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PATENTS

January 20, 1998

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1205 O.G. 4, on December 2, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1997, and were announced in the *Official Gazette* at 1201 O.G. 63, on August 19, 1997.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1998, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	49.00	98.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	360.00	720.00
USPTO was ISA but not IPEA	395.00	790.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	535.00	1070.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	465.00	930.00
Other National fees		
— For each independent claim in excess of 3	41.00	82.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	135.00	270.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 10, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 17, 1995 for which maintenance fees due at 3 years

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and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,381,557 through 5,383,234
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 15, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,984,299 through 4,985,931
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 13, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,635,300 through 4,637,073
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $525.00
By other than a small entity $1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,050.00
By other than a small entity $2,100.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,580.00
By other than a small entity $3,160.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional $1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 12, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,551,862	06/435,761	11/12/85
4,551,864	06/524,276	11/12/85
4,551,869	06/591,469	11/12/85
4,551,872	06/577,563	11/12/85
4,551,873	06/397,795	11/12/85
4,551,874	06/450,388	11/12/85
4,551,877	06/500,256	11/12/85
4,551,887	06/580,878	11/12/85
4,551,902	06/647,696	11/12/85
4,551,907	06/554,544	11/12/85
4,551,912	06/718,817	11/12/85
4,551,919	06/539,361	11/12/85
4,551,921	06/541,341	11/12/85
4,551,925	06/239,587	11/12/85
4,551,932	06/594,193	11/12/85
4,551,934	06/461,538	11/12/85
4,551,935	06/464,897	11/12/85
4,551,937	06/719,223	11/12/85
4,551,938	06/580,811	11/12/85
4,551,950	06/634,430	11/12/85
4,551,953	06/618,048	11/12/85
4,551,959	06/543,175	11/12/85
4,551,961	06/470,160	11/12/85
4,551,979	06/506,707	11/12/85
4,551,980	06/479,012	11/12/85
4,551,982	06/670,014	11/12/85
4,551,983	06/621,374	11/12/85
4,551,987	06/566,409	11/12/85
4,551,988	06/622,209	11/12/85
4,551,992	06/651,400	11/12/85
4,551,998	06/530,594	11/12/85
4,552,001	06/558,473	11/12/85
4,552,002	06/701,649	11/12/85
4,552,010	06/628,824	11/12/85
4,552,015	06/578,538	11/12/85
4,552,021	06/567,372	11/12/85
4,552,026	06/663,113	11/12/85
4,552,028	06/578,065	11/12/85
4,552,039	06/583,191	11/12/85
4,552,042	06/635,800	11/12/85
4,552,045	06/486,292	11/12/85
4,552,048	06/495,403	11/12/85
4,552,057	06/567,193	11/12/85
4,552,060	06/650,514	11/12/85
4,552,065	06/650,989	11/12/85
4,552,069	06/637,846	11/12/85
4,552,071	06/388,551	11/12/85
4,552,074	06/553,824	11/12/85
4,552,075	06/500,437	11/12/85
4,552,081	06/740,167	11/12/85
4,552,085	06/573,362	11/12/85
4,552,089	06/541,875	11/12/85
4,552,093	06/541,581	11/12/85
4,552,095	06/625,030	11/12/85
4,552,097	06/693,978	11/12/85
4,552,099	06/664,640	11/12/85
4,552,111	06/514,846	11/12/85
4,552,112	06/634,349	11/12/85
4,552,114	06/685,258	11/12/85
4,552,115	06/599,973	11/12/85
4,552,118	06/590,662	11/12/85
4,552,123	06/681,033	11/12/85
4,552,128	06/566,486	11/12/85
4,552,130	06/583,428	11/12/85
4,552,131	06/622,189	11/12/85
4,552,135	06/586,438	11/12/85
4,552,145	06/508,854	11/12/85
4,552,147	06/527,831	11/12/85
4,552,150	06/504,170	11/12/85
4,552,153	06/552,693	11/12/85
4,552,166	06/597,614	11/12/85
4,552,169	06/533,900	11/12/85
4,552,184	06/557,765	11/12/85
4,552,187	06/691,384	11/12/85
4,552,189	06/427,675	11/12/85
4,552,195	06/447,698	11/12/85
4,552,196	06/559,367	11/12/85
4,552,206	06/458,322	11/12/85
4,552,209	06/716,507	11/12/85
4,552,210	06/437,642	11/12/85
4,552,213	06/585,440	11/12/85
4,552,214	06/592,378	11/12/85
4,552,223	06/497,552	11/12/85
4,552,227	06/641,720	11/12/85
4,552,231	06/529,407	11/12/85
4,552,233	06/632,255	11/12/85
4,552,247	06/662,450	11/12/85
4,552,248	06/664,512	11/12/85
4,552,251	06/495,337	11/12/85
4,552,265	06/524,129	11/12/85
4,552,269	06/558,989	11/12/85
4,552,272	06/599,193	11/12/85
4,552,280	06/444,745	11/12/85
4,552,283	06/672,672	11/12/85
4,552,284	06/602,308	11/12/85
4,552,292	06/440,800	11/12/85
4,552,296	06/543,483	11/12/85
4,552,316	06/558,086	11/12/85
4,552,317	06/656,609	11/12/85
4,552,318	06/517,266	11/12/85
4,552,319	06/561,323	11/12/85
4,552,331	06/637,296	11/12/85
4,552,333	06/574,413	11/12/85
4,552,335	06/548,320	11/12/85
4,552,339	06/617,387	11/12/85
4,552,347	06/555,845	11/12/85
4,552,349	06/635,500	11/12/85
4,552,356	06/628,912	11/12/85
4,552,359	06/582,533	11/12/85
4,552,361	06/581,735	11/12/85
4,552,387	06/497,074	11/12/85
4,552,395	06/715,763	11/12/85
4,552,400	06/693,315	11/12/85
4,552,402	06/435,957	11/12/85
4,552,406	06/458,925	11/12/85
4,552,407	06/513,173	11/12/85
4,552,409	06/590,711	11/12/85
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4,552,426	06/532,424	11/12/85
4,552,427	06/449,359	11/12/85
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4,552,441	06/625,926	11/12/85
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4,552,469	06/617,368	11/12/85
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4,552,489	06/551,103	11/12/85
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4,552,497	06/612,229	11/12/85
4,552,501	06/532,574	11/12/85
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4,552,504	06/579,362	11/12/85
4,552,506	06/573,430	11/12/85
4,552,509	06/229,427	11/12/85
4,552,519	06/567,429	11/12/85
4,552,521	06/679,669	11/12/85
4,552,527	06/659,161	11/12/85
4,552,531	06/671,908	11/12/85
4,552,540	06/572,267	11/12/85
4,552,543	06/649,287	11/12/85
4,552,552	06/466,645	11/12/85
4,552,557	06/544,059	11/12/85
4,552,561	06/452,523	11/12/85
4,552,563	06/650,778	11/12/85
4,552,582	06/517,424	11/12/85
4,552,585	06/657,848	11/12/85
4,552,588	06/502,714	11/12/85
4,552,593	06/538,274	11/12/85
4,552,595	06/606,094	11/12/85
4,552,614	06/621,609	11/12/85
4,552,618	06/599,102	11/12/85
4,552,622	06/605,893	11/12/85
4,552,629	06/696,985	11/12/85
4,552,633	06/534,661	11/12/85
4,552,635	06/639,528	11/12/85
4,552,642	06/507,864	11/12/85
4,552,649	06/712,181	11/12/85
4,552,652	06/542,349	11/12/85
4,552,653	06/602,472	11/12/85
4,552,654	06/595,476	11/12/85
4,552,663	06/636,208	11/12/85
4,552,666	06/554,712	11/12/85
4,552,673	06/544,904	11/12/85
4,552,679	06/590,129	11/12/85
4,552,683	06/532,086	11/12/85
4,552,694	06/635,681	11/12/85
4,552,696	06/471,379	11/12/85
4,552,705	06/670,181	11/12/85
4,552,710	06/567,883	11/12/85
4,552,711	06/634,530	11/12/85
4,552,712	06/627,516	11/12/85
4,552,714	06/417,674	11/12/85
4,552,716	06/562,943	11/12/85
4,552,719	06/528,005	11/12/85
4,552,725	06/464,165	11/12/85
4,552,727	06/586,057	11/12/85
4,552,728	06/455,429	11/12/85
4,552,739	06/729,099	11/12/85
4,552,740	06/704,979	11/12/85
4,552,750	06/517,852	11/12/85
4,552,752	06/518,237	11/12/85
4,552,753	06/556,883	11/12/85
4,552,754	06/482,574	11/12/85
4,552,763	06/574,441	11/12/85
4,552,764	06/577,450	11/12/85
4,552,765	06/488,100	11/12/85
4,552,775	06/474,635	11/12/85
4,552,778	06/614,417	11/12/85
4,552,785	06/547,758	11/12/85
4,552,790	06/583,221	11/12/85
4,552,801	06/622,662	11/12/85
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4,552,822	06/558,246	11/12/85
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4,552,840	06/433,255	11/12/85
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4,552,907	06/635,012	11/12/85
4,552,911	06/462,152	11/12/85
4,552,914	06/678,218	11/12/85
4,552,916	06/663,123	11/12/85
4,552,918	06/616,865	11/12/85
4,552,924	06/642,093	11/12/85
4,552,927	06/530,843	11/12/85
4,552,929	06/617,064	11/12/85
4,552,933	06/510,848	11/12/85
4,552,935	06/568,845	11/12/85
4,552,939	06/563,062	11/12/85
4,552,947	06/484,848	11/12/85
4,552,948	06/717,929	11/12/85
4,552,950	06/691,029	11/12/85
4,552,955	06/393,254	11/12/85
4,552,960	06/595,866	11/12/85
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4,879,216	07/165,288	11/07/89
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5,259,173	07/687,436	11/09/93
5,259,174	07/774,508	11/09/93
5,259,178	07/938,017	11/09/93
5,259,181	08/005,177	11/09/93
5,259,185	07/894,673	11/09/93
5,259,189	07/805,581	11/09/93
5,259,199	07/911,098	11/09/93
5,259,204	08/002,176	11/09/93
5,259,218	07/997,602	11/09/93
5,259,220	07/883,468	11/09/93
5,259,221	07/847,131	11/09/93
5,259,240	07/862,868	11/09/93
5,259,243	07/638,463	11/09/93
5,259,267	07/882,758	11/09/93
5,259,278	07/928,740	11/09/93
5,259,279	07/869,780	11/09/93
5,259,284	07/818,788	11/09/93
5,259,291	07/861,285	11/09/93
5,259,297	07/847,021	11/09/93
5,259,299	07/950,974	11/09/93
5,259,302	07/796,418	11/09/93
5,259,304	07/937,169	11/09/93
5,259,305	07/917,887	11/09/93
5,259,308	07/785,033	11/09/93
5,259,316	07/973,659	11/09/93
5,259,318	07/468,939	11/09/93
5,259,321	07/933,188	11/09/93
5,259,322	07/799,910	11/09/93
5,259,329	07/849,046	11/09/93
5,259,334	07/976,362	11/09/93
5,259,338	07/799,973	11/09/93
5,259,339	07/915,459	11/09/93

Patent Number	Serial Number	Issue Date
5,259,341	07/986,115	11/09/93
5,259,343	07/961,419	11/09/93
5,259,345	07/878,644	11/09/93
5,259,351	07/776,009	11/09/93
5,259,352	08/013,970	11/09/93
5,259,372	07/721,092	11/09/93
5,259,374	07/898,018	11/09/93
5,259,381	07/377,722	11/09/93
5,259,391	07/709,692	11/09/93
5,259,397	07/607,994	11/09/93
5,259,399	07/844,135	11/09/93
5,259,402	07/802,340	11/09/93
5,259,407	07/715,421	11/09/93
5,259,408	07/872,991	11/09/93
5,259,409	07/841,058	11/09/93
5,259,414	07/430,412	11/09/93
5,259,415	07/965,224	11/09/93
5,259,424	07/858,143	11/09/93
5,259,425	07/710,497	11/09/93
5,259,426	08/012,332	11/09/93
5,259,428	07/848,976	11/09/93
5,259,434	07/838,831	11/09/93
5,259,437	07/737,022	11/09/93
5,259,458	07/762,581	11/09/93
5,259,467	07/865,835	11/09/93
5,259,481	07/819,339	11/09/93
5,259,483	07/834,868	11/09/93
5,259,491	07/796,012	11/09/93
5,259,496	07/971,323	11/09/93
5,259,497	08/012,427	11/09/93
5,259,500	07/811,940	11/09/93
5,259,502	08/052,798	11/09/93
5,259,505	07/893,373	11/09/93
5,259,506	07/916,486	11/09/93
5,259,513	07/801,714	11/09/93
5,259,515	07/806,714	11/09/93
5,259,516	07/791,451	11/09/93
5,259,521	07/771,485	11/09/93
5,259,523	07/945,124	11/09/93
5,259,524	07/927,155	11/09/93
5,259,525	07/492,083	11/09/93
5,259,531	08/012,930	11/09/93
5,259,533	07/793,823	11/09/93
5,259,534	07/936,662	11/09/93
5,259,539	07/820,707	11/09/93
5,259,540	07/915,786	11/09/93
5,259,541	07/955,409	11/09/93
5,259,543	07/879,174	11/09/93
5,259,546	07/702,266	11/09/93
5,259,547	07/911,656	11/09/93
5,259,549	07/992,322	11/09/93
5,259,553	07/976,283	11/09/93
5,259,554	07/883,543	11/09/93
5,259,559	07/820,163	11/09/93
5,259,560	07/854,545	11/09/93
5,259,562	07/848,367	11/09/93
5,259,564	07/940,741	11/09/93
5,259,571	07/844,499	11/09/93
5,259,573	07/948,057	11/09/93
5,259,574	07/838,426	11/09/93
5,259,575	07/855,607	11/09/93
5,259,579	07/865,175	11/09/93
5,259,581	07/855,197	11/09/93
5,259,583	07/912,284	11/09/93
5,259,587	07/895,041	11/09/93
5,259,588	07/774,999	11/09/93
5,259,589	07/940,847	11/09/93
5,259,600	07/900,956	11/09/93
5,259,602	07/967,235	11/09/93
5,259,609	07/868,453	11/09/93
5,259,615	07/854,610	11/09/93
5,259,617	07/821,809	11/09/93
5,259,618	07/930,756	11/09/93
5,259,619	07/830,383	11/09/93
5,259,620	07/823,862	11/09/93
5,259,622	07/917,844	11/09/93
5,259,625	07/985,799	11/09/93
5,259,626	07/925,738	11/09/93
5,259,627	08/027,271	11/09/93
5,259,631	07/869,223	11/09/93
5,259,632	07/834,364	11/09/93
5,259,639	08/008,508	11/09/93
5,259,640	07/701,069	11/09/93
5,259,645	07/809,178	11/09/93
5,259,649	07/718,416	11/09/93
5,259,654	07/894,870	11/09/93
5,259,655	07/955,644	11/09/93
5,259,657	07/947,276	11/09/93
5,259,659	07/993,024	11/09/93
5,259,664	07/868,557	11/09/93
5,259,666	07/910,202	11/09/93
5,259,669	07/889,518	11/09/93
5,259,673	07/687,301	11/09/93
5,259,674	07/917,857	11/09/93
5,259,676	07/859,841	11/09/93
5,259,679	07/819,053	11/09/93
5,259,680	07/713,987	11/09/93
5,259,682	07/866,972	11/09/93
5,259,691	07/755,033	11/09/93
5,259,694	07/710,399	11/09/93
5,259,699	07/894,392	11/09/93
5,259,702	07/902,333	11/09/93
5,259,719	07/815,938	11/09/93
5,259,720	07/881,163	11/09/93
5,259,741	07/925,381	11/09/93
5,259,742	07/884,158	11/09/93
5,259,743	07/743,042	11/09/93
5,259,761	07/579,810	11/09/93
5,259,763	07/723,180	11/09/93
5,259,775	07/936,665	11/09/93
5,259,778	07/911,626	11/09/93
5,259,781	07/977,946	11/09/93
5,259,786	07/905,381	11/09/93
5,259,792	07/887,890	11/09/93
5,259,794	08/000,184	11/09/93
5,259,798	07/730,129	11/09/93
5,259,802	07/929,598	11/09/93
5,259,808	08/004,384	11/09/93
5,259,815	07/562,854	11/09/93
5,259,816	07/885,042	11/09/93
5,259,823	07/592,551	11/09/93
5,259,824	07/797,302	11/09/93
5,259,828	07/843,400	11/09/93
5,259,829	08/002,721	11/09/93
5,259,834	07/806,241	11/09/93
5,259,842	08/007,919	11/09/93
5,259,868	07/985,890	11/09/93
5,259,880	07/731,236	11/09/93
5,259,884	07/609,619	11/09/93
5,259,885	07/679,614	11/09/93
5,259,892	07/834,260	11/09/93
5,259,901	07/889,445	11/09/93
5,259,912	07/870,496	11/09/93
5,259,913	07/965,184	11/09/93
5,259,915	07/856,795	11/09/93
5,259,927	07/842,548	11/09/93
5,259,928	07/699,768	11/09/93
5,259,929	07/824,353	11/09/93
5,259,940	07/842,898	11/09/93
5,259,941	07/837,199	11/09/93
5,259,951	07/713,071	11/09/93
5,259,953	07/739,239	11/09/93
5,259,964	07/838,124	11/09/93
5,259,973	07/966,493	11/09/93
5,259,975	07/854,502	11/09/93
5,259,987	07/793,796	11/09/93
5,259,993	07/823,682	11/09/93
5,260,001	07/924,126	11/09/93
5,260,003	07/910,344	11/09/93
5,260,004	07/802,675	11/09/93
5,260,007	07/763,283	11/09/93
5,260,011	07/065,883	11/09/93
5,260,019	07/662,496	11/09/93
5,260,021	07/905,630	11/09/93
5,260,023	07/918,700	11/09/93
5,260,024	07/910,806	11/09/93

VOL
1206
ISS
3
JA
20
1998
UMI

Patent Number	Serial Number	Issue Date
5,260,034	07/873,268	11/09/93
5,260,047	07/978,068	11/09/93
5,260,056	07/640,750	11/09/93
5,260,070	07/944,326	11/09/93
5,260,073	07/893,956	11/09/93
5,260,074	07/901,734	11/09/93
5,260,078	07/938,481	11/09/93
5,260,080	07/854,647	11/09/93
5,260,081	07/979,067	11/09/93
5,260,087	07/953,529	11/09/93
5,260,091	07/964,328	11/09/93
5,260,094	07/966,439	11/09/93
5,260,096	07/062,292	11/09/93
5,260,098	07/811,661	11/09/93
5,260,114	07/684,588	11/09/93
5,260,116	07/666,621	11/09/93
5,260,124	07/798,464	11/09/93
5,260,131	07/822,205	11/09/93
5,260,137	07/794,469	11/09/93
5,260,144	07/761,829	11/09/93
5,260,158	07/717,152	11/09/93
5,260,165	07/664,551	11/09/93
5,260,173	07/511,201	11/09/93
5,260,185	07/928,872	11/09/93
5,260,191	07/828,087	11/09/93
5,260,196	07/715,660	11/09/93
5,260,205	07/613,160	11/09/93
5,260,211	07/617,644	11/09/93
5,260,215	07/916,936	11/09/93
5,260,218	07/604,738	11/09/93
5,260,219	07/751,157	11/09/93
5,260,235	07/750,738	11/09/93
5,260,240	07/803,925	11/09/93
5,260,244	07/955,606	11/09/93
5,260,245	07/962,557	11/09/93
5,260,246	07/949,096	11/09/93
5,260,259	07/877,579	11/09/93
5,260,270	07/730,074	11/09/93
5,260,277	07/579,789	11/09/93
5,260,278	07/678,469	11/09/93
5,260,283	07/885,530	11/09/93
5,260,285	07/794,534	11/09/93
5,260,293	07/775,630	11/09/93
5,260,294	07/889,720	11/09/93
5,260,306	07/727,322	11/09/93
5,260,313	07/849,770	11/09/93
5,260,315	07/887,933	11/09/93
5,260,328	07/972,391	11/09/93
5,260,332	07/832,550	11/09/93
5,260,334	07/917,452	11/09/93
5,260,342	07/900,119	11/09/93
5,260,348	07/830,017	11/09/93
5,260,355	08/020,815	11/09/93
5,260,364	07/926,011	11/09/93
5,260,366	07/742,499	11/09/93
5,260,373	07/837,227	11/09/93
5,260,375	07/660,378	11/09/93
5,260,378	07/466,914	11/09/93
5,260,381	07/774,564	11/09/93
5,260,400	07/996,015	11/09/93
5,260,405	07/966,298	11/09/93
5,260,411	07/183,721	11/09/93
5,260,412	07/586,460	11/09/93
5,260,424	07/829,245	11/09/93
5,260,426	07/856,851	11/09/93
5,260,427	07/908,975	11/09/93
5,260,434	07/728,125	11/09/93
5,260,437	07/981,015	11/09/93
5,260,444	07/977,173	11/09/93
5,260,446	07/865,754	11/09/93
5,260,453	07/609,491	11/09/93
5,260,455	07/910,463	11/09/93
5,260,464	07/518,417	11/09/93
5,260,465	07/807,695	11/09/93
5,260,479	07/809,199	11/09/93
5,260,489	07/953,362	11/09/93
5,260,491	07/966,841	11/09/93
5,260,493	07/907,909	11/09/93
5,260,494	08/022,846	11/09/93
5,260,499	07/904,285	11/09/93
5,260,502	07/818,605	11/09/93
5,260,511	07/822,585	11/09/93
5,260,522	07/651,197	11/09/93
5,260,534	07/994,334	11/09/93
5,260,537	07/717,884	11/09/93
5,260,556	07/690,994	11/09/93
5,260,566	07/897,715	11/09/93
5,260,574	07/904,627	11/09/93
5,260,586	07/976,326	11/09/93
5,260,606	07/829,781	11/09/93
5,260,617	07/939,297	11/09/93
5,260,633	07/947,849	11/09/93
5,260,639	07/822,457	11/09/93
5,260,645	07/856,590	11/09/93
5,260,648	07/646,785	11/09/93
5,260,651	07/594,783	11/09/93
5,260,660	07/951,204	11/09/93
5,260,662	07/899,020	11/09/93
5,260,669	07/828,139	11/09/93
5,260,677	07/927,596	11/09/93
5,260,684	07/699,931	11/09/93
5,260,686	07/928,942	11/09/93
5,260,689	07/900,133	11/09/93
5,260,691	07/605,418	11/09/93
5,260,693	07/776,064	11/09/93
5,260,694	07/819,465	11/09/93
5,260,701	07/752,656	11/09/93
5,260,702	07/717,996	11/09/93
5,260,730	08/008,503	11/09/93
5,260,731	07/819,810	11/09/93
5,260,749	07/779,052	11/09/93
5,260,765	07/827,146	11/09/93
5,260,766	07/862,078	11/09/93
5,260,772	07/382,191	11/09/93
5,260,773	07/771,498	11/09/93
5,260,814	07/863,228	11/09/93
5,260,827	07/871,348	11/09/93
5,260,830	07/960,731	11/09/93
5,260,835	07/981,415	11/09/93
5,260,846	07/740,928	11/09/93
5,260,849	07/931,427	11/09/93
5,260,851	07/965,336	11/09/93
5,260,856	07/828,811	11/09/93
5,260,859	07/272,675	11/09/93
5,260,860	07/855,910	11/09/93
5,260,865	07/678,775	11/09/93
5,260,866	07/761,270	11/09/93
5,260,867	07/781,081	11/09/93
5,260,870	07/615,960	11/09/93
5,260,883	07/816,578	11/09/93
5,260,889	07/861,077	11/09/93
5,260,891	07/762,897	11/09/93
5,260,893	07/816,301	11/09/93
5,260,910	07/961,532	11/09/93
5,260,916	07/964,124	11/09/93
5,260,919	07/880,023	11/09/93
5,260,925	07/699,846	11/09/93
5,260,940	07/628,793	11/09/93
5,260,941	07/890,720	11/09/93
5,260,953	07/942,165	11/09/93
5,260,981	07/890,144	11/09/93
5,260,982	07/881,297	11/09/93
5,260,985	07/931,757	11/09/93
5,261,012	07/881,108	11/09/93
5,261,015	07/796,544	11/09/93
5,261,026	07/820,855	11/09/93
5,261,039	07/503,876	11/09/93
5,261,060	07/668,778	11/09/93
5,261,063	07/624,438	11/09/93
5,261,070	07/587,615	11/09/93
5,261,071	07/673,030	11/09/93
5,261,075	07/908,573	11/09/93
5,261,083	07/692,371	11/09/93
5,261,099	07/908,621	11/09/93
5,261,123	07/823,368	11/09/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 10/03/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,518,703	06/447,477	12/06/82	05/21/85	10/03/97
4,626,346	06/827,867	02/10/86	12/02/86	10/06/97
4,798,590	06/554,617	11/22/83	01/17/89	10/07/97

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 10/10/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
5,204,473	07/883,812	05/12/92	04/20/93	10/15/97
5,225,464	07/861,530	04/02/92	07/06/93	10/10/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,393,368, Re. S.N. 08/940,815, Sept. 30, 1997, Cl. 156/577, CORRECTION TAPE DISPENSER, Christopher J. Stevens, Owner of Record: *The Gillette Co., Boston, Mass.*, Attorney or Agent: Charles P. Boukus, Jr., Ex. Gp.: 1304

5,446,267, Re. S.N. 08/921,045, Aug. 29, 1997, Cl. 235/440, LASER BEAM BAR CODE READER, Giuseppe Stanzani, et. al., Owner of Record: *Datalogic S.P.A., Bologna, Italy,* Attorney or Agent: Robert V. Sloan, Ex. Gp.: 2514

5,467,317, Re. S.N. 08/970,780, Nov. 14, 1997, Cl. 365/230.60, SEMICONDUCTOR MEMORY DEVICE FOR USE AN APPARATUS REQUIRING HIGH-SPEED ACCESS TO MEMORY CELLS, Yasushi Kameda, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-shi, Japan,* Attorney or Agent: Richard L. Schwaab, Ex. Gp.: 2511

5,468,958, Re. S.N. 08/975,058, Nov. 20, 1997, Cl. 250/292, QUADRUPOLE ION TRAP WITH SWITCHABLE MULTIPOLE FRACTIONS, John Franzen, et. al., Owner of Record: *Bruker-Franzen Analytik, Bremen, Germany,* Attorney or Agent: Philip L. Conrad, Ex. Gp.: 2506

5,589,323, Re. S.N. 08/972,071, Nov. 17, 1997, Cl. 430/492, CHEMICALLY STABLE ASCORBATE-BASED PHOTOGRAPHIC DEVELOPER AND IMAGING PROCESS, John L. Adkins, et. al., Owner of Record: *Abbott Laboratories, Abbott Park, Ill.,* Attorney or Agent: None, Ex. Gp.: 1113

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,363,877, Reexam. No. 90/004,861, Dec. 10, 1997, Cl. 435/317.1, RECOMBINANT DNA TRANSFER VECTORS, Howard M. Goodman, et. al., Owner of Record: *The Regents of the University of California, Berkeley, Calif.,* Attorney or Agent: Gary J. Sertich, Arnold White and Durkee, Houston, Tex., Ex. Gp.: 1815, Requester: Genentech, Inc., c/o Margaret B. Kelley, Rogers and Wells, New York, N.Y.

4,785,450, Reexam. No. 90/004,867, Dec. 12, 1997, Cl. 370/095, APPARATUS AND METHOD FOR OBTAINING FREQUENCY AGILITY IN DIGITAL COMMUNICATION SYSTEMS, Duane R. Bolgiano, et. al., Owner of Record: *Interdigital Technology Corp., Wilmington, Del.,* Attorney or Agent: Gerald B. Halt, Jr., Volpe and Koenig, Philadelphia, Pa., Ex. Gp.: 2731, Requester: Owner

4,817,089, Reexam. No. 90/004,868, Dec. 12, 1997, Cl. 370/095, SUBSCRIBER RF TELEPHONE SYSTEM FOR PROVIDING MULTIPLE SPEECH AND/OR DATA SIGNALS SIMULTANEOUSLY OVER EITHER A SINGLE OR PLURALITY OF RF CHANNELS, Eric Paneth, et. al., Owner of Record: *Interdigital Technology Corp., Wilmington, Del.,* Attorney or Agent: Gerald B. Halt, Jr., Volpe and Koenig, Philadelphia, Pa., Ex. Gp.: 2731, Requester: Owner

5,022,024, Reexam. No. 90/004,869, Dec. 12, 1997, Cl. 370/050, SUBSCRIBER RF TELEPHONE SYSTEM FOR PROVIDING MULTIPLE SPEECH AND/OR DATA SIGNALS SIMULTANEOUSLY OVER EITHER A SINGLE OR PLURALITY OF RF CHANNELS, Eric Paneth, et. al., Owner of Record: *Interdigital Technology Corp., Wilmington, Del.,* Attorney or Agent: Gerald B. Halt, Jr., Volpe and Koenig, Philadelphia, Pa., Ex. Gp.: 2731, Requester: Owner

5,170,528, Reexam. No. 90/004,866, Dec. 11, 1997, Cl. 016/018CG, OBSTACLE CLEARING DEVICE FOR WHEELS, John J. Navar, et. al., Owner of Record: *Movit, Inc., Corpus Christi, Tex.,* Attorney or Agent: Michael A. O'Neil, Gardere and Wynne, Dallas, Tex., Ex. Gp.: 3209, Requester: Owner

5,254,390, Reexam. No. 90/004,863, Dec. 9, 1997, Cl. 428/156, PLANO-CONVEX BASE SHEET FOR RETROREFLECTIVE ARTICLES AND METHOD FOR MAKING SAME, Shih-Lai Lu, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Peter L. Olson, 3M Office of Patent Counsel, St. Paul, Minn., Ex. Gp.: 1315, Requester: Owner

5,382,207, Reexam. No. 90/004,860, Dec. 9, 1997, Cl. 482/054, EXERCISE TREADMILL, Richard E. Skowronski, et. al., Owner of Record: *Brunswick Corp., Lake Forrest, Ill.,* Attorney or Agent: Michael B. Murray, Chicago, Ill., Ex. Gp.: 3302, Requester: Precor Inc., c/o Thomas D. Theisen, Christensen, O'Connor, Johnson & Kindness, Seattle, Wash.

5,398,894, Reexam. No. 90/004,836, Nov. 13, 1997, Cl. 246/028R, VIRTUAL BLOCK CONTROL SYSTEM FOR RAILWAY VEHICLE, Robert D. Pascoe, Owner of Record: *Union Switch and Signal Inc., Pittsburgh, Pa.,* Attorney or Agent: John E. Grosselin III, Buchanan Ingersoll, Pittsburgh, Pa., Ex. Gp.: 3103, Requester: Owner

5,443,960, Reexam. No. 90/004,865, Dec. 10, 1997, Cl. 435/013, METHOD FOR THE DIAGNOSIS OF BLOOD COAGULATION DISORDERS, Bjorn Dahlback, Owner of Record: *T A C Thombosis and Coagulation AB, Malmo, Sweden,* Attorney or Agent: Steven M. Bauer, Testa Hurwitz and Thibeault,

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Boston, Mass., Ex. Gp.: 1211, Requester: Ian C. McLeod, McLeod and Moyne, Okemos, Mich.

5,574,260, Reexam. No. 90/004,864, Dec. 9, 1997, Cl. 174/102R, COMPOSITE CONDUCTOR HAVING IMPROVED HIGH FREQUENCY SIGNAL TRANSMISSION CHARACTERISTICS, James R. Broomall, et. al., Owner of Record: *W L Gore and Associates Inc., Newark, Del.,* Attorney or Agent: Victor M. Genco, Jr., W L Gore and Associates, Newark, Del., Ex. Gp.: 2109, Requester: Owner

5,589,963, Reexam. No. 90/004,837, Nov. 13, 1997, Cl. 349/119, PIXELATED COMPENSATORS FOR TWISTED NEMATIC LIQUID CRYSTAL DISPLAYS, William J. Gunning, et. al., Owner of Record: *Rockwell International Corp., Cedar Rapids, Iowa,* Attorney or Agent: Gregory G. Williams, Rockwell International Corp., Cedar Rapids, Iowa, Ex. Gp.: 2515, Requester: Joseph A. Rhoa, Myers Liniak and Berenato, Bethesda, Md.

5,620,465, Reexam. No. 90/004,870, Dec. 12, 1997, Cl. 604/028, METHOD FOR THE PREPARATION OF PRE-FILLED PLASTIC SYRINGES, Gayle Heffernan, et. al., Owner of Record: *Bracco International, B V, Amsterdam, The Netherlands,* Attorney or Agent: George Hoare Jr., Rogers and Wells, New York, N.Y., Ex. Gp.: 3306, Requester: Gregory L. Bradley, Medrad, Inc., Indianola, Pa.

5,636,667, Reexam. No. 90/004,835, Nov. 12, 1997, Cl. 141/059, CONVERSION OF FUEL DISPENSERS TO PROVIDE FOR VACUUM ASSISTED VAPOR RECOVERY, Jonathan P. Young, et. al., Owner of Record: *Dover Corp., New York, N.Y.,* Attorney or Agent: Dinsmore and Shohl, Cincinnati, Ohio, Ex. Gp.: 3105, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 11, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
115,274	71/097,568	02/06/1917
115,295	71/098,937	02/06/1917
115,296	71/075,426	02/06/1917
115,418	71/098,505	02/06/1917
342,860	71/366,659	02/02/1937
342,875	71/381,824	02/02/1937
342,879	71/383,186	02/02/1937
342,888	71/380,552	02/02/1937
342,890	71/372,188	02/02/1937
342,895	71/374,714	02/02/1937
342,923	71/383,458	02/02/1937
342,931	71/383,727	02/02/1937
342,935	71/383,732	02/02/1937
342,940	71/383,584	02/02/1937
342,948	71/383,634	02/02/1937
342,949	71/383,635	02/02/1937
342,956	71/383,453	02/02/1937
640,816	71/684,298	02/05/1957
640,840	72/008,620	02/05/1957
640,841	72/009,271	02/05/1957
640,846	72/007,811	02/05/1957
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640,854	71/695,457	02/05/1957
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640,878	72/006,883	02/05/1957
640,879	72/007,104	02/05/1957
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1,057,820	73/065,652	02/01/1977
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1,057,825	73/080,943	02/01/1977
1,057,830	73/087,680	02/01/1977
1,057,838	73/060,236	02/01/1977

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			1,058,070	73/047,514	02/08/1977
			1,058,077	73/075,653	02/08/1977
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1,057,886	73/090,308	02/01/1977	1,058,104	73/089,147	02/08/1977
1,057,888	73/069,961	02/01/1977	1,058,107	73/091,290	02/08/1977
1,057,889	73/073,158	02/01/1977	1,058,108	73/061,511	02/08/1977
1,057,891	73/086,771	02/01/1977	1,058,109	73/066,401	02/08/1977
1,057,893	73/090,641	02/01/1977	1,058,110	73/067,753	02/08/1977
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1,057,927	73/048,770	02/01/1977	1,058,129	73/076,157	02/08/1977
1,057,930	73/062,867	02/01/1977	1,058,130	73/076,406	02/08/1977
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1,057,934	73/078,316	02/01/1977	1,058,136	73/080,457	02/08/1977
1,057,939	73/067,210	02/01/1977	1,058,137	73/080,568	02/08/1977
1,057,943	73/089,560	02/01/1977	1,058,139	73/081,005	02/08/1977
1,057,946	73/073,574	02/01/1977	1,058,142	73/083,002	02/08/1977
1,057,959	73/053,869	02/01/1977	1,058,144	73/084,843	02/08/1977
1,057,961	73/055,529	02/01/1977	1,058,145	73/086,483	02/08/1977
1,057,965	73/073,573	02/01/1977	1,058,146	73/086,739	02/08/1977
1,057,971	73/033,957	02/01/1977	1,058,148	73/087,294	02/08/1977
1,057,972	73/044,282	02/01/1977	1,058,149	73/087,295	02/08/1977
1,057,973	73/046,480	02/01/1977	1,058,150	73/088,785	02/08/1977
1,057,975	73/051,463	02/01/1977	1,058,166	73/091,807	02/08/1977
1,057,983	73/068,569	02/01/1977	1,058,169	73/092,038	02/08/1977
1,057,984	73/069,286	02/01/1977	1,058,173	73/093,718	02/08/1977
1,057,985	73/069,287	02/01/1977	1,058,175	73/064,740	02/08/1977
1,057,992	73/082,747	02/01/1977	1,058,178	73/075,181	02/08/1977
1,058,000	73/087,329	02/01/1977	1,058,179	73/076,909	02/08/1977
1,058,001	73/088,561	02/01/1977	1,058,186	73/089,423	02/08/1977
1,058,002	73/089,027	02/01/1977	1,058,188	73/089,503	02/08/1977
1,058,003	73/089,833	02/01/1977	1,058,190	73/089,542	02/08/1977
1,058,005	72/461,277	02/01/1977	1,058,192	73/090,050	02/08/1977
1,058,008	72/438,352	02/01/1977	1,058,193	73/090,051	02/08/1977
1,058,009	72/436,580	02/01/1977	1,058,197	73/090,058	02/08/1977
1,058,011	72/463,090	02/01/1977	1,058,199	73/090,267	02/08/1977
1,058,012	72/458,731	02/01/1977	1,058,200	73/090,268	02/08/1977
1,058,014	72/383,991	02/01/1977	1,058,206	73/090,527	02/08/1977
1,058,018	72/445,418	02/01/1977	1,058,218	73/078,013	02/08/1977
1,058,021	73/085,184	02/01/1977	1,058,220	73/086,572	02/08/1977
1,058,023	73/071,260	02/01/1977	1,058,221	73/088,838	02/08/1977
1,058,028	73/074,299	02/01/1977	1,058,224	73/092,337	02/08/1977
1,058,029	73/079,140	02/01/1977	1,058,228	73/093,499	02/08/1977
1,058,030	73/063,323	02/01/1977	1,058,230	73/025,443	02/08/1977
1,058,031	73/063,682	02/01/1977	1,058,232	73/038,506	02/08/1977
1,058,038	73/059,981	02/01/1977	1,058,235	73/043,450	02/08/1977
1,058,039	73/060,697	02/01/1977	1,058,237	73/062,431	02/08/1977
1,058,040	73/062,319	02/01/1977	1,058,244	73/069,886	02/08/1977
1,058,042	73/080,191	02/01/1977	1,058,251	73/084,340	02/08/1977
1,058,050	73/090,743	02/01/1977	1,058,252	73/084,524	02/08/1977
1,058,054	73/102,308	02/01/1977	1,058,253	73/084,826	02/08/1977
1,058,055	73/094,394	02/01/1977	1,058,254	73/086,134	02/08/1977
1,058,057	73/093,095	02/01/1977	1,058,258	73/088,798	02/08/1977
1,058,064	73/039,049	02/01/1977	1,058,261	73/091,592	02/08/1977
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1,058,068	73/045,280	02/08/1977	1,058,263	73/092,120	02/08/1977
1,058,069	73/045,801	02/08/1977	1,058,265	73/093,805	02/08/1977

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1,058,273	73/005,722	02/08/1977	1,058,495	73/056,872	02/08/1977
1,058,275	73/024,668	02/08/1977	1,058,496	73/069,425	02/08/1977
1,058,276	73/026,085	02/08/1977	1,058,497	73/069,642	02/08/1977
1,058,280	73/056,090	02/08/1977	1,058,498	73/075,397	02/08/1977
1,058,285	73/060,168	02/08/1977	1,058,499	73/082,972	02/08/1977
1,058,288	73/060,968	02/08/1977	1,058,504	73/050,482	02/08/1977
1,058,289	73/062,408	02/08/1977	1,058,505	73/051,326	02/08/1977
1,058,291	73/065,524	02/08/1977	1,058,506	73/051,480	02/08/1977
1,058,292	73/066,001	02/08/1977	1,058,510	73/055,640	02/08/1977
1,058,293	73/066,070	02/08/1977	1,058,514	73/058,675	02/08/1977
1,058,295	73/068,663	02/08/1977	1,058,515	73/058,835	02/08/1977
1,058,297	73/068,948	02/08/1977	1,058,518	73/059,769	02/08/1977
1,058,299	73/069,569	02/08/1977	1,058,519	73/060,207	02/08/1977
1,058,304	73/072,410	02/08/1977	1,058,523	73/064,323	02/08/1977
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1,058,315	73/079,043	02/08/1977	1,058,531	73/075,845	02/08/1977
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1,058,324	73/086,100	02/08/1977	1,058,539	73/082,990	02/08/1977
1,058,328	73/089,730	02/08/1977	1,058,551	73/087,292	02/08/1977
1,058,330	73/090,356	02/08/1977	1,058,552	73/087,446	02/08/1977
1,058,331	73/090,602	02/08/1977	1,058,554	73/089,025	02/08/1977
1,058,341	73/088,635	02/08/1977	1,058,558	73/089,655	02/08/1977
1,058,342	73/047,271	02/08/1977	1,058,559	73/089,659	02/08/1977
1,058,343	73/055,014	02/08/1977	1,058,560	73/089,678	02/08/1977
1,058,347	73/088,875	02/08/1977	1,058,563	73/080,651	02/08/1977
1,058,348	73/088,977	02/08/1977	1,058,565	73/086,908	02/08/1977
1,058,353	73/033,040	02/08/1977	1,058,567	73/088,264	02/08/1977
1,058,361	73/085,552	02/08/1977	1,058,568	73/088,266	02/08/1977
1,058,362	73/085,715	02/08/1977	1,058,573	73/091,462	02/08/1977
1,058,365	73/088,858	02/08/1977	1,058,575	73/091,570	02/08/1977
1,058,373	73/052,317	02/08/1977	1,058,580	73/092,221	02/08/1977
1,058,375	73/073,280	02/08/1977	1,058,586	73/092,473	02/08/1977
1,058,376	73/074,556	02/08/1977	1,058,589	73/092,568	02/08/1977
1,058,379	73/089,573	02/08/1977	1,058,592	73/092,808	02/08/1977
1,058,382	73/058,655	02/08/1977	1,058,593	73/093,062	02/08/1977
1,058,384	73/090,885	02/08/1977	1,058,596	73/024,778	02/08/1977
1,058,389	73/044,571	02/08/1977	1,058,599	73/064,023	02/08/1977
1,058,394	73/051,414	02/08/1977	1,058,600	73/064,243	02/08/1977
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1,058,401	73/066,526	02/08/1977	1,058,613	73/088,477	02/08/1977
1,058,406	73/071,477	02/08/1977	1,058,614	73/056,647	02/08/1977
1,058,408	73/076,764	02/08/1977	1,058,619	73/065,870	02/08/1977
1,058,412	73/082,631	02/08/1977	1,058,620	73/073,292	02/08/1977
1,058,413	73/082,632	02/08/1977	1,058,623	73/078,817	02/08/1977
1,058,416	73/087,434	02/08/1977	1,058,626	73/081,375	02/08/1977
1,058,418	73/087,759	02/08/1977	1,058,627	73/081,376	02/08/1977
1,058,420	73/088,221	02/08/1977	1,058,628	73/081,875	02/08/1977
1,058,421	73/088,743	02/08/1977	1,058,631	73/087,681	02/08/1977
1,058,422	73/088,775	02/08/1977	1,058,643	73/086,077	02/08/1977
1,058,423	73/089,397	02/08/1977	1,058,648	73/090,920	02/08/1977
1,058,424	73/089,512	02/08/1977	1,058,649	73/090,924	02/08/1977
1,058,425	73/089,715	02/08/1977	1,058,650	73/091,418	02/08/1977
1,058,431	73/088,130	02/08/1977	1,058,651	73/091,445	02/08/1977
1,058,433	73/088,480	02/08/1977	1,058,653	73/075,703	02/08/1977
1,058,438	73/064,887	02/08/1977	1,058,654	73/079,179	02/08/1977
1,058,440	73/073,319	02/08/1977	1,058,657	73/084,871	02/08/1977
1,058,446	73/090,223	02/08/1977	1,058,658	73/091,358	02/08/1977
1,058,453	73/047,800	02/08/1977	1,058,661	73/068,908	02/08/1977
1,058,454	73/058,408	02/08/1977	1,058,666	73/091,905	02/08/1977
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1,058,465	73/087,289	02/08/1977	1,058,670	73/061,619	02/08/1977
1,058,467	73/091,663	02/08/1977	1,058,672	73/063,854	02/08/1977
1,058,469	73/093,421	02/08/1977	1,058,673	73/063,909	02/08/1977
1,058,472	73/065,280	02/08/1977	1,058,676	73/082,023	02/08/1977
1,058,473	73/074,934	02/08/1977	1,058,677	73/088,157	02/08/1977
1,058,475	73/078,356	02/08/1977	1,058,679	73/089,058	02/08/1977
1,058,476	73/078,381	02/08/1977	1,058,685	73/065,852	02/08/1977
1,058,479	73/080,133	02/08/1977	1,058,687	73/078,599	02/08/1977
1,058,482	73/089,315	02/08/1977	1,058,688	73/083,141	02/08/1977
1,058,484	73/093,601	02/08/1977	1,058,691	73/022,925	02/08/1977
1,058,485	73/050,923	02/08/1977	1,058,693	73/044,637	02/08/1977
1,058,487	73/075,081	02/08/1977	1,058,694	73/045,355	02/08/1977
1,058,490	73/021,554	02/08/1977	1,058,697	73/062,435	02/08/1977

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Reg. Number	Serial Number	Reg. Date
1,058,698	73/066,354	02/08/1977
1,058,699	73/067,318	02/08/1977
1,058,703	73/085,882	02/08/1977
1,058,706	73/047,665	02/08/1977
1,058,707	73/052,700	02/08/1977
1,058,709	73/077,590	02/08/1977
1,058,710	73/078,645	02/08/1977
1,058,712	73/086,691	02/08/1977
1,058,715	73/087,254	02/08/1977
1,058,716	73/087,401	02/08/1977
1,058,718	73/088,165	02/08/1977
1,058,722	73/091,487	02/08/1977
1,058,728	73/083,699	02/08/1977
1,058,730	73/086,816	02/08/1977
1,058,731	73/086,853	02/08/1977
1,058,733	73/094,460	02/08/1977
1,058,734	73/047,885	02/08/1977
1,058,735	73/092,012	02/08/1977
1,058,738	73/052,687	02/08/1977
1,058,742	73/076,041	02/08/1977
1,058,750	73/090,784	02/08/1977
1,058,757	73/059,776	02/08/1977
1,058,759	73/068,404	02/08/1977
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1,058,773	73/080,395	02/08/1977
1,058,776	73/085,325	02/08/1977
1,058,777	73/086,640	02/08/1977
1,058,779	73/087,185	02/08/1977
1,058,780	73/087,264	02/08/1977
1,058,781	73/087,720	02/08/1977
1,058,782	73/087,745	02/08/1977
1,058,783	73/088,053	02/08/1977
1,058,784	73/088,359	02/08/1977
1,058,785	73/088,529	02/08/1977
1,058,787	73/088,741	02/08/1977
1,058,788	73/090,205	02/08/1977
1,058,790	73/091,448	02/08/1977
1,058,791	73/091,523	02/08/1977
1,058,792	73/091,852	02/08/1977
1,058,793	73/092,224	02/08/1977
1,058,794	73/092,225	02/08/1977
1,058,797	72/400,410	02/08/1977
1,058,800	72/422,400	02/08/1977
1,059,995	73/070,183	02/22/1977

Closing of the Patent and Trademark Office on Friday, December 26, 1997

In view of the official closing of the Federal government offices, including the Patent and Trademark Office, on Friday, December 26, 1997, by Executive order of the President, the Patent and Trademark Office will consider December 26, 1997, as a "Federal holiday within the District of Columbia" under 35 U.S.C. § 21 and 37 C.F.R. §§ 1.6, 1.7 and 1.9. Any action or fee due on that day will be considered as timely for the purposes of, e.g., 35 U.S.C. 119, 120, 133 and 151, if the action is taken, or the fee paid, on the next succeeding business day on which the Patent and Trademark Office is open, that is, Monday, December 29, 1997.

37 C.F.R. § 1.6(a)(2) provides that correspondence deposited as Express Mail in accordance with 37 C.F.R. § 1.10 will be considered filed on the date of its deposit. This will occur even though the date of deposit date is a Saturday, Sunday or Federal holiday within the District of Columbia.

Information regarding whether or not the Office is officially closed on any particular day may be obtained by calling 1-800-786-9199 or 703-308-4357.

December 18, 1997
BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 6, 1998.

Hsu, Winston, 13F-1 No. 2, Sec. 1, Yungho Rd., Yungho City, Taipei-Hsien, Taiwan

Newberger, Barry S., 10037 Circleview Dr., Austin, Tex. 78733

Randazzo, Gaspare J., 242 Lincoln Pl., Franklin Square, N.Y. 11010

Schmitt, Ross A., 319 Palos Verdes Blvd., #413, Redondo Beach, Calif. 90277

December 22, 1997
KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Errata

"All reference to Patent No. 5,699,433 to Philip Moore, et al. of Calif., for SUBCARRIER INJECTION SYSTEM AND METHOD USING ADAPTIVE LEVEL-SHIFTED MINIMUM SHIFT KEYING appearing in the Official Gazette of December 16, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,703,042 to Mark J. Suto, et al. of Calif., for CYTOKINE RESTRAINING AGENTS appearing in the Official Gazette of December 30, 1997, should be deleted since no patent was granted."

Certificates of Correction for the Week of January 20, 1998

D. 386,495
Re. 35,022
4,854,311
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5,688,233
5,689,033

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 1-5, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-2	CANC (SJ)	24,716	Dentelligent Corp. v. Waters	2(d) [priority]	Petition to Cancel Granted (on summary judgment)	"DENTELLIGENT CORPORATION" [trade name use in connection with the sale of dental instruments, equipment, control apparatus, and supplies]	"DENTELLIGENCE" [educational books, patient charts, information manuals, and brochures to help dentists and their staffs improve dental care delivery to their patients]		No
12-2	EX	74/678,211	Republic Engineered Steels, Inc.	2(e)(1)	Refusal Reversed		"CAST-ROLL" (and design) [steel bars of various shapes and sizes]		No
12-2	EX	74/652,566	Radical Athletic Designs, Inc.	2(d)	Refusal Reversed		mark comprising the words "RAD," "RADICAL," "ATHLETIC DESIGNS" and "BE RADICAL" and design elements [shirts, t-shirts, sweat shirts, tank tops, pants, sweat pants, shorts and hats]	"RADICAL" [t-shirts, sweat shirts, tank tops, shorts, hats, etc.]	No
12-3	EX	74/402,282	Marilyn Adair	whether the matter for which registration is sought is being used in connection with the services recited in the application	Refusal Affirmed		"TREE ARTS CO." (and design) [designing handcrafted permanently decorated Christmas and designer trees with custom skirts for use as room accessories]		Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-4	OPP OPP	88,237 88,238	Birmingham Steel Corp. v. Beta Steel Corp.	2(d)	Opposition Dismissed	"B" (and design) [semi-finished steel products, namely, reinforcing bars, merchant bars, merchant shapes and expansion shells; powdered metal products, namely, camming plugs and nuts]	"B BETA STEEL" (and design) and "B" (and design) [both marks for semi-finished steel products, namely, hot rolled coil steel, cold rolled coil steel, tube steel, pipe steel, structural steel, galvanized and other treated coil steel, reinforcing bar steel, and steel wire]		No
12-5	CANC CANC OPP	20,428 20,511 87,066	Claude Jean v. Limited Express, Inc. and Structureco, Inc.	2(d) [priority]; fraud	Petitions to Cancel Denied; Opposition Dismissed	"STRUCTURE" [clothing]	"STRUCTURE" [women's pants and tops and men's shorts, pants and tops]; "STRUCTURE" [retail clothing store services]; "STRUCTURE" (and design) [clothing, namely, shirts, sweaters, sweat pants, sweat shirts, pants, shorts, swimwear, jackets, coats, cloth belts, socks and ties; retail clothing store services]		No
12-5	EX	74/504,114	Tom L. Lee	2(e)(2); 2(d)	Refusal Affirmed (on both grounds)		"MONTANA SAPPHIRE" [rough and faceted gemstones, as loose stones and for use in the manufacture of jewelry]	"MONTANA" (in stylized lettering) [fine jewelry and imitation jewelry; watches]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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2900 Crystal Drive
Arlington, Virginia 22202-3513

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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	Not Yet Operational
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
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Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
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	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
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New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	Not Yet Operational
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
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	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
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	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
VACANT, Assistant Commissioner for Patents
NICHOLAS P. GODICI, (Acting) Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/30/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	04/23/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	03/25/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	03/27/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	07/20/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	09/21/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	12/22/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	12/22/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	11/01/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	03/11/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director	305-3900	06/01/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-3293	12/29/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	10/25/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	04/30/96
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	12/06/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	12/11/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	08/06/96

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of December 1, 1997

	Oldest Date	
Law Office	New*	Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/17/97	10/01/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/05/97	09/29/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/14/97	11/06/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/97	10/15/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/05/97	10/01/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/06/97	07/10/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/16/97	10/07/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/97	09/04/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/97	10/17/97
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	11/06/97	—0—
Renewals (All Classes)	10/24/97	—0—
Section 12(c) Publications (All Classes)	10/02/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

JANUARY 20, 1998

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,225,934 (3418th)

MULTIFUNCTIONAL ARITHMETIC AND LOGIC UNIT IN SEMICONDUCTOR INTEGRATED CIRCUIT

Jerry L. Vandierendonck, Houston, Tex., assignor to Texas Instruments, Inc., Dallas, Tex.

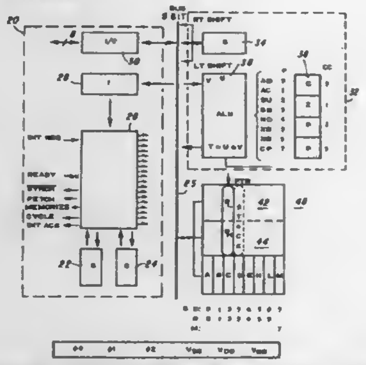
Reexamination Request No. 90/004,363, Sep. 13, 1996.

Reexamination Certificate for Patent 4,225,934, issued Sep. 30, 1980, Ser. No. 815,871, Jul. 14, 1977.

Continuation of Ser. No. 176,664, Aug. 31, 1971, Pat. No. 4,037,094.

Int. Cl.^{6} G06F *7/50*

U.S. Cl. 364—716.02



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

New claims **2–16** are added and determined to be patentable.

1. In a digital processor system that includes an arithmetic logic unit for performing a plurality of different arithmetic and logic operations in response to coded instructions *obtained from a program memory*, the arithmetic logic unit being formed in a single semiconductor integrated circuit device, a parallel bus connected to the device, the arithmetic logic unit including:

(a) decode means for receiving in parallel said coded instructions from said parallel bus and providing a plurality of multi-bit sets of parallel output control signals, each set respectively corresponding to a different one of the arithmetic and logic operations that can be performed by the system; and

(b) logic circuit means for receiving said plurality of sets of parallel control signals, one set at a time, and selectively effecting logic operations corresponding to the selected operation, the logic circuit means also receiving parallel data inputs from two separate sources on the device loaded from said parallel bus, and producing a parallel multi-bit output representing the selected operation on the data inputs, the output being stored on the device and outputted via said parallel bus.

B2 4,692,781 (3419th)

SEMICONDUCTOR DEVICE WITH ELECTROSTATIC DISCHARGE PROTECTION

Robert N. Rountree, Richmond, and Troy H. Herndon, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Reexamination Request Nos. 90/003,474, Jun. 24, 1994 and 90/004,484, Dec. 13, 1996.

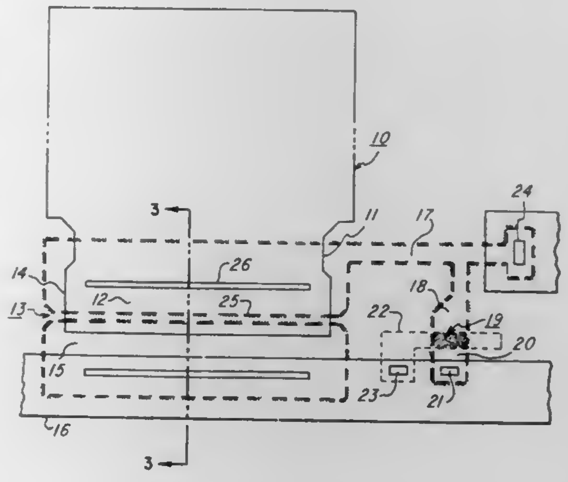
Reexamination Certificate for Patent 4,692,781, issued Sep. 8, 1987, Ser. No. 617,876, Jun. 6, 1984.

Reexamination Certificate B1 4,692,781, issued May 30, 1995.

Int. Cl.^{6} H01L *27/04;29/78*

U.S. Cl. 257—360

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



The patentability of claims **1–3**, **11**, **12**, **55–59** and **71–112** is confirmed.

Claims **34–36** are cancelled.

Claims **4**, **13–33**, **37–54** and **60–70** are determined to be patentable as amended.

Claims **5–9**, dependent on an amended claim, are determined to be patentable.

New claims **113–126** are added and determined to be patentable.

1. An input protection structure for an MOS device, comprising:

(a) a metal input pad on a face of a silicon chip,

(b) a transistor having a thick gate oxide, having a source-to-drain path connecting said metal input pad to a voltage-supply conductor having a metal gate, and having a drain region directly connected to said metal gate and metal input pad at an elongated contact area parallel to the width of said source-to-drain path,

(c) wherein the width of said source-to-drain path is at least about 25 times the length of the source-to-drain path, and wherein the spacing along said face between said source-to-drain path and said elongated contact area is at least about twice said length of the source-to-drain path.

B1 4,774,987 (3420th)

APPARATUS FOR FEEDING ROUNDWOOD INTO A ROTATING BARKING DRUM

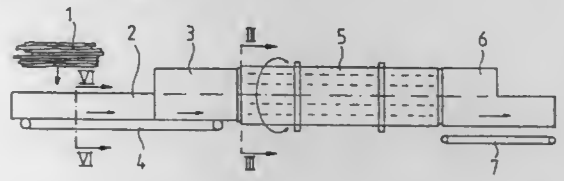
Matti Sepling, Rajamaki, Finland, assignor to Andritz Patentverwaltungs-Gesellschaft m.b.H., Graz, Austria

Reexamination Request Nos. 90/004,453, Nov. 14, 1996 and 90/004,643, May 19, 1997.

Reexamination Certificate for Patent 4,774,987, issued Oct. 4, 1988, Ser. No. 17,049, Feb. 20, 1987.

Int. Cl.^{6} B27L *1/04*

U.S. Cl. 144—208.9



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AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

New claims **10–15** are added and determined to be patentable.

10. Apparatus according to claim 1, wherein said feed cylinder has a cross-section comprising non-symmetrical segments.

B1 5,001,138 (3421st)

HETEROCYCLIC COMPOUNDS

Kozo Shiokawa, Kanagawa; Shinichi Tsuboi, Tokyo; Shinzo Kagabu, Tokyo, and Koichi Moriya, Tokyo, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Reexamination Request No. 90/004,361, Sep. 12, 1996.

Reexamination Certificate for Patent 5,001,138, issued Mar. 19, 1991, Ser. No. 347,836, May 4, 1989.

Division of Ser. No. 68,991, Jul. 1, 1987, Pat. No. 4,845,106, which is a division of Ser. No. 821,621, Jan. 21, 1986, Pat. No. 4,742,060.

Claims priority, application Japan, Feb. 4, 1985, 60-18627; Feb. 4, 1985, 60-18628; Feb. 12, 1985, 60-23683; May 21, 1985, 60-106853; May 21, 1985, 60-106854; Oct. 3, 1985, 60-219082

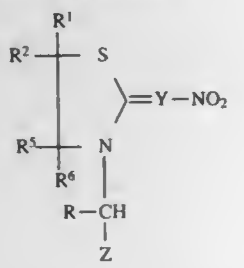
Int. Cl.^{6} A01N *43/78*

U.S. Cl. 514—342

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–11** are cancelled.

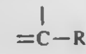
[1. A method of combating insects which comprises applying to said insects or to an insect habitat an insecticidally effective amount of a compound of the formula



in which

R^1, R^2, R^5 and R^6 independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R^3 and R^4 independently represent a hydrogen atom, a hydroxy group or an alkyl group having 1 to 4 carbon atoms,

Y represents a nitrogen atom or



$$=\overset{|}{C}-R^9,$$

R^9 represents a hydrogen atom, fluorine atom, a chlorine atom, a bromine atom, a hydroxy group, an alkoxy group having 1 to 4 carbon atoms, a benzyloxy group, an alkyl group having 1 to 4 carbon atoms which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a hydroxy group, an alkoxy group having 1 to 2 carbon atoms, alkylthio groups having 1 to 2 carbon atoms, a cyano group, a dimnethylamino group, aklylcarbonyl groups having an alkyl with 1 to 2 carbon atoms and alkoxycarbonyl groups having an alkyl with 1 to 2 carbon atoms, an alkenyl group having 2 to 3 carbon atoms, a phenyl group, an alkylcarbonyl group having an alkyl with 1 to 4 carbon atoms which may be substituted by at least one member selected from the class consisting of a methoxy group, a chlorine atom and a fluorine atom, an alkenylcarbonyl group having an alkenyl with 2 to 3 carbon atoms, a benzoyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, a methoxy group and a methyl group, an alkoxycarbonyl group which may be substituted by a fluorine atom and/or a chlorine atom, an alkylthiocarbonyl group having an alkyl with 1 to 4 carbon atoms, a phenoxycarbonyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, a methyl group, a methoxy group and a nitro group, a phenylthiocarbonyl group, a benzyloxycarbonyl group, a benzoylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of methyl group, a fluorine atom, a chlorine atom and a bromine atom, a phenylsulfonylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, an alkylsulfonylaminocarbonyl group having an alkyl with 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, an alkylsulfonyl group which may be substituted by a fluorine atom and/or a chlorine atom, a phenylthio group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, or a phenylsulfonyl group which may be substituted by at lest one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, in addition, R^9 may form a bis-form of the formula (I), via a methylene group,

R represents a hydrogen atom or a methyl group, and

Z represents a 5 to 6 members heterocyclic group, containing one to three hetero atoms selected from the class consisting of an oxygen atom, a sulfur atom and a nitrogen atom, at least one of which is a nitrogen atom, which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, alkyl groups having 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom, a nitro group, a cyano group, alkylsulfinyl groups having 1 to 4 carbon atoms, alkylsulfonyl groups having 1 to 4 carbon atoms, alkoxy groups having 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom, alkylthio groups having 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom; alkenyl groups having 2 to 3 carbon atoms which may be substituted by a chlorine atom, an acetamide group which may be substituted by a fluorine atom and/or a chlorine atom, alkoxycarbonyl groups having an alkyl with 1 to 4 carbon atoms, a thiocyanato group, alkynyl groups having 2 to 4 carbon atoms, an amino group, a methylamino group, a dimethylamino group, an acetyl group, a formyl group, a carboxy group, a hydroxy group, a mercapto group, cycloalkyl groups having 3 to 7 carbon atoms, an oxo group, a thioxo group, alkenylthio groups substituted by a fluorine atom, a chlorine atom and/or a bromine atom, alkoxyalkyl groups having 2 to 4 carbon atoms in total, alklyaminocarbonyl groups having an alkyl with 1 to 2 carbon atoms, dialkylaminocarbonyl groups having an alkyl with 1 to 2 carbon atoms, a phenyl group, a phenoxy group and a benzyl group.]

B1 5,134,013 (3422nd)

FOLDING AND CRIMPING APPARATUS

Johnny M. Parker, Vashon, Wash., assignor to Ranpak Corporation

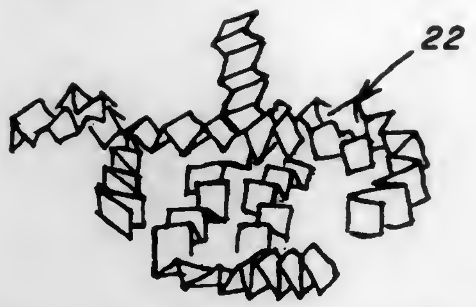
Reexamination Request No. 90/004,287, Jun. 26, 1996.

Reexamination Certificate for Patent 5,134,013, issued Jul. 28, 1992, Ser. No. 533,755, Jun. 6, 1990.

Division of Ser. No. 430,861, Nov. 2, 1989, Pat. No. 5,088,972.

Int. Cl.^{6} B32B *3/28;* **D04H** *1/04*

U.S. Cl. 428—182



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16**, **20** and **21** is confirmed.

Claims **17–19** and **22** are cancelled.

New claims **23–31** are added and determined to be patentable.

1. A packing product comprising:

a plurality of narrow, elongated strip means of flat, substantially planar material;

each of said strip means including a plurality of folds along a length thereof; and

said plurality of said strip means being intertwined and interconnected to form a resilient mass of said packing product.

B1 5,222,967 (3423rd)

KERATOREFRACTIVE DIAMOND BLADE AND SURGICAL METHOD

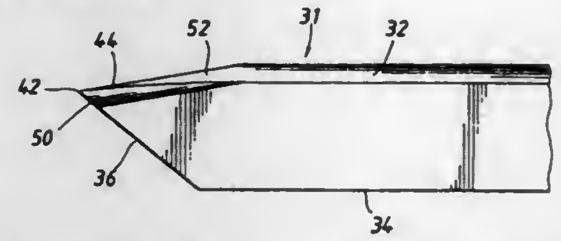
J. Charles Casebeer, Flagstaff, Ariz., and Carol A. Rae, Rapid City, S. Dak., assignors to Magnum Diamond Corporation, Rapid City, S. Dak.

Reexamination Request No. 90/003,307, Jan. 21, 1994.

Reexamination Certificate for Patent 5,222,967, issued Jun. 29, 1993, Ser. No. 865,300, Apr. 8, 1992.

Int. Cl.^{6} A61B *17/32*

U.S. Cl. 606—166



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **12–18** is confirmed.

Claims **1–11** are cancelled.

[**9**. The surgical blade of claim **8**, wherein the sharp cutting edge is formed at a relatively small angle relative to the adjacent relatively dull portion of the longer longitudinal edge.]

B1 5,240,909 (3424th)

USE OF LACTOFERRIN FOR TREATMENT OF TOXIC EFFECTS OF ENDOTOXINS

Dietrich Nitsche, Bismarckallee 2, 2300 Kiel, Germany

Reexamination Request No. 90/003,921, Aug. 21, 1995.

Reexamination Certificate for Patent 5,240,909, issued Aug. 31, 1993, Ser. No. 834,327, Jan. 13, 1992.

PCT No. PCT/DE91/00214, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/13629, PCT Pub. Date Sep. 19, 1991

Claims priority, application Germany, Mar. 14, 1990, 4008033

Int. Cl.^{6} A61K *38/16*

U.S. Cl. 514—8

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–17** are cancelled.

[1. A method of protecting animal species from the toxic effects of endotoxins comprising administering to an animal an endotoxin reducing dose of a solution containing lactoferrin bound to a metal ion.]

B1 5,260,274 (3425th)

FACTOR VIII BINDING DOMAIN OF VON WILLEBRAND FACTOR

Theodore S. Zimmerman, La Jolla; Paul A. Foster, San Diego, and Carol A. Fulcher, La Jolla, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Reexamination Request No. 90/004,577, Mar. 7, 1997.

Reexamination Certificate for Patent 5,260,274, issued Nov. 9, 1993, Ser. No. 725,560, Jul. 3, 1991.

Division of Ser. No. 45,032, May 1, 1987, Pat. No. 5,043,429.

The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.

Int. Cl.^{6} A61K *38/36;* **C07K** *14/745*

U.S. Cl. 514—12

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3**, **5**, **7** and **9** is confirmed.

Claims **4**, **6**, **10** and **11** are determined to be patentable as amended.

Claims **8** and **12**, dependent on an amended claim, are determined to be patentable.

New claim **13** is added and determined to be patentable.

4. A pharmaceutical composition for preventing thrombosis comprising an effective amount of a polypeptide in a pharmaceutically acceptable carrier, said polypeptide consisting [essentially] of the amino acid sequence:

3
|
SCRPPMVKLVCPADNLRAEGLECXKTCQNYDLECMSMGCVSGCL

CPPGMVRHENRCVALERCPCFHQGKEYAPGETVKIGCNTCVCRDR

KWNCTDHVCDATCSTIGMAHYLTFDGLKYLFPGECQYVLVQDYC

GSNPGTFRILVGNKGCSHPSVKCKKRVTILVEGGEIELFDGEVNVK

RPMKDETHFEVVESGRYIILLLGKALSVVWDRHLSISVVLKQTYQ

EKVCGLCGNFDGIQNNDLTSSNLQVEEDPVDFGNSWKVSSQCAD

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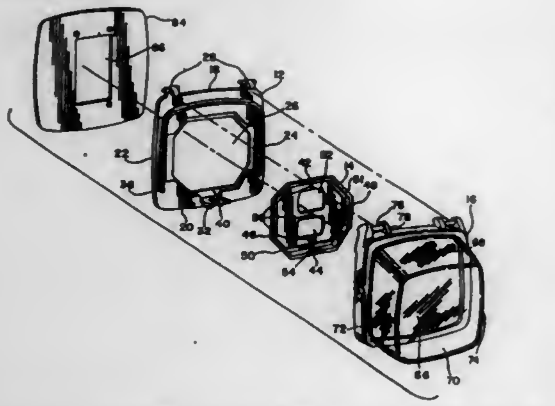
B1 5,280,135 (3426th)
OUTDOOR ELECTRICAL OUTLET COVER

Donald M. Berlin, and Julius R. Rosenski, both of McHenry, Ill., assignors to Intermatic Incorporated, Spring Grove, Ill.
Reexamination Request Nos. 90/003,974, Sep. 21, 1995 and 90/004,132, Feb. 9, 1996.
Reexamination Certificate for Patent 5,280,135, issued Jan. 18, 1994, Ser. No. 742,743, Aug. 9, 1991.
Int. Cl.⁶ H01R *13/447*

U.S. Cl. 174—67



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** and **19** is confirmed.

Claim **14** is determined to be patentable as amended.

Claims **15–18**, dependent on an amended claim. are determined to be patentable.

1. An outdoor weatherproof protective electrical outlet cover adapted to be attached in weatherproof connection to an electrical outlet comprising:

(a) a base plate adapted to be attached in weatherproof connection with the electrical outlet, the base plate having an aperture of sufficient size to accommodate the electrical outlet positioned in a first orientation and a second orientation wherein only one electrical outlet orientation can be accommodated at a given time;

(b) an insert sized and adapted to fit within the aperture of the base plate in a first orientation and a second orientation, the insert being of sufficient size to accommodate one electrical outlet orientation;

(c) a protective housing defining a closed space enclosing the electrical outlet even with at least one electrical plug present, the protective housing adapted to be mounted to the base plate.

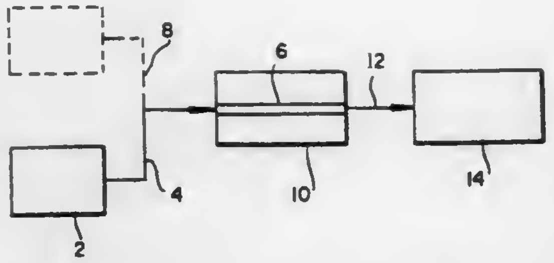
B1 5,309,452 (3427th)
PRASEODYMIUM LASER SYSTEM

Yasutake Ohishi, Mito, Japan, and Elias Snitzer, Piscataway, N.J., assignors to Rutgers University, New Brunswick, N.J.
Reexamination Request No. 90/004,339, Aug. 23, 1996.
Reexamination Certificate for Patent 5,309,452, issued May 3, 1994, Ser. No. 830,430, Jan. 31, 1992.
Int. Cl.⁶ H01S *3/07;3/30*

U.S. Cl. 372—6

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–27** and **30–81** is confirmed.



Claims **28** and **29** are determined to be patentable as amended.

1. A system for producing an optical gain, the system comprising:

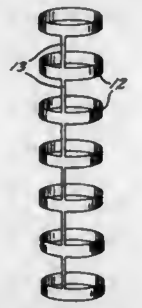
an optical fiber having a core and a cladding, the core being doped with Pr^{3+}; and

a light source producing light at a wavelength in the range of from about 0.94 to 1.07 microns to energize the Pr^{3+} to the $^1G_4$ state and produce an optical gain by a $^1G_4$—$^3H_5$ transition for light at a wavelength in the range of 1.25 to 1.34 microns.

B1 5,421,955 (3428th)
EXPANDABLE STENTS AND METHOD FOR MAKING SAME

Lilip Lau, Cupertino; William M. Hartigan, Fremont, and John J. Frantzen, San Jose, all of Calif., assignors to Advanced Cardiovascular Systems Inc., Santa Clara, Calif.
Reexamination Request No. 90/004,240, May 10, 1996.
Reexamination Certificate for Patent 5,421,955, issued Jun. 6, 1995, Ser. No. 214,402, Mar. 17, 1994.
Division of Ser. No. 164,986, Dec. 9, 1993, abandoned, which is a continuation of Ser. No. 783,558, Oct. 28, 1991, abandoned.
Int. Cl.⁶ B44C *1/22;* **C23F** *1/02*

U.S. Cl. 216—48



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11** and **12** is confirmed.

Claims **1**, **5–10** and **13** are determined to be patentable as amended.

Claims **2–4**, **14** and **15**, dependent on an amended claim, are determined to be patentable.

New claims **16–34** and **35** are added and determined to be patentable.

1. The process of making a stent [which includes] *for use in a human vascular system, comprising* the steps of:

a) applying a coating resistive to chemical etching to a length of tubing;

b) selectively removing portions of the resistive coating to expose sections of the tubing; and

c) removing exposed portions of the tubing.

REISSUES

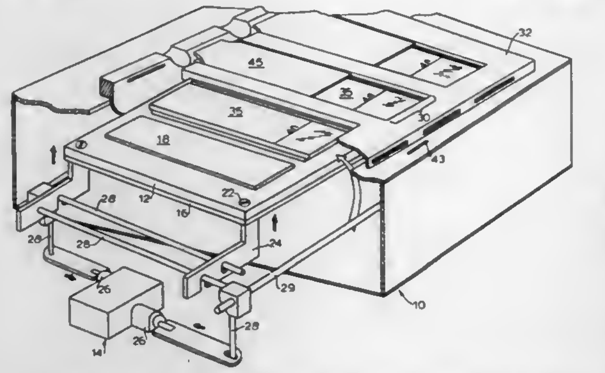
JANUARY 20, 1998

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,716
TEMPERATURE CONTROL APPARATUS AND METHOD

Marilyn J. Stapleton, Durham, and Warren R. Jewett, Cary, both of N.C., assignors to Gene Tec Corporation, Durham, N.C.
Original No. 5,281,516, dated Jan. 25, 1994, Ser. No. 855,318, Mar. 23, 1992. Continuation-in-part of Ser. No. 227,348, Aug. 2, 1988, abandoned, Ser. No. 438,592, Nov. 17, 1989, Pat. No. 5,188,963, and Ser. No. 836,348, Mar. 3, 1992, Pat. No. 5,451,500. Application for reissue Jan. 25, 1996, Ser. No. 591,346
Int. Cl.⁶ C12Q *3/00;* **C12M** *1/02;1/38;* **F28F** *5/00*

U.S. Cl. 435—3 **15 Claims**



12. An apparatus for providing temperature control to one or more specimens, comprising:

(*a*) *one or more specimen carriers, each of said specimen carriers comprising a compartment for holding a specimen and reaction fluids not thicker than 0.5 millimeters;*

(*b*) *an enclosure having an interior space and having a site for positioning said one or more specimen carriers;*

(*c*) *a temperature-controlled plate located in said enclosure, said temperature-controlled plate capable of bringing said one or more specimen carriers to a first predetermined reaction temperature;*

(*d*) *means for bringing said one or more specimen carriers to a second predetermined reaction temperature;*

(*e*) *temperature control means capable of controlling the temperature of said temperature-controlled plate and adjusting the temperature of said one or more specimen carriers, in response to control signals; and*

(*f*) *computer means connected to said temperature control means and to said means for bringing said one or more specimen carriers to the second predetermined temperature wherein the amount of time said one or more specimen carriers is at either predetermined reaction temperature is repeatedly regulated, and wherein the temperature-controlled plate has a thermal mass enabling uniform heat transfer to and away from the specimens and the specimen carriers, wherein regulation of reaction temperature is sufficiently rapid to allow an amplification product to be obtained.*

Re. 35,717
CYCLOOLEFIN COPOLYMERIZATION METHOD, FEED COMPOSITION AND PRODUCT

Steven H. Nahm, Wilmington, Del., assignor to Metton America, Inc., Abingdon, Va.
Original No. 4,689,380, dated Aug. 25, 1987, Ser. No. 851,874, Apr. 11, 1986. Continuation of Ser. No. 925,492, Aug. 5, 1992, abandoned, which is a continuation of Ser. No. 758,501, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 397,697, Aug. 22, 1989, abandoned, which is a continuation of Ser. No. 672,301, Nov. 16, 1994, abandoned. Application for reissue Sep. 17, 1993, Ser. No. 122,176
Int. Cl.⁶ C08F *232/04;232/08*

U.S. Cl. 526—166 **61 Claims**

9. A solid, infusible, crosslinked copolymer, prepared by metathesis-catalyzed, ring-opening polymerization of a cycloolefin monomer having a norbornene group, in admixture with a comonomer selected from the group consisting of ethylene-bis-(5-norbornene-2-carboxylate), ethylene-bis -(2-methyl-5-norbornene-2-carboxylate), 1,4-butane-bis-(2-methyl-5-norbornene-2-carboxylate), bis-(2-hydroxymethyl-5 -norbornene) adipate, trimethylolpropane-tris-(5-norbornene-2- carboxylate), and 1,4,5,8-dimethano-1,4,4a,5,8,8a- hexahydronaphthalene.

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PLANT PATENTS

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Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,201
SCAVEOLA PLANT NAMED 'BLUE FANDANGO'
Neil R. Marriott, Stawell, Australia, assignor to Koala Blooms Pty. Ltd., Mordialloc, Australia
Filed Aug. 8, 1996, Ser. No. 693,979
Claims priority, application Australia, May 30, 1994, 94/118
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct Scaevola plant named 'Blue Fandango', as illustrated and described.

10,202
SCAEVOLA PLANT NAMED 'OUTBACK MINI PINK FAN'
Eric Howard, Lilydale, Australia, assignor to Koala Blooms Pty. Ltd., Mordialloc, Australia
Filed Aug. 8, 1996, Ser. No. 694,171
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct Scaevola plant named 'Outback Mini Pink Fan', as illustrated and described.

10,203
BRACHYCOME PLANT NAMED 'SUNBURST'
Patricia Valencia Shaw, Macgregor, Australia, assignor to Koala Blooms Pty. Ltd., Mordialloc, Australia
Filed Aug. 30, 1996, Ser. No. 705,602
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct Brachycome named 'Sunburst', as illustrated and described.

10,204
CHRYSANTHEMUM PLANT NAMED 'REMIX'
Robert Noodelijk, Woubrugge, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands
Filed Oct. 29, 1996, Ser. No. 738,600
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct variety of Chrysanthemum plant as described and illustrated.

10,205
CHRYSANTHEMUM PLANT NAMED 'SPLENDID REAGAN'
Robert Noodelijk, Woubrugge, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands
Filed Oct. 29, 1996, Ser. No. 738,605
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct variety of Chrysanthemum plant as described and illustrated.

10,206
CHRYSANTHEMUM PLANT NAMED 'YELLOW REMIX'
Robert Noodelijk, Woubrugge, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands
Filed Oct. 29, 1996, Ser. No. 739,453
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct variety of Chrysanthemum plant as described and illustrated.

10,207
CHRYSANTHEMUM PLANT NAMED 'TRIPOLI'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 25, 1996, Ser. No. 755,185
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Tripoli', as illustrated and described.

10,208
CHRYSANTHEMUM PLANT NAMED 'PINOS'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 25, 1996, Ser. No. 755,951
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Pinos', as illustrated and described.

10,209
CHRYSANTHEMUM PLANT NAMED 'CREAM REAGAN'
Robert Noodelijk, Vrouwgeestweg 26, 2481 KN Woubrugge, Netherlands
Filed Oct. 29, 1996, Ser. No. 738,606
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct variety of Chrysanthemum plant as described and illustrated.

10,210
ANTHURIUM PLANT "A2"
Marian W. Oslecki, Marianna, Fla., assignor to Oglesby Plant Laboratories, Inc., Altha, Fla.
Filed Dec. 2, 1996, Ser. No. 753,874
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant names 'A2', substantially as described and illustrated herein, characterized particularly as to novelty by its dwarf growth habit; vigorous growth; early branching; abundant, year-round and exceptionally early flowering; good quality inflorescence from the onset of flowering; exceptionally long-lasting, pink spathes, large in relation to the plant, held above foliage on straight, exceptionally thick and strong, peduncles and not turning brown after maturity.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
066–179	5,709,107
122–001	5,709,173
188–106	5,709,285
236–012	5,709,339
504–251	5,710,106
525–444	5,710,243
545–167	5,710,296

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GENERAL AND MECHANICAL

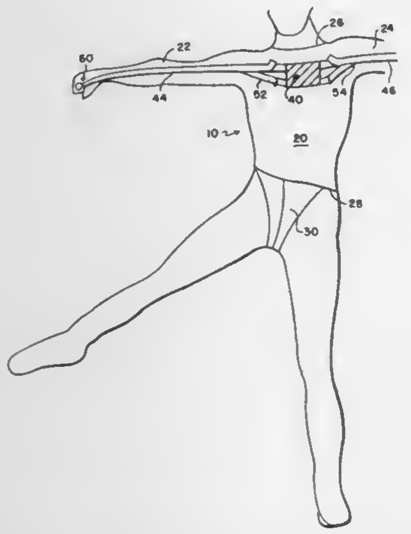
5,708,976
RESISTANT EXERCISE SHIRT AND PANTS

Timothy P. Dicker, 11359 Dornfield, Lake View Terrace, Calif. 91342

Continuation of Ser. No. 554,733, Nov. 7, 1995, Pat. No. 5,570,472. This application Oct. 21, 1996, Ser. No. 734,736

Int. Cl.^{6} A41D *1/00*

U.S. Cl. 2—69 **20 Claims**



1. A resistive exercise shirt, comprising: a shirt portion made of a resilient material and having first and second sleeves and defining openings for a neck and a torso; a first elastic block incorporated into said shirt portion, said first elastic block centrally located on a first side of said shirt portion between said first and second sleeves; a first tension band incorporated into said first sleeve and traversing the length of said first sleeve, said first tension band connectable to said first elastic block; a first hand anchor structure connected to said first tension band; a second tension band incorporated into said second sleeve and traversing the length of said second sleeve, said second tension band connectable to said first elastic block; and a second hand anchor connected to said second tension band; whereby a person seeking exercise may don the resistive exercise shirt and connect said first and second tension bends to said first elastic block so as to resist movement of said person's arms, thereby augmenting muscular effort and exercise when said person moves said arms.

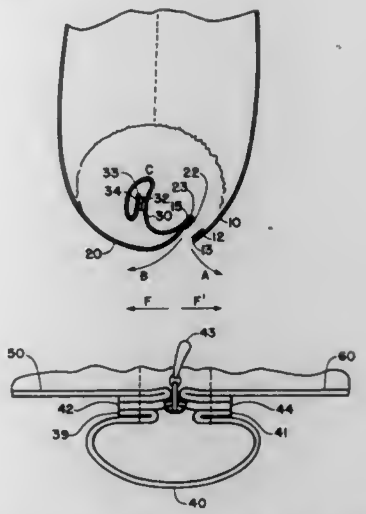
5,708,977
EXPANSION UNIT FOR CLOTHING

Dorothy Lynn Morkunas, 6186 College Ave., San Diego, Calif. 92120

Filed May 17, 1996, Ser. No. 649,789

Int. Cl.^{6} A41D *11/00*

U.S. Cl. 2—80 **12 Claims**



1. An expansion unit for clothing having a first section and a second section, said expansion unit comprising:

a first garment section having a first garment section end at a seam location and a first garment section connector inside said first garment section;

a second garment section having a second garment section end at a seam location and a second garment section connector outside said second garment section;

an expander section affixed to said second garment section end at a seam location, said expander section having an expander mid-point and an expander connector inside said expander section substantially at said expander mid-point, and further having an expander section end and an expander retainer outside said expander section substantially at said expander section end; and

means for removably connecting said first garment section by said first garment section connector to said second garment section by said second garment section connector in a non-expanded mode and, in an expanded mode, for removably connecting said expander section by said expander connector onto said first garment section at said first garment section connecter at a seam location while said expander retainer and said second garment section connector are also connected,

whereby, when said first garment section is disengaged from said second garment section, said expander section becomes exposed and is connected to said first garment section thereby expanding said clothing in a seam-to-seam manner to accommodate increased growth of a wearer.

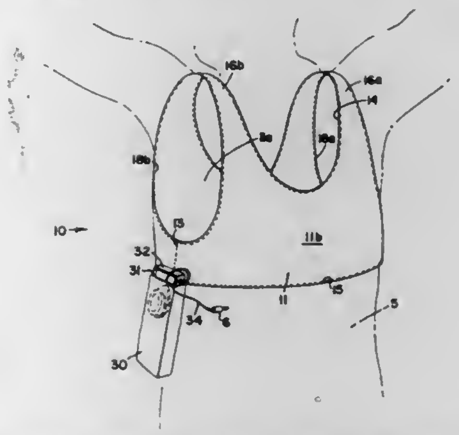
5,708,978
MEDICAL VEST

Anna C. Johnsrud, 516 W. 7th St., Starbuck, Minn. 56381

Filed Aug. 17, 1994, Ser. No. 291,772

Int. Cl.^{6} A41D *1/04*

U.S. Cl. 2—102 **12 Claims**



1. A medical vest for operatively carrying and positioning for comfort a patient care module on a human body having an upper torso defining a midriff area extending from an upper area adjacent a lower rib cage of the torso to a lower area adjacent a waist portion of the torso, comprising:

(a) a sleeveless primary portion sized to encircle the upper torso and having:

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- (i) continuous front and back panels cooperatcively defining an enlarged neck opening and sized and configured to terminate at a lower edge adjacent the upper area of said midriff, said front and back panels meeting and being joined at oppositely disposed sides below the arms of the body; and
- (ii) widened straps connecting the front and rear panels and configured to overlie the shoulders of the body;

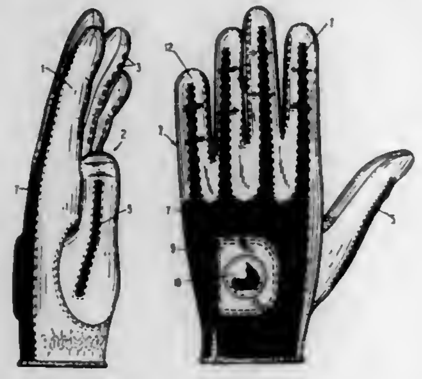
(b) a pocket connected to said primary portion at one of said aides go am to be positioned generally under an arm of said body, said pocket downwardly depending from said lower edge to a distal end and being, sized and configured to retainably operatively hold a patient care module in loose movable relation to the body and such that said distal end lies generally along said lower area of said midriff; and

(c) said vest being construcied of soft, washable material for minimizing irritation and chafing of the body skin and in a manner so as to minimize irritation of stitchings of said vest to the body, and being configured to be slidably movable relative to the body.

5,708,979
GLOVE WITH ELASTIC BACK

Michael Redwood, Somerset, Great Britain; Kenneth Shim, Irvington, N.Y., and Dong Kyu Sun, Yong-In Kun Kyong Ki Do, Rep. of Korea, assignors to Acushnet Company, Fairhaven, Mass.

Filed Nov. 1, 1996, Ser. No. 742,530
Int. Cl.^{6} A41D *19/00;* A63B *71/14*
U.S. Cl. 2—161.1 **22 Claims**



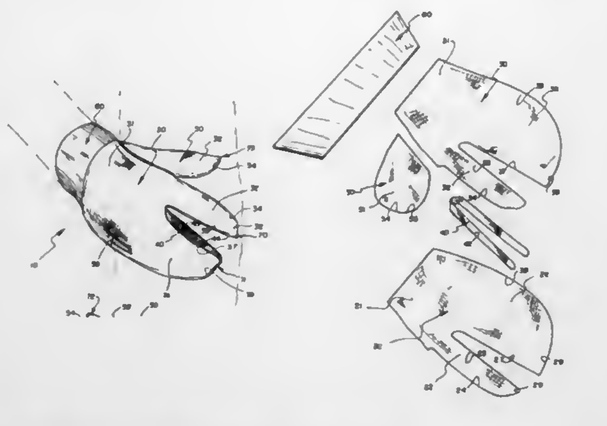
1. A glove comprising:
a palm covering portion;
a plurality of finger covering portions extending from the palm covering portion to receive and cover fingers;
a back portion associated with the palm covering portion to form a chamber to receive a hand, wherein the back portion receives the back of the hand; and
elastic members extending from the back portion past and over at least one knuckle of each finger, each elastic member being associated with a finger covering portion to facilitate stretching of the finger covering portion at least at each knuckle when the finger is bent, and having a width that is less than that of the finger.

5,708,980
PROTECTIVE GLOVE

Brenda LaManna, and J. Jaye Vaughn, both of 41 Stewart Ave., Tuckahoe, N.Y. 10707

Filed Jan. 7, 1997, Ser. No. 779,837
Int. Cl.^{6} A41D *19/00*
U.S. Cl. 2—163 **20 Claims**

1. A Protective Glove for covering a hand of a user and protecting hosiery and other delicate fabrics from snags and tears caused by rough skin or jagged fingernails, comprising:

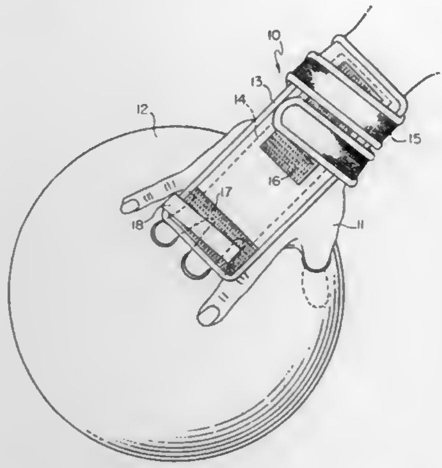


a palm piece, said palm piece comprising
  a palm section,
  a first palm piece finger section extending from said palm section for covering an index finger of said user, and
  a second palm piece finger section extending from said palm section for covering a middle finger, a ring finger, and a little finger of said user;
a back piece, said back piece comprising
  a back section,
  a first back piece finger section extending from said back section for covering said index finger of said user, and
  a second back piece finger section extending from said back section for covering said middle finger, said ring finger, and said little finger of said user,
said first palm piece finger section, said second palm piece finger section, said first back piece finger section, and said second back piece finger section each having an inner edge, an outer edge, and a tip end;
a gusset panel interconnecting said palm piece and said back piece between and along adjacent sides of said index finger and said middle finger, said gusset panel having an upper edge and a lower edge; and
a thumb stall extending from said palm section of said palm piece and said back section of said back piece, said thumb stall extending in diverging relationship with said first palm piece finger section and said first back piece finger section, said thumb stall having an inner edge adjacent said first palm piece finger section and said first back piece finger section,
said palm piece, said back piece, said gusset panel, and said thumb stall joined together to fit said hand, wherein said lower edge of said gusset panel, said inner edge of said first palm piece finger section, and said inner edge of said second palm piece finger section are joined and form a lower seam along mating edges thereof, wherein said upper edge of said gusset panel, said inner edge of said first back piece finger section, and said inner edge of said second back piece finger section are joined and form an upper seam along mating edges thereof, wherein said outer edge of said first palm piece finger section and said outer edge of said first back piece finger section are joined and form a first outer edge seam along mating edges thereof, and wherein said thumb stall includes a thumb stall seam along said inner edge thereof,
whereby said lower seam and said upper seam each provide a means for gripping said hosiery between said index finger and said middle finger of said user of said glove, whereby said thumb stall seam and said first outer edge seam provide a means for gripping said hosiery between said index finger and said thumb of said user of said glove, and whereby said thumb stall seam and said lower seam provide a means for gripping said hosiery between said middle finger and said thumb of said user of said glove.

5,708,981
BOWLER'S WRIST BRACE

James Tilton, 38448 20th St., E., Palmdale, Calif. 93550

Filed Feb. 18, 1997, Ser. No. 800,449
Int. Cl.^{6} A41D *13/08*
U.S. Cl. 2—170 **6 Claims**

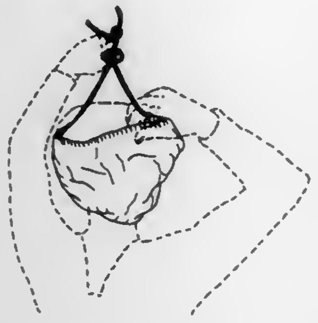


1. A wrist and hand brace for bowlers comprising:
an elongated base having opposite ends;
strap means carried on said base opposite ends adapted to wrap around the wrist and middle fingers of the user;
an elongated rigid brace member disposed between said base and the wrist and hand of the user;
said rigid brace member having a plurality of rigid non-bendable elements arranged in spaced-apart relationship along the length of said brace member;
said brace member characterized as being flexible about a central longitudinal axis of said elongated brace member;
said brace includes flexible areas between and separating adjacent ones of said rigid brace member to permit bending of said brace member laterally of said central longitudinal axis whereby said brace member form fits to the back of the user's wrist and hand;
said rigid elements are elongated rods; and
said elongated rigid rods are in a radial pattern fanning outwardly from the location of the wrist towards the fingers of the hand.

5,708,982
HAIR TOWEL

Aida M. Armani, 308 Everest Cir., West Chester, Pa. 19382

Filed Jul. 19, 1996, Ser. No. 684,604
Int. Cl.^{6} A41D *1/00;23/00*
U.S. Cl. 2—171 **1 Claim**

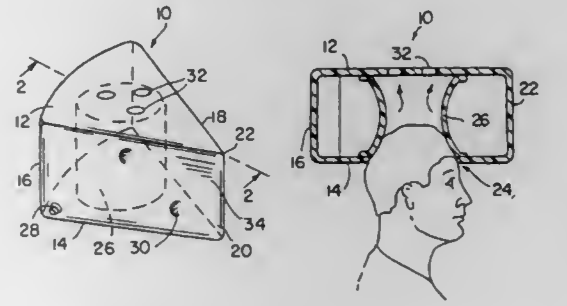


1. A towel for use in the washing and treatment of a user's hair consisting of a
(1) generally semicircular shape with a straight edge and a curved edge,
(2) track on the curved edge,
(3) drawstring in the track; and
(4) an absorbent toweling material,
wherein said shape, track, and drawstring comprise means for
(1) forming the towel from a cape into a bag, open at the top, that envelopes the user's hair; and
(2) then securing the bag to the user's head.

5,708,983
INFLATABLE CHEESE WEDGE HAT

David R. Cross, Fox Point; Keith M. Baxter, Brookfield, and Thomas L. Maser, Mequon Court, all of Wis., assignors to Blowhard Industries Inc., Mequon, Wis.

Filed Mar. 26, 1997, Ser. No. 827,073
Int. Cl.^{6} A42B *1/00*
U.S. Cl. 2—171 **3 Claims**



1. An inflatable hat comprising:
first and second flexible plastic sheets;
the first flexible sheet having an outer periphery and an inner periphery formed by an aperture sized to receive the crown of an average human head;
the second flexible plastic sheet having an outer periphery;
a flexible upstanding side wall having upper and lower edges, said upper edge of said side wall being attached to said outer periphery of the second flexible sheet and said lower edge of said side wall being attached to said outer periphery of the first flexible sheet to position the first and second flexible sheets in opposition about an inner volume;
a tube of flexible material having a lower periphery and an upper periphery, said lower periphery of said tube being attached to said inner periphery of said first sheet and extending into the inner volume and attached at said upper periphery to an inner surface of the second flexible sheet.

5,708,984
SOCKS WITH COLOR INDICATORS TO FACILITATE MATCHING OF COMPONENTS OF A PAIR

Michael Monroe Shofner, 1715 Wartrace Pike, Shelbyville, Tenn. 37160

Continuation-in-part of Ser. No. 546,603, Oct. 23, 1995, abandoned. This application Sep. 26, 1996, Ser. No. 721,236
Int. Cl.^{6} A41B *11/01*
U.S. Cl. 2—239 **7 Claims**

1. In a process for making pairs of socks of a predetermined size, wherein both socks of each pair exhibit the same dominant first color, which process includes stitching a toe seam into the toe end of each sock, the improvement which comprises:
(a) selecting a number of pairs to be made in a first group;
(b) selecting a second color that may be distinguished from the first color, for the thread that is utilized to form the toe seam for each sock to be made in the first group of pairs; and
(c) stitching the toe seam of each of the socks to be made in the first group using thread of the second color;
(d) pairing the socks in the first group;
(e) selecting a number of pairs to be made in a second group;

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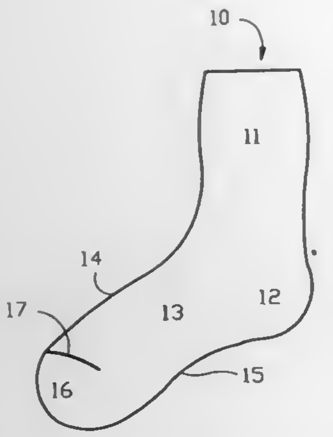
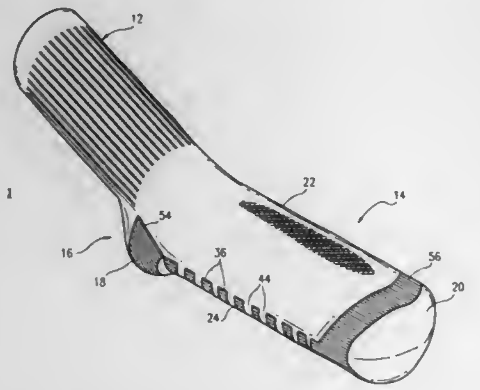


(f) selecting a third color that may be distinguished from the first and second colors, for the thread that is utilized to form the toe seam for each sock to be made in the second group of pairs;
(g) stitching the toe seam of each of the socks to be made in the second group using thread of the third color;
(h) pairing the socks in the second group.

5,708,985
ENHANCED FRICTIONAL ENGAGEMENT SOCK

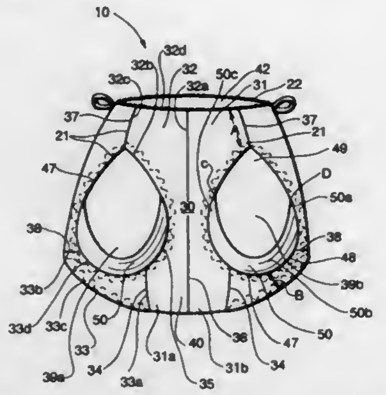
J. Michael Ogden, Cincinnati, Ohio, assignor to Ogden & Company, Inc., Cincinnati, Ohio
Filed Nov. 12, 1996, Ser. No. 747,333
Int. Cl.^{6} A41B *11/00*
U.S. Cl. 2—239 **56 Claims**



1. A sock, comprising:
an integrally knitted leg portion and a foot portion, said foot portion including a toe at one end, a heel at the other end connected to said leg portion, a sole portion engageable with the lower half of the foot, and an instep portion engageable with the upper half of the foot, said sole portion and instep portion extending in a longitudinal direction between said heel and toe portions and having opposed sides which are joined together;
said sole portion being knitted with successive courses of yarn having a thickness defining an inner surface and an outer surface, said sole portion further including longitudinally spaced ribs formed by at least one additional knitted course of yarn extending from said inner surface in a direction toward said instep portion and in a position to contact the plantar surface of a foot, each of said spaces between adjacent ribs being sufficiently wide to induce the skin of the plantar surface of the foot to at least partially extend into said spaces so as to enhance the frictional engagement between said sole portion and the plantar surface of the foot.

5,708,986
UNDERGARMENT HAVING REAR SUPPORTS

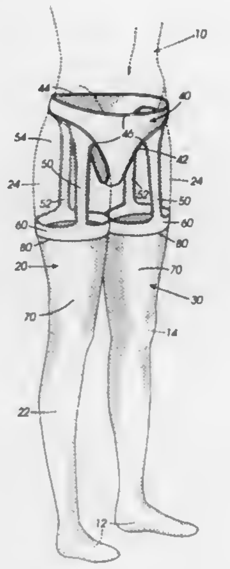
Marie Belardinelli, 301 Boxwood Rd., Wilmington, Del. 19804
Filed Aug. 2, 1996, Ser. No. 691,601
Int. Cl.^{6} A41B *9/04*
U.S. Cl. 2—406 **9 Claims**



1. An undergarment for a person to be worn over a lower torso area including waist, crotch, hips, left buttock, and right buttock of the person, comprising:
a front portion, a rear portion and a crotch portion substantially enclosing the lower torso area between the waist and crotch;
said front portion, rear portion and crotch portion defining a waist opening, a left leg opening and a right leg opening;
said rear portion having a right buttock opening and a left buttock opening positioned over the respective right buttock and left buttock, each of said buttock openings having an upper portion and a lower portion;
a first support, having a first end, a central portion and a second end, disposed substantially along the lower portion of the right buttock opening and having sufficient rigidity to support the right buttock of the person in an upraised position; and
a second support, having a first end, a central portion and a second end, disposed substantially along the lower portion of the left buttock opening and having sufficient rigidity to support the left buttock of the wearer in an upraised position.

5,708,987
PANTYHOSE WITH UNCOVERED THIGH REGIONS

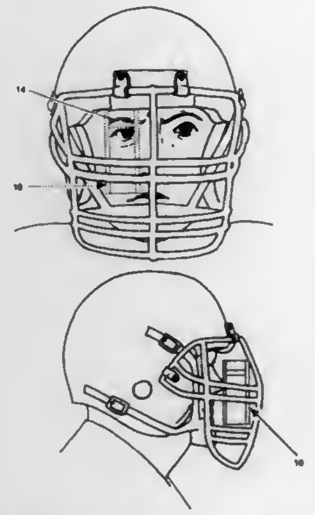
Carolyn C. Matthews, 420 Aiken Hunt Cir., Columbia, S.C. 29229
Filed Jan. 21, 1997, Ser. No. 781,379
Int. Cl.^{6} A41B *11/04*
U.S. Cl. 2—409 **20 Claims**



1. A pantyhose comprising:
a panty portion;
a pair of leg portions for covering the lower legs of a wearer and extending up the leg to above the knee when on the wearer; and
a plurality of straps integrally connected to said panty portion and extending over the thigh when on the wearer, said plurality of straps connected to said pair of leg portions and defining openings over the thighs when on the wearer.

5,708,988
FOOTBALL HELMET ADJUSTMENT SYSTEM

Timothy A. McGuine, Sauk City, and Steven J. Nass, Lake Mills, both of Wis., assignors to Wisconsin Alumni Research Foundation
Filed Jul. 19, 1996, Ser. No. 683,921
Int. Cl.^{6} A42B *3/00*
U.S. Cl. 2—425 **8 Claims**

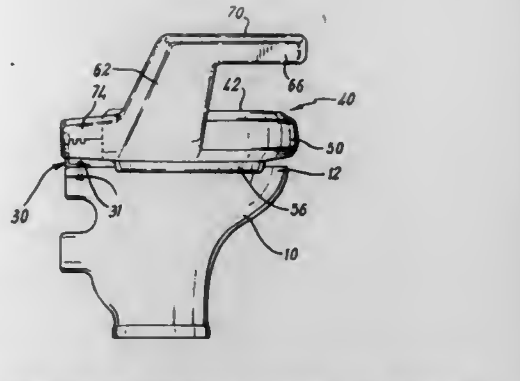


1. A device for the adjustment of the size of an adjustable football helmet having a face mask on a wearer, the device comprising
a planar card of a generally rectangular shape, the card being elongated in a first direction between two ends and having a lateral width in a second direction perpendicular to the first direction;
indicia placed on the card extending across the lateral width of the card and located on the card an appropriate distance from a one of the ends of the card so that when the card is placed inside the facemask of the helmet with said one end abutting the brim of the helmet, the indicia will indicate where a physical reference point of the face of the wearer should be located relative to the brim of the helmet; and
the lateral width of the card being sized so as to correspond to the recommended distance between the facemask of the wearer and the nose of the wearer, so that the card may be conveniently used to size the helmet in position on the wearer.

5,708,989
TOILET SEAT ASSEMBLIES

William Edwin Gordon Ellis, Allestree, England, assignor to Gordon Ellis and Company, Derby, England
Filed Mar. 20, 1996, Ser. No. 621,873
Claims priority, application United Kingdom, Mar. 23, 1995, 9505884
Int. Cl.^{6} A47K *13/26*
U.S. Cl. 4—237 **12 Claims**

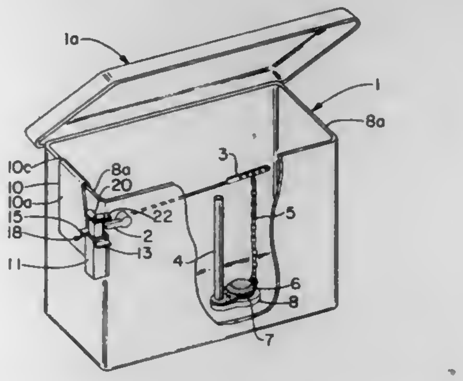
1. A raised toilet seat assembly for a toilet bowl having a rim and a rear portion, the rear portion defining a rear mounting surface of reduced width relative to the rim, said assembly comprising:



an elongate seat fixing bar assembly for being rigidly attached to the rear mounting surface of the toilet bowl, and having opposed ends adapted for projecting laterally outwardly beyond opposite sides of the rear mounting surface;
a toilet seat defining a lower downwardly facing surface for engagement on the rim of the toilet bowl and an upwardly facing seating surface spaced from said lower surface; and
first and second laterally spaced rear mounting extensions projecting from a rear of the toilet seat and defining respective upwardly facing surfaces thereof, each of said surfaces of the mounting extensions having at least two spaced recesses therein for being selectively aligned and mated with respective opposed ends of the seat fixing bar assembly to secure the seat on the toilet bowl in one of a plurality of seating positions.

5,708,990
COMMODE FLUSH ACCESSORY

Domenick Mucciarone, 3645 Boca Clega Dr., Naples, Fla. 33962
Filed Aug. 29, 1996, Ser. No. 705,593
Int. Cl.^{6} E03D *1/14;5/092*
U.S. Cl. 4—324 **15 Claims**



1. A water-saving device for a flush toilet having a toilet water tank comprising a drain having a valve seat surrounding an upper end of said drain, a valve adapted to seat on said valve seat and movable between an open position, a partially opened position, and a closed position, and a flush handle mounted on the exterior of said tank wherein said water-saving device comprises:
(a) a frame adapted to be mounted on said tank so that at least a portion of the frame is on the exterior of said tank;
(b) a vertical shaft for a flush lever member;
(c) a flush lever mechanism comprising (1) a vertical flush lever member which is vertically reciprocable in said shaft and (2) a flush lever extension which extends generally horizontally from said flush lever member and is adapted to make contact with said flush handle; and
(d) a spring; and
(e) an adjustable limit stop;

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wherein said flush lever mechanism between an upward position in which it does not actuate said flush handle, and a downward position in which said lever actuates said flush handle, causing said flush valve to partially open and to remain partially open as long as the lever is in said downward position;
wherein further said limit stop stops the downward movement of the flush lever mechanism; and
wherein further said spring biases said flush lever mechanism upwardly, so that downward movement of said flush lever mechanism is against the bias of said spring and upward movement of said flush lever mechanism is at the urging of said spring.

5,708,991

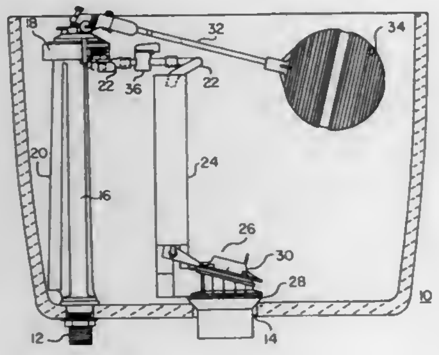
WATER SAVING DEVICE FOR A WATER CLOSET

Peter V. DeMarco, Dayton, N.J., assignor to American Standard Inc., Piscataway, N.J.

Filed Apr. 16, 1996, Ser. No. 632,869

Int. Cl.⁶ E03D *1/00*

U.S. Cl. 4—415 **12 Claims**



1. In a water closet including a toilet bowl and a toilet tank for supplying fresh water to the bowl, wherein said tank has a flush assembly including a flexible tubular refill conduit for supplying water to the bowl after each flush, the improvement comprising:
an adjustable valve interposed on said refill conduit for controlling the amount of water to said bowl, said valve means including a housing structure and a lever component, said housing structure having a pair of apertures therein, said housing structure further including a pair of tabs thereon, said lever component housed in said housing structure, said lever component rotatable within said housing structure, said lever component having a pair of tapered slots therein and a lever handle thereon, the rotation of said lever component controlled by said lever handle, said lever handle limited in rotation by said tabs, the flow of water through said valve dependent on the position of said lever component within said housing structure and the tabs positioned such that the water flow can never be completely obstructed.

5,708,992

DEVICE FOR PLACEMENT IN A BATHTUB OR SIMILAR STRUCTURE AS AN ENTERING AND EXITING AID

Walter Gobbers, and Dieter Gobbers, both of Bruderstrasse 11, 89415 Lauingen, Germany

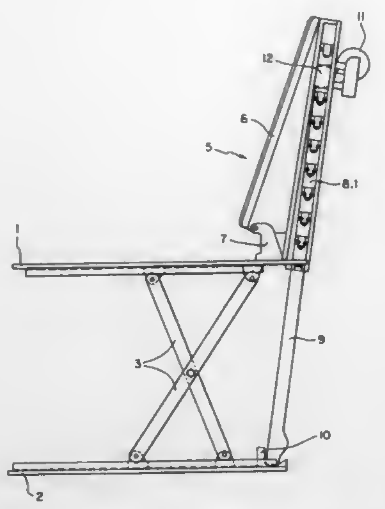
Filed Oct. 19, 1995, Ser. No. 545,541

Claims priority, application Germany, Oct. 20, 1994, 44 37 513.1

Int. Cl.⁶ A47K *3/12*

U.S. Cl. 4—565.1 **11 Claims**

1. A device for placement in a bathtub as an entering and exiting aid, the device comprising:



a seat having a seat panel that can be upwardly raised and downwardly lowered;
a backrest connected to said seat;
a drive for raising and lowering said seat panel;
an actuator arranged between said drive and said seat panel, said actuator including a stay which is attachable to said seat panel;
a pinion having teeth, said pinion driven by said drive; and a rack attached to an end of said stay, said rack including a rack channel and a plurality of rack segments having teeth, said rack segments storable in said rack channel, said teeth of said pinion mesh with said teeth of said rack segments, said drive, said pinion, and said rack channel arranged on said backrest above said seat panel; and
said stay extendable downwardly from said seat panel so as to bear on a bearing surface, thereby effecting a raising of said seat panel that substantially matches said extension of said actuator.

5,708,993

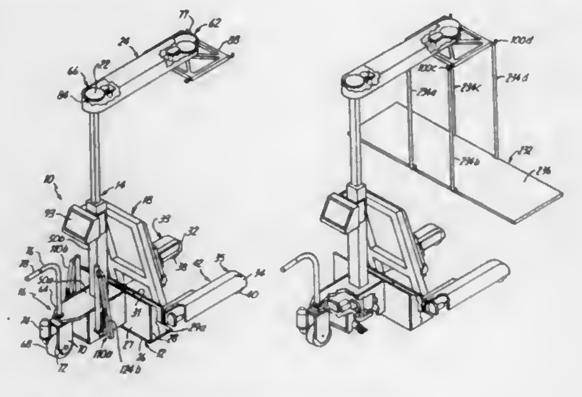
PATIENT TRANSPORTER AND METHOD OF USING IT

Peter M. Campbell, Deephaven; Loren W. Krantz, Plymouth, and Rein S. Teder, Bloomington, all of Minn., assignors to Patient Easy Care Products, Inc., Eden Prairie, Minn.

Filed Dec. 1, 1995, Ser. No. 566,003

Int. Cl.⁶ A61G *7/14*

U.S. Cl. 5—86.1 **11 Claims**



1. A patient transporter device comprising:
a frame that supports a drive wheel and a chair movably attached to the frame;
a lift mechanism attached to the frame, the lift mechanism including a screw, motor means for moving the screw, and an arm vertically moved by the screw;
a motorized pivoting mechanism attached to the arm of the lift mechanism for pivoting the arm radially about the screw; and

a swivel mechanism attached to the arm of the lift mechanism, said swivel mechanism including a motor adapted to rotate, around a vertical axis, a patient suspended from said swivel mechanism.

5,708,994

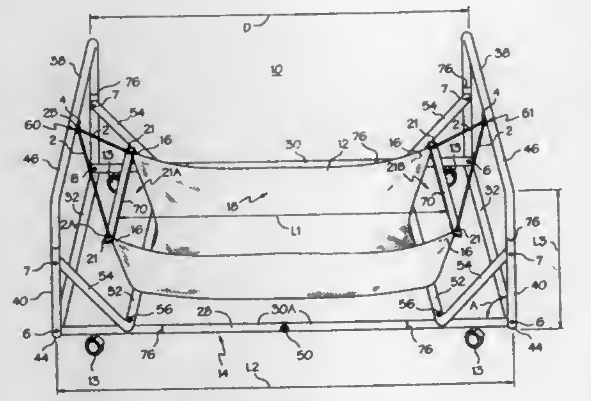
OPEN TOP FOLDABLE CRADLE

Krishna Chandran, 740 Fairborn Rd., Cincinnati, Ohio 45240

Filed May 13, 1996, Ser. No. 598,377

Int. Cl.⁶ A47D *9/00*

U.S. Cl. 5—102 **17 Claims**



1. A foldable cradle assembly comprising:
a cradle made of a flexible material,
a foldable frame supporting said cradle, and
an attachment means for attaching said cradle to said frame such that said flexible material hangs down freely from an open top of said cradle,
said attachment means comprises line means having first line ends attached to said cradle and second line ends attached to said frame,
said line means comprises four lines attached to four spaced apart corners of said cradle at said first line ends, wherein a first two of said lines are positioned at a first cradle end of said cradle attached to a first position on said frame and a second two of said lines are positioned at a second cradle end of said cradle attached to a second position on said frame wherein said first and second positions are spaced apart a distance greater than a cradle length of said cradle.

5,708,995

VARIABLY INSULATED BLANKET

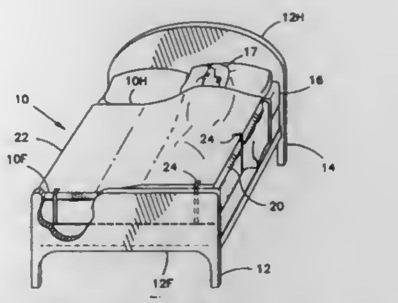
Yi-Ni Wu, 970 Medford Rd., Pasadena, Calif. 91107, and James Cheng-Wah Lob, 8818 Emperor Ave., San Gabriel, Calif. 91775

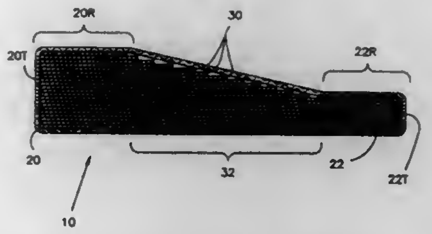
Filed Feb. 14, 1997, Ser. No. 801,044

Int. Cl.⁶ A47G *9/02*

U.S. Cl. 5—486 **5 Claims**

1. A blanket, having a blanket head and blanket foot comprising:
a light side, extending between the blanket head and blanket foot, having a light side insulation thickness;
a heavy side, extending between the blanket head and blanket foot, having a heavy side insulation thickness, wherein the heavy side insulation thickness is greater than the light side insulation thickness; and
a transitional area, extending between the blanket head and blanket foot, located between the light side and heavy side, wherein the transitional area varies in insulation thickness between the light side insulation thickness and the heavy side insulation thickness
wherein the blanket comprises at least five stacked layers, and wherein:
the light side is at least one layer thick;





the heavy side is at least five layers thick; and
the layers from steps in the transitional area to create a uniform transition between the number of layers in the light side and the number of layers in the heavy side.

5,708,996

BED WITH PERIODICALLY MOVABLE TRANSVERSE PANELS

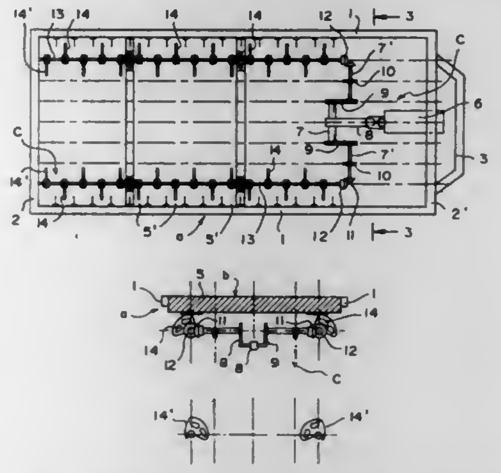
Jorge Enrique Marenco, Sarmiento 1942, 5th Fl. A, 1044 Buenos Aires, Argentina, 1044

Filed Sep. 26, 1995, Ser. No. 534,014

Claims priority, application Argentina, Sep. 26, 1994, 329.574

Int. Cl.⁶ A61G *7/057;7/018*

U.S. Cl. 5—613 **3 Claims**



1. A bed for patients that require periodic movement of their body parts, comprising:
A) a rectangular frame (**20**);
B) a plurality of panel members (**5**,**5'**) transversely disposed across said frame (**20**) including guiding means (**15**,**15'**) for keeping said panel members (**5**,**5'**) from moving along the plane of said rectangular frame and permitting said panel members to move only perpendicularly with respect to the plane of said rectangular frame (**20**);
C) at least two spaced apart and parallel shafts (**13**) disposed in a plane in parallel and spaced apart relationship with respect to said panel members (**5**,**5'**) and below said frame (**20**) and said shafts (**13**) longitudinally extending therealong;
D) a plurality of eccentric members (**14**) mounted on said shafts (**13**) and said eccentric members being in cooperative cam-

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mingly engagement with said panel members (5,5') to cause the latter to move up and down as said shafts (13) rotate and said eccentric members (14) corresponding to two sets of non-adjacent eccentric members (14) that are aligned with respect to those within the same set; and

E) means (c) for delivering a rotational force to said shafts (13).

5,708,997

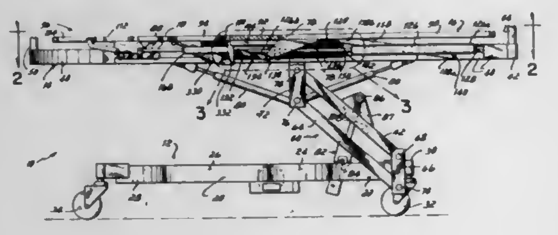
HOSPITAL BED

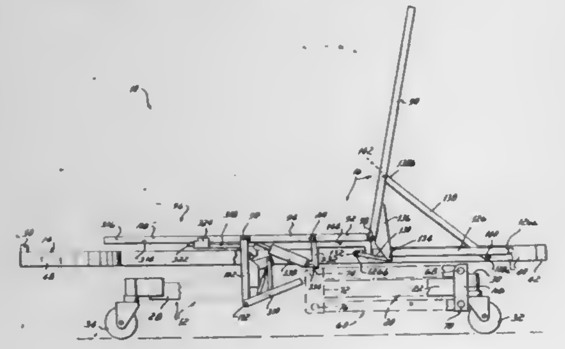
L. Dale Foster; Ryan Anthony Reeder, both of Brookville, and John David Vogel, Columbus, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Division of Ser. No. 277,243, Jul. 19, 1994, Pat. No. 5,577,279, which is a continuation-in-part of Ser. No. 234,403, Apr. 28, 1994, Pat. No. 5,454,126, which is a continuation-in-part of Ser. No. 186,657, Jan. 25, 1994, Pat. No. 5,479,666, and a continuation-in-part of Ser. No. 230,061, Apr. 21, 1994, Pat. No. 5,513,406, which is a continuation-in-part of Ser. No. 186,657, and a continuation-in-part of Ser. No. 221,748, Mar. 31, 1994, and a continuation-in-part of Ser. No. 221,633, Apr. 1, 1994, Pat. No. 5,483,709, and a continuation-in-part of Ser. No. 7,122, Jan. 21, 1993, Pat. No. 5,337,845, which is a continuation-in-part of Ser. No. 912,826, Jul. 13, 1992, Pat. No. 5,335,651, which is a continuation-in-part of Ser. No. 874,586, Apr. 24, 1992, Pat. No. 5,370,111, which is a continuation-in-part of Ser. No. 524,038, May 16, 1990, Pat. No. 5,117,521. This application Nov. 22, 1996, Ser. No. 755,480

Int. Cl.^{6} A61G *7/015*

U.S. Cl. 5—618 **13 Claims**





7. A hospital bed comprising:
a base with casters;
a main frame mounted above said base;
a patient support platform longitudinally movably mounted on said main frame and including head and leg panels pivotally moveable relative to said main frame;
a first drive for moving said patient support platform longitudinally toward a head end of said bed; and
a second drive for pivoting said leg panel downwardly after said patient support platform has traveled a predetermined distance toward said head end of said main frame.

5,708,998

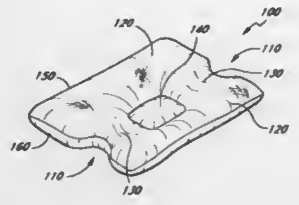
CERVICAL PILLOW

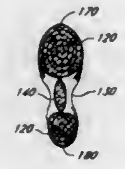
Angela M. Torbik, Long Beach, Calif., assignor to Anabolic Laboratories, Inc., Irvine, Calif.

Filed Mar. 8, 1995, Ser. No. 401,403

Int. Cl.^{6} A47G *9/00*

U.S. Cl. 5—636 **11 Claims**





1. A pillow for head and neck support, comprising:
an upper casing of greater longitudinal dimension than lateral dimension;
a lower casing of size substantially equal to said upper casing;
a top edge and a bottom edge formed by said casings connected together along said longitudinal dimension;
a left side edge and a right side edge formed by said casings connected together along said lateral dimension;
a longitudinal first portion formed between said top and bottom edges;
a longitudinal second portion formed between said first portion and said bottom edge, said second portion substantially parallel to said first portion;
a third portion formed between said first and second portions, said third portion including a recessed central portion located between said left and right side edges, such that the thickness of said central portion is less than the thickness of said third portion in order to accommodate the back of a user's head; and
a cutout formed on at least one of said side edges, said cutout providing air circulation and relieving pressure about the area of at least the nose and mouth of a side-sleeping user;
wherein said first portion contains a first neck roll having a first diameter, said second portion contains a second neck roll having a second diameter, said first diameter being greater than said second diameter, and the thickness of said third portion is less than the diameter of said neck rolls in order to align the head with the spinal column of the user during sleep on either the user's side or back, and wherein said first and second neck rolls comprise folded or rolled triangular sections of fibrous material and said central portion contains a plurality of layers of a fibrous material.

5,708,999

ADJUSTABLE THERAPEUTIC PILLOW

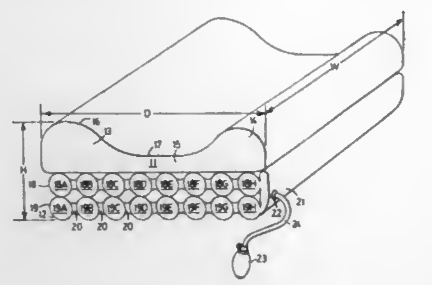
Gino John Priolo, 7 Worthview Court, Etobicoke, Ontario, Canada, M9R 4C1, and Antonio Tari, 11 Gracedale Boulevard, North York, Ontario, Canada, M9L 2B7

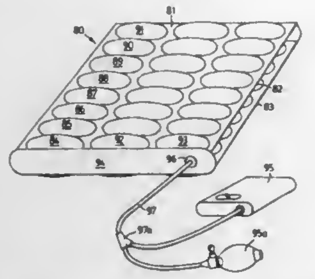
Filed Jan. 8, 1997, Ser. No. 780,443

Int. Cl.^{6} A47G *9/00;* **A47C** *27/08*

U.S. Cl. 5—644 **19 Claims**

1. A support pillow combination which comprises a support pillow having at least one bolster portion along one edge of the support pillow, and an inflatable under-pillow, said under-pillow comprising at least one row of a plurality of parallel inflatable air chambers, each air chamber within a row being in fluid communication with each adjacent air chamber in the same row, and each of said rows being in fluid communication with a header, said header being connectable to an air source by a nozzle.





5,709,000

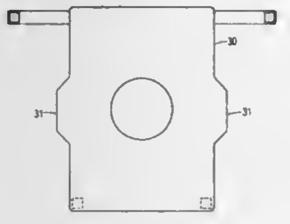
BABY PILLOW AND DROOL GUARD

Robin Hansen, and John Leon, both of P.O. Box 281764, San Francisco, Calif. 94128

Filed Oct. 3, 1996, Ser. No. 726,343

Int. Cl.^{6} A41B *13/10;* **A47D** *15/00*

U.S. Cl. 5—655 **1 Claim**



1. A combination baby pillow and drool guard for being worn on a person carrying an infant in at least one arm, with a head of the infant leaning against the person, comprising:
a flexible pad having first and second ends, and opposite sides, said pad comprising a hollow shell enclosing soft batting therein for providing a comfortable resting surface for the infant;
a hole extending through said pad;
a pair of straps extending from said opposite sides of said pad at said first end, said straps having distal ends;
a pair of hook-and-loop fasteners arranged on said distal ends of said straps, and a complementary pair of hook-and-loop fasteners arranged on respective sides of said second end of said pad; and
a pair of wings extending from said opposite sides of said pad, said pad being wearable on the person by passing a head of the person through said hole until said pad is supported on a pair of shoulders of the person, said pad being secured on the person by fastening said distal ends of said straps to said respective sides of said second end of said pad, said pad being sized to cover the shoulders and upper chest area of the person, so as to cushion the head of the infant, and to protect the person from drool from the infant, said wings being positioned for covering additional areas on the shoulders of the person.

5,709,001

TRACK WORK MACHINE

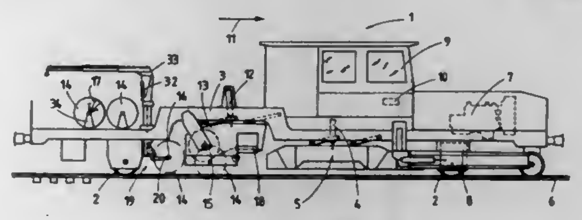
Hannes Felber, Salzburg, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

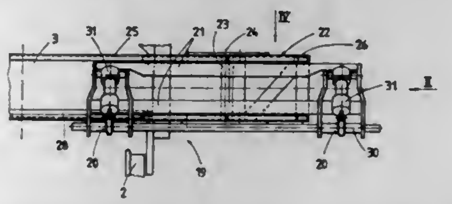
Filed Dec. 4, 1996, Ser. No. 760,201

Claims priority, application Austria, Feb. 5, 1996, 207/96

Int. Cl.^{6} E01H *8/00*

U.S. Cl. 15—55 **8 Claims**





1. A machine for carrying out work on a track, which comprises
(a) a machine frame extending in a longitudinal direction and supported by undercarriages on the track for moving in an operating direction,
(b) a broom housing,
(c) a ballast broom having a horizontal shaft extending in a direction transverse to the longitudinal direction and rotatably mounted in the broom housing,
(d) a holding device for temporarily storing the ballast broom, the holding device being mounted on the machine frame and comprising
two bearing arms for supporting the horizontal shaft of the ballast broom, the bearing arms being spaced from each other in the transverse direction,
(e) a horizontal guide extending in the transverse direction and displaceably guiding the holding device in the transverse direction, and
(f) a drive connected to the holding device for displacing the holding device in the transverse direction.

5,709,002

SPHERICAL BEARING ARRANGEMENT FOR VEHICLE LAUNDRY SIDE BRUSH

Michael J. Belanger, Novi, and Robert J. Wentworth, Farmington Hills, both of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Apr. 29, 1996, Ser. No. 641,116

Int. Cl.^{6} B60S *3/06*

U.S. Cl. 15—97.3 **6 Claims**

1. An omnidirectionally pivotal vehicle laundry implement comprising:
a drive shaft, a motor connected to rotate said shaft about its longitudinal axis and a vehicle contacting implement carried on the free end of said shaft;
a bearing member having a hemispherical bearing surface;

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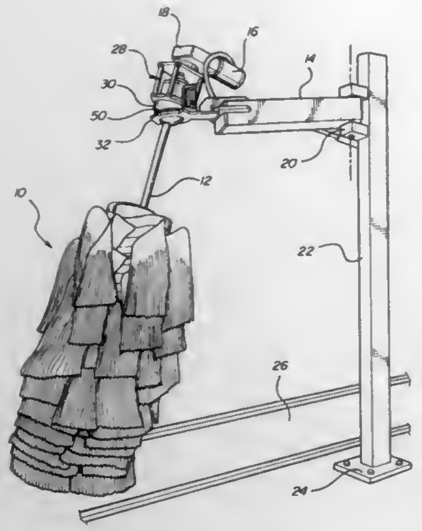
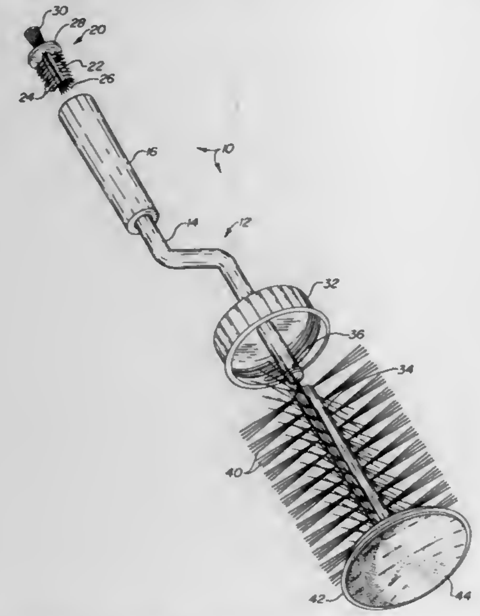


an annular seat for the bearing member;
means for mounting said shaft and implement to and in depending relation to the bearing member with the shaft extending through the seat, said shaft being unrestrained and unenclosed below said seat; and
means mounted at least in part to said seat for preventing relative rotation between the bearing member and the seat about the shaft axis while still allowing substantially unrestrained omnidirectional pivotal motion of said shaft and said implement.

5,709,003
CRANK ARM CLEANING BRUSH WITH SCRUB PAD

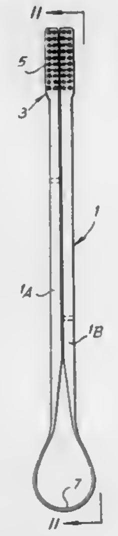
Charles W. Batch, P.O. Box 19004, Pensacola, Fla. 32523
Filed May 8, 1996, Ser. No. 646,912
Int. Cl.^{6} A46B *3/18;15/00*
U.S. Cl. 15—106 **8 Claims**



1. A cleaning brush for removable attachment to a vessel to be cleaned comprising:
a shaft having a topend, a bottomend, a crank arm therebetween;
a handle attached to the top end of the shaft;
a rod secured to the bottom end of the shaft;
a plurality of bristles projecting outwardly from the rod;
a securing cap, impaled by the shaft, adapted to removably secure the clearing brush to the vessel; and
a generally concave and resilient scrub cap defining a concave surface, said surface having a scouring pad secured thereto to define a concave scrub surface, the scrub cap to an end of the rod.

5,709,004
TOOTHBRUSH WITH DEVICE FOR CLEANING THE TONGUE

Guido Paduano; Elisabetta Rossi, both of Via Roma No.12, 22067 Missaglia, Como, Italy, and Simone Zilli, Via Montegrappa No.1, Frazione Uslgliano, 56035 Lari, Pisa, Italy, 56035
Filed Jul. 15, 1996, Ser. No. 680,375
Claims priority, application Italy, Jul. 20, 1995, F195A0167
Int. Cl.^{6} A46B *9/04;* **A61B** *17/24*
U.S. Cl. 15—111 **14 Claims**

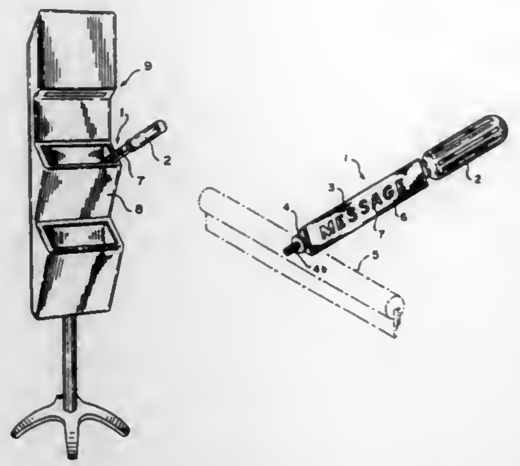


1. A toothbrush comprising:
an elongated handle with a head equipped with bristles attached to an end thereof, and a device for cleaning the surface of the tongue, wherein said handle is composed of two sections joined by a thin, flexible, arc-shaped strip used for cleaning the tongue, placed at the end of the handle opposite said head, a first section of said two sections of said handle including a pin, and a second section of said two sections of said handle defining a slot for receiving said pin and joining said first and second sections of said handle.

5,709,005
IMPLEMENT HANDLE HAVING ADVERTISING DISPLAY AREA AND SEPARATE GRIPPING PORTION

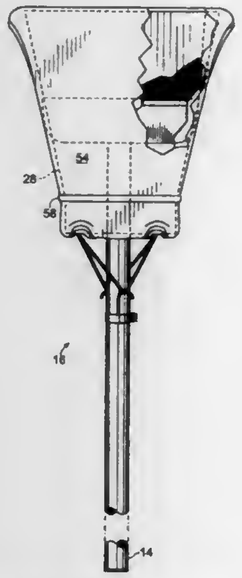
Philip L. Brach, Jr., 655 Sixth St., Hermosa Beach, Calif. 90254; Charles Khalil, 26722 Rolling Hills Rd., Rolling Hills Estates, Calif. 90274, and Robert W. Mead, 655 Sixth St., Hermosa Beach, Calif. 90254
Continuation of Ser. No. 179,701, Jan. 11, 1994, Pat. No. 5,487,203. This application Dec. 28, 1995, Ser. No. 580,370
Int. Cl.^{6} A47C *13/11*
U.S. Cl. 15—145 **12 Claims**

3. A handle for use in manipulating an implement, comprising:
an elongate body;
a gripping section at a first end of the elongate body;
a connector at a second end of said elongate body remote from said gripping section to attach the implement to said body;
an advertising display section separate from and positioned between said connector and said gripping section, said advertising display section having multiple distinct faces in a transverse cross-section, wherein the gripping section is separate from the advertising display section such that the gripping section is manipulatable without covering the advertising display section during use; and
advertising indicia printed on a substrate, said substrate being adhesively secured to at least a majority of said distinct faces.



5,709,006
METHOD AND APPARATUS FOR CLEANING WITH A BROOM

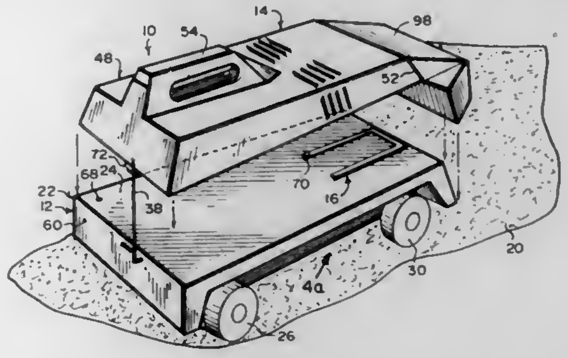
Harvey R. Carter, Jr., 124 N. Second, Apt. 314, Klamath Falls, Oreg. 97601
Filed Dec. 19, 1994, Ser. No. 359,681
Int. Cl.^{6} A46B *17/04*
U.S. Cl. 15—247 **6 Claims**



1. An apparatus for cleaning with a broom, comprising:
an attachment having at least one hook and being adapted for attachment to the handle of a broom;
a first cover having two opposite ends and being adapted to be placed over the bristles of the broom;
a pair of elongate end pieces, affixed to said cover at respective ends thereof, so as to spread said cover over the bristles of the broom; and
a pair of elastic straps, each connected at one point to a respective end of said first cover and adapted to be connected at another point thereof to a hook of said attachment, wherein each of said elongate end pieces comprises a substantially rigid pin having two opposite ends and being disposed along a respective end of said first cover, wherein each of said elastic straps is attached to said pin, wherein said elastic strap comprises an elongate elastic member connected at each end thereof to one end of said first cover at spaced apart locations so as to form a loop for placement over one said hook, each end of said elongate elastic member being further connected to each end of a respective pin, said ends of said pin coinciding with said spaced apart locations of said end of said first cover, and wherein said pin has a plurality of holes therethrough, each end of said elongate elastic member being disposed through at least one said hole.

5,709,007
REMOTE CONTROL VACUUM CLEANER

Wayne Chiang, 36-21 Prince St., Flushing, N.Y. 11354
Filed Jun. 10, 1996, Ser. No. 660,922
Int. Cl.^{6} A47L *9/00*
U.S. Cl. 15—329 **23 Claims**



1. A remote control vacuum cleaner comprising:
a) a mobile unit;
b) a vacuum unit;
c) means for attaching said vacuum unit onto said mobile unit in a removable manner; and
d) a remote control unit to operate said mobile unit and said vacuum unit, so that said mobile unit will move along a floor, while said vacuum unit will clean by suction, dirt and dust from the floor.

5,709,008
STORAGE CONTAINER WHEEL ASSEMBLY

Thomas Dickinson, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Division of Ser. No. 176,860, Jan. 3, 1994, Pat. No. 5,564,805. This application Jan. 25, 1995, Ser. No. 378,177
Int. Cl.^{6} B60B *33/00;* **A47B** *91/00*
U.S. Cl. 16—45 **22 Claims**

1. A wheel assembly and container combination to improve the transportability of the container, the container having an interior, the wheel assembly comprising:
a first panel integral with said container;
an axle pin having first and second ends, said first end extending through and being removably attached to said first panel;
a roller having a hole extending axially therethrough, said roller being rotatably mounted on said pin through the hole;
a second panel integral with said container and spaced from said first panel, said roller being mounted between said first and second panels;
an integral enclosure defined by a third panel integral with said container and spaced from said first panel, said third panel being positioned on an opposite side of said first panel from said second panel, and the first end of said pin being positioned between said first panel and third panel, thereby isolat-

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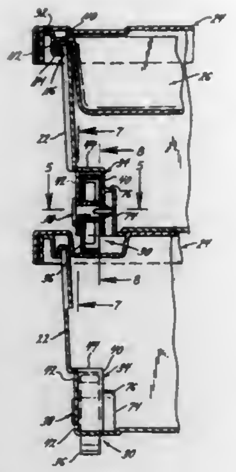


ing the first end of said pin from the contents of said container.

5,709,009

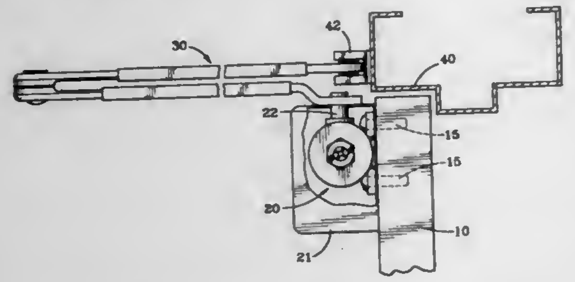
DOOR CLOSER FOR THE NON-FIRE SIDE OF A FIRE-DOOR SAFETY INSTALLATION

Rex H. Lasson, Princeton; William L. Downey, Peru, and Roderick A. L. Ross, Princeton, all of Ill., assignors to Schlage Lock Company, San Francisco, Calif.

Continuation of Ser. No. 233,107, Apr. 25, 1994, abandoned. This application Jul. 25, 1996, Ser. No. 690,403

Int. Cl.^{6} E05F *1/08;15/20*

U.S. Cl. 16—79 **12 Claims**



1. A door control device for use on a non-fire side of a fire-door mounted in a door frame in a fire-door safety installation, comprising:

a door closer assembly filled with a hydraulic damping fluid and attached to said non-fire side of said fire-door by at least one fastener;

a door control arm pivotally connected to said door frame at a first end and to said door closer assembly at a second end; and

said at least one fastener being made from a material which has a melting point lower than an auto-ignition temperature for said hydraulic damping fluid.

5,709,010

COTTON SWABS WITH EXPANDED TIPS

Robert Bennett, Easton, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

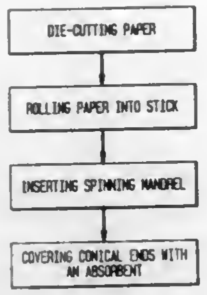
Division of Ser. No. 412,048, Mar. 28, 1995, Pat. No. 5,531,671. This application Mar. 31, 1995, Ser. No. 414,984

Int. Cl.^{6} D01G *13/00*

U.S. Cl. 19—145.3 **1 Claim**

1. A process for manufacturing a swab comprising:

(a) preparing a swab stick by die-cutting paper to achieve mirror image curved left and right edges cut along a length thereof;


DIE-CUTTING PAPER
ROLLING PAPER INTO STICK
INSERTING SPINNING MANDREL
COVERING CONICAL ENDS WITH AN ABSORBENT

(b) rolling the die-cut paper into a stick;

(c) inserting a spinning mandrel into the ends of the stick to form conical members flaring outwardly and having a hollow center; and

(d) placing an absorbent covering around each of the conical members.

5,709,011

APPARATUS FOR DETERMINING IRREGULARITIES IN THE MASS OF A SLIVER

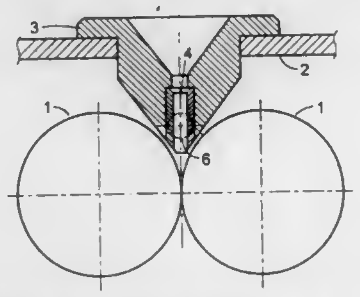
François Baechler, Wermatswil, and Jürg Zehr, Uster, both of Switzerland, assignors to Zellweger Luwa AG, Uster, Switzerland

Filed Jun. 21, 1996, Ser. No. 670,220

Claims priority, application Switzerland, Jun. 22, 1995, 01 828/95

Int. Cl.^{6} D04H *11/00;* **D06H** *3/08*

U.S. Cl. 19—157 **9 Claims**



1. Apparatus for determining irregularities in the mass of a sliver, comprising a pair of rolls for advancing the sliver in a lengthwise direction; a funnel adjacent to said rolls for directing the sliver to said rolls; said funnel having a sliver passage extending longitudinally therethrough and having entrance and exit ends, and means in said funnel for permitting a gas stream to be introduced into said sliver passage so that the pressure in the gas stream varies in response to irregularities in a sliver passing through the sliver passage, said means comprising an orifice or nozzle intersecting said sliver passage between said entrance and exit ends of said sliver passage and a chamber connected, on the one hand, via a throttle to a source for a gas stream of stable pressure and, on the other hand, via said orifice or nozzle to the sliver passage; and a pressure measuring unit connected to said chamber.

5,709,012

BELT CLIP INTEGRATED WITH STRUCTURE TO RECEIVE CHAIN CLIP

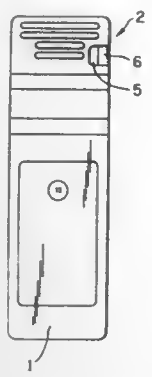
Shinichi Ebashi, Tokyo, Japan, assignor to Uniden Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,499

Int. Cl.^{6} A44B *21/00*

U.S. Cl. 24—3.11 **8 Claims**

1. A belt clip integrated with a structure for receiving a chain clip to be clamped to a portable terminal unit for clipping the



portable terminal unit to a belt, wherein a notched receiving section for receiving the chain clip integrated with said belt clip with molded resin is formed along only one longitudinal edge of said belt clip.

5,709,013

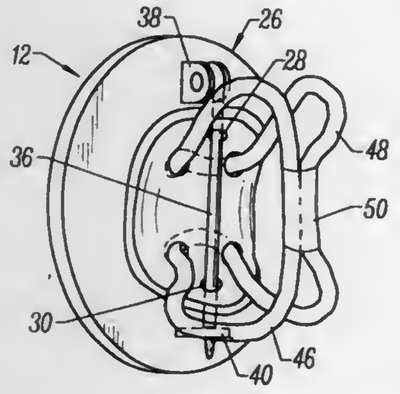
ORNAMENT SUPPORT DEVICE

Alicia Stanback, 4349 Elkhorn Blvd. No. 177, Sacramento, Calif. 95842

Filed Jun. 3, 1996, Ser. No. 660,010

Int. Cl.^{6} A44B *9/00*

U.S. Cl. 24—66.9 **8 Claims**



1. A device for confining an ornamental article, having a pin fastener, to a piece of material comprising:

a. a base member, said base member lying adjacent the backside of the ornamental article and including attachment means for engaging the pin fastener, said base member being constructed of flexible material, said attachment means including at least one bore through said base member for passing of the pin fastener therethrough, and

b. support means for holding said base member to the piece of material, said support means including linking means for connecting said support means to said base member.

5,709,014

THREE-WAY-STRAPPED BUCKLE

Yoshinobu Takahashi, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 560,386

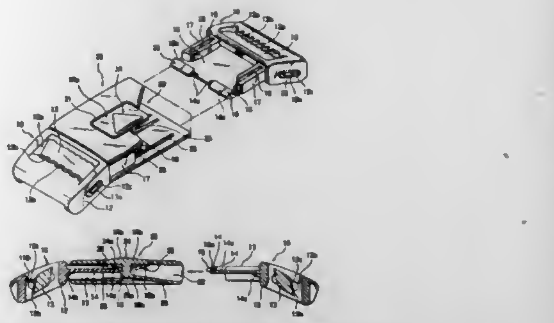
Claims priority, application Japan, Nov. 18, 1994, 6-309547

Int. Cl.^{6} A44B *11/25*

U.S. Cl. 24—614 **15 Claims**

1. A buckle comprising:

(a) first and second plugs each attached to one end of a respective one of first and second straps; and



(b) a socket attached to one end of a third strap;

(c) each of said plugs having at each base thereof a first or second strap attaching portion, a first or second tongue projecting from said respective strap attaching portion and said first or second tongue terminating in first or second engaging ends respectively to be inserted into said socket;

(d) said socket having at opposite ends longitudinal first and second insertion holes formed so as to communicate and confront with each other for receiving said first and second tongues of said plugs, said socket having first and second fixed engaging portions projecting into said first and second insertion holes respectively for engagement with the first and second engaging ends respectively of said tongues of said plugs, and said socket having a release button formed between said first and second fixed engaging portions for depressing said first and second engaging ends respectively to deform and release them from said fixed engaging portions, said first and second tongues having bulge portions with inclined surfaces and said release button having push projections with oblique surfaces facing said inclined surfaces, depression of said release button causing said oblique surfaces to press said inclined surfaces to deflect said tongue to release engagement from said fixed engaging portions.

5,709,015

AUTOMATED PILE-RAISING MACHINE FOR FABRIC

Alessandro Denti, and Paolo Fedi, both of Prato, Italy, assignors to Comet S.p.A., Di Montemurlo, and Sperotto Rimar S.p.A., Milan, both of Italy

PCT No. PCT/EP95/05182, § 371 Date Aug. 30, 1996, § 102(e) Date Aug. 30, 1996, PCT Pub. No. WO96/21059, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 30, 1995, Ser. No. 702,618

Claims priority, application Italy, Jan. 3, 1995, MI95A0004; Aug. 25, 1995, MI95A1804

Int. Cl.^{6} D06C *11/00*

U.S. Cl. 26—33 **24 Claims**

1. An automated pile-raising machine for fabric, comprising:

a carrier structure;

at least one drum mounted for rotation on a shaft;

a respective first motor arranged to rotate each said drum about the longitudinal axis of the respective said shaft;

each said drum carrying two mutually alternating sets of raising cylinders respectively arranged to operate in a pile mode and in a counter-pile mode; said raising cylinders being arranged so as to be radially outwardly effectively coincident with respective generatrices of the respective said drum;

for each said drum, two mutually independent drive means arranged for rotating all of the cylinders of each respective set of raising cylinders, about the longitudinal axis of the respective ones of said raising cylinders, in respective directions;

for each said drum, a pair of rotating brushes arranged for cleaning the respective ones of said raising cylinders;

for each said drum, a second motor arranged for rotating one of the brushes of the respective said pair of rotating brushes, and a third motor arranged for rotating the other of the brushes of the respective said pair of rotating brushes;

an electrical-electronic system operatively associated with each said first motor, each said second motor, and each said third motor;

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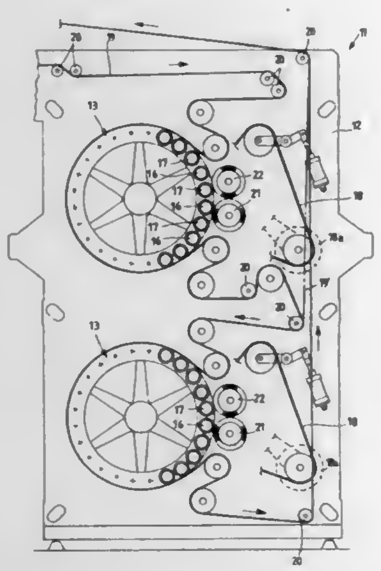
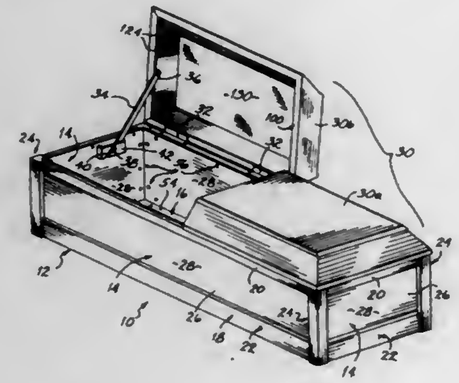


said electrical-electronic system including, in operatively associated relation:
- a detection unit;
- an electrical driver unit;
- a power supply for each said drum;
- an electrical measuring unit; and
- an electronic control circuit;

said detection unit comprising a plurality of sensors which read, instant-by-instant, the angular position of said at least one drum and said brushes so as to check the correct timing between each said drum and the respective said brushes, said brushes being arranged to disengage respective one of said raising cylinders when a phase shift occurs.

5,709,016
READY-TO-ASSEMBLE CASKET

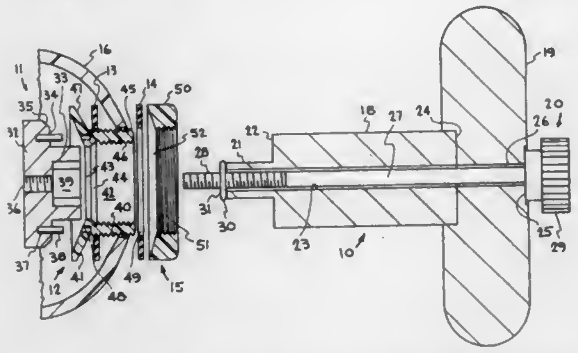
Kenneth J. Gulick, Ashland; Dennis C. Laphan, Cincinnati, both of Ohio; John R. Enneking, Batesville, Ind.; Carolyn Wetzler, West Chester, Ohio; Leslie W. Smith, Batesville, Ind.; James F. Kirschner, Batesville, Ind.; Gary L. Henby, Batesville, Ind., and Wilbur A. Schebler, Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Jun. 2, 1995, Ser. No. 459,736
Int. Cl.^{6} A61G *17/00*
U.S. Cl. 27—2 **43 Claims**



1. A casket comprising:
a cap; and
a shell, said shell being closeable by said cap, said shell comprising a bottom and a plurality of individual interconnected upstanding walls;
each said shell wall comprising:
  a peripheral frame formed from a plurality of frame members, said peripheral frame defining an opening;
  a post coupleable to a cam to join each said frame member to an adjacent frame member, said post having a head thereon and projecting from one of said frame members, a portion of said post and said head being insertable into a hole in said adjacent frame member, said hole being in communication with said cam so that when said post is inserted therein said head engages said cam and upon actuation of said cam said head is captured by said cam to thereby join said frame member to said adjacent frame member; and
  a panel attached to said frame and spanning said opening.

5,709,017
TOOL FOR INSTALLING AN AIR VALVE ASSEMBLY

David A. Hill, P.O. Box 3843, Turlock, Calif. 95381-3843
Division of Ser. No. 42,084, Apr. 1, 1993, Pat. No. 5,490,537. This application Nov. 13, 1995, Ser. No. 557,364
Int. Cl.^{6} B23P *19/04*
U.S. Cl. 29—213.1 **11 Claims**

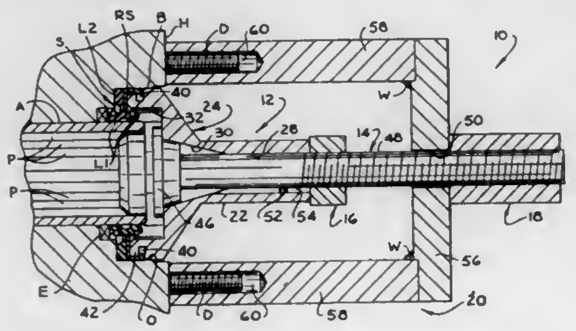


1. A tool for mounting a housing having an opening therein in an opening of a member such as a prosthesis socket, comprising:
- a spanner member having an opening therein, and at least one pin extending therefrom for contact with a housing to be mounted, and
- a spanner tool body adapted to be removably connected to said spanner member, said tool body including a rotatable shaft having one end section constructed to be removably connected to said spanner member,

said spanner tool body additionally including a body member and a handle, each having a passage extending therethrough, said rotatable shaft extending through said passage and provided with shaft retaining means adjacent one end of said body member and a knob-like means secured to another end section.

5,709,018
SEAL MANIPULATION TOOLS

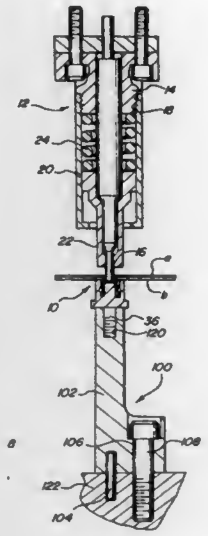
Charles E. Dugan, 109 Echo La., Bethalto, Ill. 62010
Filed Apr. 28, 1995, Ser. No. 430,323
Int. Cl.^{6} B23P *19/02*
U.S. Cl. 29—235 **15 Claims**



1. A seal removal tool for removing an annular seal from around a shaft located in a hole in a housing, the tool comprising:
- a gripper sized and shaped for reception in the hole, the gripper having fingers capable of movement into engagement with the seal in the hole for gripping the seal, the gripper having opposing flats sized and arranged for receiving a wrench for holding the gripper from rotation;
- a puller bolt constructed for sliding reception through the gripper, a first end of the puller bolt being shaped for engagement with the gripper for moving the fingers into gripping engagement with the seal upon relative movement of the puller bolt and gripper, the puller bolt including a threaded portion extending outwardly from the gripper toward a second end of the puller bolt opposite the first end;
- a bridge engageable with the housing for extending over the hole in the housing, the bridge having an opening therein slidably receiving the threaded portion of the puller bolt through the bridge;
- a first nut capable of threaded reception on the threaded portion of the puller bolt, the first nut being rotatable on the threaded portion of the puller bolt to bear against the gripper while the gripper is held from rotation by a wrench received on the flats of the gripper for pulling the puller bolt through the gripper such that the first end of the puller bolt engages the gripper to force the fingers into gripping engagement with the seal;
- a second nut capable of threaded reception on the threaded portion of the puller bolt, the second nut being rotatable on the threaded portion of the puller bolt to bear against the bridge for pulling the puller bolt and gripper in a direction out of the hole in the housing thereby to remove the seal from the shaft.

5,709,019
APPARATUS FOR JOINING SHEETS OF MATERIAL

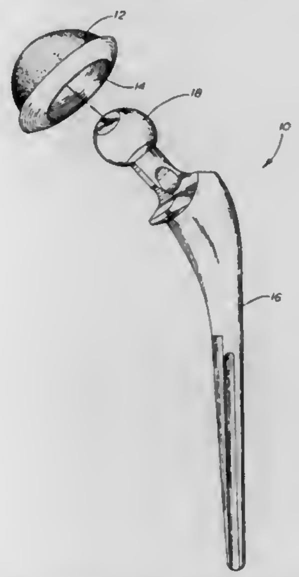
Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.
Continuation of Ser. No. 189,580, Jan. 31, 1994, Pat. No. 5,479,187. This application Oct. 27, 1995, Ser. No. 549,437
The portion of the term of this patent subsequent to Jan. 13, 2014, has been disclaimed.
Int. Cl.^{6} B23P *11/00*
U.S. Cl. 29—243.5 **55 Claims**



1. An apparatus for joining sheets of material, said apparatus comprising:
- an anvil having a working surface and a peripheral surface;
- an outer sleeve substantially surrounding said peripheral surface of said anvil;
- an upper portion of a plurality of die segments each having a shoulder surface, said plurality of die segments being movably disposed between said anvil and said outer sleeve; and
- an upper edge of said outer sleeve projecting at least as high as a plane defined by said shoulder surfaces of said plurality of die segments.

5,709,020
METHOD FOR REDUCING THE GENERATION OF WEAR PARTICULATES FROM AN IMPLANT

David A. Pienkowski, and Kwon-Yong Lee, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.
Continuation-in-part of Ser. No. 276,972, Jul. 19, 1994, Pat. No. 5,515,590. This application Apr. 29, 1996, Ser. No. 639,579
Int. Cl.^{6} B23Q *17/00*
U.S. Cl. 29—404 **22 Claims**



1. A method for reducing the amount of wear particulates generated by a total joint orthopaedic implant consisting of two matched articulating components, wherein at least one of the matched articulating components is made of a polymer, comprising:
- placing the polymer component in a processing environment selected from a group consisting of air and a fluid bath; and
- subjecting the polymer component to pre-implantation creeping;
- whereby the pre-implantation creeping causes increased wear resistance for the polymer component and improved conformity between the matched articulating components so as to reduce the wear particulate burden imposed by the total joint orthopaedic implant on surrounding tissue following implantation and thereby increase overall service life of the total joint orthopaedic implant.

5,709,021
PROCESS FOR THE MANUFACTURE OF METAL TUBES

John A. DiCello, Los Altos; Bhupinder S. Minhas, Union City; Jeffrey W. Simpson, Mountain View; Rajendra S. Cornelius, Los Altos, and John D. Harrison, Watsonville, all of Calif., assignors to Memry Corp., Brookfield, Conn.
Filed May 11, 1994, Ser. No. 241,109
Int. Cl.^{6} B23P *17/00*
U.S. Cl. 29—423 **21 Claims**

1. A method of making an elongated seamless metal tube of I.D. of 0.005 to 0.5 in (0.13–12.7 mm) and with wall thickness of 0.002–0.2 in (0.05–5 mm) of material selected from the group consisting of:
(a) alloys comprising a metal selected from the class consisting of nickel and reactive metals (titanium, niobium, tantalum,

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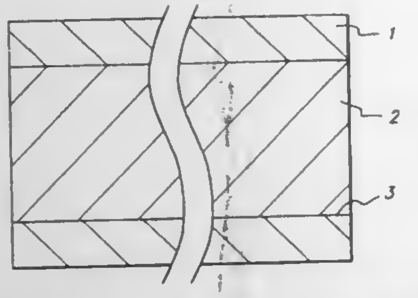


zirconium and/or hafnium) as a principal alloy ingredient and one or more additional alloy ingredients selected from the class consisting of aluminum, vanadium, nickel, iron, copper and niobium,

(b) nickel aluminide and titanium aluminide, and

(c) one or more of the elements, titanium, zirconium, hafnium

comprising steps of:

(1) forming a tubular blank of the metal assembled into an assembly with a metal core surrounded and contacted by the tubular blank, the core metal being capable of stable elongation—elongation with uniform reduction of cross section area in relation to the degree of elongation—with a greater degree of reduction than the tube blank or the same degree of reduction depending on applied conditions, the metal of the core having an elongation capability as described at (3) below when worked as described in (2) and (3), below,

(2) elongating the assembly by mechanical working until the tube is reduced in cross section area outer diameter compared to the original billet assembly and the tube wall thickness is correspondingly reduced compared to the original tubular blank, but in a way that avoids metallurgical or chemical bonding at the tubular blank/core interface, and then

(3) further elongating the core by mechanical working, but in a way that causes its elongation and corresponding cross area reduction to a greater degree than any concomitant elongation and cross section area reduction of the tube with such elongation/reduction retained when stretching forces are withdrawn so that a clearance is developed between the tube and core enabling longitudinal core removal, and then removing the core.

5,709,022
METHOD AND APPARATUS FOR ASSEMBLING PHOTOGRAPHIC FILM CASSETTE

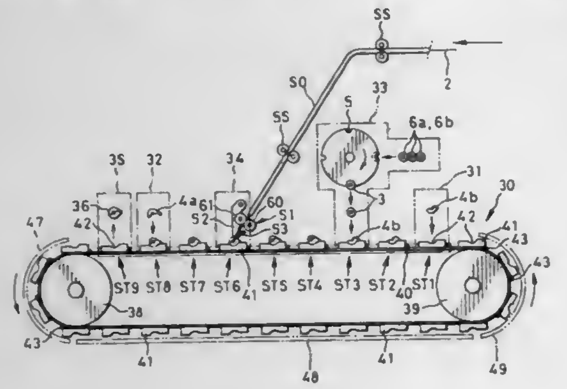
Makoto Shimizu, and Takayuki Kambara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 15, 1995, Ser. No. 440,933

Claims priority, application Japan, May 17, 1994, 6-102896

Int. Cl.^{6} B23P *19/04;21/00;* **B23Q** *7/18*

U.S. Cl. 29—434 **8 Claims**



1. A method of assembling a photographic film cassette having a cassette shell, a spool mounted in said cassette shell to be rotatable about an axis, and a photographic filmstrip coiled about said spool, said cassette shell comprising at least first and second shell segments sectioned through said rotational axis of said spool, said assembling method comprising the steps of:

A. locating said spool in said first shell segment so as to be rotatable therein;

B. fastening a first end of said photographic filmstrip to said spool located in said first shell segment;

C. rotating said spool in said first shell segment to wind said photographic filmstrip onto said spool; and

D. joining said second shell segment to said first shell segment after said rotating step C.

5,709,023
DEVICE AND METHOD FOR REDUCING THE EFFECTIVE CUTTING SURFACE OF A CUTTING MACHINE

Régis Lallement, 45 Chemin de l'Aoudougue-Rejouit, 33610 Cestas, France

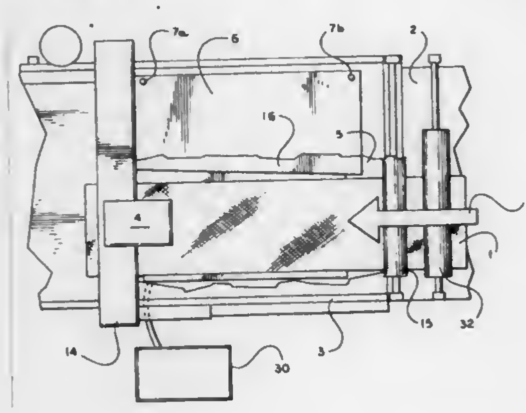
PCT No. PCT/FR93/00808, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/05471, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 12, 1993, Ser. No. 392,893

Claims priority, application France, Sep. 1, 1992, 92 10454

Int. Cl.^{6} B26D *7/01*

U.S. Cl. 29—559 **7 Claims**



1. A method for reducing a working area for cutting on a cutting machine using a removable air-impervious mask, comprising the steps of:

fixing said removable air-impervious mask over a portion of a working area defined on a surface of a cutting table, said cutting table being part of said cutting machine;

placing an air-impervious film on a stack of sheet material in a remaining portion of said working area that is not occupied by said mask, the dimensions of said film being close to those of said stack such that said film overlies an edge of said mask; and

holding down said film on said stack by applying suction from a suction apparatus connected beneath said working area, wherein said working area for cutting on said cutting machine is reduced by said portion of said working area that is covered by said mask.

5,709,024
APPARATUS FOR ASSEMBLING ELECTRONIC COMPONENT

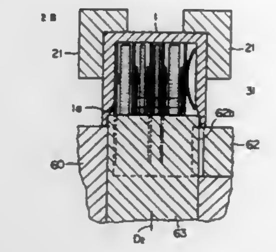
Daisaku Kugo, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

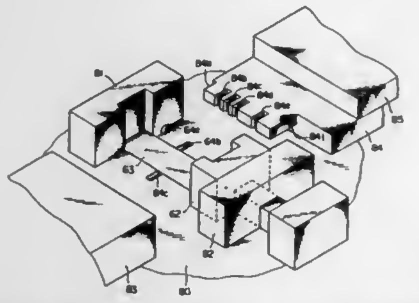
Division of Ser. No. 202,149, Feb. 24, 1994, Pat. No. 5,575,050. This application Sep. 22, 1995, Ser. No. 532,480

Claims priority, application Japan, Feb. 26, 1993, 5-62872

Int. Cl.^{6} H01L *41/22*

U.S. Cl. 29—747 **9 Claims**





1. An apparatus for assembling an electronic component having at least one element being held between terminal plates under pressure and stored in a case said apparatus comprising:

a base having a receiving portion on an upper surface thereof for receiving said element and said terminal plates so as to align said element and said terminal plates along a direction of thickness thereof;

a press for compressing said element and said terminal plates received in said receiving portion in the direction of thickness;

a setting device for setting said case on said base so that an opening of said case corresponds to said receiving portion; and

an ejector for simultaneously inserting said element and said terminal plates from said receiving portion into said case, wherein

said receiving portion is a cavity which is formed on an upper surface of said base,

said press being laterally movable has a head portion which is arranged on one end of said cavity in order to compress said element and said terminal plates, and wherein

said ejector being vertically movable is arranged at a bottom of said cavity in order to push lower ends of said element and said terminal plates.

5,709,025
APPARATUS FOR WIRING A CONNECTOR

Robert Wuyts, Antwerpen, Belgium, assignor to Framatome Connectors International, Courbevoie, France

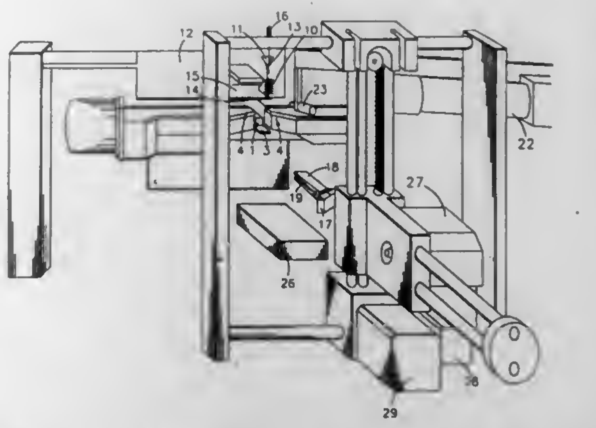
PCT No. PCT/EP94/03596, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO95/12908, PCT Pub. Date May 11, 1995

PCT Filed Oct. 31, 1994, Ser. No. 635,894

Claims priority, application Netherlands, Nov. 5, 1993, 9301915; Aug. 8, 1994, 9401284

Int. Cl.^{6} H01R *43/28*

U.S. Cl. 29—748 **13 Claims**



1. Apparatus for wiring a connector (1), in particular a connector with a plurality of contacts (2), comprising an elongated holder (3) for the connector to be wired, said elongated holder being aligned with an axis in the x-direction, at each longitudinal side of the holder a tool (5) movable back and forth in an y-direction transverse to the holder for applying a wire into a contact aligned with the associated tool, wherein a wire guiding means (6) is provided for each tool, said wire guiding means being aligned with the corresponding tool, means for moving the tools with respect to the holder in the x-direction, wire selection means (**11–16**; **40**) for separating and delivering the wires (**10**) to be connected one by one, means (**17–20**) for supplying a delivered wire to a wire guiding means (**6**) and a processing unit (**21**) identifying a separated wire and controlling the wire selection means, the wire supplying means, the tool moving means and operating the tools in dependence on the identified wire, wherein the wire selection means (**11–16**; **40**) comprises a selection slot (**13**) with an inlet and an outlet, the width of said selection slot substantially corresponding with the diameter of the individual wires and a shutter (**14**) for closing and opening the outlet of the selection slot, wherein said means (**17–20**) for supplying a wire (**10**) to a wire guiding means (**6**) comprises a gripper (**17**) and means (**20**) for moving the gripper in the x-, y- and z-direction, said wire selection means (**11–16**; **40**) comprises a stationary wire selection plate (**12**) defined by a plane with an insertion opening (**11**) for a bundle of wires to be connected, said selection slot (**13**) being provided in said selection plate joining the insertion opening with its inlet and having its outlet in an edge of the wire selection plate lying opposite of the insertion opening (**11**), wherein a bundle of wires introduced in the insertion opening are permitted to enter the selection slot in a single row, each wire protruding transversely to the plane of the wire selection plate, wherein the wire selection means further comprises a separating means (**15**; **42–45**) for separating the wire (**46**) adjacent to the shutter (**14**) from the remaining wires (**1**) in the selection slot.

5,709,026
APPARATUS FOR METAL STAMPING INSERTION INTO A MOLD CAVITY

Steve Veselaski, Bay Shore, and Curt Delanoy, Massapequa, both of N.Y., assignors to Micro Contacts, Inc., Hicksville, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,149

Int. Cl.^{6} B23P *21/00*

U.S. Cl. 29—771 **22 Claims**

11. A system for inserting precision metal stampings into a mold cavity formed in a mold base, comprising:

a metal strip having a plurality of stamping elements pre-formed therealong and having a plurality of index holes formed along a length of said strip,

a base structure;

a head assembly movably mounted on said base structure for vertical movement and horizontal movement in two directions relative to the mold base arranged on a movable table and for receiving said metal strip and cutting off one of said plurality of stamping elements and inserting the cutoff stamping element into the mold cavity; and

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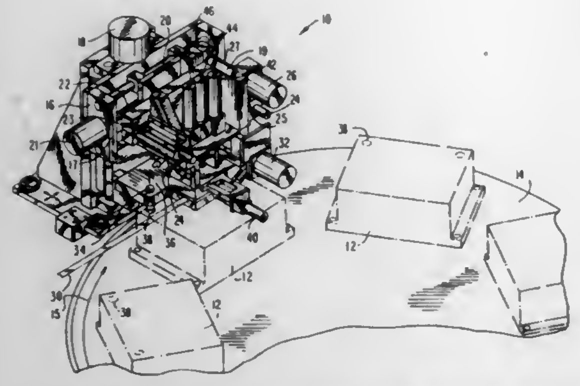


control means for controlling movement of said head assembly and for controlling the cutting off and inserting operations of said head assembly based on movement of the moveable table.

5,709,027
METHOD OF MAKING A WIRE HARNESS WITH PRESS-FITTING CONTACTS AND APPARATUS THEREFOR

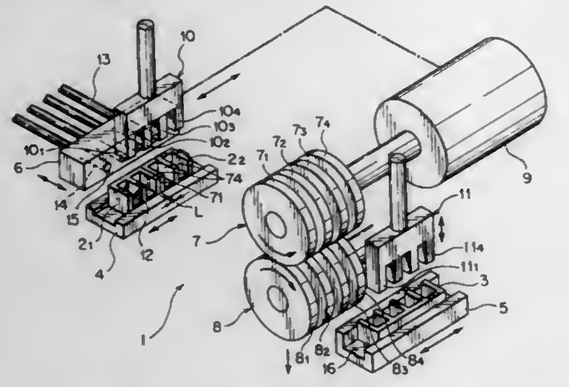
Sanae Kato; Akira Sugiyama, and Kazuhiko Takada, all of Gotenba, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,978

Claims priority, application Japan, Mar. 1, 1994, 6-031198; Feb. 2, 1995, 7-015744

Int. Cl.^{6} H01R *43/04;* B23P *19/00*

U.S. Cl. 29—861 **19 Claims**



1. An apparatus for making a wire harness with press-inserted contacts, comprising:
a pair of tables including a first table and a second table which are aligned in a path in which wires are advanced, said first table being disposed upstream of said second table, each of said tables being adapted to support at least one connector thereon, and at least one of said tables being adapted to move transversely of said path;
a first press-insertion blade and a second press-insertion blade, each of said press-insertion blades having at least one blade and being adapted to advance onto each of said tables respectively to press-insert the wires for electrical contact with the connector supported on said table, said press-insertion blades being adapted to move transversely of said path;
a pair of wire-metering rollers adapted to move toward each other to hold the wires therebetween and to rotate to meter the wires, said rollers being adapted to move away from each other to allow the wires to pass therebetween, and at least one of said rollers being adapted to move transversely of said path; and
a wire-supplying head adapted to move selectively between said pair of tables for supplying the wires to the connectors on said tables.

16. A method of making a wire harness with press-inserted contacts, comprising steps of:
arranging a first table for supporting at least one first connector thereon and a second table for supporting at least one second connector thereon, said first table being disposed upstream of said second table in a path through which wires are supplied to said tables;
advancing the wires to said second connector on said second table;
press-inserting the wires into said second connector on said second table using a second press-insertion blade;
retracting said second table transversely of the path leaving said second connector behind;
moving the wires either forwardly or rearwardly by means of a pair of wire-metering rollers for metering a predetermined length of the wires; and
press-inserting the wires into said first connector on said first table using a first press-insertion blade.

5,709,028
PROCESS OF MANUFACTURING A HEAT EXCHANGER

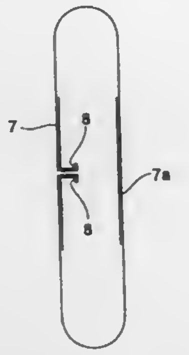
Josef Kreutzer, Mühlacker, and Fritz Glock, Fellbach, both of Germany, assignors to BEHR GmbH & Co., Stuttgart, Germany

Filed Nov. 28, 1995, Ser. No. 564,573

Claims priority, application Germany, Dec. 24, 1994, 44 46 754.0

Int. Cl.^{6} B23P *15/26*

U.S. Cl. 29—890.047 **6 Claims**



1. Process of manufacturing a heat exchanger, particularly a radiator for an internal-combustion engine for driving a motor vehicle, comprising:
arranging flat tubes in parallel to one another with fins arranged in-between and pressed together to form a finned-tube block by means of forces extending transversely to the tube axes, and
subsequently soldering the flat tubes and fins together,
wherein the fins are convexly curved in direction of an adjacent tube in each case on fin edges resting against the adjacent tubes and are only then inserted between the flat tubes and pressed against the flat tubes so that the tubes are laterally pressed to form a concave shape by respective convexly curved edges of the fins before the soldering-together takes place.

5,709,029
MANUFACTURE OF HELICALLY CORRUGATED CONDUIT

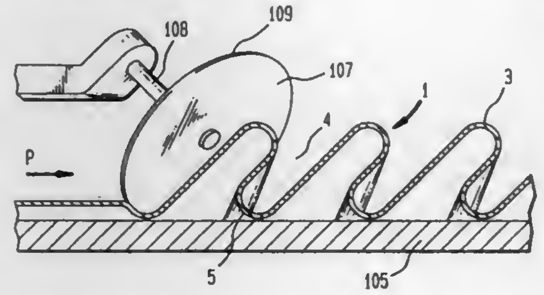
Rodney Mitchell Innes, Auckland, New Zealand, assignor to Energy Saving Concepts Limited, Auckland, New Zealand

Continuation of Ser. No. 408,486, Mar. 22, 1995, abandoned. This application Feb. 14, 1997, Ser. No. 801,713

Claims priority, application New Zealand, Sep. 22, 1992, 244431

Int. Cl.^{6} B23P *15/00*

U.S. Cl. 29—890.053 **8 Claims**



1. A method of manufacturing a helically corrugated conduit from a smooth walled tube of formable material comprising the steps of:
supporting said tube on a support means;
engaging a portion of the outer periphery of at least one forming wheel against an outer surface of said tube and wherein said forming wheel engages said tube at an angle relative to a longitudinal axis of said tube;
rotating said tube or said forming wheel or both, one with respect to the other; and
simultaneously moving said tube or said forming wheel to create movement between said forming wheel and said tube relative along the longitudinal axis of said tube under a pressure such that said forming wheel moves about an outer surface of said tube in a helical spiral forming corresponding deformations in both the outer and inner surfaces of said tube; and wherein a substantial portion of the inner surface of said corrugations in said conduit remain free from contact with an inner support throughout formation.

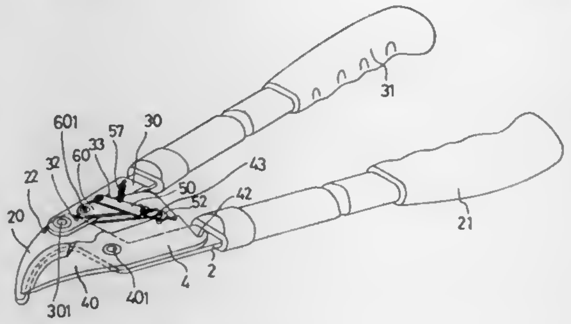
5,709,030
GARDEN SHEAR CONTROL MECHANISM

Meng Tun Wang, No. 9-4-1, Chung Nan Lane, Tai Ping City, Taichung Hsien, Taiwan

Filed Nov. 5, 1996, Ser. No. 743,213

Int. Cl.^{6} B26B *13/00*

U.S. Cl. 30—251 **8 Claims**



1. A garden shear comprising:
a lever including a first end having a first cutting blade provided therein and including a second end having a handle provided therein, said lever including a middle portion,
a plate including a middle portion pivotally coupled to said middle portion of said lever and including a first end having a second cutting blade for acting with said first cutting blade and for cutting a branch, said plate including a second end having at least one engaging portion provided therein, said second end of said plate including a stud provided thereon,
a beam including a first end having a handle provided therein and including a second end pivotally coupled to said first end of said lever for allowing said beam to be moved toward and away from said lever,
means for moving said second cutting blade away from said first cutting blade, said moving means including a bar pivotally coupled to said beam, said bar including a hook for engaging with said stud and for allowing said plate to be moved by said beam, and
an arm pivotally coupled to said beam and including an actuating end for engaging with said engaging portion of said plate and for allowing said arm to force said second cutting blade toward said first cutting blade when said beam is moved toward said lever.

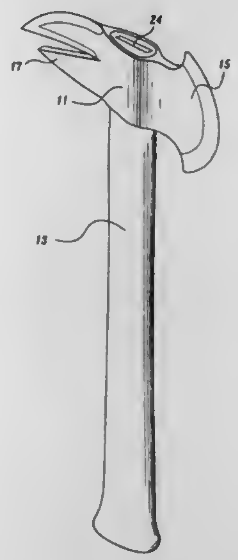
5,709,031
FIRE FIGHTER'S HATCHET

Gÿs J. Jansen Van Beek, Caldwell, Id., assignor to Spencer Products Co., Seattle, Wash.

Continuation of Ser. No. 552,196, Nov. 2, 1995, abandoned. This application Feb. 26, 1997, Ser. No. 806,393

Int. Cl.^{6} B26B *23/00*

U.S. Cl. 30—308.1 **17 Claims**



1. A fire fighters'/rescue worker's hatchet comprising:
an elongate handle; and
a unitary, balanced, single-piece head, said head including a blade side and an integral cutting side lying in substantially the same plane, said blade side and said cutting side having substantially the same weight, said blade side including a curved blade having a beveled edge and a relatively small radius of curvature that subtends a relatively large arc, said cutting side including a pair of teeth, one positioned outside the other so as to define a slot therebetween, said outside tooth being curved and having a tip that extends beyond the tip of said inside tooth, the outer periphery of said outside tooth also being beveled to create a cutting edge.

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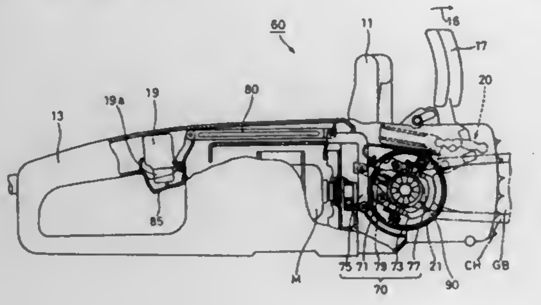
5,709,032

CHAIN STOP DEVICE FOR AN ELECTROMOTIVE CHAIN SAW

Makoto Mizutani; Hideki Okubo, and Masaki Kondo, all of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed May 15, 1996, Ser. No. 657,627
Claims priority, application Japan, May 16, 1995, 7-117354; Jul. 4, 1995, 7-168721
Int. Cl.^{6} B27B *17/02*
U.S. Cl. 30—382 **19 Claims**



1. An electromotive chain saw, having a chain stop device, comprising:

a cutting chain wound around a guide bar extending forwards from a housing;

an electromotive motor for providing a rotary drive force via a clutch to a sprocket onto which said cutting chain is wound; and

a trigger member for energizing said electromotive motor when turned on and for stopping said electromotive motor when turned off, said chain stop device comprising;

a clutch release member for releasing the engagement of said clutch;

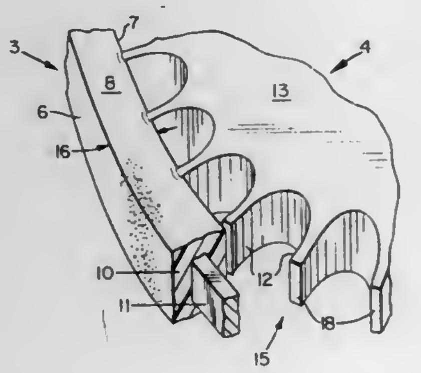
a brake member for applying a brake force to a brake drum secured onto said sprocket; and

a trigger link means for operating said clutch release member and said brake member when said trigger member is moved from an ON position to an OFF position.

5,709,033

DRAWING DEVICE

Charles Arnold Cummings, 5719 Thomaridge Ct., Cincinnati, Ohio 45248
Filed Jun. 25, 1996, Ser. No. 684,264
Int. Cl.^{6} B43L *11/00*
U.S. Cl. 33—27.01 **6 Claims**



1. A design drawing device comprising:

a flat surface;

at least one flexible guide, said flexible guide having an outer circumference wall and an inner circumference wall, said flexible guide comprising a soft outer covering and a malleable bar, said soft outer covering surrounding said malleable bar, wherein said flexible guide is bendable into any desired shape;

at least one solid wheel disk said solid wheel disk having sides, a flat top surface, a flat bottom surface, and teeth positioned on the sides of said solid wheel disk, said flat top surface and said flat bottom surface being perpendicular to said sides;

at least one hole through said solid wheel disk, said hole positioned perpendicular through and to said flat top surface and said flat bottom surface; and

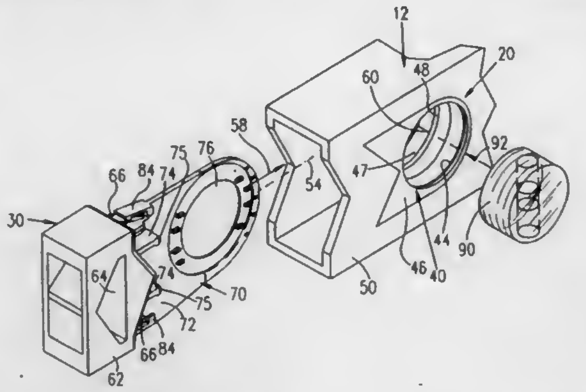
a drawing implement, said drawing implement positionable through said at least one hole positioned through said solid wheel disk;

wherein said solid wheel disk is rotatable about the inner circumference wall or outer circumference wall of said flexible guide when said drawing implement is positioned through said at least one hole positioned through said solid wheel disk, thereby forming a patterned drawing, and wherein said teeth of said solid wheel disk lock into the inner circumference wall of the flexible guide, thereby preventing slippage of said solid wheel disk as said solid wheel disk rotates about said inner circumference wall of said flexible guide.

5,709,034

SPIRIT LEVEL

Gabriel Kohner, Kibbutz Amiad, Israel, assignor to Kapro Industries Ltd., Hakerem, Israel
Filed Feb. 29, 1996, Ser. No. 608,757
Claims priority, application Israel, Mar. 5, 1995, 112882
Int. Cl.^{6} G01C *9/28*
U.S. Cl. 33—377 **7 Claims**



1. A spirit level comprising:

a body portion having at least one open, hollow end, and at least one non-circular aperture formed on a face thereof;

a clamp insertable into said at least one hollow end, said clamp comprising at least one vial mounting portion, said clamp being folded and inserted into said at least one said at least one vial mounting portion being fixedly held in said at least one non-circular aperture and having a precisely fixed orientation relative to said body portion which is determined by said non-circular aperture and

a vial calibrated and bonded in place onto said vial mounting portion following insertion of said clamp into said body portion.

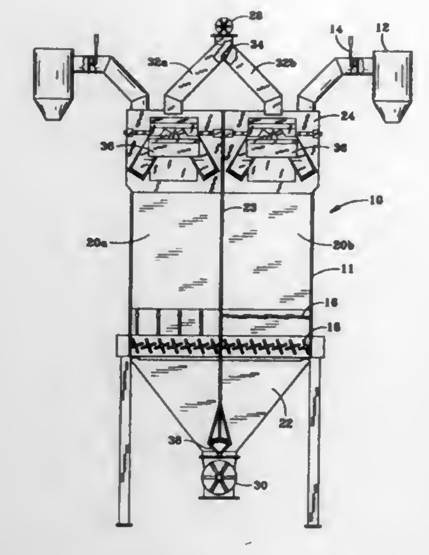
5,709,035

COUNTER FLOW COOLER

Donald M. Wilhelm, Merrimack, N.H., assignor to California Pellet Mill Company, Nashua, N.H.
Filed Jul. 22, 1996, Ser. No. 681,257
Int. Cl.^{6} F26B *17/12*
U.S. Cl. 34—167 **16 Claims**

1. A counterflow cooler comprising:

a housing having a plurality of cooling chambers therein;



a distribution means for selectively feeding feed material into at least one of the cooling chambers;

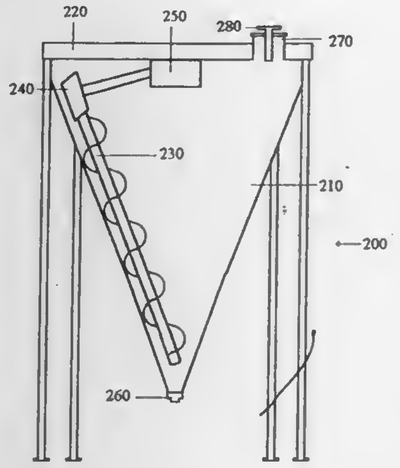
each cooling chamber having an airflow means for passing air through the cooling chamber; and

a sealing means for sealing the flow of air in one cooling chamber from the other cooling chamber.

5,709,036

AGGRESSIVE CONVECTIVE DRYING IN A CONICAL SCREW TYPE MIXER/DRYER

Len W. Haleen, 1932 Duke St., Edwardsville, Ill. 62025
Division of Ser. No. 443,280, May 17, 1995, Pat. No. 5,544,424. This application May 3, 1996, Ser. No. 642,066
Int. Cl.^{6} F26B *11/12*
U.S. Cl. 34—179 **2 Claims**



1. In a conical screw type mixer modified for use as a dryer comprising:

a cone shaped compression vessel;

a cover attached to and covering said vessel, said cover including an inlet port for the introduction of drying medium to said vessel and an outlet port for the release of vaporized liquids from a product charged to said vessel;

a discharge port located at the lower end of said vessel for discharge of product from said vessel;

a screw agitator housed within said vessel, said agitator including a helical blade for mixing product charged to said vessel; and

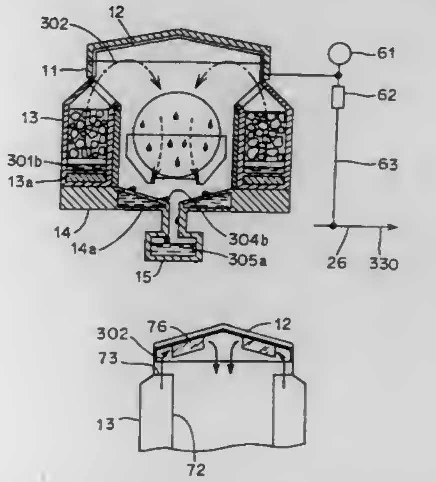
at least one drive means attached to said screw agitator and adapted to drive said agitator; the improvement comprising:

means to create turbulence within said vessel during a drying cycle, said means comprising at least one high velocity nozzle for injecting drying medium at high velocity into said vessel, wherein at least one high velocity nozzle is located within said inlet port.

5,709,037

STREAM DRYING PROCESS

Hiroshi Tanaka; Nobuaki Doi; Masashi Omori, and Hiroaki Ishikawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Hyogo, both of Japan
Division of Ser. No. 526,478, Sep. 11, 1995, Pat. No. 5,608,974. This application Oct. 7, 1996, Ser. No. 726,734
Claims priority, application Japan, Nov. 7, 1994, 6-272102; Jan. 12, 1995, 7-003247
Int. Cl.^{6} F26B *3/00*
U.S. Cl. 34—330 **5 Claims**



1. A steam drying process for drying a material to be dried, by exposing said material to a processing solution vapor, comprising the steps of:

loading said material to be dried in a process chamber through an opening in an upper end thereof, said process chamber comprising a lid for hermetically closing said opening from above;

drying said material to be dried, by flowing said processing solution vapor upwardly hitting against said lid and then flowing downwardly from above said material to be dried; and

condensing, beneath said material to be dried, to recover said processing solution vapor that has come into said process chamber.

5,709,038

AUTOMATED AIR FILTRATION AND DRYING SYSTEM FOR WATERBORNE PAINT AND INDUSTRIAL COATINGS

Fred G. Scheufler, Rensselaer; Richard D. Scheufler, East Greenbush, and William H. Bayard, South Glens Falls, all of N.Y., assignors to Optimum Air Corporation, Malta, N.Y.
Continuation-in-part of Ser. No. 423,683, Apr. 18, 1995, Pat. No. 5,554,416, which is a continuation-in-part of Ser. No. 126,547, Sep. 24, 1993, abandoned. This application Mar. 29, 1996, Ser. No. 625,068
Int. Cl.^{6} F26B *3/00*
U.S. Cl. 34—475 **3 Claims**

1. A method for drying an aqueous-based paint that was applied onto a substrate at a surface thickness of from about 0.1 to about 15 mils to provide a substrate having a substantially tack-free

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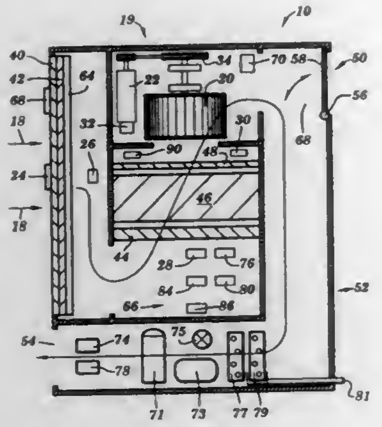


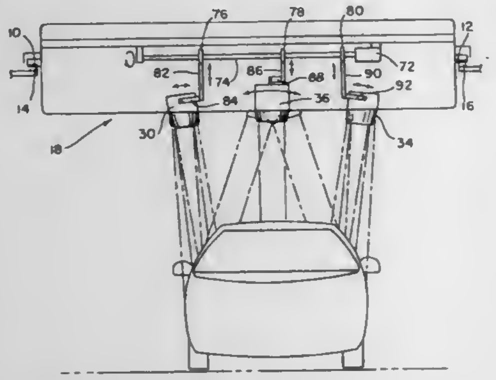
painted surface capable of resisting the formation of surface flaws, which method comprises,

(1) flowing air substantially uniformly in an angular and/or parallel direction and at surface velocity of at least 10 feet per minute over the painted substrate surface, while maintaining the painted substrate in a drying environment having an RH in the range of about 25 to about 95 percent, and a temperature in the range of about 45 F. to about 125 F., and

(2) continuing the procedure of step (1) in a continuous or batch mode until the painted substrate surface is tack-free and blemish-free after normal handling procedures.

5,709,039
MOTOR VEHICLE DRYER

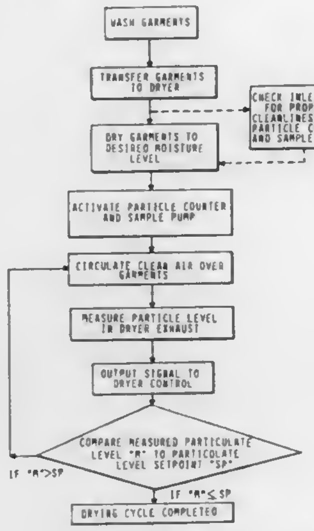
Allen Jones, Oneida, Wis., assignor to PDQ Manufacturing, Inc., Green Bay, Wis.
Division of Ser. No. 324,351, Oct. 17, 1994, Pat. No. 5,596,818. This application Dec. 4, 1996, Ser. No. 763,616
Int. Cl.^{6} F26B *21/06*
U.S. Cl. 34—558 **17 Claims**



1. A dryer used to dry a motor vehicle, comprising:
a first nozzle;
a second nozzle;
a center nozzle disposed between said first and second nozzles;
blower means for providing a gas at a high velocity to said first, second, and center nozzles;
support means for supporting said first, second, and center nozzles; and
means for changing the output of said center nozzle as a function of the distance between said center nozzle and said vehicle.

5,709,040
EXHAUST AIR PARTICULATE CONTAMINATION SENSING FOR TUMBLER DRYERS

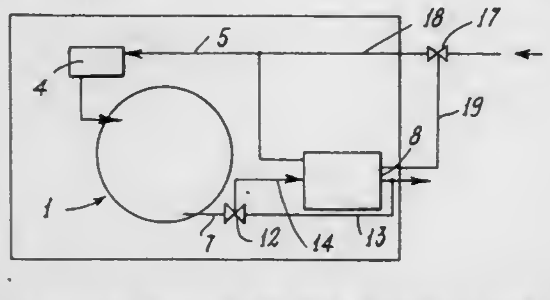
Steven A. Horwitz, Bryan, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Dec. 4, 1996, Ser. No. 760,050
Int. Cl.^{6} F26B *21/00*
U.S. Cl, 34—565 **20 Claims**


WASH GARMENTS
TRANSFER GARMENTS TO DRYER
CHECK INLET AIR FOR PROPER CLEANLINESS USING PARTICLE COUNTER AND SAMPLE PUMP
DRY GARMENTS TO DESIRED MOISTURE LEVEL
ACTIVATE PARTICLE COUNTER AND SAMPLE PUMP
CIRCULATE CLEAN AIR OVER GARMENTS
MEASURE PARTICLE LEVEL IN DRYER EXHAUST
OUTPUT SIGNAL TO DRYER CONTROL
COMPARE MEASURED PARTICULATE LEVEL "M" TO PARTICULATE LEVEL SETPOINT "SP"
IF "M">SP
IF "M"≤ SP
DRYING CYCLE COMPLETED

1. An apparatus for removing particulates from garments to a desired particulate level, said apparatus comprising:
a chamber for receiving garments containing particulates, said chamber being adapted for passing air through said chamber and proximate to said garments whereby particulates are removed by said air passing through said chamber;
a controller for governing the operation of said apparatus; and
a particle counter assembly comprising a sample port in communication with said air passing through said chamber, and provisions for producing an output representative of the amount of particulates in said chamber, whereby said output of said particle counter assembly is utilized by said controller to operate said apparatus until particulates have been removed from garments to said desired particulate level.

5,709,041
DEVICE FOR RECOVERING THE HEAT REMOVED BY A LOAD CONTAINED IN A CLOTHES WASHING-DRYING MACHINE OR CLOTHES DRYER AND FOR ITS REUSE FOR FURTHER DRYING SAID LOAD

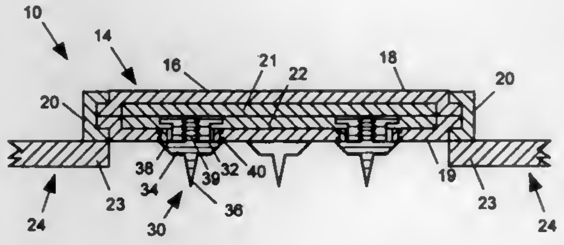
Jennifer L. Tarplee, Cedar Rapids, Iowa, assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 1, 1996, Ser. No. 742,524
Claims priority, application Italy, Nov. 3, 1995, MI950758 U
Int. Cl.^{6} F26B *11/02*
U.S. Cl. 34—595 **7 Claims**



1. A device for recovering heat during the drying of a load in a clothes dryer of the once-through external air type, said clothes dryer comprising a tub for containing a load to be dried, a conduit for feeding external fresh air into said tub, a conduit for expelling hot moist air from the tub and for feeding it into the environment in which the machine is located, and means for heating the fresh air, the device comprising a container containing a phase change material (PCM) in which a heat transfer area is present, at least part of the hot moist air passing into the heat transfer area from the exit of the tub so as to transfer thermal energy to said PCM, which changes its physical state or phase, and at least part of the fresh air entering the machine passing through the heat transfer area and to which said energy is transferred by the return of said PCM to its original physical state or phase.

5,709,042
TRACTION DEVICE FOR A SHOE

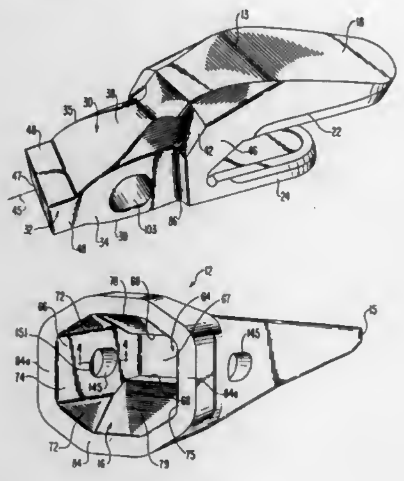
Ali N. Houdroge, 330 NW. Orchard Dr., Portland, Oreg. 97229
Filed Sep. 20, 1996, Ser. No. 718,214
Int. Cl.^{6} A43C *15/06;15/04*
U.S. Cl. 36—62 **12 Claims**



1. An apparatus for a shoe for providing traction on ice comprising:
an envelope,
means for attaching the envelope to said shoe,
a flexible first layer contained within said envelope; and
spike means attached to said first layer and extending though said envelope away from said shoe for engaging said ice,
wherein said spike means is devoid of attachment to said envelope.

5,709,043
EXCAVATING TOOTH

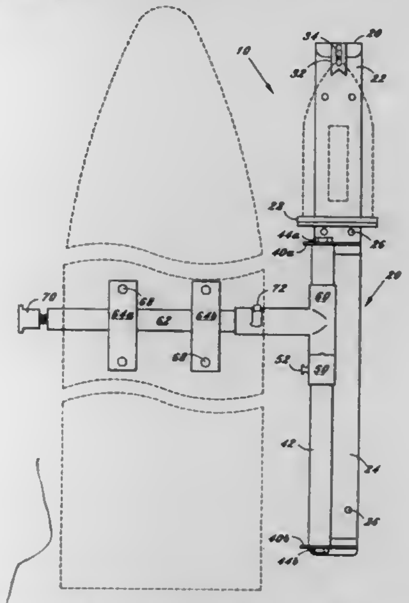
Larren F. Jones, Aloha, and Robert K. Emrich, Tigard, both of Oreg., assignors to Esco Corporation, Portland, Oreg.
Filed Dec. 11, 1995, Ser. No. 570,438
Int. Cl.^{6} E02F *9/28*
U.S. Cl. 37—458 **40 Claims**



1. An excavating tooth comprising:
an adapter having a rear base end for fixed engagement to a digging edge of an excavator, and a forwardly projecting nose;
a wear member having a longitudinal axis, a forward end and a rearwardly opening socket for receiving said nose of said adapter, said socket being defined by a pair of converging walls tapering toward said forward end, a pair of side walls, a plurality of first bearing faces extending substantially parallel to said longitudinal axis, and a plurality of second bearing faces extending substantially parallel to said longitudinal axis, said first bearing faces being spaced farther from said longitudinal axis than said second bearing faces, and each said first bearing face being located between one of said converging walls and one of said side walls; and
a lock for releasably securing said wear member to said adapter.

5,709,044
IRONING BOARD MOUNTING BRACKET

Suramya T. Atapattu, 9614 Pondwoood Rd., Boca Raton, Fla. 33428
Filed Jul. 31, 1996, Ser. No. 692,920
Int. Cl.^{6} D06F *81/06;* A47B *5/04*
U.S. Cl. 38—103 **8 Claims**



1. A wall mountable bracket for supporting an ironing board and hand iron, said wall mountable bracket comprising:
an elongated, substantially planar, rigid plate having a top portion and a bottom portion, said rigid plate adapted for wall mounting;
said plate top portion defining means for supporting a hand held iron including a supporting flange for bearing the weight of an iron thereon, and a retaining flange for engaging a portion of an iron supported by said supporting flange;
said plate bottom portion incorporating means for adjustably supporting an ironing board and for enabling adjustment of an ironing board vertically and in two degrees of rotational freedom.

5,709,045
ELECTROLUMINESCENT IDENTIFICATION DEVICE

Brian L. Thelen, W.3904 Artesian Rd., Fond du Lac, Wis. 54935
Continuation-in-part of Ser. No. 323,806, Oct. 17, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 633,229
Int. Cl.^{6} G09F *13/22*
U.S. Cl. 40—544 **6 Claims**

1. An illuminated premises identification system comprising:

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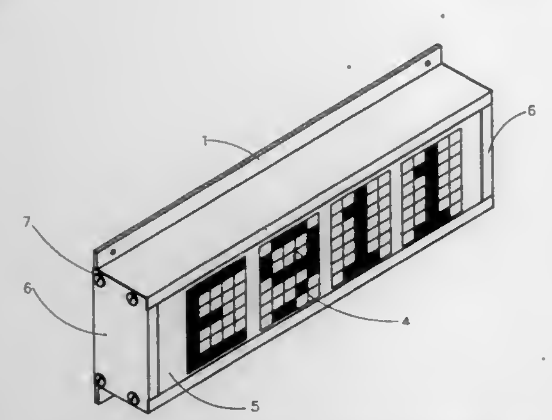


an annunciator circuit including a doorbell transformer and an annunciator; and

an electroluminescent identifying device including

low-voltage, low-frequency power from the doorbell transformer providing a voltage in the range of 8 to 20 A.C. volts, at 50 to 60 Hertz,

a converter for changing the low-voltage, low-frequency power to higher-voltage, higher-frequency output power in the range of 80 to 150 volts, at 300 to 500 Hertz, with a total power consumption of less than 10 watts,

the convertor connected to the annunciator circuit in parallel to the annunciator so neither device interferes with the operation of the other,

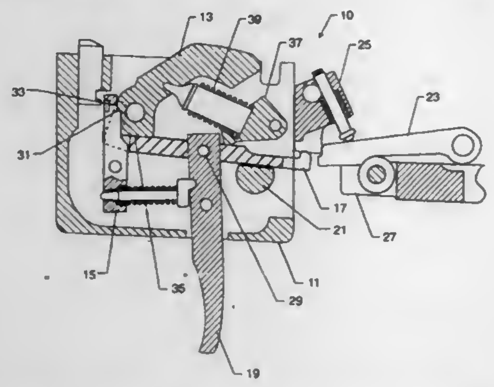
a capacitive load characteristic lamp, and

passive/opaque material in the form of alpha-numeric characters which form a cumulative character unit and which are visually surrounded and back-lighted by said capacitive load characteristic lamp for maximum legibility.

5,709,046
SINGLE TRIGGER DUAL FIRING MECHANISM

Michael M. Canaday, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1995, Ser. No. 514,883
Int. Cl.^{6} F41A *19/21*
U.S. Cl. 42—69.01 **6 Claims**



1. A single trigger dual firing mechanism comprising:

a trigger housing frame adapted for attachment to a spotter rifle;

a trigger rotatably mounted within said housing;

a connector link pivotally mounted to said trigger, said trigger having a first lug at a first end for engagement of a primary sear and a second lug at a second end for engagement of a secondary sear;

a selector bar rotatably mounted on said housing frame and engaging said connector link with an eccentric cam section thereby providing a position central of said connector link;

a primary sear pivotally attached to said trigger housing frame and engaging said connector link;

a primary hammer rotatably connected to said trigger housing frame and engaging said primary sear;

a primary hammer spring connected to said hammer on a first end and having a second end for connection to a connector link spring lever;

a connector link spring lever engaging and operated by said primary hammer spring and further engaging said connector link thereby providing a downward impetus to the second end of said connector link and urging said link against the selector bar;

a secondary sear prop rotatably attached to said trigger housing frame and engaging the second end of said connector link;

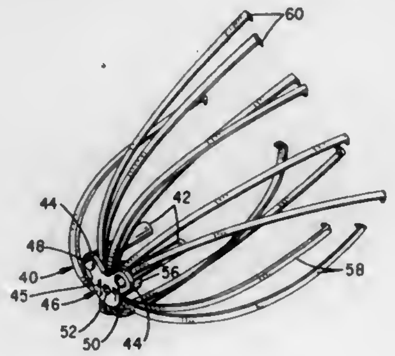
a secondary sear rotatably outside said housing frame and engaging said sear prop; and

a secondary hammer slidably mounted outside said housing and engaging said secondary sear.

5,709,047
WRAPPED LURE SKIRTS AND METHOD OF MANUFACTURE

Donald J. Link, 1053 Legion St., Shakopee, Minn. 55379

Filed Feb. 15, 1996, Ser. No. 602,040
Int. Cl.^{6} A01K *85/00*
U.S. Cl. 43—42.31 **18 Claims**



1. A lure dressing comprising:

a) rattle means;

b) an elastomer core having a head and a body, wherein a first bore extends through said head and body, wherein said head radially projects from said body and includes a bore which is displaced form said body, and wherein said rattle means is attached to the displaced bore of said head; and

c) an elastomer skirt having a border and a plurality of filaments which extend from said border and wherein said border is wrapped about said body, whereby said filaments and said rattle means are displaced from said body add undulate with movement of the dressing.

5,709,048
NATURAL SAVORY AND UMAMI FLAVORING MATERIALS FROM DEHYDRATED MUSHROOM

R. Barry Holtz, 3808 Serenity Hills Dr., Vacaville, Calif. 95688

Division of Ser. No. 251,470, Jun. 1, 1994, Pat. No. 5,522,175. This application Dec. 21, 1995, Ser. No. 576,189
Int. Cl.^{6} A01G *1/04;* A01H *3/04*
U.S. Cl. 47—1.1 **8 Claims**

1. A nutrient supplement for growing mushrooms with an enhanced lipid content, said nutrient supplement comprising:

a particulate, non-nutritive, hydrophobic matrix having a particle size of between 20 and 80 standard mesh, said particle selected from the group consisting of vermiculite, perlite, microcrystalline cellulose, and diatomaceous earth;

a polyunsaturated fat; and

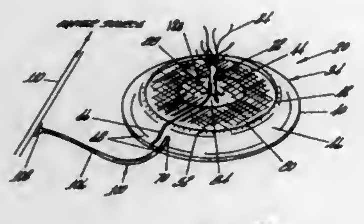
a food grade surfactant,

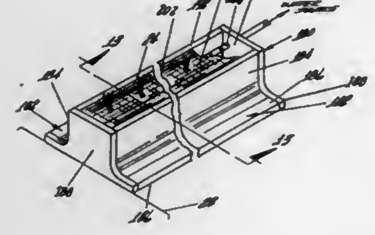
wherein said surfactant comprises between 1% and 3% by weight of said polyunsaturated fat, said polyunsaturated comprising between 30% and 45% by weight of said hydrophobic matrix.

5,709,049
GROUND COVER AND METHOD OF MAKING

Donald L. Baird, P.O. Box 146, Los Olivos, Calif. 93441

Filed Apr. 22, 1996, Ser. No. 635,682
Int. Cl.^{6} A01G *17/00*
U.S. Cl. 47—27 **31 Claims**





1. An enclosure for covering undesired vegetation around objects upstanding from the ground, said objects including both desired plants as well as inmate objects and said enclosure being adapted to promote the growth of a plant when it is the object, comprising:

a water and light pervious, vegetation impervious membrane adapted to receive the object upstanding from the ground through the membrane with said membrane circumferentially engaging the object, and

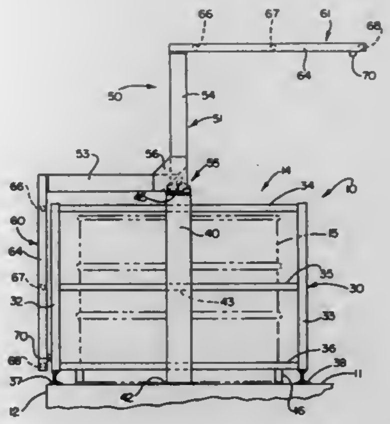
means engageable with the ground adjacent to the object for supporting the membrane in spaced relation to the ground so that the object, the membrane and the ground form a chamber around the base of the object in which the temperature and humidity are elevated thereby to promote plant growth in the ground area under the membrane while obscuring undesired vegetation growing from said ground area upwardly around the object.

5,709,050
MEZZANINE SAFETY GATE

John C. Benko, Westlake, Ohio, assignor to Benko Engineering, Inc., Sheffield Village, Ohio

Filed Nov. 26, 1996, Ser. No. 756,059
Int. Cl.^{6} E05C *7/06*
U.S. Cl. 49—109 **17 Claims**

1. A platform safety gate positioned along an edge of an elevated platform at a staging area, spaced apart side railings extending normal to said edge, a spacing of the side railings generally corresponding to that of the staging area, an M-shaped gate assembly spanning the side railings and having two gates extending substantially at right angles to each other interconnected by a right angle center V-frame having legs meeting at a vertex, the vertex of the V-frame being pivoted about a pivot centered and above the

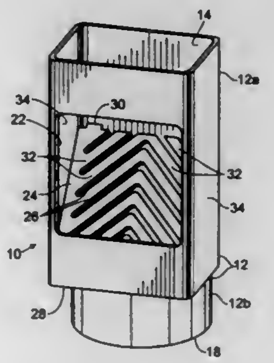


side rails so that said gates close alternate ends of said side rails as said gate assembly is pivoted.

5,709,051
DEBRIS REMOVAL DEVICE FOR RAIN GUTTER DOWNSPOUTS

Robert R. Mazziotti, 30470 Seely La., Eugene, Oreg. 97405

Filed Nov. 25, 1996, Ser. No. 758,186
Int. Cl.^{6} E04D *13/076*
U.S. Cl. 52—12 **4 Claims**



1. A debris removal device for rain gutter downspouts, said device comprising:

(a) an elongate substantially tubular housing having a first end and a second end with a substantially tubular wall therebetween;

(b) a first opening formed in said first end, a second opening formed in said second end, and a third opening formed in said tubular wall between said first end and said second end;

(c) a partition, having apertures formed therein, extending generally transversely within said tubular housing in a direction of inclination extending toward said second end and away from said first end and converging toward said third opening so as to divert debris, entering said tubular housing through said first opening, out said third opening while enabling rainwater associated with said debris to pass through said apertures and out said second opening; and

(d) said partition having elongate water flow guides which diverge in said direction of inclination transversely toward portions of said tubular wall located on opposite sides of said third opening.

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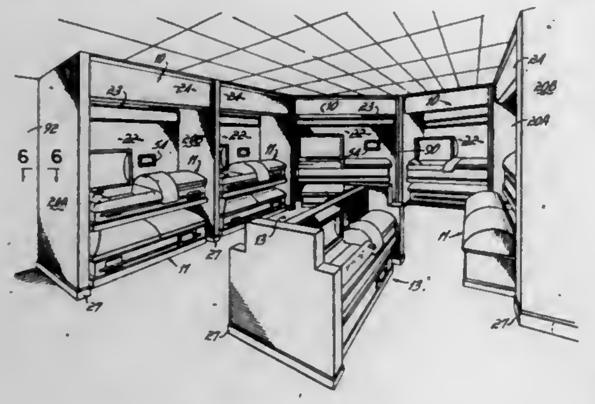
5,709,052
MODULAR CASKET DISPLAY SYSTEM

Lajos L. Szabo, Sr.; Lajos L. Szabo, Jr., both of Columbus, Ohio; Alton F. Doody, New Orleans, La., and Dennis J. Riga, New Albany, Ohio, assignors to Batesville Casket Company, Inc., Batesville, Ind.

Continuation of Ser. No. 388,528, Feb. 14, 1995, Pat. No. 5,524,394, which is a division of Ser. No. 25,075, Mar. 2, 1993, Pat. No. 5,405,017. This application May 26, 1995, Ser. No. 452,073

Int. Cl.^{6} A47F *10/00;* **A61G** *17/00*

U.S. Cl. 52—36.1 **14 Claims**



1. A casket display comprising:
- two vertical, parallel, spaced wing walls having vertical rear and front edges;
- a vertical back wall spanning between said rear edges of said wing walls; and
- a two-tiered rack for supporting an upper and a lower casket, said rack being mounted between and free of said wing walls, said rack including a lower movable support permitting the lower casket to be moved out from under the upper casket and opened for display;
- said wing walls being adapted to be positioned in close proximity to the ends of the upper and lower caskets supported on said two-tiered rack to thereby define, with said back wall, an alcove for containing said two-tiered support and the caskets therein.

5,709,053
PANEL FOR CONSTITUTING SOUND INSULATING WALL

Hideyuki Kuroda, Kanagawa, Japan, assignor to Zeon Kasei Co., Ltd, Tokyo, Japan

PCT No. PCT/JP95/00957, § 371 Date Nov. 21, 1996, § 102(e) Date Nov. 21, 1996, PCT Pub. No. WO95/32496, PCT Pub. Date Dec. 30, 1995

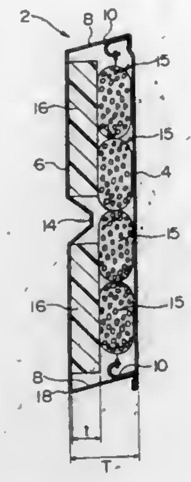
PCT Filed May 18, 1995, Ser. No. 737,594

Claims priority, application Japan, May 23, 1994, 6-108302

Int. Cl.^{6} E04B *1/82*

U.S. Cl. 52—145 **14 Claims**

1. A panel for constituting sound insulating wall, comprising:
- a front plate,
- a rear plate, and
- a sound absorbing member attached between the front plate and the rear plate,
- said sound absorbing member substantially constituted by shreds of a plastic coated with a magnetic material.



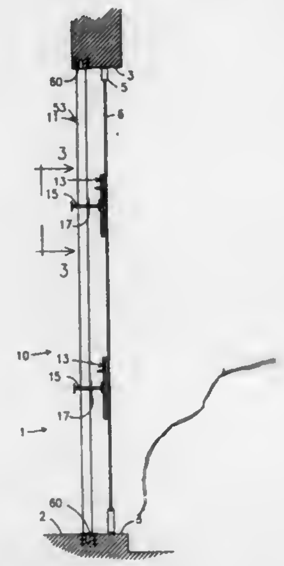
5,709,054
HIGH WIND WINDOW BRACE

Harold J. McGillivray, 1108 Gulf Blvd., Ste. 202, Indian Rocks Beach, Fla. 33783

Continuation-in-part of Ser. No. 529,457, Sep. 18, 1995, abandoned. This application Jan. 17, 1997, Ser. No. 785,652

Int. Cl.^{6} E04H *9/14;* **E06B** *5/12*

U.S. Cl. 52—167.1 **20 Claims**



1. A high wind window brace, comprising:
- a) a vertically disposed post adapted to be fixedly mounted adjacent a window pane;
- b) a pad having a rear wall, and having peripheral walls engageable with a window pane, said rear wall and peripheral walls adapted to define, with a window pane, an enclosed chamber;
- c) clamping means between said post and pad for clamping said pad peripheral walls into firm engagement with a window pane; and
- d) evacuation means for at least partially evacuating air within said chamber to cause a suction force to be applied enhancing adherence of said pad to a window pane.

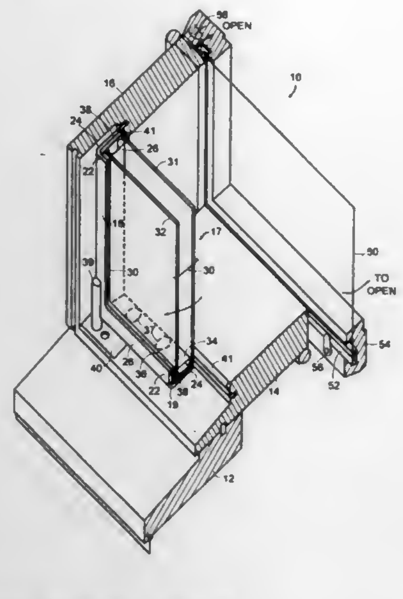
5,709,055
WINDOW STRUCTURE

Jonathan Levi, 170 Rawson Rd., Brookline, Mass. 02146

Filed May 8, 1995, Ser. No. 436,517

Int. Cl.^{6} E06B *1/04*

U.S. Cl. 52—204 **11 Claims**



1. A window structure comprising:
- A. a rectangular sash having an exterior and interior side, and an L-shaped cross section formed by a first sash member having a first interior face and a second sash member having a second interior face, wherein said first and second sash members run along the entire perimeter of said sash, and said second member is formed at a right angle to said first member and has a width dimension which extends inward to said interior from said face of said first sash member;
- B. glazing adhesive applied to an interior face of said first member;
- C. a window lite seated in said sash, and comprising
  - C1. a first pane of glass having an exterior face and an interior face, and a perimeter edge, wherein said exterior face flushly contacts said glazing material, and said perimeter edges of said first pane are spaced from said second interior face;
  - C2. a spacer;
  - C3. a second pane of glass mounted in parallel to said first pane of glass and separated from said first pane by said spacer, wherein perimeter edges of said second pane are spaced a distance from said second interior face;
- D. a sealant applied between said perimeter edges of said first and second panes and said face of said second sash member

wherein, said glazing adhesive and said silicone sealant retain said window lite in said sash.

5,709,056
CLADDING UNITS FOR BUILDING AND SEAL STRUCTURE FOR JOINT THEREOF

Masahiro Matsuyama, Omiya, and Fumihiro Yano, Toyama, both of Japan, assignors to YKK Corporation, Tokyo, Japan

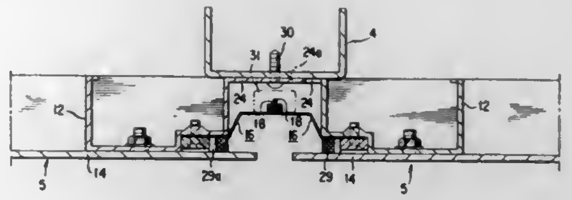
Filed Jul. 18, 1996, Ser. No. 682,993

Claims priority, application Japan, Jul. 21, 1995, 7-185569; Feb. 28, 1996, 8-041760

Int. Cl.^{6} E04B *2/96*

U.S. Cl. 52—235 **11 Claims**

3. A sealed cruciform joint for a cladding structure for a building, said cruciform joint comprising:
- first, second, third and fourth cladding units, each having a framework with a vertical and a lateral framework portion interconnected to define first, second, third and fourth corners, and a face member attached to one side face of said framework;
- waterproof slide fastener stringers having waterproof tapes, one each attached to said lateral portions and vertical portions of said cladding units sealingly forming first, second, third and fourth joined corner parts protruding outwardly from said corners, and engaging parts, one each along one longitudinal edge of said waterproof tapes;
- first, second, third and fourth notches formed in said first, second, third and fourth joined corner parts interrupting the continuity of said engaging parts;
- said first, second, third and fourth cladding units being arranged having their respective of said corners adjacent and spaced from one another, said cladding units in combination defining a lateral joint between adjacent of said lateral portions and a vertical joint between adjacent of said vertical portions;
- a lateral seal formed by coupling said engaging parts of said fastener stringers of said lateral joint;
- a vertical seal formed by coupling said engaging parts of said fastener stringers of said vertical joint;
- an opening defined by said notches; and
- a waterproof sheet sealingly disposed over said opening.



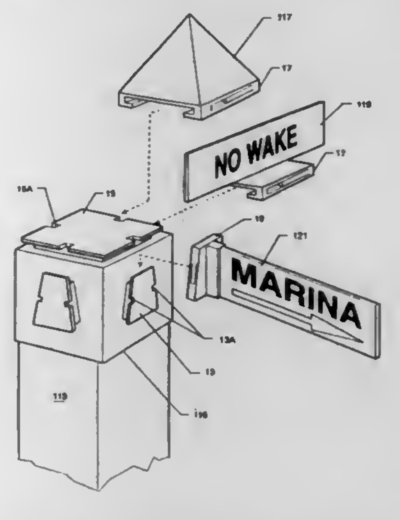
5,709,057
POST CAP AND ACCESSORY ASSEMBLY

Anderson Forbes Johnson, Jr., HCR-1, Box 445A, Deltaville, Va. 23042; Michael Lee Johnson, 3705 Genesee Ct., Virginia Beach, Va. 23456-5708, and William Eric Johnson, Sr., General Delivery, Bavon, Va. 23013

Filed Jul. 27, 1995, Ser. No. 508,160

Int. Cl.^{6} E04H *12/32*

U.S. Cl. 52—301 **8 Claims**



1. A protective cap and accessory assembly for posts and pilings comprising;
- a protective cap having a plurality of winged mounting pedestals, said winged mounting pedestals comprising:
  - a top-mounted square-sided pedestal having wings on each of the sides, and
  - a plurality of side-mounted winged pedestals, and
  - a plurality of accessory mounting bases having a pair of grooves, and

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a plurality of accessories attached to said mounting bases.

5,709,058
WALL CONSTRUCTION SYSTEM EMPLOYING COVERING TILES

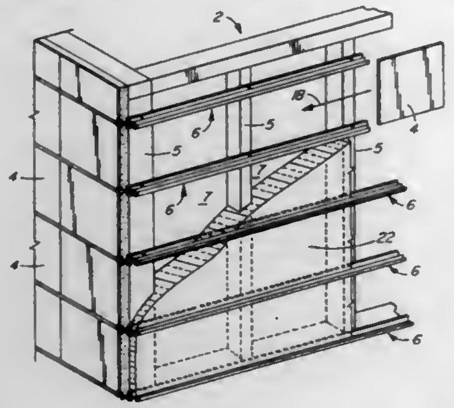
William S. Shaw, 4247 Baker Place, Prince George, B.C., Canada, V1H 1A7

Filed Sep. 15, 1995, Ser. No. 529,226

Claims priority, application Canada, Sep. 15, 1994, 2132168

Int. Cl.^{6} E04B *2/28*

U.S. Cl. 52—404.1 **11 Claims**



1. A construction unit for forming an exterior surface on a support framework comprising:

at least one covering unit for forming a finishing layer on the support framework;

spacing and retaining means attachable to the support framework comprising elongate mounting brackets having a mounting flange for attachment to the support framework and a spacing web extending outwardly from the mounting flange terminating in at least one retaining channel slidably receiving the at least one covering unit and to position the at least one covering unit at a distance from the support framework to define an internal cavity between the support framework and the at least one covering unit; and

adhesive, filler material introduced into the internal cavity to bind together the support framework, the at least one covering unit and the spacing and retaining means to form a consolidated construction unit.

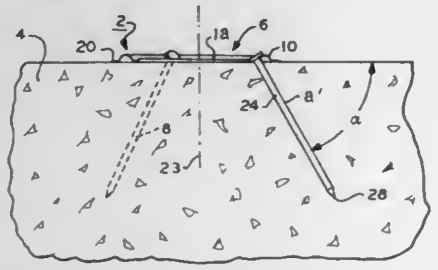
5,709,059
FASTENER FOR CEMENTITIOUS SUBSTRATE

Colin Murphy; Robert Mills, both of Seattle; Mark Reichlin, Marysville; Steven Bunn, and Charles Phillips, both of Seattle, all of Wash., assignors to Exterior Research & Design, LLC, Seattle, Wash.

Filed Apr. 3, 1996, Ser. No. 627,029

Int. Cl.^{6} F16B *15/00*

U.S. Cl. 52—410 **24 Claims**



1. A fastener for attaching and holding a membrane to a cementitious roof deck substrate material comprising:

a stress plate having an annular periphery subtending a given area and including an outer peripheral annular region, a thickness and opposing broad surfaces for attaching said membrane to the roof deck; and

a plurality of discrete elongated shank members each having a length of a given extent defining a longitudinal axis and having proximal and distal ends, said distal ends for penetration into said substrate material, said members being secured to and depending from the stress plate at said proximal ends in said annular peripheral region, said members diverging away from one another for their entire given extent in a direction away from the stress plate annular periphery so that a major portion of each said shank members extends beyond the subtended given area beyond said stress plate annular periphery.

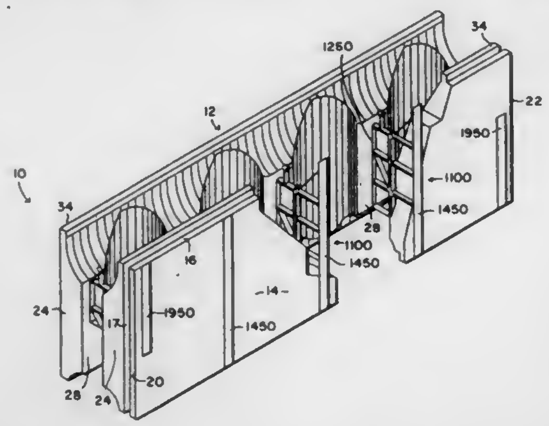
5,709,060
CONCRETE FORMING SYSTEM WITH BRACE TIES

Jamieson R. Vaughan, Omaha; Jay D. Williamson, Papillion, both of Nebr., and Kenneth M. Blom, Kansas City, Mo., assignors to I.S.M., Inc., Paola, Kans.

Continuation-in-part of Ser. No. 334,146, Nov. 4, 1994. This application Mar. 30, 1995, Ser. No. 413,417

Int. Cl.^{6} E04B *2/34;2/40*

U.S. Cl. 52—426 **11 Claims**



1. A form tie for maintaining a desired spatial relationship between first and second facing sidewalls of a concrete form comprising:

first and second end trusses with an intermediate web therebetween, each end truss adapted to lie within a respective sidewall and comprising:

first and second laterally spaced-apart vertical struts, said first strut having upper and lower ends and adapted to vertically extend between upper and lower edges of an exterior surface of a sidewall and beyond an upper and lower end of said second strut, said second strut adapted to vertically extend between upper and lower edges of an interior surface of a sidewall of a panel;

a first pair of vertically spaced-apart horizontal struts extending between said upper and lower ends of said second strut and said first vertical strut to form a primary rectangular truss in combination with said vertical struts, said upper and lower ends of said first strut extending beyond said rectangular truss;

a second pair of vertically spaced-apart horizontal struts disposed between said struts of said first pair of horizontal struts and extending between said first and second vertical struts to form within said primary rectangular truss a pair of secondary upper and lower rectangular trusses with an intermediate truss therebetween;

at least one diagonal strut extending from each upper and lower end of said first strut to each upper and lower end of said second strut;

said web intermediate said first and second end trusses and adapted to extend between facing interior surfaces of first and second sidewalls of a form and comprising:

at least a first pair of vertically spaced-apart horizontal struts extending between said second struts of each end truss to form at least one rectangular truss intermediate said first and second primary end trusses;

a second pair of vertically spaced-apart horizontal struts disposed between said struts of said first pair of horizontal web struts and extending between said vertical second struts to form a pair of secondary upper and lower rectangular trusses with an intermediate truss therebetween;

each end truss being adapted to lie within a respective sidewall with said web adapted to extend between interior surfaces of the facing sidewalls of the form, whereby said tie maintains the sidewalls in place.

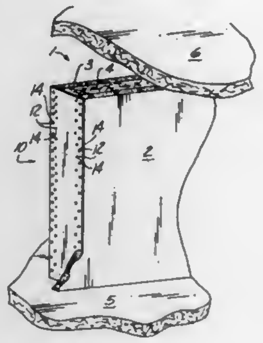
5,709,061
STRUCTURAL CONNECTOR FOR A SANDWICH CONSTRUCTION UNIT

Douglas D. Dietrich, Ankeny, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 266,528, Jun. 28, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 663,852

Int. Cl.^{6} F04B *2/00*

U.S. Cl. 52—426 **20 Claims**



1. In an insulated sandwich construction unit, including a first concrete panel disposed to extend between a floor member and a ceiling member, a second concrete panel disposed in parallel spaced relationship to the first panel to extend between the floor and ceiling members, and insulating material disposed intermediate the first and second panels, the improvement comprising:

a continuous, rigid, one piece, vertical, load-transferring, structural connector formed of a continuous pultruded resin impregnated glass fiber material dissimilar to the concrete panels and having a low heat conductivity extending perpendicular to the first and second concrete panels the entire distance between the floor and ceiling structural members, the structural connector including a first edge attached to one end of the first panel and a second opposite edge attached to one end of the second panel; and

means for attaching the first and second edges of the structural connector to the said one ends of the first and second panels.

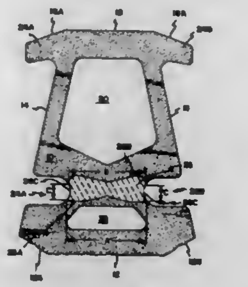
5,709,062
COMPOSITE MASONRY BLOCK

Michael E. Woolford, Lake Elmo, Minn., assignor to Anchor Wall Systems, Inc., Brooklyn Park, Minn.

Continuation of Ser. No. 434,779, May 4, 1995, which is a division of Ser. No. 130,298, Oct. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 56,986, May 4, 1993, abandoned, which is a continuation of Ser. No. 957,598, Oct. 6, 1992, abandoned. This application Jul. 15, 1996, Ser. No. 680,919

Int. Cl.^{6} E04C *1/00*

U.S. Cl. 52—604 **30 Claims**



1. A retaining wall block comprising:

a front portion including a decorative front surface;

a tail portion including a rear surface;

a pair of opposed sides extending from the front surface to the tail portion and converging toward the tail portion;

opposed top and bottom surfaces;

one or more locator protrusions integrally formed on the top or bottom surface, each locator protrusion comprising at least one curved side surface; and

one or more locator walls formed in said block, each locator wall extending from the top surface of the block to the bottom surface of the block, and each locator wall being adapted to mate with the curved side surface of a locator protrusion on a block in an adjacent course, when a plurality of said blocks are stacked in courses to form a wall structure.

5,709,063
TABLET PACKING MACHINE

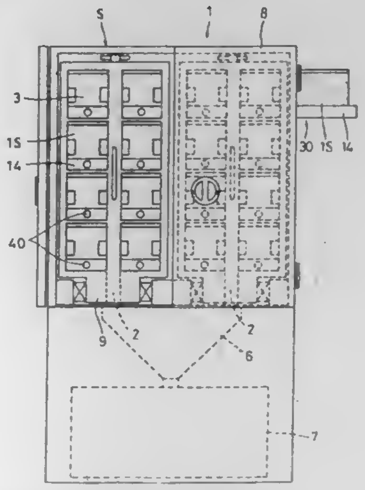
Shoji Yuyama; Hiroshi Nose, and Takaaki Murakami, all of Toyonaka, Japan, assignors to Kabushiki Kaisha Yuyama Seisakusho, Toyonaka, Japan

Filed Aug. 31, 1995, Ser. No. 522,490

Claims priority, application Japan, Sep. 1, 1994, 6-208787; Oct. 13, 1994, 6-248055

Int. Cl.^{6} B65B *35/54*

U.S. Cl. 53—154 **12 Claims**



1. A tablet packing machine comprising:

a plurality of primary tablet feeders;

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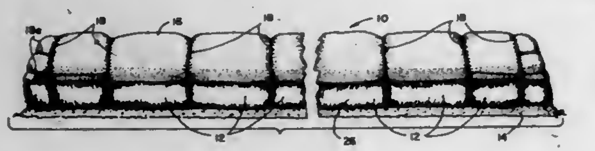
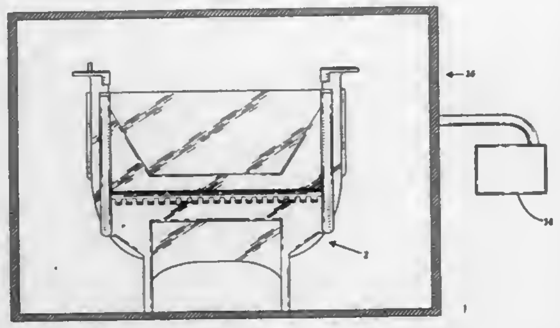
a plurality of vertically extending discharge channels communicating with said plurality of primary tablet feeders, respectively;
a plurality of backup tablet feeders;
a plurality of backup discharge channels communicating with said plurality of backup tablet feeders, respectively;
a hopper disposed below said plurality of discharge channels and said plurality of backup discharge channels for receiving tablets from said plurality of primary tablet feeders and said plurality of backup feeders;
a packing device communicating with an outlet portion of said hopper; and
a control device operatively connected to said plurality of primary tablet feeders and said plurality of backup tablet feeders such that, upon depletion of a predetermined amount of tablets in one of said primary tablet feeders, said control device automatically deactivates one of said primary tablet feeders and activates a corresponding one of said backup feeders.

5,709,064
METHOD AND DEVICE FOR COVERING CROP BALES
Denny M. Swartz, Star Rte., Box 29, Reno, Ohio 45773
Filed Sep. 27, 1996, Ser. No. 720,409
Int. Cl.⁶ B65B *11/02;67/00;* **B65D** *71/00;* **E04D** *1/34*
U.S. Cl. 53—399 **24 Claims**



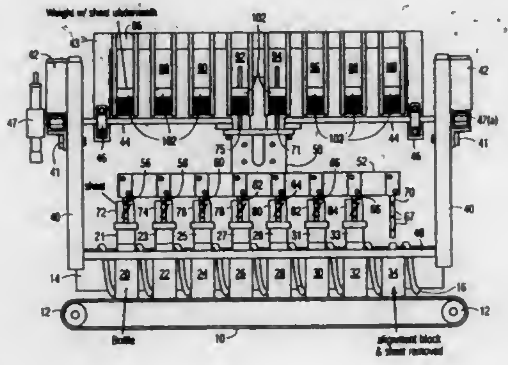
10. A method of covering bales of crop material with waterproof sheet material comprising:
providing an elongated raised mound of earthen material on the surface of the ground;
placing heavy tie strings transversely across the earthen mound near each end thereof;
placing a row of cylindrical bales of crop material in end to end relationship on the earthen mound;
laying a flexible waterproof cover on top of the bales to cover at least the top half of the bales along the entire length of the row and extending down over outer ends of the endmost bales in each row to cover at least the top half of the ends;
bringing the heavy tie strings over the cover material, and tying the ties strings in place to retain the cover on the bales;
inserting strands of baling twine under the bales at various spaced locations along the length of the row and bringing the strands of baling twine over the top of the cover; and
tying the strands of baling twine to further retain the cover in position on top of the bales.

5,709,065
DESICCANT SUBSTRATE PACKAGE
Michael Krause, Colorado Springs, Colo., assignor to Empak, Inc., Chanhassen, Minn.
Filed Jul. 31, 1996, Ser. No. 688,723
Int. Cl.⁶ B65B *29/00;31/02;63/08*
U.S. Cl. 53—400 **20 Claims**



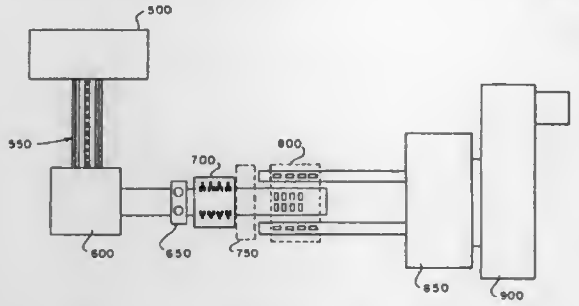
12. A method for packaging at least one substrate of the type used in the manufacture of semiconductors and other electronic devices comprising the steps of:
(a) placing the substrates to be packaged into a cassette, said cassette made at least in part from a hydrophilic plastic material;
(b) exposing said cassette to a drying environment to reduce the moisture content of the hydrophilic plastic material;
(c) providing a sealed, moisture-proof barrier around the cassette and the substrates contained therein so that moisture inside the barrier is absorbed by the hydrophilic plastic material from which the cassette is made and moisture outside the barrier does not penetrate the barrier.

5,709,066
INSERTER APPARATUS
Rodney R. Prochaska, Montgomery; David N. Segner, St. Bonifacius, and Scott D. Docken, Norwood, all of Minn., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 20, 1996, Ser. No. 697,186
Int. Cl.⁶ B65B *63/04*
U.S. Cl. 53—429 **13 Claims**



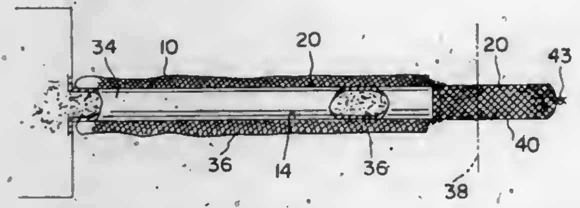
1. A method for inserting sheet material into containers comprising:
aligning on a support a plurality of containers having a body and a neck and a relatively narrow upper opening on said neck, with a container opening on said neck facing upwardly;
supporting at least two opposite surfaces of said containers;
providing a plurality of magazines, each holding a plurality of sheet material;
moving a picker arm into contact with each magazine, each picker arm removing a sheet material from a magazine;
stabilizing said plurality of containers by contacting the neck of said containers with a neck and body stabilizer guide moveable into and out of contact with said containers, said stabilizer guide having an upper sheet material shaping portion;
further moving a picker arm into alignment with each said container openings;
passing said sheet material through the upper sheet material shaping portion of said neck and body stabilizer guide to form said sheet material into an at least partially rounded form and inserting each sheet material into one of said containers.

5,709,067
METHOD FOR MAKING STERILE SUTURE PACKAGES
Clifford A. Dey, San Angelo, Tex.; Robert J. Cerwin, Pipersville, Pa.; J. Mark Findlay, San Angelo, Tex.; Konstantin K. Ivanov, Bound Brook, N.J.; Robert Nuñez, Asbury, N.J.; Donald Pompel, Montville, N.J.; William R. Reinhardt, Belle Mead, N.J.; Mehmet Reyhan, E. Windsor, N.J., and David A. Szabo, Branchburg, N.J., assignors to Ethicon, Inc., Summerville, N.J.
Division of Ser. No. 624,971, Mar. 29, 1996, Pat. No. 5,623,810. This application Jan. 14, 1997, Ser. No. 783,624
Int. Cl.⁶ B65B *57/00*
U.S. Cl. 53—430 **8 Claims**



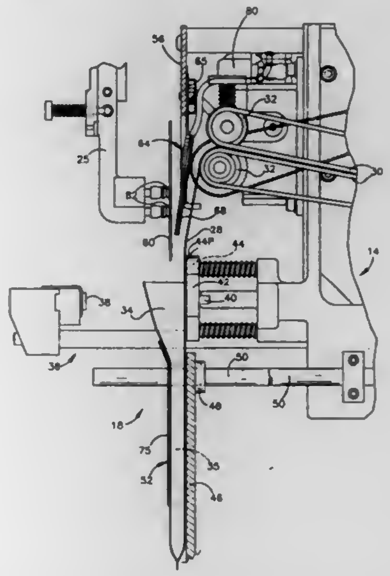
1. A method for processing sterile suture packages, comprising:
a. forming a plurality of packages, each having a needle-suture assembly sealed therein in a sterile condition;
b. transporting the packages on a first conveyor belt through an automated optical inspection station for detecting defects in the integrity of the seal in each package as it passes over a video camera;
c. flipping the packages upside down to permit inspection by human operators of the bottom of each package at a subsequent station down line from the automated optical inspection station;
d. following inspection by human operators, moving the packages to a second conveyor belt and inverting the packages to a top-side-up orientation on the second conveyor belt; and
e. moving the packages on the second conveyor belt to a downstream station for loading the packages into shipping cartons.

5,709,068
PACKAGING APPARATUS AND PROCESS
Peter G. Bylenga, Greenville, S.C., assignor to PCM Packaging Concepts & Materials, Inc., Greenville, S.C.
Division of Ser. No. 591,114, Jan. 25, 1996, Pat. No. 5,634,317, which is a continuation of Ser. No. 344,954, Nov. 23, 1994, abandoned. This application Jan. 28, 1997, Ser. No. 789,298
Int. Cl.⁶ B65B *11/58*
U.S. Cl. 53—449 **9 Claims**



1. A process for producing a packaging apparatus comprising the steps of:
providing a tubular lining material having at least one open end and defining a hollow space therein;
placing a casing material circumferentially around a portion of the lining material; and
folding the lining material outwardly at an open end and pulling it toward an opposite end of the lining material thereby forming an inner and an outer layer of the lining material;
whereby the casing material is positioned substantially between the inner layer and the outer layer of the lining material;
passing a product through the hollow space and pulling the casing material from between the inner layer and outer layer of the lining material so as to surround the product as the product passes through the hollow space.

5,709,069
PACKAGING MACHINE AND METHOD
William M. Cronauer, Tallmadge, Ohio, assignor to Automated Packaging Systems, Inc., Streetsboro, Ohio
Filed Feb. 20, 1997, Ser. No. 804,125
Int. Cl.⁶ B65B *39/04;43/12;43/26;43/36*
U.S. Cl. 53—459 **30 Claims**



1. A method of packaging thin products utilizing a chain of interconnected preopened bags comprising:
a) feeding an end bag of the chain closed end first into an elongate, loading station delineating, tunnel;
b) as the end bag is being fed into the tunnel to position the end bag in the station establishing a flowing film of air between a back of the end bag and a back of the tunnel;
c) continuing the flow of air in the film of air to maintain the back of the end bag and tunnel in spaced relationship and concurrently provide clearance between fronts of the bag and tunnel;
d) opening the end bag sufficiently to enable insertion of a product as the bag is positioned in the station; and,
e) inserting a thin product into the opened end bag.

5,709,070
COMPOSITE STIRRUP
Martin W. Peters, HCR1 Box 25C, Barksdale, Tex. 78828
Filed May 26, 1995, Ser. No. 451,903
Int. Cl.⁶ B68C *3/00*
U.S. Cl. 54—47 **7 Claims**
1. A composite stirrup, comprising:
a first pair of veneers secured to one another and having a U-shape; and,

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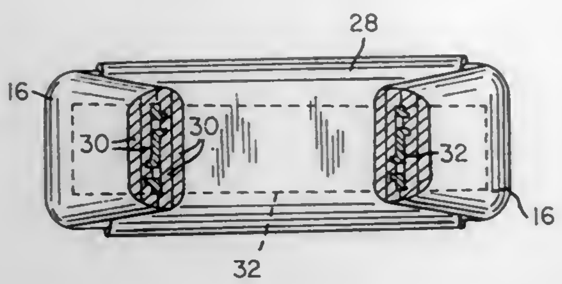


a metallic strap embedded between said first pair of veneers, said metallic strap including a plurality of extrusions extending into each of said first pair of veneers.

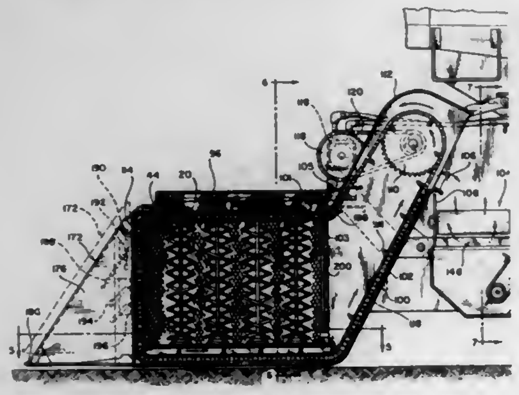
5,709,071
CHILI HARVESTER WITH ADJUSTABLE SPIRAL PICKER UNITS

Robert O. Cosimati, Las Cruces, N. Mex., assignor to Crown Farming Systems Inc., Las Cruces, N. Mex.

Filed Jan. 29, 1996, Ser. No. 593,082

Int. Cl.^{6} A01D *45/00*

U.S. Cl. 56—327.1 **15 Claims**



1. A picker unit for removing pod products from row plants by advancing along a row of plants, said unit comprising a pair of generally parallel, laterally spaced, vertically disposed, spirally coiled, pod removing devices, a frame rotatably supporting said pod removing devices, a drive system rotatably driving said pod removing devices in counterrotating directions, adjustment means interconnecting the pod removing devices and frame for simultaneous and equal lateral movement of upper and lower ends and front and rearward ends of each pod removing device and a conveyor oriented on the frame outwardly of each pod removing device receiving pods removed from the plants and conveying them away from the picker unit.

5,709,072
METHOD OF PRODUCING COLORED SHORT STAPLE FIBER YARN OF COTTON AND/OR SYNTHETICS

Klaus Hasenack; Peter Krummenast; Harald Kirchner, and Markus Spieker, all of Wuppertal, Germany, assignors to "WFG" Colcoton-Garn Hasenack & Co., Wuppertal, Germany

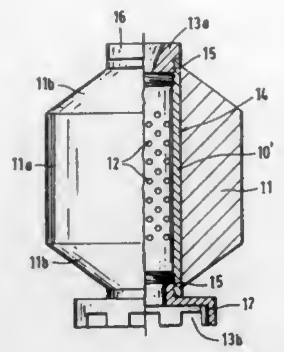
Filed Mar. 8, 1996, Ser. No. 612,724

Claims priority, application Germany, Mar. 19, 1995, 195 08 633.3

Int. Cl.^{6} D01H *7/24;1/04*

U.S. Cl. 57—67 **4 Claims**

1. A method of producing colored short staple-fiber yarn, comprising the steps of:



(a) providing a sliver of at least one fiber selected from the group which consists of short staple fiber cotton, synthetics or blends thereof;

(b) flyer-winding said sliver into a flyer roving and winding the roving in a roving body with a uniform turn density on a perforated dyeing sleeve;

(c) dyeing said roving body by passing a dyestuff through said roving body and perforations in said sleeve; and

(d) directly following the dyeing of said roving body spinning the flyer roving into a yarn on a spinning machine.

5,709,073
STEEL CORDS FOR THE REINFORCEMENT OF RUBBER ARTICLES HAVING A WRAPPING CORD

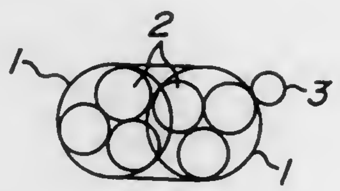
Shuichi Onuma, Ohtawara; Naohiko Obana, Kuroiso; Kazuto Fujita, Kodaira, and Motonori Bundo, Higashimurayama, all of Japan, assignors to Bridgestone Metalpha Corporation, Tokyo, Japan

Continuation of Ser. No. 359,634, Dec. 20, 1994, Pat. No. 5,605,036. This application Sep. 13, 1996, Ser. No. 713,642

Claims priority, application Japan, Dec. 24, 1993, 5-328737

Int. Cl.^{6} D02G *3/36*

U.S. Cl. 57—212 **11 Claims**



3. A steel cord for use in the reinforcement of pneumatic tires comprising: a bundle formed by contacting a plurality of strands with each other and arranging them in the same plane, each of said strands obtained by twisting 3 or more steel filaments and having a twisting pitch in the range of 3.0 to 30.0 mm; and a single wrapping filament helically wound around and immediately adjacent to the bundle at a twisting pitch in the range of 2.0 to 15.0 mm.

5,709,074
OPEN END SPINNING ROLLER WITH EXCHANGEABLE COMBING RING

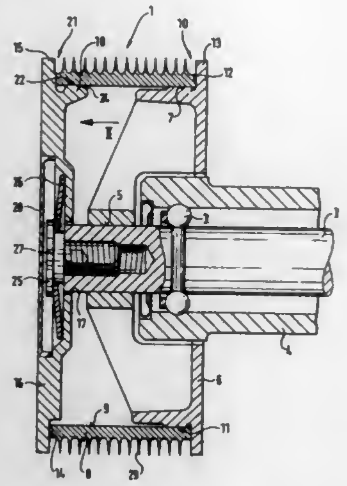
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 73337 Bad Überkingen, Germany, assignor to Fritz Stahlecker, Bad Überkingen, and Hans Stahlecker, Süssen, both of Germany

Filed Aug. 23, 1996, Ser. No. 700,928

Claims priority, application Germany, Aug. 30, 1995, 195 31 910.9

Int. Cl.^{6} D01H *4/00*

U.S. Cl. 57—408 **22 Claims**



1. An opening roller for an open-end spinning arrangement comprising a combing ring which is slipped onto a base body and supported between two axially opposed clamping surfaces, said combing ring being provided at its axial end faces with stopping surfaces arranged at the clamping surfaces, axial end areas of the inner circumference of the combing ring having centering surfaces, of which one centering surface is arranged at the base body and the other centering surfaces arranged at lid-like clamping member, said clamping member comprising one of the clamping surfaces and being centered radially with respect to the base body exclusively by the centering surface of the combing ring arranged thereat.

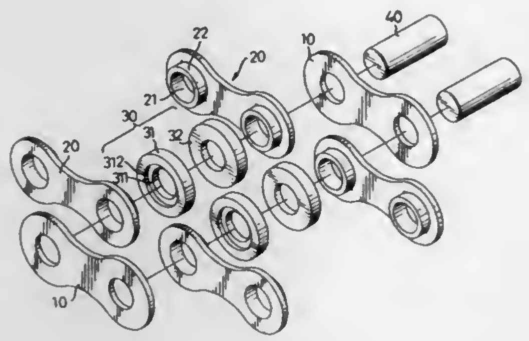
5,709,075
CHAIN

Chia-long Wu, No. 734, Chungshan Rd., Kuei Ren Hsiang, Tainan Hsien, Taiwan

Filed Jan. 23, 1997, Ser. No. 788,854

Int. Cl.^{6} F16G *13/06*

U.S. Cl. 59—4 **4 Claims**



1. A chain, comprising:

a pair of chain links;

a pair of side plates mounted between said chain links, each said side plate comprising a first hole and a flange around said first hole;

a roller consisting of a pair of rolling elements mounted between said side plates, each said rolling element comprising a second hole and a counterbore in communication with said second hole, said flanges being extended respectively into said counterbores; and

a rivet extending through the chain links, said first holes of said side plates, and said second holes of said rolling elements and being tightly fitted with said chain links and loosely fitted with said side plate and said rolling elements, said side plates and said rolling elements being pivotable relative to said rivet and said chain links.

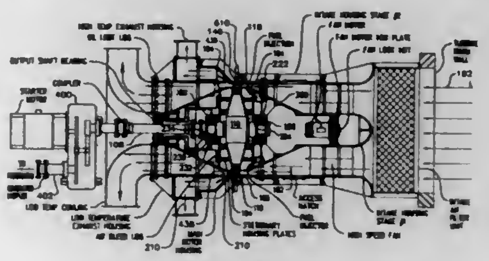
5,709,076
METHOD AND APPARATUS FOR POWER GENERATION USING ROTATING RAMJET WHICH COMPRESSES INLET AIR AND EXPANDS EXHAUST GAS AGAINST STATIONARY PERIPHERAL WALL

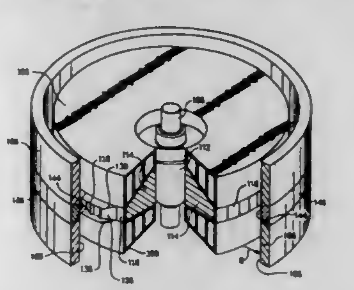
Shawn P. Lawlor, 7113 139th Pl. NE., Redmond, Wash. 98052

Continuation-in-part of Ser. No. 213,217, Mar. 14, 1994, which is a division of Ser. No. 945,228, Sep. 14, 1992, Pat. No. 5,372,005. This application Jun. 7, 1995, Ser. No. 480,663

Int. Cl.^{6} F02C *3/14*

U.S. Cl. 60—39.35 **45 Claims**





1. Apparatus for generation of power, said apparatus comprising:
(a) an air inlet for supply of air for combustion of fuel;
(b) a rotor having an axis of rotation, said rotor extending radially outward from said axis of rotation along to an outer extremity and adapted for rotation about said axis of rotation;
(c) a stationary peripheral wall positioned radially outward from said axis of rotation and very slightly radially outward from said outer extremity of said rotor;
(d) one or more ramjets, said one or more ramjets comprising
  (i) a rotating portion affixed at said outer extremity of said rotor, and
  (ii) a stationary peripheral wall portion,
wherein said rotating portion and said stationary peripheral wall portion of each of said one or more ramjets cooperate to compress therebetween a portion of said air to allow said one or more ramjets to oxidize fuel supplied thereto and to generate combustion gases and thereby develop thrust from said combustion gases to turn said rotor and to thereby effect rotary motion of a shaft extending through said axis of rotation.

18. A method of generating power, comprising:
(a) providing one or more thrust modules rotatably secured between a first, inboard housing and a second, stationary outboard housing;
(b) supplying an oxidizable fuel to said one or more thrust modules;

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(c) oxidizing said fuel in said one or more thrust modules to
  (i) generate combustion gases which escape therefrom, and to
  (ii) generate a motive force by thrust reaction of said escaping combustion gases from (A) said one or more thrust modules, and (B) at least a portion of said second, stationary outboard housing,
(d) propelling said one or more thrust modules at a velocity in excess of Mach 1.0 through a supplied air stream by way of said motive force, said one or more thrust modules further characterized in that each of said one or more thrust modules relies on at least a portion of said second, stationary outboard housing to assist in compression of a portion of said supplied air stream, as each of said one or more thrust modules passes adjacent to said second, outboard housing;
(e) turning an output shaft operatively connected to said one or more thrust modules;
(f) whereby power is provided at said output shaft.

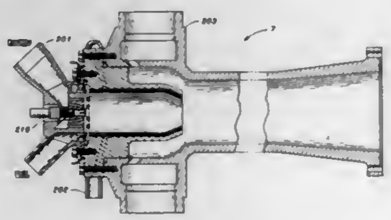
5,709,077
REDUCE POLLUTION HYDROCARBON COMBUSTION GAS GENERATOR

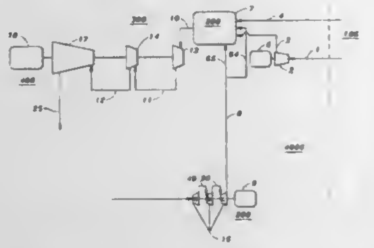
Rudi Beichel, Sacramento, Calif., assignor to Clean Energy Systems, Inc., Sacramento, Calif.

Division of Ser. No. 295,417, Aug. 25, 1994. This application Aug. 25, 1995, Ser. No. 479,928

Int. Cl.^{6} F02C *3/30*

U.S. Cl. 60—39.55 **1 Claim**





1. A low pollution gas generator comprising in combination:
a source of elevated pressure oxygen, free of nitrogen;
a source of elevated pressure fuel including compounds containing carbon and hydrogen, at least one of the compounds in the fuel including the element carbon;
a source of water, said source of water at least partially including water generated within said system as a product of combustion of the fuel with the oxygen;
a gas generator having a walled enclosure with a center line, said gas generator including at least one fuel inlet passing through a wall of said enclosure and coupled to said source of elevated pressure fuel, at least one oxygen inlet passing through said wall of said enclosure and coupled to said source of elevated pressure oxygen, a means to initiate combustion of said fuel within said generator, a means to combust the fuel with the oxygen to generate a gas including steam and carbon dioxide as products of combustion, at least one water flow inlet coupled to said source of water, said water flow inlet passing through said wall of said enclosure at a location on said wall of said enclosure spaced from said fuel inlet and said oxygen inlet, a mixing chamber oriented within said enclosure wherein products of combustion of the fuel and the oxygen mix with the water from said water flow inlet, and a discharge passing out of said enclosure for a mixture of both the gaseous products of combustion including steam and carbon dioxide produced within said enclosure from reaction of the fuel and the oxygen therein and gaseous phase water within said enclosure and originally provided from said water flow inlet;
wherein said fuel inlet and said oxygen inlet are located within an induction head portion of said enclosure, said induction head having a planar side facing said enclosure, said planar side supporting said fuel inlet and said oxygen inlet;
wherein said planar side of said induction head is perpendicular to a direction of fuel and oxygen flow into said enclosure;
wherein said enclosure includes at least three separate units including said induction head, an adapter block and said mixing chamber;
wherein said discharge is located in said mixing chamber of said enclosure at a location on said mixing chamber most distant from said induction head;
wherein said adapter block includes a hollow cylindrical shroud having a central axis aligned perpendicular to said planar side of said induction head in a position which corresponds with said center line of said enclosure, said cylindrical shroud having a first end adjacent said induction head and a second end opposite said first end, said second end located free from contact with said walls of said enclosure; and
wherein said shroud includes a hollow interior and an exterior surface facing away from said hollow interior, said fuel inlet and said oxygen inlet oriented within said hollow interior, said water inlet located outside of said hollow interior and adjacent said exterior surface of said shroud, said second end of said shroud having a tapered throat thereon, said tapered throat having a diameter less than a diameter of said first end of said cylindrical shroud adjacent said planar side of said induction head.

5,709,078

Patent Not Issued For This Number

5,709,079
DUAL METERING VALVE FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

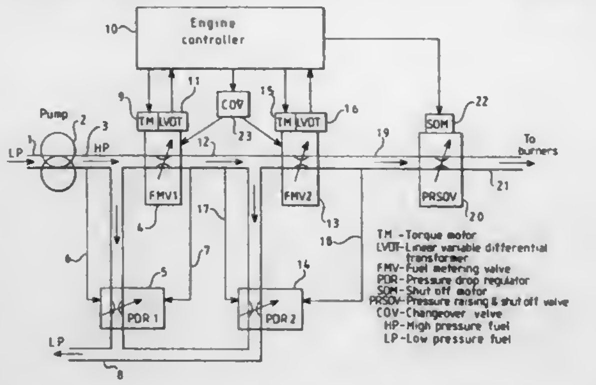
Trevor Stanley Smith, Sutton Coldfield, England, assignor to Lucas Industries, plc, England

Filed Jul. 23, 1996, Ser. No. 685,048

Claims priority, application United Kingdom, Sep. 9, 1995, 9518582

Int. Cl.^{6} F02C *9/26*

U.S. Cl. 60—39.281 **9 Claims**



1. A fuel system for a gas turbine engine, comprising a first metering valve for metering fuel flow, a second metering valve for metering fuel flow connected in series with said first metering valve, and a controller which, in a first mode of operation, supplies a first fuel demand signal corresponding to a first rate of fuel supply to said first metering valve and a second demand signal corresponding to a second rate of fuel supply which tracks the first rate and which is higher than the first rate to said second metering valve.

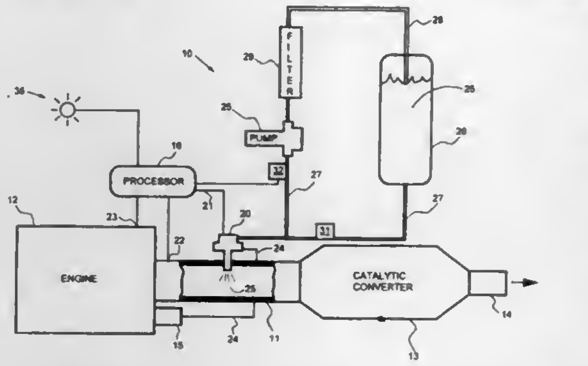
5,709,080
LEAK DETECTION METHOD AND APPARATUS FOR AN EXHAUST PURIFICATION SYSTEM

Amit Arora, Peoria; Ward L. Bivens, Lacon; Darren L. Krahn, Peoria, and Randy N. Peterson, Edelstein, all of Ill.; assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 15, 1996, Ser. No. 616,431

Int. Cl.^{6} F01N *3/18;3/36*

U.S. Cl. 60—274 **9 Claims**



1. A method for determining a leak in an engine exhaust purification system containing a NOx reducing fluid, the system including an injector that injects an amount of a NOx reducing fluid, a tank that holds the NOx reducing fluid, and a pump that pressurizes the NOx reducing fluid, the method comprising the steps of:
monitoring the system fluid pressure while the pump is operating;
shutting the pump off for a predetermined time period and thereafter monitoring the system fluid pressure;
comparing the pressure difference while the pump is operating and while the pump is shut off; and
turning the system off in response to the pressure difference being greater than a predetermined value.

5,709,081
EXHAUST GAS SYSTEM FOR A COMBUSTION ENGINE WITH EXHAUST DRIVEN TURBO CHARGE

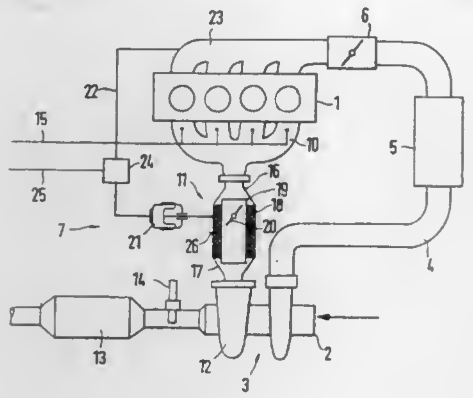
Claus Bruestle, Heimsheim, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Continuation of Ser. No. 319,073, Oct. 6, 1994, abandoned. This application Nov. 4, 1996, Ser. No. 744,067

Claims priority, application Germany, Oct. 15, 1993, 45 35 153.0

Int. Cl.^{6} F01N *3/20*

U.S. Cl. 60—274 **18 Claims**



1. An internal combustion engine arrangement comprising:
a multi-cylinder engine having an exhaust outlet and an air inlet,
an exhaust gas driven turbocharger disposed downstream of the exhaust outlet and having an exhaust gas driven turbine operable to charge air supplied to the air inlet,
a main catalytic converter disposed downstream of the exhaust driven turbine,
a starting catalytic converter disposed between the exhaust outlet and the exhaust driven turbine, and
an exhaust gas flow control system selectively supplying exhaust gas to the exhaust driven turbine from the exhaust outlet through the starting catalytic converter during first engine operating conditions and in bypassing relation to the starting catalytic converter during second engine operating conditions, said first engine operating condition being engine starting.

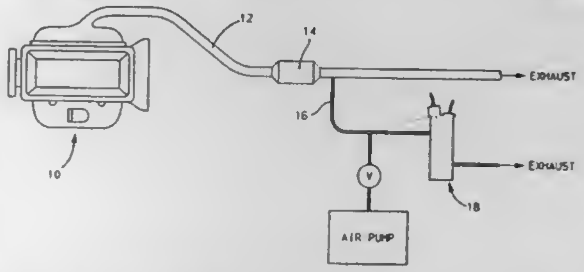
5,709,082
MODULATION SCHEMES FOR ON-BOARD DIAGNOSTIC EXHAUST SYSTEM

Stephen Joel Harris, Bloomfield Hills, and David Kay Lambert, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 266,055, Jun. 27, 1994, abandoned. This application May 28, 1996, Ser. No. 654,049

Int. Cl.^{6} F01N *3/28*

U.S. Cl. 60—276 **3 Claims**



1. An on-board diagnostic system comprising:
a combustion engine, and a combustion emission collection system operatively connected to said engine, and an exhaust measuring system constructed and arranged to be useable as the combustion engine is in operation on a regular continuous basis, said exhaust measuring system comprising an exhaust sampling port, a sample cell, and an infrared system;
said exhaust sampling port communicating with the exhaust collection system;
said sample cell communicating with the exhaust sampling port, and an air pump communicating with the sample cell; and
said infrared system, having a filter selective for detecting light associated with the presence of hydrocarbon, connected to the sample cell, and wherein said pump is controlled to periodically purge the sample cell of exhaust gas and fill the sample cell with air and wherein the infrared system is controlled to take a first measurement when the sample cell is filled with air and a second measurement, independent of the first measurement, when the sample cell is filled with exhaust gas, and further comprising a comparator for determining the ratio between the first and second measurements, and wherein said infrared system includes only one infrared detector.

5,709,083
HYDRAULIC SWING MOTOR DECELERATION CONTROL

Dennis L. Sorbel, Maple Park, and John W. Grant, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 15, 1996, Ser. No. 698,380

Int. Cl.^{6} F16D *31/02*

U.S. Cl. 60—394 **7 Claims**

1. A hydraulic deceleration control for a hydraulic motor having a pair of motor lines connected to the opposite sides of the

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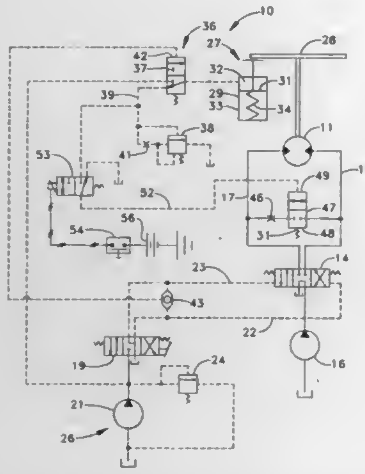


hydraulic motor and a pilot operated control valve connected to the motor lines and having closed and open positions comprising:

a source of pressurized fluid;

a fluid energy storage device including a fluid chamber;

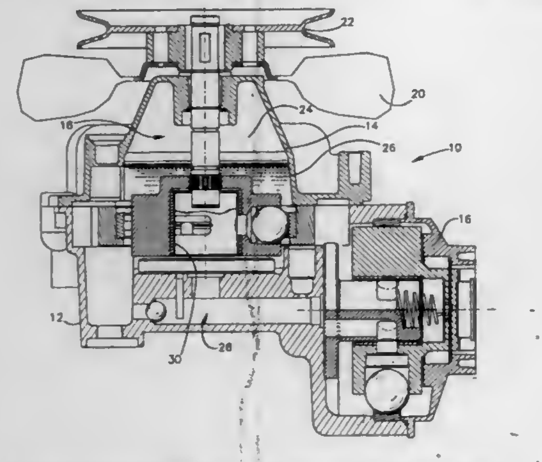
a valve device disposed to communicate the source of pressurized fluid to the (storage device) fluid chamber when the control valve is in its open position and to release the pressurized fluid contained in the (storage device) fluid chamber when the control valve is moved from the open position to the closed position, the valve device including a throttle orifice to release the fluid from the (storage device) fluid chamber at a controlled rate;

an orifice disposed between the motor lines; and

a pilot operated diverter valve disposed in series with the orifice to control fluid flow through the orifice and having first and second ends and a spring disposed at the first end resiliently biasing the diverter valve to its closed position, the (storage device) fluid chamber being in communication with the second end of the diverter valve when the valve device is releasing the fluid from the (storage device) fluid chamber.

5,709,084
MOTOR VEHICLE HYDROSTATIC TRANSMISSION HAVING AN INTERNAL OIL EXPANSION CHAMBER

Douglas William Krantz, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Jun. 13, 1996, Ser. No. 661,299
Int. Cl.^{6} F16D *31/02*
U.S. Cl. 60—453 **10 Claims**



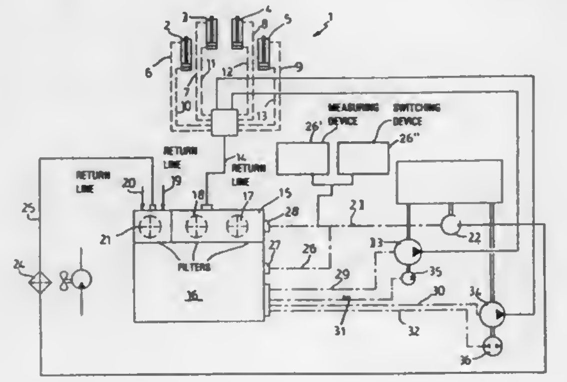
1. A motor vehicle hydrostatic transmission, comprising:

a main housing having at least one opening; and

an input cover sealingly attached to said at least one opening of said main housing, said input cover including a sump pump oil reservoir having a predetermined volume of sump pump oil and an internal oil expansion reservoir which captures a specified volume of air above said predetermined volume of sump pump oil.

5,709,085
METHOD OF COOLING THE HYDRAULIC FLUID IN THE WORKING CIRCUIT OF A CONSTRUCTION MACHINE, IN PARTICULAR A HYDRAULIC EXCAVATOR

Rainer Herbig, Dortmund, Germany, assignor to O & K Orenstein & Koppel AG, Berlin, Germany
PCT No. PCT/EP93/03235, § 371 Date May 17, 1996, § 102(e) Date May 17, 1996, PCT Pub. No. WO95/14175, PCT Pub. Date May 26, 1995
PCT Filed Nov. 19, 1993, Ser. No. 648,053
Int. Cl.^{6} F16D *31/02*
U.S. Cl. 60—456 **8 Claims**



1. A method for cooling hydraulic oil present in an operating circuit of a construction machine comprising the steps of:

intermediately storing only a portion of the hydraulic oil returning from operating areas of the operating circuit and having an elevated temperature in an intermediate reservoir spatially separate from the hydraulic oil present in a hydraulic oil tank prior to causing the hydraulic oil to flow into the hydraulic oil tank;

pumping the hydraulic oil having an elevated temperature from the intermediate reservoir to an oil cooler for lowering a temperature of the hydraulic oil prior to causing the hydraulic oil to flow into the hydraulic oil tank;

causing the hydraulic oil to flow into the hydraulic oil tank from the oil cooler for mixing the hydraulic oil flowing into the hydraulic oil tank from the oil cooler with the hydraulic oil present in the hydraulic oil tank, the hydraulic oil flowing into the hydraulic oil tank from the oil cooler having a temperature different from the temperature of the hydraulic oil present in the hydraulic oil tank; and

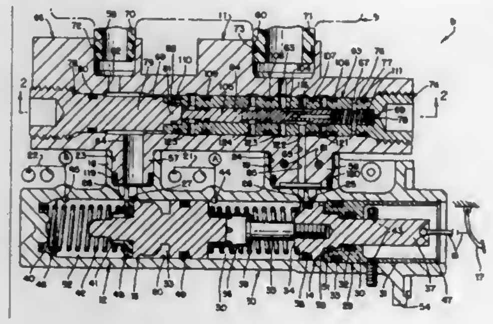
pumping hydraulic oil from the hydraulic oil tank as soon as the hydraulic oil in the intermediate reservoir falls below a predetermined filling level.

5,709,086

Patent Not Issued For This Number

5,709,087
POWER BRAKE APPLY SYSTEM

John Benjamin Hageman, Vandalia; Schuyler Scott Shaw, Dayton, and Donald Edward Schenk, Vandalia, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 18, 1996, Ser. No. 682,343
Int. Cl.^{6} B60T *13/20*
U.S. Cl. 60—556 **12 Claims**



1. A power brake apply system comprising:

a master cylinder including a master cylinder body having a bore with a piston slidably carried in the bore, the master cylinder body having a high pressure chamber in the bore on a first side of the piston and a boost chamber in the bore on a second side of the piston;

a boost valve assembly adjacent the master cylinder body, the boost valve assembly having a valve body carrying a slidable spool wherein the slidable spool has a first end and a second end;

a reservoir engaging the boost valve assembly; and

a brake line opening to the bore of the master cylinder on the first side of the piston and opening to the valve body on the first end of the spool;

wherein a first passage extends into the boost valve assembly and opens to the reservoir and a second passage extends into the boost valve assembly and opens to the bore of the master cylinder, the first passage normally being open through the valve body to the second passage and wherein movement of the piston communicates fluid pressure through the brake line to move the spool wherein the spool closes off the first passage from the second passage.

5,709,088
ENGINE

James Graeme Acaster, 6/17 Succoth Court, Succoth Park, Edinburgh EH12 6BY, Scotland
PCT No. PCT/GB94/01903, § 371 Date Feb. 22, 1996, § 102(e) Date Feb. 22, 1996, PCT Pub. No. WO95/06806, PCT Pub. Date Mar. 9, 1995
PCT Filed Sep. 2, 1994, Ser. No. 605,113
Claims priority, application United Kingdom, Sep. 2, 1993, 9318205
Int. Cl.^{6} F02C *5/06*
U.S. Cl. 60—624 **19 Claims**

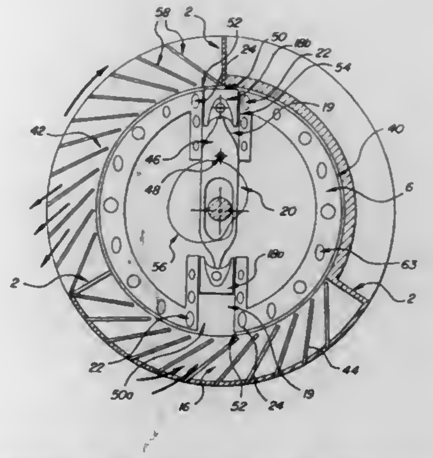
1. An internal combustion engine comprising an inner stator (**6**) and an annular rotor (**2**) arranged to rotate around the stator, the stator comprising:

at least one combustion chamber (**19**) and fluid supply means (**24**) for introducing combustible fluid into the or each chamber;

compression means (**18**) for compressing combustible fluid in the or each chamber; and

ignition means (**22**) for igniting compressed combustible fluid in the or each chamber,

the rotor (**2**) having turbine reaction means (**58**) and the stator and rotor being formed and arranged so as to provide a pathway (**42, 50***a*) for conducting combustion products from said chamber into driving engagement with the turbine reaction means so as to cause the rotor to rotate around the stator, characterised in that:



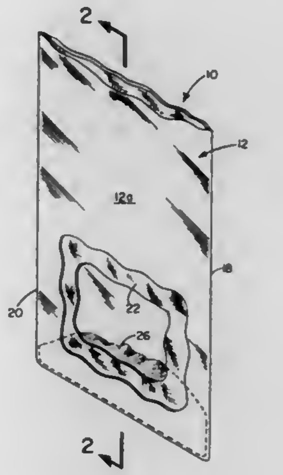
said chamber has an opening (**50**) at an interface between the stator (**6**) and the rotor (**2**);

the rotor has a compression sector (**40**) with a wall for closing said chamber opening (**50**) so as to confine compressed combustible fluid within the chamber (**19**) during a compression phase, and

the rotor has an exhaust sector (**42**) provided with said turbine reaction means (**58**), for bringing said turbine reaction means into substantially direct communication with said chamber through said chamber opening during an exhaust phase.

5,709,089
PACKAGE FOR COOLING CONTAINING SUPERABSORBENT POLYMER

Gregory D. Dawson, 24 S. Monterey St., Mobile, Ala. 36604, and Jonathan S. Browne, 204 Morgan Ave., Mobile, Ala. 36606
Filed Mar. 4, 1996, Ser. No. 610,217
Int. Cl.^{6} F25D *5/00*
U.S. Cl. 62—4 **20 Claims**



1. In a package for cooling containing a superabsorbent polymer, the improvement comprising:

a. a bag for receiving and containing a liquid, said bag having an opening therein for receiving said liquid, said bag being constructed of a material which is liquid impermeable, said bag having an inside and an outside,

b. a pouch for holding a superabsorbent polymer, said pouch being connected to the inside of said bag, said pouch having a water permeable portion for enabling said liquid to enter said pouch, and

c. a superabsorbent polymer located inside said pouch.

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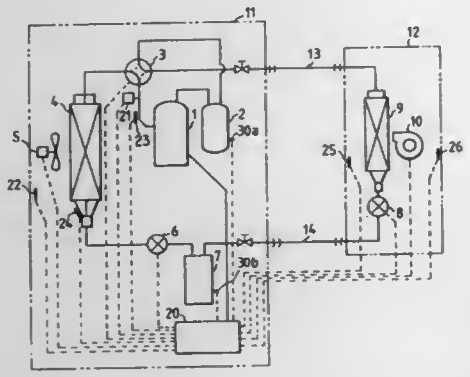
5,709,090
REFRIGERATING SYSTEM AND OPERATING METHOD THEREOF

Takeshi Endo, Shimizu; Hirokiyo Terada, Shizuoka; Naoto Katsumata; Kensaku Oguni, both of Shimizu; Kazumoto Urata, Shizuoka; Masatoshi Muramatsu, and Michiko Endo, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 27, 1995, Ser. No. 562,950
Claims priority, application Japan, Nov. 25, 1994, 6-290926
Int. Cl.^{6} F25B *41/00;1/00*
U.S. Cl. 62—81 **17 Claims**



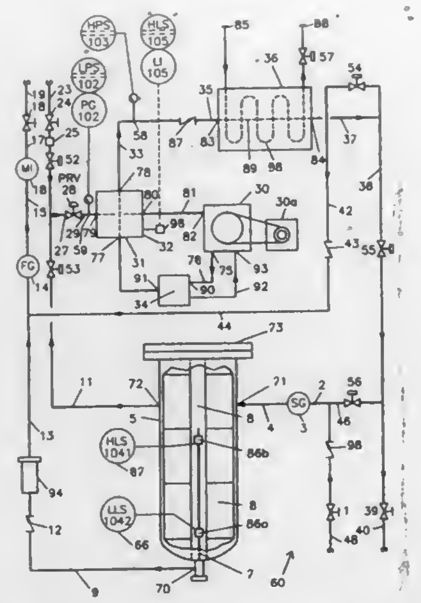
1. A refrigerating system in which an indoor unit and an outdoor unit are connected by pipes and which uses non-azeotrophic refrigerant mixtures, comprising:
- an outdoor unit expander whose restriction may be changed;
- an indoor unit expander whose restriction may be changed similarly;
- a receiver provided between said outdoor unit expander and said indoor unit expander; and
- a controller for turning both of a refrigerant flow at the inlet of said receiver and a refrigerant flow at the outlet thereof into a gas-liquid two-phase flow by changing the restriction of said outdoor unit expander and said indoor unit expander.

5,709,091
REFRIGERANT RECOVERY AND RECYCLING METHOD AND APPARATUS

James Joseph Todack, 2827 Carmel Woods Dr., Seabrook, Tex. 77586

Continuation-in-part of Ser. No. 959,598, Oct. 13, 1992, Pat. No. 5,363,662, which is a continuation-in-part of Ser. No. 906,773, Jun. 30, 1992, abandoned. This application Jul. 29, 1994, Ser. No. 283,270
Int. Cl.^{6} F25B *45/00*
U.S. Cl. 62—85 **29 Claims**

21. A method for recovering liquid and vapor refrigerant from a refrigeration system and storing recovered refrigerant in a refrigerant storage system in a closed system preventing release of the refrigerant to the environment, said method comprising the steps of:
- withdrawing the refrigerant liquid from the refrigeration system and into the refrigerant storage system by increasing the pressure within the refrigeration system to a pressure greater than the pressure within the refrigerant storage system;
- filtering the refrigerant liquid;
- withdrawing the refrigerant vapor from the refrigeration system after withdrawing substantially all of the refrigerant liquid;
- condensing the refrigerant vapor to a liquid;
- storing the condensed refrigerant in the refrigerant storage system until reaching a desired pressure value representative of substantially all of the refrigerant being withdrawn from the refrigeration system and differentiating liquid refrigerant droplets from vapor refrigerant by allowing liquid droplets to drop off the vapor refrigerant; gathering the droplets into a collection chamber; and heating the collected liquid refrigerant for vaporization thereof.



5,709,092
REFRIGATION PROCESS USING CONSTANT BOILING COMPOSITIONS OF HFC-32, HFC-125 AND HFC-134A

Mark Brandon Shiflett, Newark, Del., assignor to E. I. Du Pont de Nemours and Company

Continuation of Ser. No. 392,281, Feb. 22, 1995, Pat. No. 5,643,492, which is a continuation of Ser. No. 128,435, Sep. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,371, Aug. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 649,356, Feb. 1, 1991, Pat. No. 5,185,094, which is a continuation-in-part of Ser. No. 628,000, Dec. 17, 1990, abandoned. This application Jun. 20, 1996, Ser. No. 667,107
Int. Cl.^{6} C09K *5/04*
U.S. Cl. 62—114 **1 Claim**

1. A process for producing refrigeration in a refrigeration system designed to use R-502 comprising condensing a composition consisting essentially of a substantially constant boiling composition consisting of 5–90 weight percent pentafluoroethane, 5–59 weight percent difluoromethane, and 15–70 weight percent 1,1,1,2-tetrafluoroethane having a vapor pressure of about 186 to about 227 psia at 23.8° C., wherein the vapor pressure changes less than about 10% after leakage of 50% of the initial mixture, and further wherein said composition displays the following properties in a refrigeration cycle: net refrigeration effect of 50–81.7 BTU/lb. and a temperature glide no greater than 18° C.

5,709,093
PROCESS FOR MINIMIZING COMPOSITIONAL CHANGES

Gustavo Cerri, Boonton, and Maurice William Hunt, Wenonah, both of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

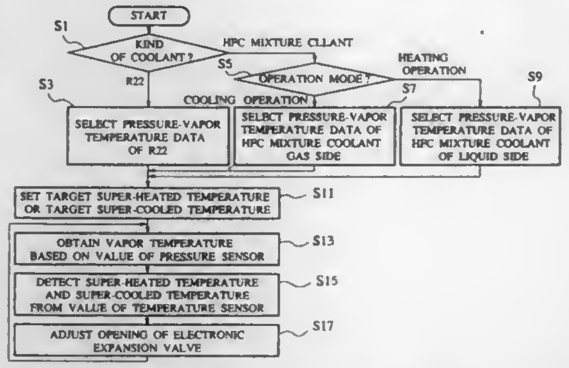
Filed Jun. 27, 1996, Ser. No. 671,440
Int. Cl.^{6} F25B *41/00*
U.S. Cl. 62—114 **10 Claims**

1. A process for minimizing compositional changes of a non-azeotropic composition during withdrawal of an amount of said non-azeotropic composition from a vessel containing the composition, which process comprises the step of cooling the non-azeotropic composition to a temperature sufficient to maintain the non-azeotropic composition's tolerances during the withdrawal of the amount of the composition from the vessel.

5,709,094
AIR CONDITIONER CONTROL APPARATUS BASED ON COOLANT TYPE DETECTION

Yasunori Ooyabu, Kanagawa-ken; Hideaki Motohashi; Megumi Komazaki, both of Shizuoka-ken, and Kokichi Furuhama, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 11, 1996, Ser. No. 613,886
Claims priority, application Japan, Mar. 15, 1995, 7-056246
Int. Cl.^{6} F25B *49/00*
U.S. Cl. 62—126 **32 Claims**

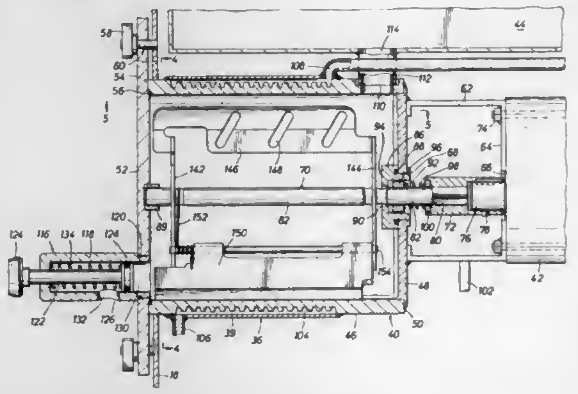

START
S1
KIND OF COOLANT ?
HPC MIXTURE CLLANT
S5
OPERATION MODE ?
HEATING OPERATION
S3
R22
S7
S9
COOLING OPERATION
SELECT PRESSURE-VAPOR TEMPERATURE DATA OF R22
SELECT PRESSURE-VAPOR TEMPERATURE DATA OF HPC MIXTURE COOLANT GAS SIDE
SELECT PRESSURE-VAPOR TEMPERATURE DATA OF HPC MIXTURE COOLANT OF LIQUID SIDE
SET TARGET SUPER-HEATED TEMPERATURE OR TARGET SUPER-COOLED TEMPERATURE
S11
OBTAIN VAPOR TEMPERATURE BASED ON VALUE OF PRESSURE SENSOR
S13
DETECT SUPER-HEATED TEMPERATURE AND SUPER-COOLED TEMPERATURE FROM VALUE OF TEMPERATURE SENSOR
S15
ADJUST OPENING OF ELECTRONIC EXPANSION VALVE
S17

1. An air conditioner control apparatus, comprising:
- control data storing means for storing at least two control data items for controlling a cooling cycle of an air conditioner which is driven with one of at least two coolants appropriate for use in said air conditioner;
- coolant exchange detection means for detecting replacement of one of said coolants by another of said coolants; and
- data selection means for selecting one of said control data items corresponding to said another of said coolants for controlling said cooling cycle of said air conditioner.

5,709,095
FROZEN BEVERAGE DISPENSER

Greg A. Johnson, 16002 Garden Hill, Houston, Tex. 77095

Filed May 26, 1995, Ser. No. 450,889
Int. Cl.^{6} A23G *9/16*
U.S. Cl. 62—136 **13 Claims**

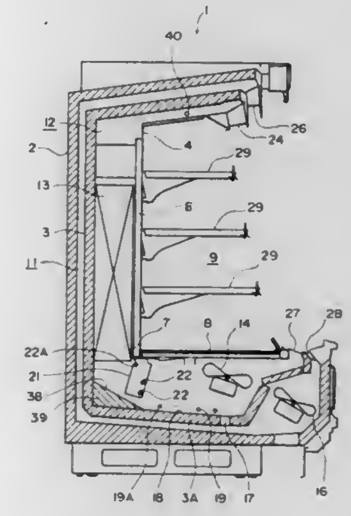


1. A frozen beverage dispenser comprising:
- (a) a refrigeration system mounted within a dispenser housing, said refrigeration system including a compressor, a dryer, an evaporator, a heat exchanger, and a condenser connected together to form a refrigerant circulation loop;
- (b) a beverage retaining tank mounted in said housing;
- (c) a mixing cylinder in fluid communication with said beverage retaining tank, said mixing cylinder being closed at one end by a back plate;
- (d) a beater bar rotatably mounted within said mixing cylinder, said beater bar including a drive shaft having a distal end extending through the back plate of said mixing cylinder;
- (e) a rear seal mount assembly forming a seal about the distal end of the beater bar drive shaft, said seal mount assembly including an axial passage extending therethrough opening into a seal recess, and further including ceramic seal means and rear seal means journaled about said beater bar drive shaft and maintained in facing contact within said seal recess by spring means journaled about said beater bar drive shaft;
- (f) a direct drive motor connected in axial alignment with said mixing cylinder for rotating said beater bar; and
- (g) means for monitoring the speed-torque characteristics of said drive motor, wherein a slight decrease in motor speed generates a signal which automatically turns off the compressor and stops the flow of refrigerant to said evaporator.

5,709,096
DEFROSTING DEVICE FOR A LOW TEMPERATURE DISPLAY CASE

Hirokuni Tamai; Hirotaka Nakano, and Hisao Sagara, all of Gunma, Japan, assignors to Sanyo Electric Company, Ltd., Osaka, Japan

Filed Oct. 11, 1996, Ser. No. 731,345
Claims priority, application Japan, Oct. 11, 1995, 7-289247
Int. Cl.^{6} F25D *21/06*
U.S. Cl. 62—155 **4 Claims**



1. A defrosting device for a low temperature display case including cooled air generated by heat exchange at an evaporator disposed in a duct and circulated through a storage chamber by a blower, comprising:
- defrosting heaters provided said duct;
- a first defrost recovery temperature sensor for detecting an air temperature in said duct;
- a second defrost recovery temperature sensor for detecting a temperature at said evaporator; and
- a controller which, during a defrosting operation for said evaporator, renders said defrosting heaters operative, supplying a high temperature refrigerant to said evaporator, and renders said defrosting heaters inoperative, based on an output of said first defrost recovery temperature sensor, and halts a flow of said high temperature refrigerant to said evaporator, based on an output of said second defrost recovery temperature sensor.

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5,709,097
MULTIROOM AIRCONDITIONER

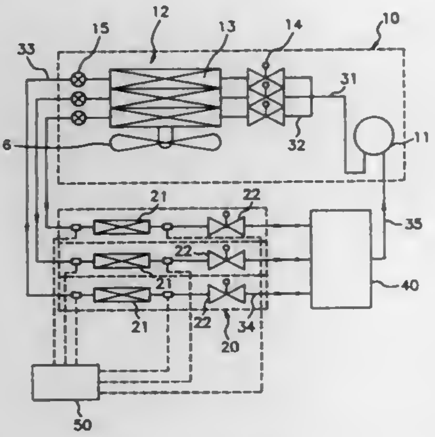
Tae-Geun Kim, Seoul; Kew-Wan Kim, and Jeong-Seok Kim, both of Kyunggi-do, all of Rep. of Korea, assignors to Mando Machinery Corp., Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 773,867

Claims priority, application Rep. of Korea, Dec. 27, 1995, 95-59624; Dec. 27, 1995, 95-59627

Int. Cl.^{6} F25B *41/00*

U.S. Cl. 62—206 **9 Claims**



1. A multiroom airconditioner comprising:

a plurality of indoor units, each of them including an indoor heat exchanger and a valve for selectively opening and closing a flow of refrigerant from the indoor heat exchanger;

an outdoor unit including a compressor, an outdoor heat exchanger divided into an identical number of sections as that of the indoor heat exchangers, an identical number of valves for selectively opening and closing the flow of the refrigerant from the compressor into the outdoor heat exchanger as that of the sections of the outdoor heat exchanger, and a blower fan for allowing a heat exchange between the refrigerant and air;

an identical number of expansion valves as that of the sections of the outdoor heat exchanger for reducing a pressure of the refrigerant flowing from the outdoor unit into the indoor units;

a temperature detecting unit for respectively detecting a temperature of the refrigerant at an inlet side and at an outlet side of each of the indoor exchangers;

means for equalizing the pressure of the refrigerant flowing from the indoor units to the compressor; and

refrigerant conveying conduits for connecting each of the indoor units with each of the sections of the outdoor heat exchanger.

5,709,098
AIR CONDITIONING APPARATUS

Satoshi Itoh, Kariya; Kunio Iritani, Anjo; Takahisa Suzuki, Kariya, and Yuji Takeo, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 5, 1996, Ser. No. 658,643

Claims priority, application Japan, Jun. 6, 1995, 7-139705

Int. Cl.^{6} F25B *49/02;* B60H *1/00*

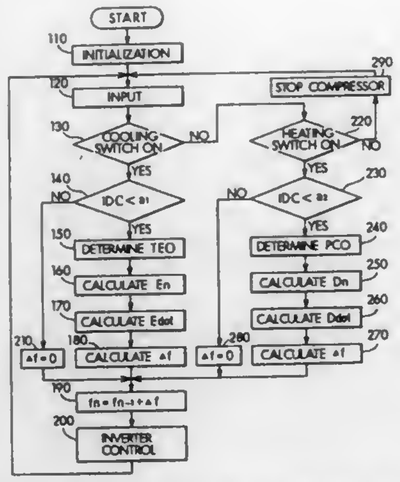
U.S. Cl. 62—228.4 **30 Claims**

1. An air conditioning apparatus comprising:

a refrigerating cycle equipped with a compressor for sucking, compressing, and discharging refrigerant, a condenser for condensing the refrigerant from said compressor, a pressure reducing means for reducing pressure of the refrigerant from said condenser, and an evaporator for evaporating the refrigerant from said pressure reducing means;

driving means for driving said compressor;

an air conditioning unit for forming an air passage leading to a compartment, at least one of said evaporator or said condenser being disposed in said air passage;



air blowing means for blowing air in said air passage;

temperature setting means for setting target temperature in said compartment;

target rotational speed determining means for determining target rotational speed of said compressor according to said target temperature and actual air conditioning load of said refrigerating cycle;

driving control means controlling said driving means in such a manner that an actual rotational speed of said compressor is set to said target rotational speed

means for obtaining a physical value relative to consumed power of said driving means;

determining means for determining whether said physical value is larger or smaller than a predetermine value;

wherein said target rotational speed determining means determines a rotational speed of said compressor in such a manner that said actual physical value is set to be no more than said predetermined value when said obtained physical value is larger than said predetermined value;

suction temperature detecting means for detecting air temperature at a suction side of said evaporator or said condenser disposed in said air passage; and

predetermined value determining means for determining said predetermined value based on said air temperature detected by said suction temperature detecting means.

5,709,099
MULTI-PURPOSE RECREATIONAL FACILITY

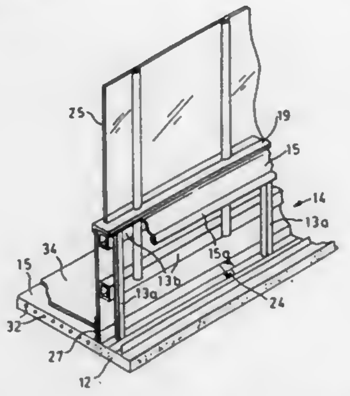
Russell W. Blades, Carlisle; Roger E. Bacci, Richmond Hill, and Brendan J. Lenko, Hamilton, all of Canada, assignors to Bassai Limited, Canada

Filed Jun. 27, 1995, Ser. No. 495,045

Claims priority, application Canada, Jun. 9, 1995, 2151430

Int. Cl.^{6} A63C *19/10;* F25C *3/02*

U.S. Cl. 62—235 **28 Claims**



1. A multi-purpose recreation facility comprising:

a base to support one of a layer of frozen fluid and a pre-selected quantity of fluid;

an upstanding wall surrounding said base, and having an opening;

a fluid retaining membrane extending from said wall onto said base;

a door moveable between an open position whereat said door does not block said opening and a closed position whereat said door blocks said opening, and said wall, said door, said base and said membrane define a tank to retain said quantity of fluid; and

a refrigeration system to freeze said layer of frozen fluid on said base.

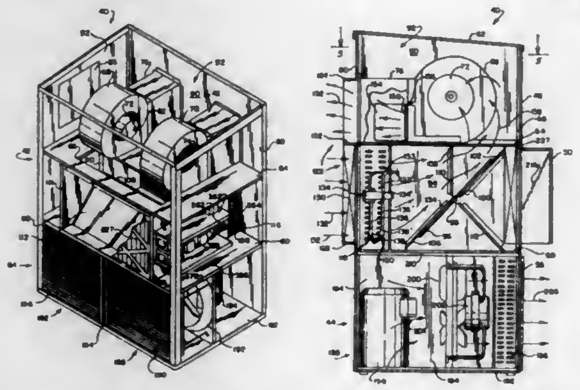
5,709,100
AIR CONDITIONING FOR COMMUNICATIONS STATIONS

Daniel B. Baer, Delaware; Frank E. DiPaolo, Dublin; Stephen C. Sillato, Westerville, and David A. Dukes, Powell, all of Ohio, assignors to Liebert Corporation, Columbus, Ohio

Filed Aug. 29, 1996, Ser. No. 705,430

Int. Cl.^{6} F25D *23/12*

U.S. Cl. 62—259.2 **16 Claims**



1. In a communications system having a ground supported enclosure for retaining electronic equipment exhibiting a given heat load and having a wall with an air transfer port for cooperating with an air conditioning system, the improved air conditioning apparatus comprising:

a conditioned air housing mountable upon said wall having a blower chamber located adjacent said air transfer port;

a condenser system housing mountable upon said wall;

first and second air circulation blowers mounted within said blower chamber having respective first and second blower input ports located within said blower chamber and respective first and second blower air output ports positioned in air input communication with said wall air transfer port;

first and second motors selectively energizable to drive respective said first and second blower air circulation blowers to transfer air from said blower chamber through said air transfer port while effecting an air pressure drop at said blower chamber;

first and second dampers pivotally mounted at respective said first and second output ports, said first blower damper having a closed orientation blocking air transfer from said enclosure through said first blower air output port when said first motor is de-energized and said second motor is energized and having an open orientation when said first motor is energized, said second damper having a closed orientation blocking air transfer from said enclosure through said second blower air output port when said second motor is de-energized and said first motor is energized and having an open orientation when said second motor is energized, said first and second dampers being freely mounted at respective said first and second output ports for swinging movement derived by air from said blower air output ports and said air pressure drop, about a substantially vertical axis;

a first refrigeration circuit having a first condenser coil, a first expansion device, a first compressor energizable to compress refrigerant, and a first evaporator coil, said first evaporator coil being located within said blower chamber in heat transfer association with air passing from said enclosure through said air transfer port, and said first condenser coil, being located within said condenser system housing;

a first condenser fan located within said condenser system housing;

a third motor located within said condenser system housing and energizable to drive said first condenser fan to effect passage of ambient air across said first condenser coil;

a second refrigeration circuit having a second condenser coil, a second expansion device, a second compressor energizable to compress refrigerant, and a second evaporator coil, said second evaporator coil being located within said blower chamber in heat transfer association with air passing through said air transfer port, and said second condenser coil being located within said condenser system housing;

a second condenser fan located within said condenser system housing;

a fourth motor located within said condenser system housing and energizable to drive said second condenser fan to effect passage of ambient air across said second condenser coil; and

a control system responsive to an applied source of power for energizing said first and third motors and said first compressor, and responsive to an alarm condition to energize said second and fourth motors and said second compressor.

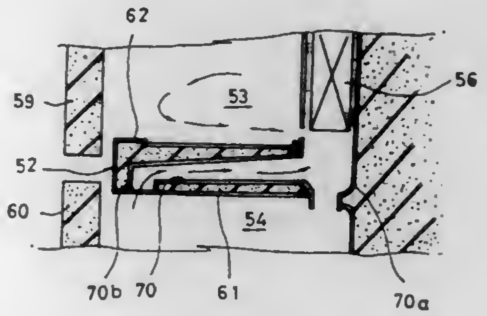
5,709,101
COOLED AIR SUCTION DUCT FOR REFRIGERATOR

Gue Ho Jeong, Kyungsangnam-do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Jan. 3, 1996, Ser. No. 582,494

Int. Cl.^{6} F25D *21/14*

U.S. Cl. 62—285 **10 Claims**



10. An insulation wall assembly of a refrigerator, comprising:

an outer casing;

an inner casing made by vacuum molding an ABS material formed integrally within said outer casing to separately form a freezer compartment and a refrigeration compartment;

an intermediate insulation wall formed at a middle portion of said inner casing for further separating said freezer compartment from said refrigeration compartment, said intermediate insulation wall having a suction duct with a suction opening at one end thereof for receiving cooled air circulating within said freezer compartment or said refrigeration compartment, said suction opening and suction duct both being formed integrally within said intermediate insulation wall by blow molding;

a defrosted water receiving device located at an end of said suction duct opposite said suction opening for receiving and removing defrosted water from an evaporator in said refrigerator; and

an insulating foam material disposed between said inner casing and said suction duct.

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5,709,102
HEAT PUMP COOLING-HEATING-DEHUMIDIFYING SYSTEM FOR ELECTRIC VEHICLE

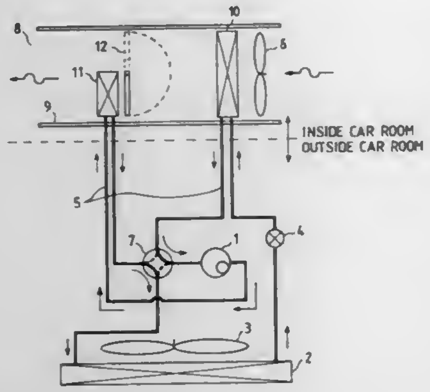
Minoru Fukumoto, Nara, and Norio Yoshida, Moriyama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 9, 1996, Ser. No. 598,987

Claims priority, application Japan, Feb. 16, 1995, 7-028160

Int. Cl.^{6} F25B *13/00*

U.S. Cl. 62—324.1 7 Claims



1. A heat pump cooling-heating-dehumidifying system for an electric vehicle, comprising:
- a compressor for compressing refrigerant;
- a refrigerant throttling device for achieving pressure reduction of the refrigerant;
- an out-room air-heat exchanger for heat-exchanging between the refrigerant and outside air;
- a first in-room air-heat exchanger for heat-exchanging between the refrigerant and air to be introduced into a car room;
- a second in-room air-heat exchanger provided downstream of said first in-room air-heat exchanger for selectively heat-exchanging between the refrigerant and the air which was heat-exchanged at said first in-room air-heat exchanger; and
- a four-way switching valve for switching a flow passage of the refrigerant, said flow passage including therein said compressor, said refrigerant throttling device, said out-room air-heat exchanger, said first in-room air-heat exchanger, said second in-room air-heat exchanger and said four-way switching valve,
- wherein the refrigerant is circulated through the flow passage in order of said compressor, said second in-room air-heat exchanger, said four-way switching valve, said out-room air-heat exchanger, said refrigerant throttling device, said first in-room air-heat exchanger, said four-way switching valve and then said compressor during each of a cooling operation of the system and a dehumidifying-heating operation of the system, and
- wherein the refrigerant is circulated through the flow passage in order of said compressor, said second in-room air-heat exchanger, said four-way switching valve, said first in-room air-heat exchanger, said refrigerant throttling device, said out-room air-heat exchanger, said four-way switching valve and then said compressor during a heating operation of the system.

5,709,103
ELECTRICALLY POWERED DIFFERENTIAL AIR-CYCLE AIR CONDITIONING MACHINE

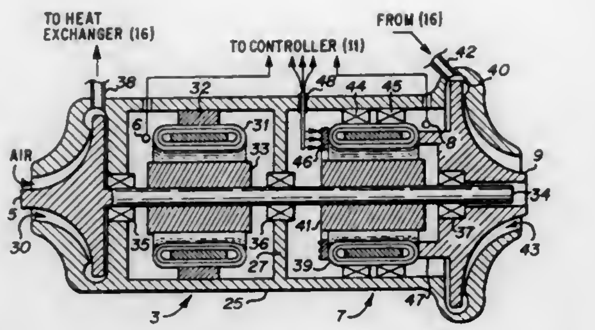
Kenneth Roy Williams, Huntington Beach, Calif., assignor to McDonnell Douglas Coporation, Huntington Beach, Calif.

Filed Aug. 15, 1996, Ser. No. 689,894

Int. Cl.^{6} F25D *9/00*

U.S. Cl. 62—402 10 Claims

1. An air cycle air cooling machine for an aircraft, said aircraft containing a source of electricity, comprising: an electrically powered air compressor for raising the pressure and temperature of air to produce high enthalpy air, cooling means for cooling said high enthalpy air to lower the temperature thereof, and a turbine driven electrical generator for producing electrical voltage, said turbine driven electrical generator including a rotatably mounted turbine blade, said blade being driven in rotation by expansion of said cooled pressurized air; said turbine driven electrical generator containing an armature and field windings; said armature being mounted for rotation by said electrical air compressor means and said field windings being mounted for rotation with said turbine blade, whereby the electrical voltage produced by said turbine driven electrical generator is dependent upon the relative rotational velocity between said armature and said field windings.



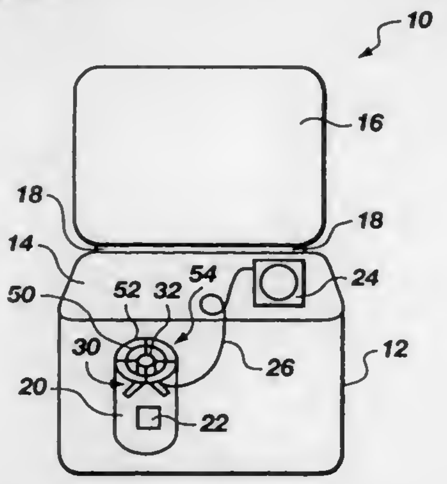
5,709,104
COOLING DEVICE FOR INSULATED ICE CHEST

Kent Howcroft, 488 N. Brigham Ave., American Fork, Utah 84003

Filed Feb. 20, 1996, Ser. No. 603,453

Int. Cl.^{6} F25D *3/08*

U.S. Cl. 62—457.1 19 Claims



1. A portable cooling apparatus comprising:
- a housing having an interior and a main opening, said housing being of a size, weight and configuration conducive for hand-held carrying by a user;
- lid means for removably covering the main opening of the housing;
- containment means disposed entirely within the housing for containing therein a temperature altering means for altering temperature, said containment means including at least one air intake opening and at least one air discharge opening; and
- blower means disposed entirely within the containment means for circulating air along an air movement path through the containment means into the interior of the housing, wherein said blower means is disposed along a portion of the air movement path residing between the temperature altering means and the air discharge opening for contacting air that has been altered in temperature by the temperature altering means and driving said altered air from said air discharge opening into the interior of the housing.

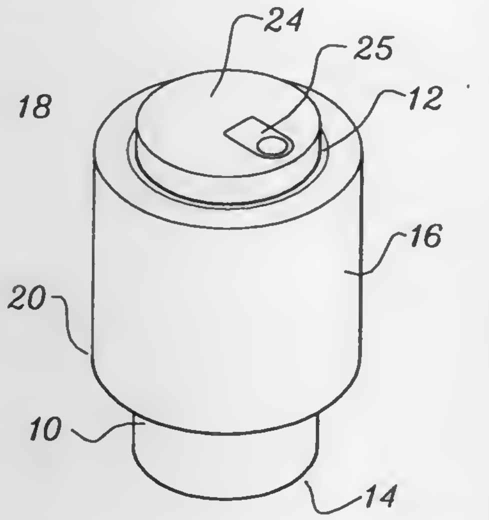
5,709,105
BEVERAGE CONTAINER COOLER ADAPTED FOR USE WITH A STANDARD CUP HOLDER

Ralph Palermo, 2260 10th St. N., Naples, Fla. 33940

Filed Dec. 22, 1995, Ser. No. 577,927

Int. Cl.^{6} F25D *3/08*

U.S. Cl. 62—457.4 5 Claims



1. A temperature maintenance device for a beverage container, the device comprising:
- (a) a rigid longitudinal tube having a circumferential interior thereby defining a tubular interior wall and exterior thereof, said tube including an open ended upper region and an extended lower region having a closed end thereof thereby defining a planar bottom end wall said tube having a constant interior diameter, thereby dimentioned and configured so as to receive a standard beverage can in close conformity to said bottom end wall, and in close conformity to said interior wall along substantially the entire length of said beverage can; and
- (b) thermal insulating means provided upon said exterior of said upper portion of said rigid tube, a lower concentric surface of said insulating means located near an interface between said upper and lower regions,
- whereby said lower region of said tube and said lower concentric surface of said insulating means, in combination constitute means for complemental engagement with a beverage container holder.

5,709,106
CONDENSER STRUCTURE WITH LIQUID TANK

Hiroyuki Inaba; Hiroaki Hashimoto; Hideo Kobayashi; Naohisa Kamiyama, and Yutaka Moriyama, all of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan

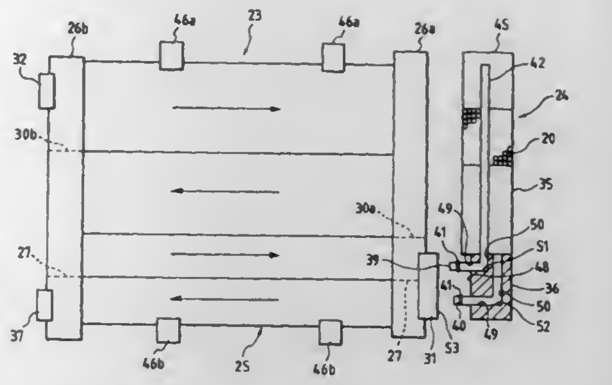
Filed Oct. 18, 1996, Ser. No. 734,030

Claims priority, application Japan, Oct. 18, 1995, 7-269745; Oct. 18, 1995, 7-269746; Oct. 18, 1995, 7-270036; Mar. 18, 1996, 8-060867; Aug. 7, 1996, 8-208194; Aug. 7, 1996, 8-208195; Aug. 9, 1996, 8-211129

Int. Cl.^{6} F25B *39/04*

U.S. Cl. 62—507 17 Claims

1. A condenser structure with a liquid tank comprising:
- (1) a condenser including:
  - a pair of header pipes spaced from each other;
  - a plural number of heat transferring pipes disposed between said pair of header pipes so as to be spaced from each other, both ends of said heat transferring pipes being opened to an inside of said header pipes; and
  - fins disposed between said adjacent heat transferring pipes spaced from each other; and
- (2) a liquid tank fastened to said first header pipe so as to receive a liquid refrigerant discharged from a discharging port of said condenser;
  - wherein means are provided for coupling said first header pipe and liquid tank with each other detachably in such a manner that a liquid refrigerant flowing passage is formed so as to be air- and liquid-tight.



5,709,107
KNITTING METHOD

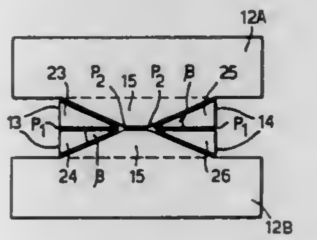
Keith Jeffcoat, Nuneator, United Kingdom, assignor to General Motors Corporation, Detroit, Mich.

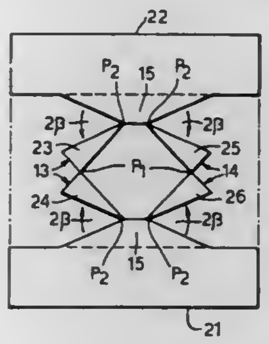
Division of Ser. No. 546,261, Oct. 20, 1995. This application Sep. 9, 1996, Ser. No. 709,365

Claims priority, application United Kingdom, Nov. 10, 1994, 9422674

Int. Cl.^{6} D04B *9/46*

U.S. Cl. 66—179 4 Claims





1. A continuously weft knitted cover for a three-dimensional object comprising two adjoining triangular portions having two common knitted sutured edges with the third edge of each of said triangular portions being sutured to adjacent remainder portions of said cover such that a first suture line, formed from knitting one of said common sutured edges, has a second suture line, formed from the other of said common knitted sutured edges, extending from one of the ends of said first suture line, and third and fourth suture lines extending from the other end of said first suture line, said

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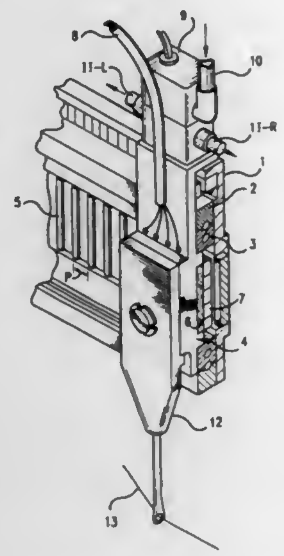
third and fourth suture lines each having a point of intersection with said second suture line in said other common edge.

5,709,108

AUXILIARY DRIVING DEVICE AND CONTROL METHOD FOR PATTERNING DEVICE IN WARP KNITTING MACHINE

Kotaro Ono, and Yoshinori Otobe, both of Fukui, Japan, assignors to Nippon Mayer Co., Ltd., Fukui, Japan
PCT No. PCT/JP95/02137, § 371 Date Jul. 24, 1996, § 102(e) Date Jul. 24, 1996, PCT Pub. No. WO96/12841, PCT Pub. Date May 2, 1996
PCT Filed Oct. 18, 1995, Ser. No. 647,984
Claims priority, application Japan, Oct. 19, 1994, 6-253255; Nov. 24, 1994, 6-288516
Int. Cl.⁶ D04B *27/26*
U.S. Cl. 66—205 **10 Claims**

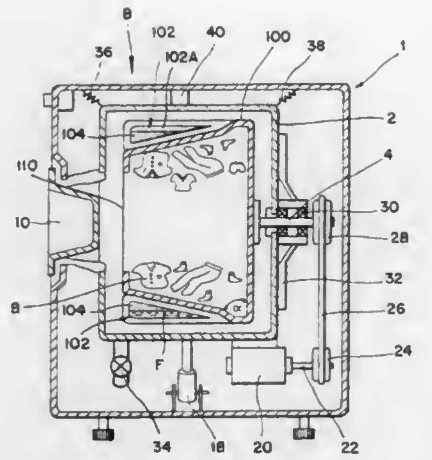


1. An auxiliary driving device for the patterning device for a warp knitting machine, including a desired number of movable bodies each having at least a portion thereof formed as a guide point, said movable bodies being disposed in a guide path so that each of said movable bodies are movable on the basis of driving means directly or associatively installed thereon, patterning being effected in that the respective guide points are moved by desired amounts of displacement in desired directions on the basis of signals transmitted from an electronic control section to the driving means for the individual movable bodies and are thereby positioned, said auxiliary driving device is characterized in that auxiliary driving means is attached which adds to the driving force from the driving means during start and movement involved in the lapping by the movable bodies.

5,709,109

DRUM TYPE CLOTHES WASHER HAVING A FLUID BALANCING MECHANISM

Sung Won Cho, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Dec. 7, 1995, Ser. No. 568,698
Claims priority, application Rep. of Korea, Dec. 7, 1994, 1994-33409
Int. Cl.⁶ D06F *37/22*
U.S. Cl. 68—23.2 **11 Claims**

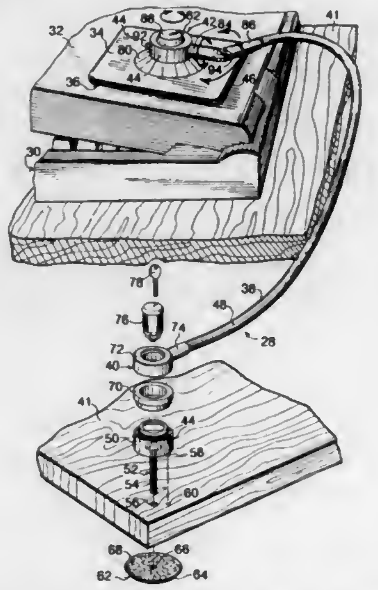


1. A clothes washing machine, comprising:
a housing;
an outer tub suspended in the housing;
an inner tub mounted within the outer tub for rotation relative thereto about a substantially horizontal axis of rotation; and
a balancing member mounted on the inner tub and for offsetting centrifugal forces acting on the inner tub during rotation thereof; the balancing member forming a chamber having a lower portion in which a liquid is disposed when the inner tub is at rest, a liquid-absorbing member disposed in the chamber, the chamber and liquid absorbing member arranged coaxially relative to the axis of rotation, and the liquid-absorbing member being rotatable about the axis of rotation along with the inner tub.

5,709,110

SECURITY SYSTEM FOR A LAP-TOP COMPUTER

Jack Greenfield, 2 Irving St., and David Monoson, 1530 Coolidge Ave., both of Baldwin, N.Y. 11510
Filed Oct. 7, 1996, Ser. No. 726,630
Int. Cl.⁶ E05B *73/00*
U.S. Cl. 70—58 **16 Claims**



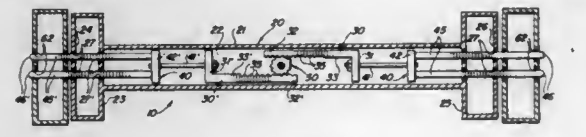
1. A security system for securing a lap-top computer having a monitor housing hinged thereto to a table/counter top having a hole therethrough, said system comprising:
a) a low profile mounting plate;
b) means for affixing said low profile mounting plate to the monitor housing;
c) an elongated flexible retainment cable;
d) first locking means for locking in a swiveled manner, a first end of said cable to the table/counter top, said first locking means including:

i) lock base;
ii) a pan head bolt having a threaded shank extending centrally from a bottom end of said lock base and through the hole in the table/counter top;
iii) an anti-spin pin extending off center from the bottom end of said lock base and into an anti-spin hole in the table/counter top;
iv) a disc nut having a chamfered edge and a centrally threaded aperture to engage with said threaded shank of said pan head bolt;
v) a pressure sensitive acrylic adhesive substrate applied onto a top side of said disc nut, whereby when said centrally threaded aperture of said disc nut is tightly threaded onto said threaded shank of said pan head bolt, said adhesive substrate will firmly stick to the underside of the table/counter top;
vi) an adaptor ring to fit onto said lock base;
vii) a first cable collar;
viii) a swivel sleeve on said first cable collar and attached to said first end of said cable;
ix) a first lock cylinder which fits through said first cable collar, said adaptor ring and into said lock base; and
x) a first key to be inserted into said first lock cylinder, whereby said first key will lock said first lock cylinder in said lock base, to allow said first cable collar to revolve three hundred and sixty degrees around said first lock cylinder and said swivel sleeve, with said first end of said cable turning three hundred and sixty degrees on its axis; and
e) second locking means for locking in a universal articulated manner a second end of said cable to said low profile mounting plate, so that the monitor housing of the lap-top computer can be moved from a closed position to a vertical opened position, without interference from said cable for full freedom of movement and positioning thereof.

5,709,111

LOCK SYSTEM

Jose Gabriel Henao, 8880 SW. 6th La., Miami, Fla. 33174
Filed Dec. 4, 1995, Ser. No. 565,956
Int. Cl.⁶ E05B *63/00*
U.S. Cl. 70—104 **12 Claims**



1. A lock system comprising:
a main housing, said main housing including a surrounding wall structure, an open interior, and opposing outlet ends,
a pair of opposing track members, each of said track members including a first end, a second end, and a plurality of teeth along an interior surface thereof,
said pair of opposing track members being disposed in spaced, confronting relation from one another in said open interior of said main housing such that said interior surface, and accordingly said plurality of teeth along said interior surface, of each of said track members confront one another, and such that said first end of each of said track members extend towards a corresponding one of said opposing outlet ends of said main housing,
a drive member, said drive member including a drive segment disposed in said main housing between said confronting interior surfaces of said track members, and at least one actuator means protruding from said main housing through said surrounding wall structure of said main housing and structured to turn said drive segment upon actuation thereof,
said drive segment including a plurality of drive teeth about a perimeter thereof, said drive teeth being structured to engage said teeth on said confronting interior surfaces of said track members such that upon rotation of said drive segment in a first direction said first ends of said track members move away from one another and towards said corresponding one of said opposing outlet ends of said main housing, and upon rotation of said drive segment in a second direction said first ends of said track members move towards one another and away from said corresponding one of said opposing outlet ends of said main housing,
a lock member extending from said first end of each of said track members towards said corresponding one of said opposing outlet ends of said main housing, each of said lock members including at least one lock shaft having an engagement end structured to protrude through said corresponding one of said opposing outlet ends of said main housing upon movement of said first end of each of said track members away from one another due to rotation of said drive segment in said first direction,
a shaft retention housing disposed adjacent said main housing at each of said opposing outlet ends thereof, each of said shaft retention housings being structured to receive a corresponding one of said engagement ends of said lock shafts therein, upon said engagement ends protruding through said opposing outlet ends of said main housing, so as to prevent planar movement of said main housing relative to said shaft retention housing,
said lock members and said track members being interconnected with one another by retraction resistance means structured and disposed to prevent inward, retracting movement of said lock members and said track members upon inward pushing of said lock members,
said retraction resistance means comprising:
  at least one extension rod and corresponding axial bore disposed on said track members and said lock members for sliding, aligned interconnection,
  a biasing spring disposed between each of said lock members and said track members and tending to urge said lock members and said track members apart from one another,
  a connector element disposed in interlocking retaining connector between each of said lock members and said track members,
  said connector element including an aperture disposed at one end thereof and structured to receive a lock pin therethrough for pivotal connection of said one end of said connection element with said lock members,
  said connector element including a slot disposed at an opposite end thereof and structured to receive a lock pin therethrough for pivotal connection of said opposite end of said connector elements with said track members,
  said connector element including a lip formed at said opposite end thereof, and
  said pin in said slot being structured and disposed to slide within said slot and pivot said connector element, such that said lip engages a stopper and inward movement of said lock members and track members is prevented, upon said lock members being pushed towards said track members.

5,709,112

TAMPERPROOF LOCKING AND LATCHING MECHANISM FOR ROTATABLE CONTROLS

Steven Kennedy, 197 Sharps Rd., Williamstown, N.J. 08094
Filed Dec. 28, 1995, Ser. No. 580,527
Int. Cl.⁶ F16K *35/06*
U.S. Cl. 70—177 **6 Claims**

1. An improved tamperproof latching mechanism for use with a rotatable control device, said control device having a body having a boss and control means including a stem journaled in the body for rotation about an axis in the boss, said latching mechanism comprising:
a handle with two sides and having a grip end portion and slider-riding and stem-engaging portions;
a slider on the slider-riding portion having a tang for extending toward the boss, the boss having a surface engageable by the tang in a locking position of the slider to restrain the handle

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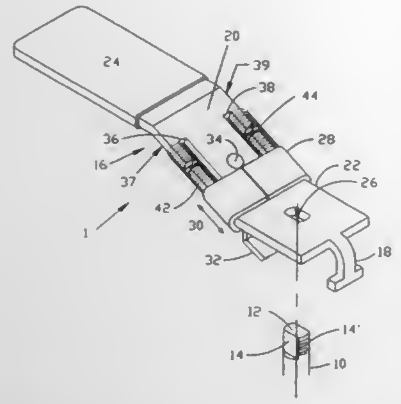


from rotation about said axis, said handle having a boss-engaging end portion for extending toward the boss, and said boss having a surface engageable therewith to define a rotational limit position of the handle, said slider being movable to said locking position with the handle located at said limit position, said boss being undercut at said surface to receive said end portion and thereby to prevent removal of said handle axially from said stem while the slider in said locking position; and

a spring-loading means for providing positive engagement pressure of said tang with said boss when said tang is in said locking position; wherein said spring-loading means includes: a pair of channels formed in said slider-riding portion of said handle, each said channel being substantially parallel to slider-riding portion sides of the handle, each said channel resulting in the formation of rail between each said portion slide and each said channel; and access notch on each side of said slider-riding portion, each said notch bisecting each said respective rail to provide access to each said respective channel; and a pair of springs, with each said spring being compressed and inserted through each said access notch so that each said spring expands and encircles each said rail; whereby the expanded springs provide positive pressure against said slider and resist its movement.

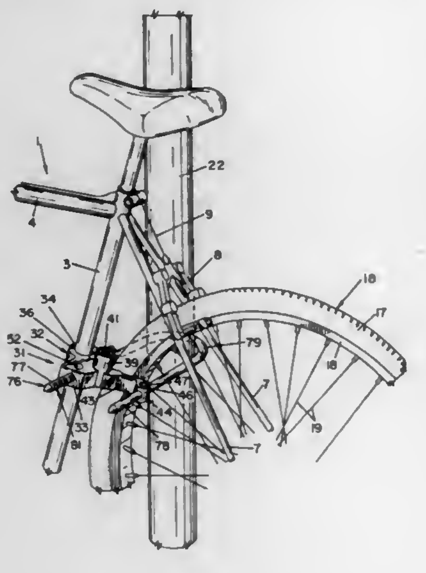
5,709,113
SELF-STORING SECURITY DEVICE

Rex A. Godfrey, Akron, Ohio, assignor to Winner International Royalty Corporation, Sharon, Pa.

Filed Mar. 20, 1996, Ser. No. 618,925

Int. Cl.^{6} E05B *71/00*

U.S. Cl. 70—233 **14 Claims**



1. A bicycle locking and storage device mountable on a bicycle frame member in proximity to the rim and tire of a wheel of said bicycle, said frame member having an axis and said rim and tire having laterally opposite sides with respect to said axis, said device comprising a receiver having a body portion mounted on said frame member and an arm extending from said body portion laterally outwardly of one of said opposite sides of said rim and tire and having an outer end spaced from said body portion for said rim and tire to be between said outer end and said body portion, a U-shaped shackle having first and second parallel legs joined by a bight, said body portion and said outer end of said arm respectively having first and second openings therein for respectively receiving said first and second legs of said shackle in a locking position of said shackle in which said first and second legs receive said rim and tire therebetween and extend transverse to said axis for said bight to be on the other of said opposite sides of said rim and tire, said body portion including lock means interengaging with said first leg to releasably lock said shackle in said locking position, and said receiver and said shackle including means interengaging for said receiver to support said shackle in a storage position of said shackle in which said first and second legs of said shackle are in a plane parallel to said axis of said frame member.

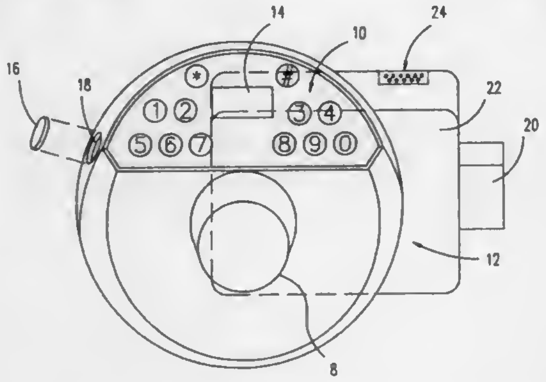
5,709,114
KEYPAD ENTRY ELECTRONIC COMBINATION LOCK WITH SELF-GENERATED COMBINATION

Gerald Lee Dawson, Lexington, and Daniel Lee Thompson, Paris, both of Ky., assignors to Mas-Hamilton Group, Lexington, Ky.

Continuation-in-part of Ser. No. 342,740, Nov. 21, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 558,843

Int. Cl.^{6} E05B *49/00*

U.S. Cl. 70—278 **37 Claims**



1. An electronic self-powered combination lock comprising:

a dial knob connected to a generator providing electrical power for said lock;

electronic controls powered by said generator;

a keypad comprising data entry key buttons for activation to enter combination and initialization data;

an electronic key;

means for accepting said electronic key connected to said electronic controls;

means for reading the contents of said key;

means for combining portions of said key contents with data stored in said lock;

comparison means for comparing said combined data with an authorized combination, said authorized combination generated by said lock and if compared equal, conditioning said lock to be opened;

at least one alternate control path for accepting alternate data and a different key for operation of said lock;

means selectable to require one or two sets of entered data from said keys and from said keypad to operate said lock;

means for recording date, time, personal identifier, and close seal number for each opening and closing of said lock.

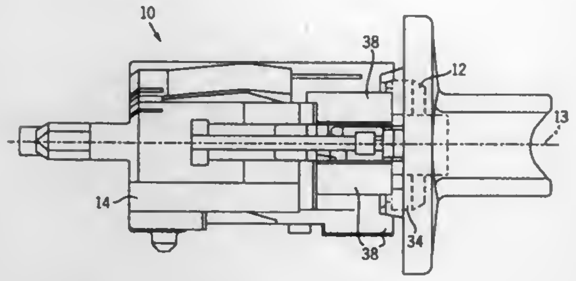
5,709,115
SIDEBAR IGNITION LOCK

Carl E. Richter, Menomonee Falls, Wis., assignor to Strattec Security Corp., Milwaukee, Wis.

Filed Feb. 3, 1995, Ser. No. 383,459

Int. Cl.^{6} C05B *27/00*

U.S. Cl. 70—495 **12 Claims**



1. A sidebar ignition lock, comprising:

a sleeve having first and second ends, and an inner peripheral surface defining an inner core,

a cylinder with an enlarged head rotatably receivable within the core of the sleeve, the cylinder defining an external cylinder surface, a longitudinal axis and a keyway disposed along the axis for slidably receiving a key therein, the cylinder further including a sidebar slot extending radially with respect to the axis, a detent slot extending radially with respect to the axis, and a tumbler ward extending radially from the axis at a location angularly spaced from the sidebar slot, the sidebar slot having an opened inner end which opens into the tumbler ward and an opened outer end which opens to the external cylinder surface;

a sidebar slidably mounted within the sidebar slot for radial movement therein, the sidebar includes a tongue at its inner end and a radially outer end, and is movable between a first cylinder locking position wherein the outer end of the sidebar projects from the cylinder, and a second cylinder unlocking position wherein the outer end of the sidebar is retracted within the cylinder;

means for biasing the sidebar radially inward toward the unlocking position;

a knob having a plurality of circumferentially spaced tangs projecting therefrom, the tangs defining a cylinder head receipt cavity for receiving the cylinder head therein, the tangs movable between a first locking position wherein the cylinder head is retained within the cylinder head receipt cavity, and a second unlocking position wherein the cylinder head may be removed from the cylinder head receipt cavity; and

a plurality of circumferentially spaced tabs integral with and projecting longitudinally from the first end of the sleeve so as to maintain the tangs in the first locking position when the cylinder is received within the inner core of the sleeve.

5,709,116
HYDRAULIC CRIMPER AND BOLT ASSEMBLY

Frank W. Rieger, Pittsburgh, Pa., and David Lee Rousar, San Jose, Calif., assignors to General Electric Company, Schenectady, N.Y.

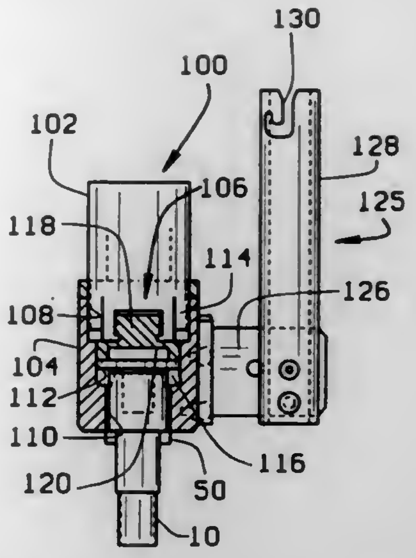
Filed Feb. 29, 1996, Ser. No. 608,637

Int. Cl.^{6} B21D *26/02;39/20*

U.S. Cl. 72—57 **14 Claims**

10. A hydraulic crimper and bolt assembly, comprising:

a bolt comprising a threaded body portion, a bolt head portion located at one end of said threaded body portion, said bolt head portion having a diameter greater than the diameter of said threaded body portion, at least one pocket formed in said bolt head portion, and a bolt head flange located at an end of said bolt head portion opposite said threaded body portion, said bolt head flange having a diameter greater than the diameter of said bolt head portion;



a keeper having a bore extending therethrough, a first portion of said keeper bore sized to have said threaded body portion substantially pass therethrough, a second portion of said keeper bore sized to substantially receive said bolt head portion;

a hydraulic cylinder for carrying hydraulic fluid under pressure;

a crimper body having a bore extending therethrough, said crimper body bore having first and second end portions and an intermediate portion extending between said first and second end portions, said first end portion of said crimper body bore configured to receive an end portion of said hydraulic cylinder, said second end portion of said crimper body bore configured to receive at a least a portion of said bolt head portion and said keeper, an upper portion of said bolt head and said keeper extending into said crimper body bore intermediate portion;

a compressible ring positioned in said intermediate portion of said crimper body bore for crimping a section of said keeper into said bolt head pocket; and

a plunger positioned in said intermediate portion of said crimper body bore and movable into contact with said ring so that when hydraulic fluid under pressure is delivered from said hydraulic cylinder to said crimper body, said plunger is forced against said ring with sufficient force so that said ring crimps said section of said keeper into said bolt head pocket.

5,709,117
COLLET ASSEMBLY FOR BENDING APPARATUS

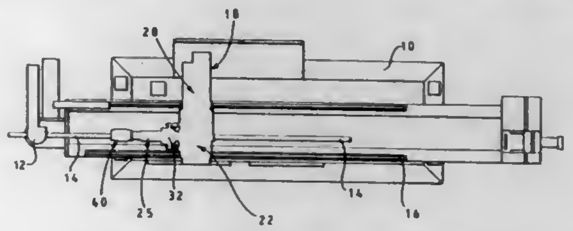
Philip George, Ivybridge, England, assignor to Eurobend Limited, Ivybridge, England

Filed Jun. 28, 1996, Ser. No. 684,769

Claims priority, application United Kingdom, Jul. 5, 1995, 9513689

Int. Cl.^{6} B21D *7/04;9/05*

U.S. Cl. 72—149 **16 Claims**



1. A collet assembly for a bending apparatus comprising a support ring, the support ring at one end is connected coaxially to

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a tubular support member, a plurality of jaws being pivotally connected to the other end of the support ring by means of parallelogram linkages, the parallelogram linkages having a pair of links one disposed radially inwardly of the other, to permit movement of the jaws transverse to the axis of the support ring, the jaws being spaced angularly around the circumference of the support ring; an actuating assembly being mounted coaxially of the support ring, the actuating assembly comprising an outer ring connected to a control sleeve slidably mounted on the tubular support member and an inner ring disposed on the internal diameter of the support ring, the inner ring defining a cam formation for engagement of a corresponding formation on an inner link of each parallelogram linkage, the inner ring of the actuating assembly being connected to the outer ring through elongate slots in the support ring, so that the actuating assembly may be moved axially with respect to the support ring between a position in which the jaws clamp the outer surface of an elongate workpiece and a position in which the jaws are released from the outer surface of the elongate workpiece.

5,709,118
PRESS APPARATUS FOR FORMING GEAR TEETH

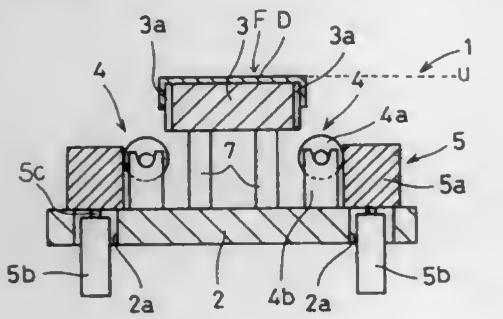
Mamoru Ohkubo, Neyagawa, Japan, assignor to Exedy Corporation, Osaka, Japan

Filed Jun. 7, 1996, Ser. No. 659,851

Claims priority, application Japan, Jun. 13, 1995, 7-1459545

Int. Cl.⁶ B21D *9/08;15/00;17/10*

U.S. Cl. 72—213 **1 Claim**



1. A gear teeth forming apparatus for forming a plurality of gear teeth extending in an axial direction on an outer circumferential wall of a cylindrically shaped member comprising;

a base member, said base formed with a plurality of circumferentially spaced apart apertures at equidistant intervals in the circumferential direction on an outer circumferential side of said base;

a punch disposed above said base member, said punch supported on said base member by elastic elements movable in the axial direction, said punch formed with a plurality of grooves on an outer circumferential surface thereof; and

a plurality of rollers supported on said base and freely rotatable with respect to said base, said rollers disposed adjacent to said outer circumferential surface of said punch, each of said rollers disposed adjacent to a corresponding one of said grooves;

an annular backup ring supported on said base which contacts a radial outer side of each of said rollers, said annular backup ring is configured for axial movement above an upper surface of said base;

a plurality of slide members attached to said base, each of said slide members having a slide rod at least partially extending there from, each of said slide rods being freely extendable from said slide members such that said slide rods extend through said apertures in said base, and each of said slide rods being fixed to said annular backup ring, thus supporting said backup ring during axial movement above said upper surface of said base;

wherein said punch is configured to move downwardly from an upper position to a lower position such that in said lower position, said rollers circumferentially surround said punch and in said upper position said punch is above and spaced apart from said rollers, and where engagement of said rollers with said cylindrically shaped member causes spinning movement of said rollers such that when said annular backup ring contacts the radial outer side of each of said rollers, said röllers causes said annular backup ring to move in an upward direction.

5,709,119
METHOD AND ARRANGEMENT FOR THE CONTROLLED FORMATION OF ROLLING STOCK LOOPS

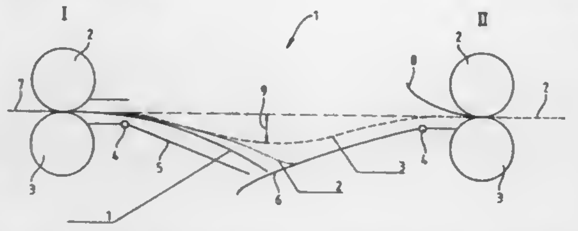
Otmar Palzer, Haan, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 3, 1995, Ser. No. 400,240

Claims priority, application Germany, Mar. 10, 1994, 44 07 981.8

Int. Cl.⁶ B21B *41/00;39/20*

U.S. Cl. 72—250 **3 Claims**



1. A method for forming a loop of rolling stock between a front roll stand and a rear roll stand in a rolling train in a controlled manner, the method comprising the steps of allowing the front end of the rolling stock emerging from the front roll stand to drop as a result of gravity, subsequently deflecting the front end of the rolling stock toward the rear roll stand and temporarily supporting the rolling stock during the step of deflecting the rolling stock until the front end of the rolling stock has entered the rear roll stand, and allowing the rolling stock to form a loop between the front and rear roll stands as a result of gravity without support and stabilizing the loop by means of a loop control unit.

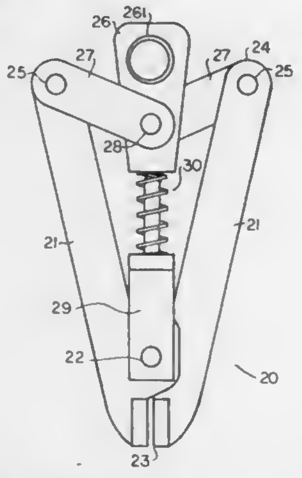
5,709,120
STRAIGHT LINE DRAWING DEVICE

Paul L. Shilling, 309 S. Folcroft St., Baltimore, Md. 21224

Filed Feb. 23, 1996, Ser. No. 604,803

Int. Cl.⁶ B21C *1/28*

U.S. Cl. 72—290 **11 Claims**



1. A pair of draw tongs intended for use on a straight line drawing device, said tongs comprising:

two straight jaw arms, two lateral link arms, a draw block, pivoted connections and a positive stop;

said two straight jaw arms each possessing two ends, one said end comprising jaws proximate a pivoted connection between said jaw arms, said other end being distal said jaws;

said two lateral link arms each possessing two ends, one said end having a central pivoted connection with said draw block, said other end possessing a distal pivoted connection with said distal end of one said jaw arm;

said central pivoted connection of both said lateral link arms with said draw block being disposed closer to said jaws along a draft line than both said distal pivoted connections of said lateral link arms with said distal jaw arm ends, said lateral link arms therefore being inverted with relation to the direction of the draft and acting outward upon said jaw arm distal ends with tension applied in the direction of the draft upon said draw block thereby closing said jaws;

said positive stop comprising means of restricting the outward displacement of said distal jaw arms effected by the tension applied upon said draw block and translated by said lateral link arms into an outward force upon said distal jaw arm ends thus prohibiting said lateral link arms from attaining perpendicularity with the draft line, said positive stop comprising means other than closing contact between said jaws.

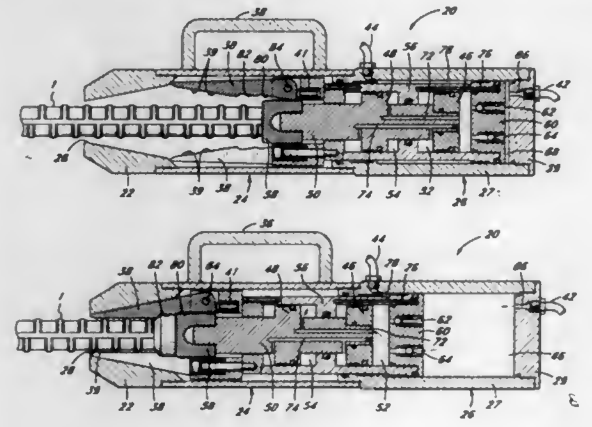
5,709,121
METHOD AND APPARATUS FOR HYDRAULICALLY UPSETTING A STEEL REINFORCEMENT BAR

Michael J. Camping, Cote How, England, assignor to Headed Reinforcement Corporation, Fountain Valley, Calif.

Filed Jun. 21, 1996, Ser. No. 668,127

Int. Cl.⁶ B21J *5/08*

U.S. Cl. 72—316 **20 Claims**



9. An upsetting tool to upset a pre-heated end of a reinforcement bar so that the reinforcement bar can be coupled to an opposing reinforcement bar, said upsetting tool comprising:

an open mouth to receive said pre-heated end of the reinforcement bar therewithin;

a plurality of rotatable jaws to releasably grasp said pre-heated end of the reinforcement bar received within said open mouth, said jaws adapted to rotate towards and into clamping engagement with said pre-heated end to prevent the displacement of the reinforcement bar, and said jaws also adapted to rotate away from said pre-heated end to release the reinforcement bar after said pre-heated end has been upset;

upsetting means located in axial alignment with said pre-heated end of the reinforcement bar and adapted to upset said pre-heated end;

a cylinder;

a hydraulic piston located within and movable reciprocally through said cylinder, said hydraulic piston interconnected with said upsetting means; and

hydraulic fluid source means communicating with said cylinder to supply hydraulic fluid to said cylinder to generate a hydraulic pressure therein for driving said hydraulic piston in a first direction through said cylinder for causing said upsetting means to move towards said pre-heated end of the reinforcement bar to compress said pre-heated end and thereby form an upset head, said hydraulic piston being driven in an opposite direction through said cylinder so that said hydraulic fluid is removed from said cylinder and returned to said hydraulic fluid source means for causing said upsetting means to be withdrawn from said upset head.

5,709,122
TOOL

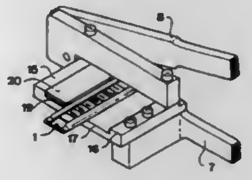
Lars Hammar, Box 15, S-790 21 Bjursås, Sweden

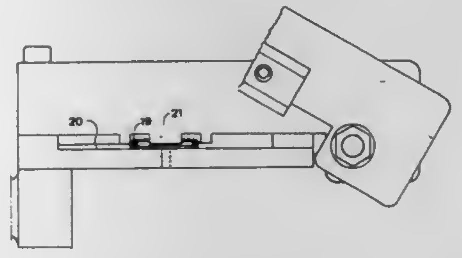
Filed Apr. 18, 1996, Ser. No. 634,555

Claims priority, application Sweden, Apr. 19, 1995, 9501435

Int. Cl.⁶ B21D *28/00;39/00*

U.S. Cl. 72—326 **11 Claims**





1. A tool for manufacturing signs wherein selective sign display elements are retained on a base profile section by folded engagement of opposite edge portions of the base section, said tool comprising at least two handle members relatively displaceable with respect to each other, said handle members defining cutting means for severing the base section, said handle means further including compression means for deforming the base section to secure the sign display elements from disengagement with the base section, one of said handle members defining a guide surface for positional alignment of the base section, compensation means for displacing the guide surface generally perpendicular to a longitudinal axis of the base section to accommodate respective base sections having different width dimensions, stop means extending from another of said handle members for restricting movement of the sign display elements in the direction of the cutting means, said stop means including a first tongue member having a width dimension being less than the distance between the folded opposite edge portions of the base section and positionable in confronting relationship to the sign display elements and a second tongue member being spaced from the first tongue member for accommodating the folded opposite edge portions between the respective first and second tongue members.

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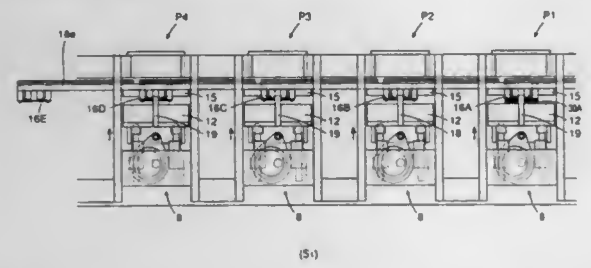
5,709,123
PRESS WORKING MACHINE WITH A VERTICALLY MOVABLE LOWER MOLD AND A HORIZONTALLY MOVABLE WORKPIECE CARRIER

Toshiaki Enami, Kyoto, Japan, assignor to Enami Seiki Mfg. Co., Ltd., Yao, Japan
Filed Feb. 27, 1996, Ser. No. 607,692
Claims priority, application Japan, Mar. 13, 1995, 7-052152
Int. Cl.^{6} B21J *13/08*
U.S. Cl. 72—405.1 **9 Claims**

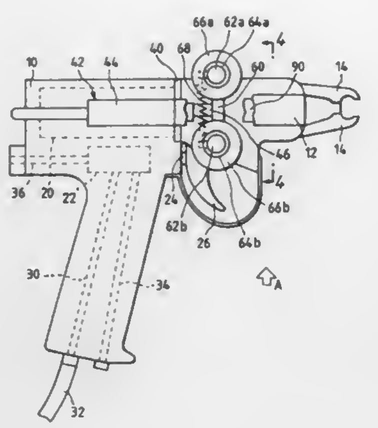


1. A press working machine for plastically deforming a workpiece consisting of a deformable material by pressing said workpiece between an upper mold and a lower mold thereby forming said workpiece into a prescribed shape, said press working machine comprising a press working machine unit that comprises:
- an upper frame adapted to receive the upper mold;
- a lower mold base adapted to receive the lower mold thereon;
- an eccentric cam arrangement including a pivot portion pivotally supporting said lower mold base, and a driving shaft portion serving as a rotation center of said cam arrangement and driving said cam arrangement;
- a servo motor connected with said driving shaft portion for rotationally driving said eccentric cam arrangement to selectively move said lower mold base among a first position for mounting the lower mold on said lower mold base, a second position for exchanging the workpiece, a third position for placing the workpiece on and removing the workpiece from the lower mold, and a fourth position for pressing the workpiece between the upper mold and the lower mold;
- a workpiece carrier that is movable in a horizontal direction between a first state adapted for placing the workpiece on and removing the workpiece from the lower mold and a second state in which said work piece carrier does not interfere with the upper mold and the lower mold when said lower mold base is in said fourth position;
- a safety pin arranged at a prescribed position on said lower mold base and extending upwardly therefrom;
- a safety plate provided on said workpiece carrier, having a first hole capable of receiving said safety pin when said workpiece carrier is in said first state and said lower mold base is at said third position; and
- a backup block provided on the upper mold, having a second hole capable of further receiving said safety pin when said safety pin is received in said first hole in said safety plate.

5,709,124
HOG RING CLAMPING DEVICE

Takashi Murayama, Honjo, Japan, assignor to Meiho Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1997, Ser. No. 786,765
Claims priority, application Japan, Feb. 2, 1996, 8-017632
Int. Cl.^{6} B21D *7/06;* **B23Q** *7/10*
U.S. Cl. 72—409.03 **11 Claims**

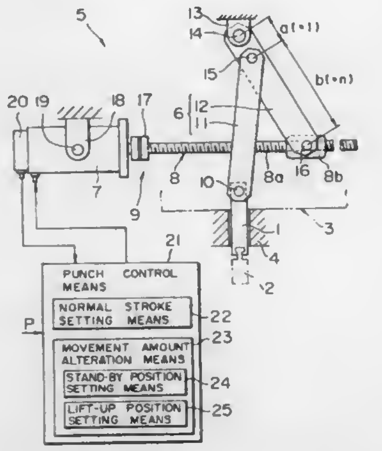
1. A hog ring clamping device comprising:
- a) a hog ring clamping device body;
- b) a hog ring magazine mounted onto said hog ring clamping device body for loading a plurality of hog rings;
- c) jaws provided in said hog ring clamping device body for clamping a hog ring;
- d) a main pneumatic cylinder for moving said jaws pivotally;



- e) a feed pneumatic cylinder attached to said hog ring clamping device body;
- f) at least one feed member mounted to a piston rod of said feed pneumatic cylinder with a unidirectional rotating means between and placed in a position to be in contact with hog rings loaded into said hog ring magazine so as to feed hog rings to said jaws;
- g) a flat spring with both ends fixed to said hog ring clamping device body; and
- h) an extrusion portion provided in said flat spring and extruding toward the neighborhood of said feed member so that the extrusion portion can press against said hog rings.

5,709,125
PUNCH DRIVE APPARATUS

Hiromu Nakazawa, Tokorozawa, and Yasuhiko Hukami, Nishikasugai-gun, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Sep. 6, 1995, Ser. No. 523,816
Claims priority, application Japan, Oct. 3, 1994, 6-264632
Int. Cl.^{6} B21J *9/18*
U.S. Cl. 72—451 **3 Claims**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a(=1)
15
b(=n)
20 19
18 17
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11
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8
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8a
16
8b
9
21
1
3
4
2
P
PUNCH CONTROL MEANS
NORMAL STROKE SETTING MEANS
22
MOVEMENT AMOUNT ALTERATION MEANS
23
STAND-BY POSITION SETTING MEANS
24
LIFT-UP POSITION SETTING MEANS
25

1. A punch drive apparatus for reciprocating a ram through a full cycle between an extended and a retracted position comprising:
- a punch;
- a linearly, movable ram operatively connected to said punch;
- a first lever having one end pivotally connected to said ram;
- a second lever pivotally connected at one end to a pivot support disposed substantially in-line with said ram; and
- a movement drive apparatus containing means operatively connected to the other end of said second lever for pivotally moving said second lever about said pivot support so that said other end of said second lever moves between both sides of a line extending between said ram and said pivot support during a full cycle of the reciprocation of said ram, and

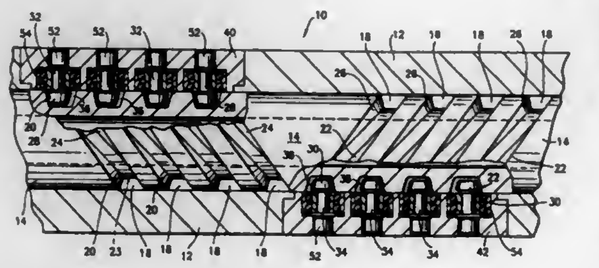
- the other end of said first lever being pivotally connected to said second lever intermediate said pivot support and said other end of said second lever.

5,709,126

Patent Not Issued For This Number

5,709,127
MECHANICAL OSCILLATOR

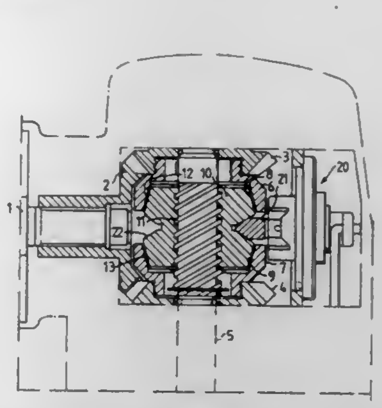
John D. Parsons, Bethel, Conn., assignor to Norco, Inc., Georgetown, Conn.
Continuation of Ser. No. 333,735, Nov. 3, 1994, Pat. No. 5,592,852. This application Jul. 17, 1996, Ser. No. 680,642
Int. Cl.^{6} F16C *19/54;25/12*
U.S. Cl. 74—57 **9 Claims**



1. A mechanical oscillator comprising, in combination:
- a) a shaft having an endless groove in its periphery,
- b) a nut body carried by and slidable along said shaft on the peripheral portion thereof which has the endless groove,
- c) a roller pin carried by said nut body, having a nose portion extending into and engaging a wall of the said endless groove and having a tail portion disposed deeply in the nut body,
- d) anti-friction bearings carried by the nut body, said bearings carrying the said roller pin,
- e) said anti-friction bearings comprising a ball bearing disposed adjacent the nose portion of the roller pin, and a needle bearing located adjacent the ball bearing and engaged with a tail portion of the roller pin, and
- f) a carrier strip demountably secured to the nut body, on which the anti-friction bearings are mounted,
- g) said nut body having an exterior recess in which the carrier strip is mounted,
- h) said recess having a bottom wall with an opening to receive the roller pin, and a wall portion surrounding said opening, said wall portion engaging the outer race of the said ball bearing, and effecting a retraction of the ball bearing with respect to the carrier strip as the latter is seated in the recess of the nut body.

5,709,128
REVERSING GEAR FOR BOATS

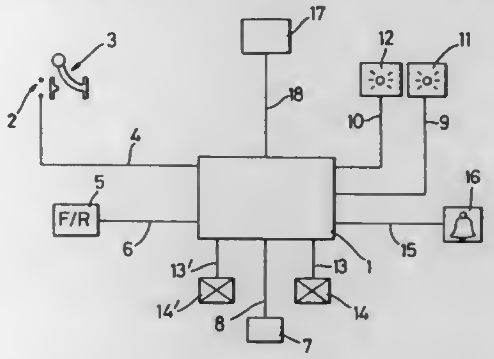
Lars Skyman, Gothenburg, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden
PCT No. PCT/SE94/01036, § 371 Date Jun. 22, 1995, § 102(e) Date Jun. 22, 1995
PCT Filed Nov. 3, 1994, Ser. No. 464,757
Claims priority, application Sweden, Nov. 3, 1993, 9303632
Int. Cl.^{6} B63H *23/08;* **F16H** *63/30;* **F16D** *21/04*
U.S. Cl. 74—323 **4 Claims**



1. Transmission comprising: a shaft, a pair of gears provided with frictional elements and freely rotatably mounted on said shaft, an engaging sleeve with frictional surfaces and displaceable on said shaft, said frictional surfaces being disposed to cooperate with the frictional elements of the gears to lock one of the gears to the shaft, and a dog which extends radially into a V-groove disposed excentrically in relation to a rotational axis of the engaging sleeve and which is joined to a pin housed in a bore in a rotatable sleeve element, said bore running excentrically relative to the axis of rotation of the sleeve element so that rotation of the sleeve element results in displacement of the dog in the longitudinal direction of said shaft, and the dog being connected to the pin via an articulated joint so that when the sleeve element is rotated the dog pivots relative to the pin around at least one pivot axis which is parallel to the rotational axis of the engaging sleeve.

5,709,129
GEARSHIFT CONTROL SYSTEM

Yvon Le Clezio, Beauvais, France, assignor to Massey-Ferguson S.A., France
Filed Dec. 20, 1995, Ser. No. 575,720
Claims priority, application United Kingdom, Dec. 24, 1994, 9426250
Int. Cl.^{6} F16H *59/56;61/16*
U.S. Cl. 74—336 R **6 Claims**



1. A preselect gear control system for use with a vehicle clutch and transmission assembly having a plurality of gear ratios and a neutral gear ratio, said preselect control system comprising:
- a gearshift actuator adapted to operate the transmission in one of the plurality of gear ratios or in the neutral gear ratio;
- a clutch control member adapted to operate the clutch in either an engaged condition or a disengaged condition;
- a clutch switch responsive to movement of said clutch control member for generating a signal when the clutch is operated in the disengaged condition;
- a preselect switch for generating a signal which is representative of a desired gear ratio for the transmission;
- a control unit responsive to said clutch switch signal and said preselect switch signal for actuating said gearshift actuator to operate the transmission in the neutral gear ratio if the clutch switch signal is generated for longer than a first predetermined time period and less than a second predetermined time period, and for actuating said gearshift actuator to operate the transmission in the desired gear ratio if the clutch switch signal is generated for longer than said second predetermined time period.

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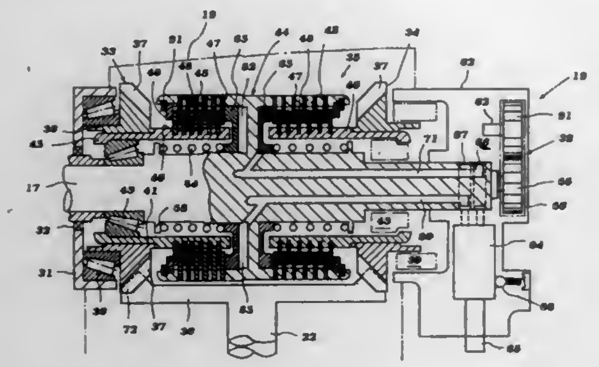
5,709,130
TRANSMISSION CLUTCH

Takayoshi Suzuki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jan. 30, 1996, Ser. No. 593,790
Claims priority, application Japan, Jan. 31, 1995, 7-013870
Int. Cl.^{6} B63H *20/20;23/30*
U.S. Cl. 74—378 **24 Claims**

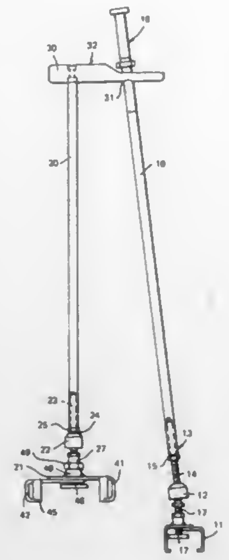


1. A reversing transmission comprised of a first shaft having a bevel gear affixed for rotation therewith, a second shaft extending transversely to said first shaft and having second and third bevel gears rotatably journaled thereon, said second and said third bevel gears being enmeshed with said first bevel gear on opposite sides thereof, and a pair of clutch devices for selectively coupling said second and said third bevel gears, respectively, for rotation with said second shaft for establishing a driving connection between said first and said second shafts, at least one of said clutch devices being comprised of an inner sleeve member affixed to but not integral with a hub portion one of said bevel gears and at least one clutch disc fixed for rotation with said sleeve member, and an anti-friction bearing cooperating with said inner sleeve member for rotatably journaling said inner sleeve member, said anti-friction bearing being disposed between said second shaft and said inner sleeve member for also journaling said second shaft.

5,709,131
VEHICLE CONTROL APPARATUS

Neil Gummery, Mansion House, St. Helens Road, Ormskirk, Lancashire, L39 4QJ, United Kingdom
PCT No. PCT/GB95/00355, § 371 Date Aug. 21, 1996, § 102(e) Date Aug. 21, 1996, PCT Pub. No. WO95/22469, PCT Pub. Date Aug. 24, 1995
PCT Filed Feb. 21, 1995, Ser. No. 693,222
Claims priority, application United Kingdom, Feb. 22, 1994, 9403309
Int. Cl.^{6} B60K *26/04*
U.S. Cl. 74—481 **13 Claims**

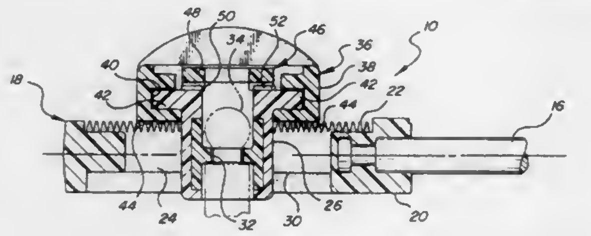
1. A vehicle control apparatus for adapting a vehicle accelerator pedal and a vehicle brake pedal to manual operation, comprising:
- an elongate accelerator control member (**10**) having at one end thereof a first securing means (**11**) for securing the accelerator control member (**10**) to a vehicle accelerator pedal;
- an elongate brake control member (**20**) having at one end thereof a second securing means (**21**) for securing the brake control member (**20**) to a vehicle brake pedal;
- characterised in that at least one of said first (**11**) and said second (**21**) securing means comprises:
  - a body portion (**41**) having a first bent over portion (**51**), said first bent-over portion (**51**) operatively locatable around a first edge of a vehicle pedal;
  - a bracket portion (**42**) having a second bent over portion (**52**), said second bent-over portion (**52**) operatively locatable around a second edge of a vehicle pedal, said bracket portion (**42**) operatively slidably displaceable with respect to said body portion (**41**);



  - retaining means (**44**) for retaining said bracket portion (**42**) at a fixed position in relation to said body portion (**41**); and
- locking means (**27**) operatively passing through an aperture in said body portion (**41**), said locking means (**27**) having a locking plate (**46**), said locking means (**27**) operatively urging said locking plate (**46**) against a surface of a vehicle pedal.

5,709,132
CABLE LENGTH ADJUSTMENT MECHANISM

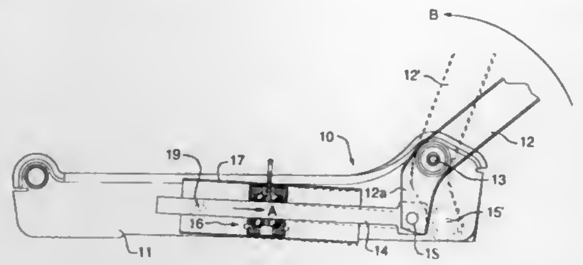
Allen G. Irish, Flint, and Grant Webb, Howell, both of Mich., assignors to Telefex Incorporated, Troy, Mich.
Filed Jul. 22, 1996, Ser. No. 681,228
Int. Cl.^{6} F16C *1/10*
U.S. Cl. 74—502.4 **20 Claims**



12. A core length adjustment device (**18**) for a motion transmitting remote control assembly (**10**) for transmitting longitudinal forces along a curved path, said device (**18**) comprising:
- a housing (**20**) having a plurality of teeth (**22**);
- a slider (**26**) longitudinally moveable within said housing (**20**) between maximum and minimum length adjusted positions;
- an interlock (**36**) having at least one tooth (**44**) transversely movable relative to said slider (**26**) between a shipping condition in which said tooth (**44**) is disengaged from said teeth (**22**) of said housing (**20**) and an engaged condition in which said tooth (**44**) engages said teeth (**22**) of said housing (**20**) to transfer longitudinal forces therebetween;
- and characterized by serviceable retainer means (**46**) isolated from said longitudinal forces for automatically restraining said interlock (**36**) in said engaged condition and selectively releasing said interlock (**36**) to return to said shipping condition without unfavorable influences resulting from said longitudinal forces; said serviceable retainer means (**46**) including a cantilevered tang (**48**) having a cam foot (**50**);
- said housing (**20**) including an interior track (**24**) in which said slider (**26**) is slidably retained;
- said slider (**26**) including a ramping retainer surface (**52**).

5,709,133
LINEAR LOCKING DEVICE

Richard J. Coggon; Gulam Premji, both of Mississauga; Adolf Notta, Toronto, and Velio Pressacco, Mississauga, all of Canada, assignors to Bertrand Faure Components Ltd., Mississauga, Canada
Filed Feb. 21, 1996, Ser. No. 604,609
Claims priority, application Canada, Nov. 9, 1995, 2 162 524
Int. Cl.^{6} B60N *2/20;* **G05G** *5/22*
U.S. Cl. 74—531 **14 Claims**

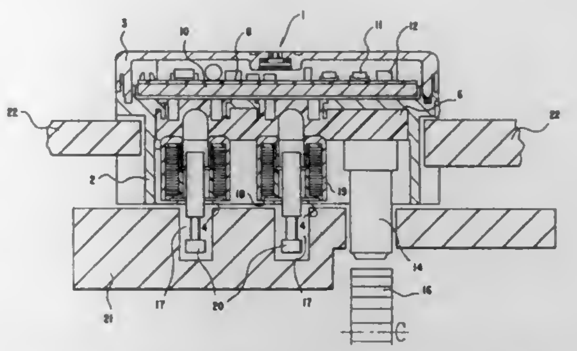


1. In a vehicle seat assembly having a seat locking assembly, said seat locking assembly comprising:
- a) a moveable elongated element defining a longitudinal axis;
- b) first and second roller ball assemblies which are coaxial with said elongated element, each roller ball assembly having at least two substantially equidistantly spaced-apart roller balls surrounding said elongated element;
- c) first and second roller ball housings for containing said first and second roller ball assemblies respectively, which housings are coaxial with said elongated element and which have internal wedging surfaces for wedging said roller balls between said internal wedging surfaces and the elongated element;
- d) a locking member adjacent each roller ball assembly, said locking member being coaxial with said moveable elongated element and rotatable about said elongated element, each locking member having cam means for urging each roller ball in an adjacent roller ball assembly into wedging relationship between said internal wedging surface and said elongated element upon rotation of said locking member is rotated in a first direction so as to attain frictionally arresting contact of said roller balls and said elongated element, and for releasing the wedging relationship upon rotation of locking member in a second direction which is reverse to the first direction, so as to release said frictionally arresting contact; and
- e) a fixed retainer for retaining said roller ball assemblies, roller ball housings and locking members in cooperating relationship, and allowing said elongated element to move in a direction of said longitudinal axis.

5,709,134
CONTROL UNIT FOR AN AUTOMATIC TRANSMISSION

Michael Ulm, Alteglofsheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 29, 1996, Ser. No. 738,624
Int. Cl.^{6} F16H *57/02;* **H02B** *1/26*
U.S. Cl. 74—606 R **4 Claims**

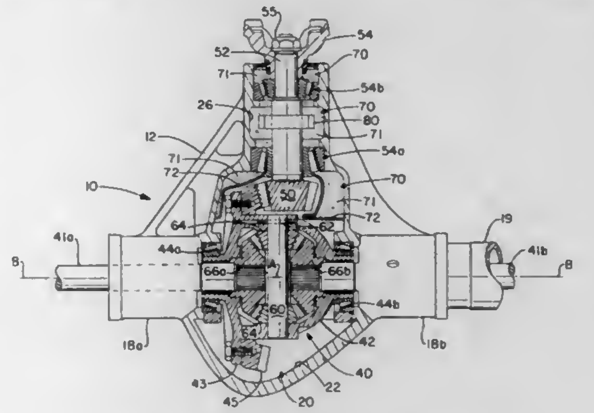
1. In a motor vehicle having an automatic transmission with a transmission housing, electromagnetic hydraulic valves and a rotating part disposed in the transmission housing, a control unit for the automatic transmission, comprising:
- a housing having an open bottom part with an interior;
- a carrier disposed in said housing;
- circuit components disposed on said carrier;
- valve coils for the electromagnetic hydraulic valves, said valve coils being disposed in said housing;
- a flexible compound in which said valve coils are embedded; and



- a rotational-speed sensor disposed in said interior of said open bottom part and embedded in said flexible compound, for detecting rotary motion of the rotating part in the transmission housing.

5,709,135
CLAM-SHELL SHAPED DIFFERENTIAL HOUSING AND LUBRICATION SYSTEM THEREFOR

Ralph W. Baxter, Ft. Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Apr. 4, 1996, Ser. No. 627,267
Int. Cl.^{6} F16H *57/02*
U.S. Cl. 74—607 **20 Claims**



1. A clam-shell shaped differential housings, comprising:
- a lower portion for receiving differential components, said lower portion including an upwardly open central section for rotatably receiving a differential case, and including an upwardly open input shaft support region for rotatably receiving a torque input shaft;
- an upper portion for connection to said lower portion to thereby enclose said upwardly open central section and said upwardly open input shaft support region such that a generally hollow differential gearing chamber is defined within said clam-shell shaped differential housing; and
- a lubricant reservoir formed in said input shaft support region of said differential housing.

5,709,136
POWER DRIVEN TOOLS

Eli C. Frenkel, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Feb. 25, 1996, Ser. No. 621,345
Int. Cl.^{6} B25B *21/00*
U.S. Cl. 81—57.13 **11 Claims**

1. In a power driven socket wrench having;
- a) a socket member with a polygonal central opening for engaging a nut or bolt head;

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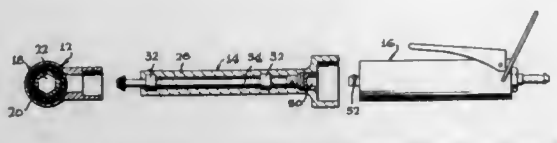


b) a bearing member extending circumferentially around and rotatably supporting said socket member for rotation on an axis at the center of said opening;

c) a housing member around said socket member and said bearing member;

d) said socket member having a series of gear teeth thereon extending circularly around its axis;

e) a power drive for said socket member;

f) the improvement which comprises a plurality of individual drive adapters for use in said power driven socket wrench and each of said drive adapters having a length which is different from the other drive adapters to enable the wrench to be extended into confined areas of differing depths, each drive adapter connecting said power drive and said socket member, each said drive adapter further comprising:

1) an elongate drive shaft mounted on an axis generally perpendicular to the axis of rotation of said socket member;

2) an input gear mounted on one end of said drive shaft and in meshing engagement with the gear teeth on said socket member for rotation thereof;

3) detachable connecting means between the power drive and the other end of said drive shaft; and

4) detachable locking means between said drive adapter and said housing member adjacent said one end of said drive shaft for optionally attaching and detaching said drive adapter from said housing member and said power drive such that differing sized drive adapters may be attached to said power drive increasing the versatility of the socket wrench to be extended into confined regions at a desired depth.

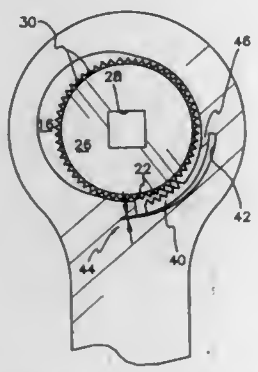
5,709,137
TORQUE CLUTCHED REVERSIBLE RATCHET WRENCH

Gordon D. Blacklock, 3321 Columbia NE., Albuquerque, N. Mex. 87107

Continuation-in-part of Ser. No. 427,256, Apr. 24, 1995, Pat. No. 5,653,151. This application Apr. 15, 1996, Ser. No. 632,157

Int. Cl.^{6} B25B *23/14*

U.S. Cl. 81—467 **22 Claims**



1. A reversible ratchet wrench for driving fasteners and interchangeable tools, comprising:

a first working head having an elongated handle and a chamber therein, said chamber having a generally circular internal surface having a first portion including internally directed teeth and a second portion of smooth surface, said generally circular internal surface having a major diameter dimension and a minor diameter dimension of magnitude less than that of said major diameter;

a driven receptacle rotatably disposed within said chamber, said receptacle having a generally circular external surface having externally directed teeth interfittably cooperating with said internally directed teeth of said working head, said receptacle further having apparatus for engaging a tool usable with said reversible ratchet wrench,

each one of said externally directed teeth of said receptacle and said internally directed teeth of said working head having two exposed intersecting faces disposed at a pitch causing slippage when said reversible ratchet wrench is rotated in one direction and causing engagement when said reversible ratchet wrench is rotated in the other direction,

said receptacle having a receptacle diameter dimension of magnitude slightly less than that of said minor diameter dimension of said circular internal surface of said chamber of said first working head, such that said externally directed teeth of said receptacle are constrained against moving out of engagement with said internally directed teeth of said first working head when said reversible ratchet wrench is rotated against a resistance in a first direction, a torque arising from the resistance and urging said receptacle into engagement with said working head, and said externally directed teeth of said receptacle are enabled to move out of engagement with said internally directed teeth of said working head when said reversible ratchet wrench is rotated in an opposite direction; and

apparatus for limiting torque applied to said receptacle, comprising an arm anchored to said chamber of said working head, said arm supporting said internally directed teeth of said chamber,

having apparatus for moving into a first position assuring engagement of said internally directed teeth of said chamber of said working head with said externally directed teeth of said receptacle and into a second position disengaging said internally directed teeth of said chamber of said working head from said externally directed teeth of said receptacle, and

having a spring biasing said arm into said first position.

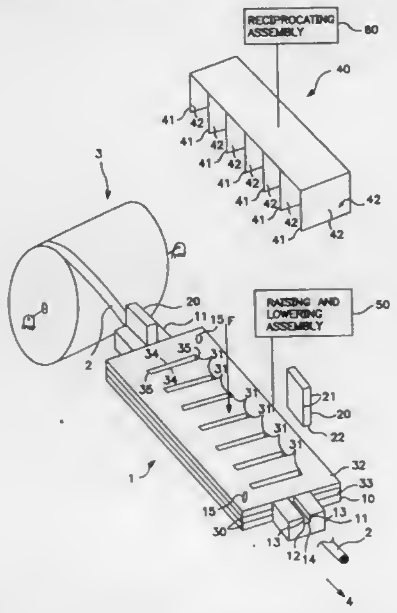
5,709,138
METHOD AND APPARATUS FOR PRECISION CUTTING OF FIBERS

Paul D. Rimer, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation of Ser. No. 176,259, Jan. 3, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 698,279

Int. Cl.^{6} B26D *1/11*

U.S. Cl. 83—18 **10 Claims**



10. An apparatus for precision cutting of a fiber tow, comprising:

two end block assemblies separated from each other by a predetermined distance, each end block assembly including an end block having an end block channel and an end block wedge receivable in the end block channel;

a pair of guide plates disposed between the two end block assemblies, at least a first one of the pair of guide plates being movable with respect to the two end block assemblies, the pair of guide plates each having one or more slots therein, the one or more slots in the first one of the pair of guide plates corresponding to and aligning with the one or more slots in a second one of the pair of guide plates, the one or more slots being disposed at predetermined distances relative to one another and relative to the two end block assemblies;

a cutter having cutting blades corresponding to the one or more slots in the pair of guide plates and being movable into and out of the one or more slots;

wherein a length of fiber tow is clamped in a taut condition by the two end block assemblies, the taut length fiber tow extends between and is held in position by the pair of guide plates, and the one or more cutting blades are moved into and guided by the one or more slots to cut the taut length of fiber tow into lengths corresponding to the predetermined distances between the one or more slots and the two end block assemblies.

5,709,139
PUNCHING APPARATUS FOR MOVING A PUNCHING UNIT IN A CIRCUMFERENTIAL DIRECTION OF A CYLINDRICAL INNER SURFACE SCANNER

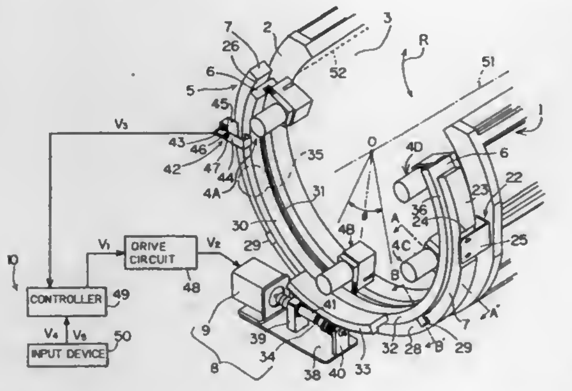
Yoshio Shimizu; Touru Kawata, and Hiroshi Nomoto, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Feb. 10, 1995, Ser. No. 387,063

Claims priority, application Japan, Feb. 10, 1994, 6-037732

Int. Cl.^{6} B26F *1/08*

U.S. Cl. 83—54 **15 Claims**



1. A punching apparatus to punch holes in a photosensitive material for use within a cylindrical inner surface scanner, which includes a cylindrical inner surface drum having an inner surface and a central axis, said punching apparatus comprising:

a plurality of punching units for punching holes in said photosensitive material which is mounted on said inner surface; and

moving means for moving said plurality of punching units within a predetermined range in a circumferential direction of said cylindrical inner surface drum, said moving means moving all of or a portion of said plurality of punching units so that at least two of said punching units perform punching at punching positions which are determined on the basis of a size of said photosensitive material.

5,709,140
HYDRAULIC CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

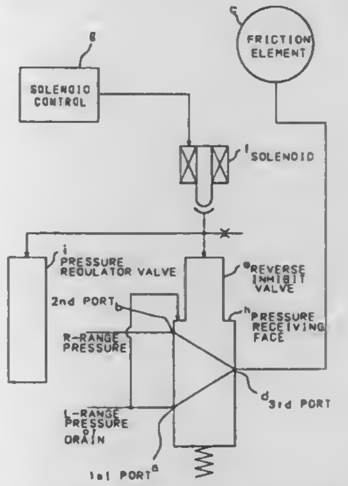
Ikuo Hirose, Fuji, Japan, assignor to Jatco Corporation, Japan

Filed Jun. 26, 1996, Ser. No. 670,632

Claims priority, application Japan, Jun. 29, 1995, 7-164026

Int. Cl.^{6} F15B *13/044;* **F16H** *61/16*

U.S. Cl. 91—459 **6 Claims**



1. A hydraulic control device for an automatic transmission, comprising:

a reverse inhibit valve including a first port receiving a forward low-speed range pressure generated when a forward low-speed range is selected, a second port receiving a reverse pressure generated when a reverse range is selected, and a third port that communicates with a friction element when one of the forward low-speed range and the reverse range is selected;

a solenoid for generating a solenoid pressure to be applied to one end of a spool of said reverse inhibit valve; and

solenoid control means for controlling said solenoid so as to generate the solenoid pressure in a controlled manner; and wherein

said reverse inhibit valve is placed in a selected one of a first state in which said first port communicates with said third port, and a second state in which said second port communicates with the third port, depending upon whether the solenoid pressure is applied to said one end of said spool of the reverse inhibit valve or not, and wherein the reverse inhibit valve is placed in said first state in which the first port communicates with the third port when the reverse range is selected during forward running of a vehicle, so that an oil pressure of said friction element is drained through the first port.

5,709,141
VARIABLE DISPLACEMENT HYDRAULIC SYSTEM

Ryota Ohashi; Shigenori Sakikawa, and Shinya Sakakura, all of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Japan

Division of Ser. No. 294,820, Aug. 26, 1994. This application Sep. 12, 1995, Ser. No. 526,975

Claims priority, application Japan, Aug. 26, 1993, 5-211207

Int. Cl.^{6} F01B *3/02*

U.S. Cl. 92—12.2 **14 Claims**

1. A variable displacement hydraulic system comprising:

a housing;

an arcuate contact surface provided at an inner surface of said housing;

a thrust metal mounted to said arcuate contact surface of said housing;

a cylinder block having a rotary axis provided with a plurality of pistons movable in reciprocation and contained in said housing;

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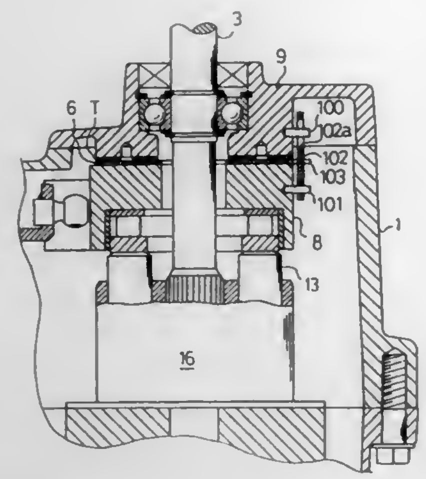
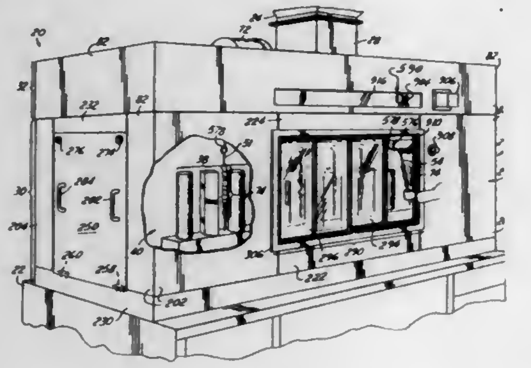


a swash plate having a central opening and provided at both sides thereof with outwardly curved portions, said outwardly curved portions of said swash plate moving along said arcuate contact surface to thereby control the reciprocation of said pistons;
a rotary shaft connected to said cylinder block and extending through said opening of said swash plate to extend along said rotary axis; and
an arcuate plate which is provided on said outwardly curved portions of said swash plate and is formed of a material having a smooth surface and high sliding efficiency, whereby said arcuate plate slidably contacts said thrust metal.

5,709,142
COOKING OVEN AND METHOD

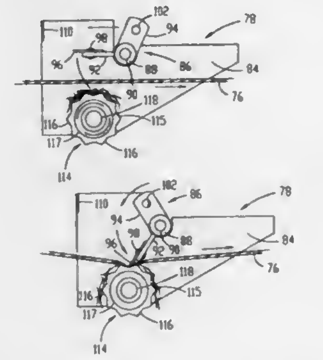
John Nersesian, 1930 Ferry Park, Detroit, Mich. 48208
Division of Ser. No. 275,103, Jul. 14, 1994, Pat. No. 5,490,451, which is a division of Ser. No. 36,342, Mar. 24, 1993, Pat. No. 5,377,582. This application Dec. 28, 1995, Ser. No. 579,790
Int. Cl.^{6} A47J *37/04*
U.S. Cl. 99—420 **16 Claims**



1. A method of cooking an array of food products removably attached to a skewer comprising the steps of:
[a] providing a variety of cookable and individually impaleable discrete food products having individually differing flavors, and selectively prearranging and impaling said products on a skewer for cooking in a predetermined array with a basting one of the products disposed above at least one of the remainder of the so impaled products when the skewer is oriented to be hung vertically;
[b] carrying said skewered food products oriented in such a vertical array on said skewer with said skewer removably suspended vertically on a conveyor operable for carrying the skewer in a horizontal travel path through a cooking oven chamber wherein the path travels adjacent a heating element array operable to cause cooking of said food products;
[c] basting the food products as they are being cooked by causing gravitational juice drippage from the basting one of the food products carried above the at least one of the remainder of suspended food products in said skewer-impaled vertical array,
[d] gravitationally collecting juice drippage from said food carrying skewer in a collection means disposed relative to the oven chamber substantially vertically beneath said travel path;
[e] detecting the cooking time of the skewer-impaled array of said food products as a predetermined function of oven cooking travel time of said food products while so suspended on the skewer and being carried on the conveyor in the oven chamber; and
[f] displaying said oven cooking travel time as a function of said skewer travel along such travel path to facilitate identifying said skewer with said food products impaled thereon and having a desired done-ness for its retrieval from suspension on the conveyor.

5,709,143
ROUND BALER TWINE CUTTER

Paul Bentley, Gainesville, Tex., assignor to Hay & Forage Industries, Hesston, Kans.
Filed Nov. 21, 1995, Ser. No. 560,273
Int. Cl.^{6} B65B *63/04;* **A01F** *15/07;* **B26D** *1/56*
U.S. Cl. 100—5 **36 Claims**

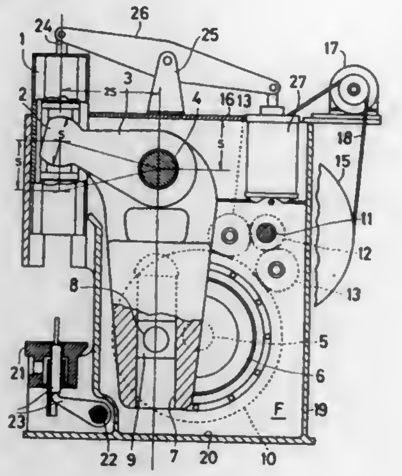


26. A twine cutter for attachment to a round baler, wherein the baler has mechanism for wrapping successive bales formed therein with twine, said cutter comprising:
a rotatable anvil mountable to the baler on one side of the path of travel of the twine; and
a knife mountable to the baler on an opposite side of the path of travel of the twine for swinging movement towards the anvil,
said knife and anvil cooperating to sever twine located therebetween when the knife swings into engagement with the anvil.

33. A rotatable anvil for use with a twine cutting knife of a round baler, said anvil comprising:
a generally cylindrical body having a corrugated, peripheral cutting surface for receiving the knife when the anvil and knife are interengaged,
said corrugated curing surface comprising circumferentially spaced V-shaped grooves, each of said grooves being formed of a pair of outwardly diverging faces that cooperatively define an angle greater than 90 degrees.

5,709,144
LEVER PRESS MACHINE HAVING A REDUCED SIZE BASED ON THE SETTING OF AN ASCENT/DESCENT STROKE OF A RAM

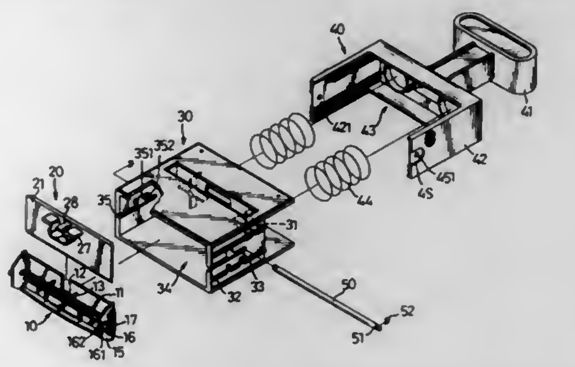
Hiroyasu Shiokawa, 9-3, Sone-Nishimachi 4-Chome, and Shozo Shiokawa, 3-8-203, Minami Sakurazuka 1-Chome, both of Toyonaka City, Prefecture of Osaka 561, Japan
Filed Jul. 24, 1996, Ser. No. 685,530
Claims priority, application Japan, Sep. 4, 1995, 7-263422
Int. Cl.^{6} B30B *1/06;15/32*
U.S. Cl. 100—218 **3 Claims**



1. A lever press comprising:
a base having a width, a length, and a sidewall, said sidewall having an inside width and a height;
a ceiling board positioned on said base;
a ram slidably positioned in an opening formed in a front portion of said ceiling board, said ram having a width and a length;
a fulcrum shaft having a central axis;
a lever mounted on said fulcrum shaft, said ever including a lever head in engagement with said ram and a lower end forming a forked portion having a groove;
a crank shaft disposed as to be parallel to said fulcrum shaft, said crank shaft having a central axis;
a crank mounted on said crank shaft and having a radius;
a slider fitted in said forked portion;
a pin fitted in said slider, said pin having a diameter;
a large gear wheel, connected to said crank wheel, having a pitch diameter and a thickness;
a plurality of idle wheels mounted so as to engage a periphery of said large gear wheel;
a motive gear wheel mounted on a motive shaft, wherein said large gear wheel contacts said motive gear wheel through said idle wheels;
a brake wheel provided on a first end of said motive shaft;
a flywheel pulley provided on a second end of said motive shaft, said flywheel pulley having a clutch and a flywheel pulley diameter;
a motor, mounted on said ceiling board, for driving said flywheel pulley;
a working table disposed below said ram at a forward location of said base, said working table having a length and a width; and
a knock-out disposed in said working table and being drivingly coupled with a knock-out shaft, said knock-out having an arm which has a length and is coupled to a knock-out drive shaft,
wherein when a stroke(S) of said ram is set at 1 S:
the distance from the center of said leverhead to the central axis of said fulcrum shaft is 2 S;
the diameter of said fulcrum shaft is 0.75 S;
the distance from said fulcrum shaft central axis to said lower end of said lever is 4.7 S;
a lateral distance between a vertical line passing through the center of said fulcrum shaft and a vertical line passing through the center of said crank shaft is 0.85 S;
the distance between the central axis of said fulcrum shaft and the central axis of said crank shaft is 3.4 S;
the radius of said crank is 0.85 S;
the width of said groove is 0.8 S and the depth of said groove is 0.4 S;
the diameter of said pin is 0.5 S;
the pitch diameter of large gear wheel is 3.4 S and the thickness of said large gear wheel is 0.35 S;
the diameter of said crank wheel is 3.5 S and the thickness of said crank wheel is 0.4 S;
the diameter of said flywheel pulley is 3.5 S;
the ceiling board is located a distance of 1 S above the central axis of said fulcrum shaft;
the width of said base is 3.2 S and the length of said base is 2.6 S+3.25 S;
the inside width of said sidewall is 1.3 S+ 0.9 S and the height of said sidewall is 6.5 S to 7 S;
the length of said working table is 2.5 S and the width of said working table is 2.7 S;
the length of said knock-out arm is 0.85 S and said knock-out arm has a stroke length of 0.5 S; and
the width of said ram is 1.75 S and the length of said ram is 1.1 S.

5,709,145
MATRIX PLATE HOLDER AND MATRIX PLATE FOR A HAND STAMP

Shiny Shih, No. 31, Lane 349, Chung Cheng S. Rd., Yung Kang City, Tainan Hsien, Taiwan
Filed Feb. 26, 1997, Ser. No. 807,894
Claims priority, application Taiwan, Jan. 13, 1997, 86200487
Int. Cl.^{6} B41J *27/02*
U.S. Cl. 101—109 **3 Claims**



1. A matrix plate and a matrix plate holder for a hand stamp, wherein the matrix plate comprises:
a main plate defining a plurality of recesses at a first side face thereof, said recesses are used to accommodate a matrix;
a flexible mounting element attached to a second side face of the main plate opposite to the first side face, said mounting element comprising:
a guide attached to the main plate;
a pair of arc-shaped fitting portions integrally formed on two lateral sides of the guide, each of said arc-shaped fitting portions defining an engaging tip; and
a pair of manipulating wings integrally formed with the arc-shaped fitting portions; and the matrix plate holder comprises:
a main board defining a cutout;
two locating blocks located beside the cutout and each defining a locating recess; and
means for connecting the matrix plate holder to a casing of the hand stamp; whereby,
when the matrix plate and the matrix holder are assembled, the guide is fittingly received in the cutout, the fitting portions are fixedly clamped between the locating blocks and the engaging tips are received in the locating recesses so that the matrix plate and the matrix holder are fixedly connected together, and, by exerting a clamping force on the manipulating wings the engagement between the locating blocks and the arc-

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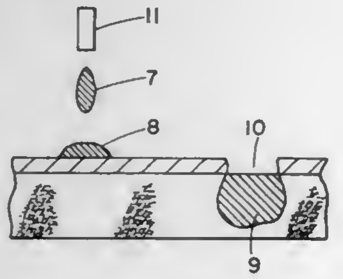
shaped fitting portions is released so that the matrix plate is detachable from the matrix plate holder.

5,709,146

PROCESS FOR PRODUCING AND PERFORATING AN AQUEOUS SOLVENT SOLUBLE STENCIL PRINTING SHEET

Hideo Watanabe, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan
Continuation of Ser. No. 302,366, Sep. 7, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 623,986
Claims priority, application Japan, Sep. 9, 1993, 5-224724
Int. Cl.^{6} B41N *1/24*
U.S. Cl. 101—128.21 8 Claims

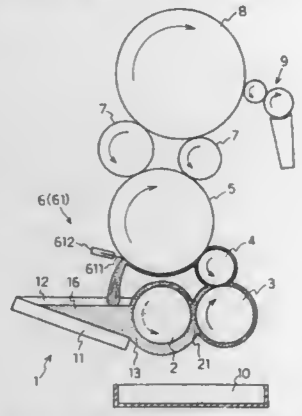


1. A process for producing a stencil printing sheet which comprises the step of laminating a water-soluble resin film to a porous substrate with an adhesive or by heat adhesion, and the step of perforating the water-soluble resin film by a single application of an aqueous solvent onto the water-soluble resin film, wherein the aqueous solvent which dissolves the water-soluble resin layer permeates into an interior of the porous substrate, and the step of controlling (i) the solubility of the aqueous solvent to the resin film, and (ii) the quantity of the aqueous solvent to thereby cause the aqueous solvent to be retained within the interior of the porous substrate during the process.

5,709,147

INK-FURNISHING APPARATUS WITH DEHYDRATION

Yoshinori Uera; Taiichi Ichizawa; Kohji Yoshizawa, all of Kawasaki, and Takashi Iijima, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Filed Dec. 14, 1995, Ser. No. 572,056
Claims priority, application Japan, Aug. 28, 1995, 7-243716
Int. Cl.^{6} B41F *31/02*
U.S. Cl. 101—350 4 Claims



1. An ink furnishing apparatus in a lithographic printing press for performing printing by furnishing relatively high viscous ink and a dampening water on printing plates on a plate cylinder, comprising:

a form roller contacting a peripheral surface of said printing plates, and rotating to displace the peripheral surface thereof in the same direction and at the same peripheral speed as the peripheral surface of said printing plates thereof;

a metering roller having a peripheral surface contacting with the peripheral surface of said form roller directly or via at least one downstream intermediate roller for matching rotation thereof with the form roller, and a large number of fine cavities being formed on the peripheral surface thereof for accumulating the ink, said metering roller rotating to displace the peripheral surface thereof in the same direction as any rollers contacting thereto, and in the same peripheral speed as the peripheral surface of the printing plates;

a doctor means for contacting with the peripheral surface of said metering roller;

an ink fountain positioned at the most upstream side in a route for furnishing the ink, said ink fountain comprising an opening at an upper portion thereof, an opening at a front portion thereof, side plates and a tilted base plate;

a fountain roller having a peripheral surface thereof located at a position for blocking the opening at the front portion of said ink fountain, and at a position in the vicinity of a front edge of said base plate of said ink fountain via a first gap, said peripheral surface thereof rotating to displace downwardly from the position for blocking the opening at the front portion of said ink fountain at a lower speed than that of the peripheral surface of the printing plates of said plate cylinder; and

an even number of upstream intermediate rollers provided between said fountain roller and said metering roller, amongst, a peripheral surface of a first intermediate roller located immediate downstream of said fountain roller being located in the vicinity of the peripheral surface of said fountain roller via a second gap smaller than said first gap, the peripheral surface of said first intermediate roller rotating to displace in the same direction to that of the peripheral surface of said fountain roller and at the same peripheral speed to the peripheral surface of said printing plates on said plate cylinder, the peripheral surfaces of respective upstream intermediate rollers including said first intermediate roller contacting sequentially to the peripheral surface of said metering roller, so as to rotate at the same direction and at the same peripheral speed to the peripheral surface of said printing plates on said plate cylinder; and a water receptacle vessel positioned downward from the route for furnishing the ink,

whereby, a first shearing force is exerted on said ink upon drawing out the ink deposited on the peripheral surface of said fountain roller through said first gap by rotation of said fountain roller, and a second shearing force is exerted on said ink due to difference of peripheral speeds of said fountain roller and said first intermediate roller upon transition of the ink from the peripheral surface of said fountain roller to the peripheral surface of said first intermediate roller across said second gap, thus water being separated from said ink, and the separated water being collected in said vessel.

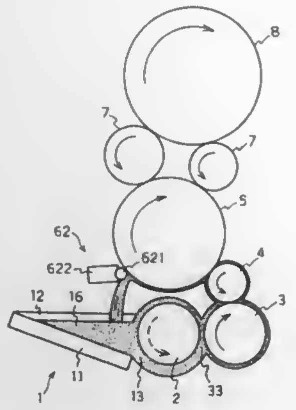
5,709,148

INK-FURNISHING APPARATUS

Yoshinori Uera; Taiichi Ichizawa; Kohji Yoshizawa, all of Kawasaki, and Takashi Iijima, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Filed Dec. 14, 1995, Ser. No. 572,533
Claims priority, application Japan, Jun. 24, 1995, 7-180673; Jul. 22, 1995, 7-207801
Int. Cl.^{6} B41F *31/04;31/06*
U.S. Cl. 101—350 51 Claims

1. An ink furnishing apparatus for a printing press for performing printing by furnishing an ink to a printing plate on a plate cylinder, comprising:

a form roller rotating in contact with a peripheral surface of the printing plate;



a metering roller rotating with contacting a peripheral surface thereof with the upstream side of the peripheral surface of said form roller in the direction of ink furnishing, and having a uniformly distributed large number of fine recesses on a peripheral surface thereof for receiving the ink;

an intermediate roller rotating with contacting a peripheral surface thereof with the upstream side of the peripheral surface of said metering roller in the direction of ink furnishing;

doctor means for contacting with the peripheral surface of said metering roller at a position downstream of the contact position between said intermediate roller and said metering roller and upstream of the contact position between said metering roller and said form roller;

an ink fountain opposing to the upper portion of said doctor means and opened at the front side and the upper side, and constituted of both side plates and tilted base;

a fountain roller having a peripheral surface located at a position for blocking the opened front side of said ink fountain, a position adjacent the front edge of said ink fountain via a first gap, and shifting downwardly at the position mating with said front side of said ink fountain; and

an uneven surface roller positioned adjacent the peripheral surface of said fountain roller at the downstream side position via a second gap narrower than said first gap, rotating with contacting with the peripheral surface of the intermediate roller at the upstream side position, and having a uniformly distributed unevenness;

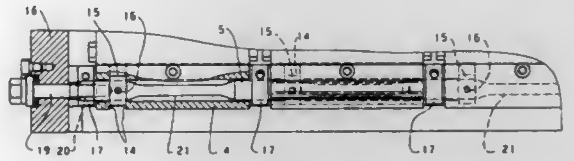
whereby said ink furnishing apparatus operating in such a manner that the ink drawn from said ink fountain by rotation of said fountain roller and having a thickness corresponding to said first gap is supplied to the peripheral surface with compression by passing through said second gap, is provided fluidity by compression and disrupture through contact between the peripheral surfaces of said uneven surface roller and said intermediate roller and contact between the peripheral surfaces of said intermediate roller and said metering roller for supplying to the peripheral surface of said metering roller, the excess amount of ink on the peripheral surface of said metering roller is scraped off by said doctor means and returned to said ink fountain for supplying substantially uniform amount of ink at any axial position of said metering roller to a printing plate on a plate cylinder via the peripheral surface of said form roller.

5,709,149

APPARATUS FOR TENSIONING PRINTING PLATES ON A CYLINDER OF A ROTARY PRINTING MACHINE

Werner Weber, Sandhausen, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany
Filed Mar. 1, 1996, Ser. No. 609,340
Claims priority, application Germany, Mar. 3, 1995, 195 07 368.1
Int. Cl.^{6} B41F *1/28*
U.S. Cl. 101—415.1 20 Claims

1. A device for tensioning a printing plate on a cylinder of a rotary printing press, said device comprising:



retaining apparatus to retain an end of a printing plate to a cylinder of a rotary printing press;

said retaining apparatus comprising a shaft;

said shaft being configured to be at least partially disposed within a cavity of a cylinder of a rotary printing press;

said shaft having a longitudinal axis;

said retaining apparatus comprising a tensioning element;

said tensioning element being rotatably disposed on said shaft;

said tensioning element being configured to retain at least a portion of an end of a printing plate to a cylinder of a rotary printing press;

stretching apparatus for stretching said shaft along the longitudinal axis;

said stretching apparatus comprising a ring-shaped member;

said ring-shaped member being fixedly disposed on said shaft;

said tensioning element comprising a depression being disposed adjacent said shaft;

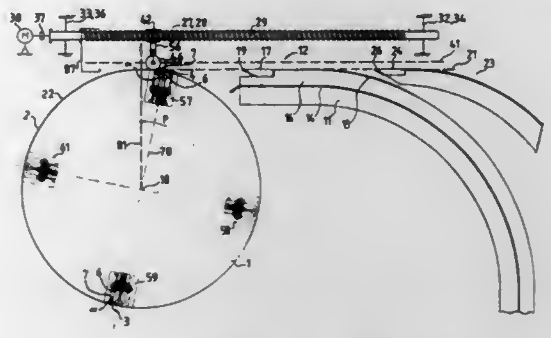
said ring-shaped member being at least partially disposed in said depression of said tensioning element; and

said depression of said tensioning element and said ring-shaped member each having dimensions to minimize relative axial movement between said tensioning element and said ring-shaped member.

5,709,150

DEVICE FOR ASSEMBLING, DISMANTLING AND TRANSPORTING EASILY BENT, ARC-SHAPED OBJECTS WITH FOLDED SUSPENSION EDGES

Reinhold Rudolf Dürr, Würzburg, and Bernhard Walter Wolfgang Muth, Veitshöccheim, both of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Germany
PCT No. PCT/DE95/00046, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/19262, PCT Pub. Date Jul. 20, 1995
PCT Filed Jan. 17, 1995, Ser. No. 669,391
Claims priority, application Germany, Jan. 17, 1994, 44 01 110.5; Jul. 14, 1994, 44 24 931.4
Int. Cl.^{6} B41F *1/28*
U.S. Cl. 101—415.1 15 Claims



1. A device for mounting, removing and transporting an easily bendable, curved printing plate with front and rear, dimensionally stable beveled suspension edges which are resistant to being bent open, and whose respective legs form an opening angle (alpha) of less than 90°, on and from a cylinder of a rotary printing press, which has at least one suspension strip of a nose-shaped cross section and a closure which engages said rear beveled suspension edge of the printing plate and which has pivotable resilient clamping flaps comprising:

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at least one printing plate preparation device positioned near the plate cylinder and fixed on a press frame and which can receive at least one pre-positioned printing plate;

a cross arm with at least one gripper and pressing device disposed so it can be positioned in a transport plane by means of a positioning device having linear drives, and wherein the transport plane lies approximately parallel with and above a tangent determined by a cylinder surface of the cylinder and a suspension strip of the printing plate preparation device; and

a gripper unit in said at least one gripper and pressing device and equipped with suction strips acting on the printing side of the printing plate, said gripper unit, starting at the transport plane, being disposed movable away from and toward a suspension strip of the cylinder, said gripper unit being movable parallel with an axis of rotation of the cylinder along the suspension strip of the cylinder in such a way that a printing plate fixed on said gripper unit can be pressed with a definable force against lateral register stops disposed on the suspension strip of the cylinder.

5,709,151
DEVICE FOR MOUNTING, DISMOUNTING AND TRANSPORTING CURVED OBJECTS THAT ARE EASY TO BEND AND HAVE HANGING UP EDGES

Reinhold Rudolf Dürr, Würzburg, and Bernhard Walter Wolfgang Muth, Veitshöccheim, both of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

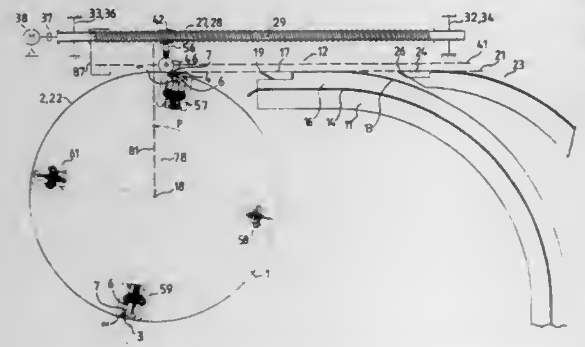
PCT No. PCT/DE95/00049, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/19263, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 17, 1995, Ser. No. 669,390

Claims priority, application Germany, Jan. 17, 1994, 44 01 110.5; Jul. 14, 1994, 44 24 903.9

Int. Cl.^{6} B41F *1/28*

U.S. Cl. 101—477 **2 Claims**



1. A device for mounting, removing and transporting an easily bendable, curved printing plate having front and rear, dimensionally stable beveled suspension edges which are resistant to being bent open, and whose respective legs form an opening angle (alpha) of less than 90°, on and from a cylinder of a rotary printing press, which has at least one suspension strip of a nose-shaped cross section and a closure which engages said rear beveled suspension edge of the printing plate and which has pivotable resilient clamping flaps comprising:

a gripper and pressing device for a printing plate which is to be removed or mounted, said gripper and pressing device being disposed positionable in and movable to a parked position close to the cylinder; and

linear drives for moving said gripper and pressing device to said parked position and wherein said linear drives include threaded spindles, said parked position being located in an extension of said linear drives in a production direction past a disengagement position determined by the intersection of a perpendicular line drawn from an axis of rotation of the cylinder with said threaded spindles of said linear drives.

5,709,152
END JOINING DEVICE FOR CARRIER TRAVELING RAILS

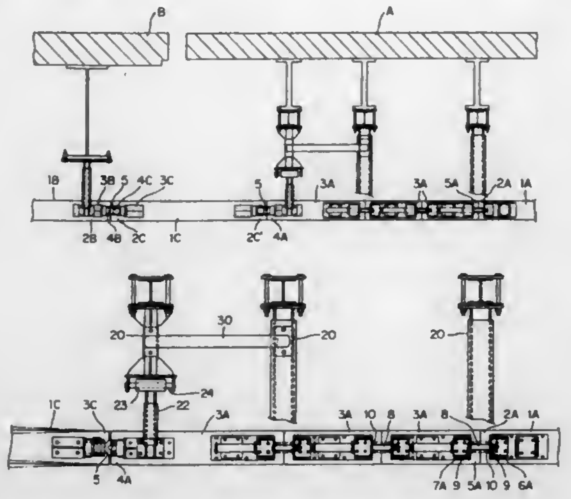
Yasunari Ohara, Kakogawa, and Shigehiko Harada, Daito, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Feb. 14, 1996, Ser. No. 601,436

Claims priority, application Japan, Feb. 15, 1995, 7-049317

Int. Cl.^{6} E01B *11/00*

U.S. Cl. 104—89 **1 Claim**



1. An end joining device for fixed carrier traveling rails for joining the ends of such traveling rails to each other and forming a continuous traveling rail, comprising: an expansion joint rail disposed between two confronting fixed ends of two adjacent carrier traveling rails to be joined and which are spaced from each other in the longitudinal direction, said expansion joint rail having a pair of brackets provided, respectively, on a side surface of an end of said expansion joint rail and on a side surface of a corresponding one of the two fixed ends of the carrier traveling rails; a resilient member sandwiched between said brackets; and a connecting bar loosely fitted through said resilient member and longitudinally movably supported on said brackets for joining said end of said universal joint rail and said corresponding end of said carrier travel rail and absorbing horizontal and vertical misalignments between said end of said universal joint rail and said end of said carrier travel rail.

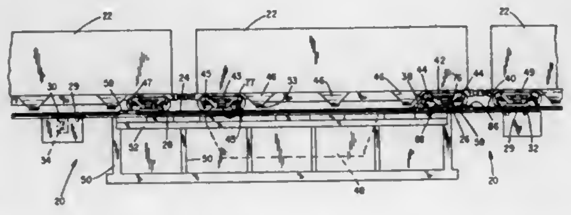
5,709,153
HIGH DOG INDEXER

Calvin Brandt, Plymouth, Minn., assignor to Motion Controls, Inc., Minneapolis, Minn.

Filed Dec. 29, 1995, Ser. No. 580,810

Int. Cl.^{6} B61J *3/04*

U.S. Cl. 104—162 **13 Claims**



1. A dog carriage in a railway car indexer for engaging and moving a railway car which has a first railway wheel axle in a bogey wheel truck frame, said dog carriage comprising:

(a) a dog carriage frame;

(b) a first high dog pivotally attached to said dog carriage frame for pivoting between a first lowered position and a first raised position, wherein said first high dog is positioned to engage an upper end portion of the bogey wheel truck frame behind the first railway wheel axle in the first raised position; and

(c) a first actuator for pivoting said first high dog between the first raised and the first lowered positions comprising rod means connected to said first dog and a directionally operated lever arm having a first end and a second end and being pivotally attached to said dog carriage frame therebetween and wherein the first end engages the railway car to pivot said lever arm and the second end is connected to said rod means for applying pivoting forces to said first high dog, wherein said red means comprises a rod slidably inserted in an outer casing which houses a first spring and a second spring separated by piston means connected to said rod for transferring forces between said rod and said outer casing.

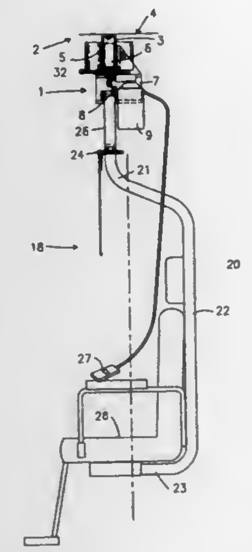
5,709,154
MONORAIL ACCESS SYSTEM FOR MAKING A BOAT HANDICAPPED ACCESIBLE

Fred R. Schott, 7619 Sandalwood Way, Sarasota, Fla. 34231

Filed Nov. 21, 1996, Ser. No. 754,540

Int. Cl.^{6} B61C *11/04*

U.S. Cl. 105—29.1 **15 Claims**



1. A monorail access system for conveying an individual, comprising:

an elongate overhead track, having a bottom portion and a top portion, said top portion being joined to an overhead support, wherein said overhead track has a channel defined therethrough;

an engagement surface provided at the bottom portion of said elongate overhead track,

a drive assembly housing;

a drive assembly, said drive assembly comprising a motor, a drive shaft extending from and driven by said motor and a gear mechanism which is secured to and rotatable with said drive shaft, wherein said gear mechanism engages said engagement surface, thereby propelling the drive assembly forward or in reverse;

a power source located within said drive assembly housing, wherein said power source powers said drive assembly;

a pair of weight bearing wheels disposed within said channel, wherein said wheels are uniaxially movable, said wheels being connected to said top surface of said drive assembly housing;

a chair assembly pivotally coupled to and suspended from said drive assembly housing; and

a control means, for controlling movement of the drive assembly.

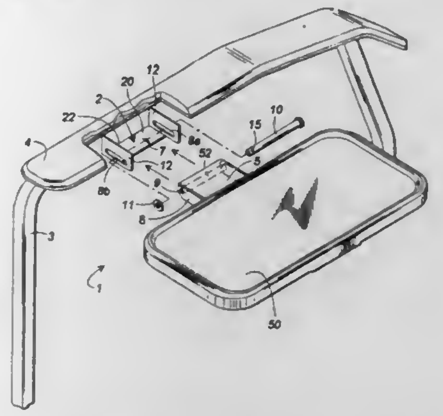
5,709,155
FOLDING TRAY TABLE FOR CHAIRS

James M. Terracciano, Commack, N.Y., assignor to MUL Acquisition Corp. II, Wilmington, Del.

Filed Jan. 12, 1995, Ser. No. 372,170

Int. Cl.^{6} A47B *23/00*

U.S. Cl. 108—42 **17 Claims**



1. A folding tray table assembly for mounting to an arm of a chair comprising:

a mount bracket adapted to be mounted to the arm of the chair, said mount bracket having a base and at least one side panel extending from said base, said mount bracket further having a pin track disposed in said side panel and extending substantially horizontally;

a tray table;

a hinge bracket having a hinge pad and at least one flange extending from said hinge pad, wherein said hinge bracket is mounted to said tray table, and wherein at least one pin hole is disposed in said flange; and

a clevis pin disposed in said pin track and said pin hole, wherein said clevis pin, said hinge bracket, and said mount bracket cooperate to allow said tray table to be shifted between a first position in which said tray table is supported by said base in a substantially horizontal orientation with said hinge bracket resting on said base and a second position in which said tray table is suspended from said mount bracket.

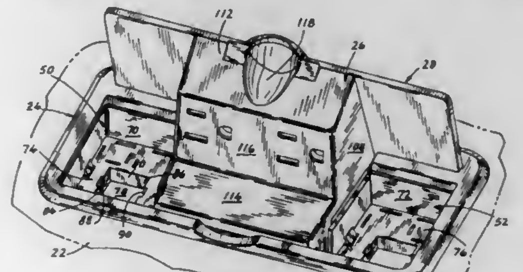
5,709,156
FLIP-UP ELECTRICAL AND COMMUNICATIONS DEVICE FOR USE IN COMBINATION WITH A WORKSURFACE

Steven C. Gevaert, and Thomas J. Barchacky, both of Green Bay, Wis., assignors to Krueger International, Inc., Green Bay, Wis.

Filed Jun. 7, 1995, Ser. No. 475,712

Int. Cl.^{6} A47B *35/00*

U.S. Cl. 108—50 **28 Claims**



1. A utility assembly for use in combination with a worksurface, the worksurface having an opening which opens onto a first one of its surfaces, comprising:

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a base stationarily mounted to the worksurface within the opening, wherein the base includes a recess having a first mounting section with mounting structure for stationarily mounting a first utility receptacle having a first configuration;

a utility receptacle member pivotably and removably mounted to the base, the utility receptacle member including a utility receptacle face and having an electrical receptacle associated with the face, the utility receptacle member being pivotable between an operative position in which the receptacle face is accessible from adjacent the first surface of the worksurface and a storage position in which the receptacle face is inaccessible from adjacent the worksurface, wherein the receptacle member includes an open internal cavity within which electrical contact structure for the electrical receptacle is located, wherein the internal cavity opens in a first direction;

a cable extending into the internal cavity of the receptacle member through a wall thereof, the cable having a plurality of wires;

wire routing structure associated with the internal cavity and including a plurality of recesses opening in the first direction, wherein each recess is adapted to receive one of the plurality of wires;

a cover mounted to the receptacle member and including retainer structure for maintaining the wires within the recesses;

releasable retainer structure interposed between the base and the receptacle member for releasably maintaining the receptacle member in its operative position, the releasable retainer structure being movable to an engagement position when the receptacle member is moved to its operative position for releasably maintaining the receptacle member in its operative position, and being manually movable to a release position by an operator to enable the receptacle member to be moved to its storage position;

wherein the first utility receptacle is accessible through the recess in the base when the utility receptacle member is in its operative position, and wherein the utility receptacle member in its storage position prevents access to the first utility receptacle;

wherein the first mounting section of the base is removable from the base and replaceable with a second mounting section having utility receptacle mounting structure to secure a second utility receptacle having a second configuration to the base member.

5,709,157

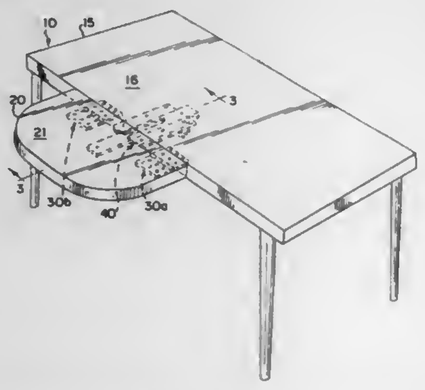
SLIDABLE LOCKING MECHANISM FOR SUPPORTING A DROP-LEAF TABLE EXTENSION

Tadeusz J. Hanusiak, 6825 W. Talcott Ave., Chicago, Ill. 60656, assignor to Tadeusz J. Hanusiak, Chicago, Ill.

Filed Mar. 12, 1996, Ser. No. 613,596

Int. Cl.^{6} A47B ***1/04***

U.S. Cl. 108—78 **18 Claims**



1. A slidable locking mechanism for supporting a drop-leaf table extension to a tabletop, the mechanism comprising:

(a) a catch plate having material removed to define an elongated groove;

(b) an elongated slidable support bar having first and second ends, a hook member attached at the first end and a stop pin extending outwardly from a first surface of the support bar, the stop pin slidably engaged within the elongated groove of the catch plate; and,

(c) an elongated retainer sleeve which receives the support bar, the retainer sleeve and the catch plate forming a housing within which the slidable support bar reciprocates from an extended position to a retracted position, where in the extended position the second end of the slidable support bar extends from the housing and supports the drop-leaf table extension in a horizontal position and when in the retracted position the hook member engages an outer edge of the drop-leaf table extension when the drop-leaf table extension is in a folded position, the housing being adapted to be mounted to the underside of the tabletop.

5,709,158

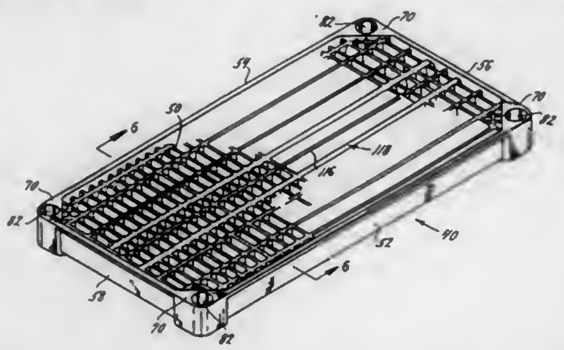
SHELF STRUCTURE

Robert Oliver Warehelm, St. Charles, Mo., assignor to Contico International Company, St. Louis, Mo.

Continuation of Ser. No. 221,173, Mar. 31, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,028

Int. Cl.^{6} A47B ***47/00***

U.S. Cl. 108—186 **26 Claims**



1. A shelf unit comprising:

a grid of crisscrossing, vertically oriented cross webs defining a generally planar shelf surface, the grid having a periphery;

a plurality of U-shaped channels connected end-to-end and extending completely around the periphery of the grid;

four corner brackets positioned outside the U-shaped channels from the grid, each corner bracket having a cylinder with an interior bore dimensioned for receiving a pole for supporting the shelf unit; and

the grid, the plurality of the U-shaped channels and the four corner brackets are all integrally molded as one piece of plastic.

5,709,159

DELIVERY ACCESS DEVICE

Scott Alan Mercer, Hanoverton; David Andrew Peters, Tallmadge, and Carl Nelson Leonhardt, Massillon, all of Ohio, assignors to InterBold, North Canton, Ohio

Continuation of Ser. No. 237,086, May 3, 1994, abandoned. This application Nov. 8, 1996, Ser. No. 744,898

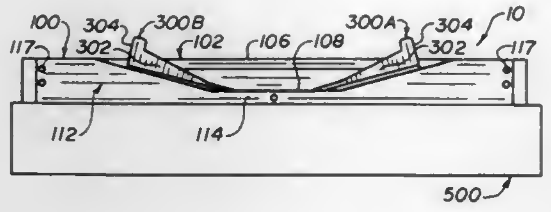
Int. Cl.^{6} E05G ***7/00***

U.S. Cl. 109—2 **14 Claims**

1. A self-contained device for attachment to a currency dispensing machine for regulating access to a dispensing slot of the currency dispensing machine, said device comprising:

a housing mountable to a currency dispensing machine,

a slot through said housing alignable with the dispensing slot in said currency dispensing machine,



a first barrier member and a second barrier member mounted within said housing, said first and second barrier members each being generally U-shaped and independently rotatable about an axis between a first position wherein said barrier member obstructs access to a portion of said dispensing slot and a second position wherein said barrier member does not obstruct access to said dispensing slot, said first barrier member being rotatable about a first axis and said second barrier member being rotatable about a second axis,

first and second actuators within said housing for initiating movement of said first and second barrier members, and

electrical connections for connecting said device to an operating circuit of said currency dispensing machine.

5,709,160

APPARATUS FOR THE COMBUSTION OF FLUIDS WITH HIGH PARTICLE CONTENT

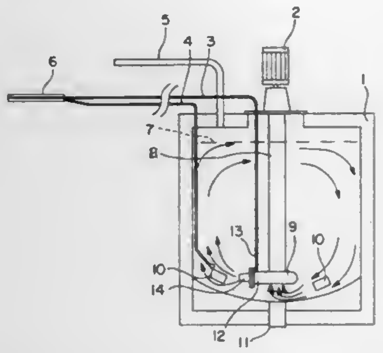
Arne Werge-Olsen; Anders Ruud, both of Årdalstangen, and Inge Holden, Kvanne, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Oct. 30, 1995, Ser. No. 550,293

Claims priority, application Norway, Oct. 28, 1994, 944107

Int. Cl.^{6} F23C ***1/10***

U.S. Cl. 110—262 **10 Claims**



1. An apparatus for combusting a suspension of combustible liquid and combustible solids in particle shape, said apparatus comprising:

a tank having an interior to contain suspension to be combusted;

a burner unit positioned outwardly of said tank for combusting the suspension;

an eddy current pump positioned in said tank, said pump including a housing, an impeller in said housing, a pump inlet into said housing located at a position below said impeller and a branched pump outlet from said housing including at least first and second outlet branches;

a pipe connected to said first outlet branch and to said burner unit to convey suspension to said burner unit; and

said second outlet branch comprising a nozzle for directing a jet of the suspension into the suspension in said tank to thereby stir the suspension.

5,709,161

SEWING MACHINE FOR SEWING OVERLAPPING MATERIALS AND MAKING ORNAMENTAL SEAMS ON A SURFACE OF A SINGLE MATERIAL

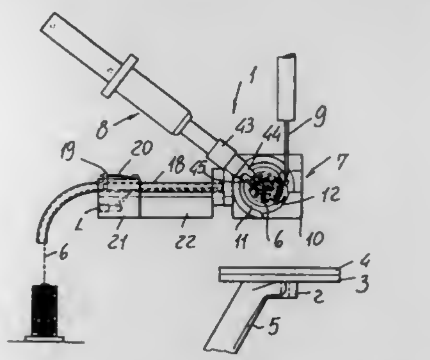
Antonella Zanellati, and Giovanna Squillaci, both of Vigevano, Italy, assignors to Falan S.r.l., Vigevano, Italy

Filed Jun. 5, 1996, Ser. No. 658,621

Claims priority, application Italy, Jun. 5, 1995, MI95A1164

Int. Cl.^{6} D05B ***85/00;47/04***

U.S. Cl. 112—116 **9 Claims**



1. A sewing machine, for sewing overlapping materials and making ornamental seams on a surface of a single material, comprising:

a first yarn supplying assembly for supplying a first seaming yarn, under pieces to be seamed, a second yarn supplying assembly for supplying a second seaming yarn above said pieces to be seamed, said second yarn supplying assembly comprising a crochet, a seaming needle arranged above a seaming region, needle driving means for driving said needle by a reciprocating movement along a movement axis thereof, so as to cause a tip of said needle to pass through said pieces to be seamed and engage said first yarn so as to form a yarn loop traversed by said second yarn as a seaming stitch is formed, characterized in that said sewing machine comprises moreover automatic loading means for automatically loading said second yarn in said crochet of said second yarn supplying assembly, and cutting means for cutting said second yarn as an operation of said loading means is ended.

5,709,162

SEMI-AUTOMATIC METHOD TO ATTACH CIRCULAR COLLARS TO T-SHIRTS

Stephen J. Pagett; Maxmilian Adamski, Jr., both of Tega Cay, S.C.; Richard J. Kurtz, and Conrad L. Fernandez, both of Charlotte, N.C., assignors to Union Special Corporation, Huntley, Ill.

Continuation-in-part of Ser. No. 311,504, Sep. 23, 1994, Pat. No. 5,570,647. This application Sep. 27, 1996, Ser. No. 722,509

Int. Cl.^{6} D05B ***21/00;27/10;35/10***

U.S. Cl. 112—470.07 **17 Claims**

1. A sewing machine having components including a needle, presser foot, feed dog, throat plate and a drive motor with attachments including an edge guider, a sensor, a stationary roller and an under puller roller, in combination with a processor that automatically controls said components and attachments, said sewing machine including stitch forming instruments for forming a seam having a stitch line a predetermined distance from the aligned marginal edges of a plurality of layers of tubular workpieces, a frame, said sewing machine mounted on said frame, a workpiece control and advancing mechanism mounted on said frame, said workpiece control and advancing mechanism functioning to individually control each workpiece layer such that its marginal edge is maintained said predetermined distance from said stitch line as the tubular workpiece advances toward said stitch forming instruments, said workpiece control and advancing mechanism comprising:

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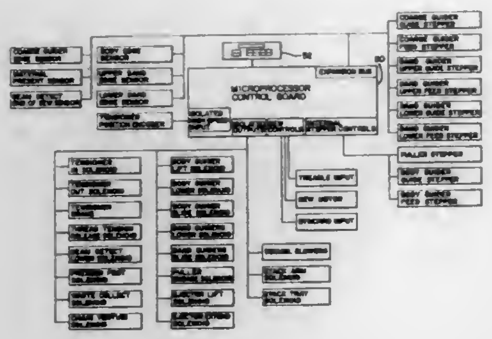
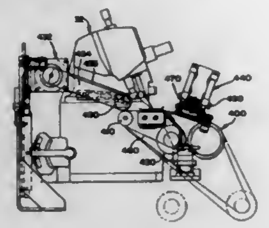




said stationary roller and said under puller roller having longitudinal axes, mounting ends and free ends;

said stationary roller and said under puller roller mounted on said frame at their mounting ends such that their longitudinal axes extend transverse to a vertical plane passing through said stitch line;

a puller mounted on said frame by a processor controlled mounting mechanism that can move said puller from a drive position adjacent said under puller roller to an inoperative position away from said under puller roller, and a drive mechanism on said frame for imparting rotary drive to said puller;

a processor controlled mounting structure for mounting said edge guider on said frame and moving said edge guider from an operating location along said stitch line between said stationary roller and said under puller roller and a non operating position away from said stitch line, an edge sensor that cooperates with said edge guider, said edge sensor sends a signal to said processor whenever it changes from sensing an edge to not sensing an edge or from not sensing an edge to sensing an edge, and said processor sends a signal to the edge guider to reverse its direction of feed in response to the signal from the sensor;

a mechanism for retracting said edge guider from its operating position to its non operating position when a beginning seam edge approaches said stitch forming instruments and returning said edge guide to its operating position under said plurality of layers of tubular workpieces; and

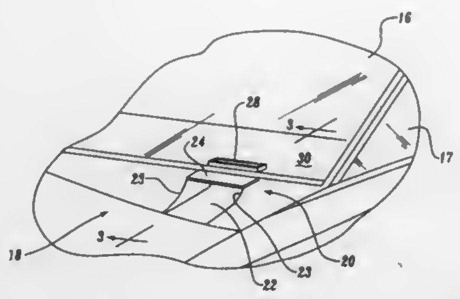
a seam detector for detecting said seam as it approaches said edge guider and transmitting a signal to said processor indicating the location of the seamed edge, said processor, in response to receiving this signal from said seam detector, sends a signal that activates said mechanism for retracting said edge guider before the seam reach the edge guider.

5,709,163
COCKPIT OF A BOAT WITH FRESH AIR VENTS

David T. Livingston, 4445-54th SW., Seattle, Wash. 98116
Filed Mar. 8, 1996, Ser. No. 612,541
Int. Cl.^{6} B63B *19/04*
U.S. Cl. 114—211 **15 Claims**

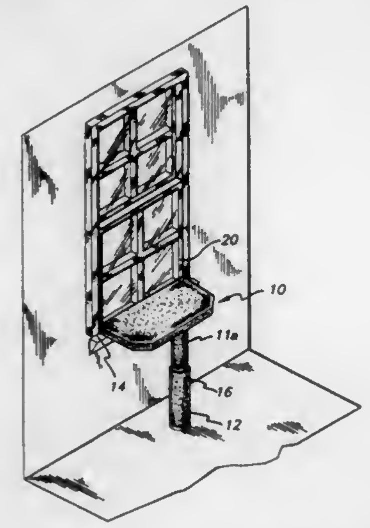
1. A naturally ventilated cockpit of a boat, the cockpit comprising:

an air scoop located outside the cockpit, in the vicinity of a zone of increasing air pressure, the zone located at an intersection of a plane of a first substantially horizontal surface above the hull of the boat with a plane of a second surface, inclined at an angle β to the first surface for directing airflow over the second surface when the boat is in motion, the zone located outside and forward of the cockpit so that air pressure increases in the zone when the boat is brought into forward motion, the air scoop having a mouth facing substantially forward of the cockpit to intercept high pressure air, when the boat is in forward motion, the air scoop comprising an air passage extending from the mouth of the air scoop to the interior of the cockpit, the air scoop being integral to the first horizontal surface and aerodynamically shaped to funnel air into the air passage, the air passage being substantially horizontal and curving upward near a terminal end thereof and in fluid communication with the interior of the cockpit to direct air upward into the cockpit and onto an inside surface of the second surface from forward of the boat, when the boat is in forward motion.



5,709,164
POST-N-PERCH

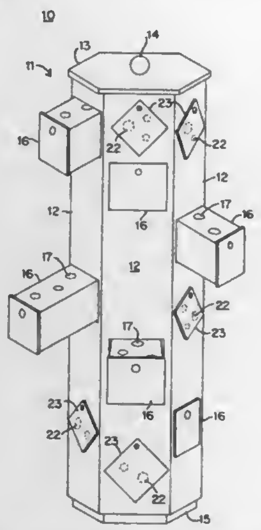
Wade Thomas Batterton, 14 Dreher Ave., Pikesville, Md. 21208
Filed Mar. 30, 1995, Ser. No. 413,368
Int. Cl.^{6} A01K *29/00*
U.S. Cl. 119—28.5 **5 Claims**



1. A pet perch comprising an essentially flat shelf-like member with a pair of connector means that functions to connect the shelf to the window sash, each protruding from one side of the shelf, that are engaged by the closure of a window sash to hold the shelf-like member in a horizontal position and combination support post member comprising an adjustable support post connected to the bottom of the shelf-like member to support the shelf-like member at a predetermined height above the floor and in an essentially horizontal position at a window ledge, wherein the support post is comprised of a concentric cylinder, combined with an outer sleeve member surrounding the cylindrical support post member and where the outer sleeve member is slidable with respect to the support post member so as to touch the floor and support the perch, and where the shelf-like member has at least one pair of connector webs extending from one surface of the shelf and can be extended under a window sash for purpose of stability, and where the post cylinder and extended outer sleeve cylinder are covered with a carpet-like or textured material so that there a a frictional fit between the two cylinders.

5,709,165
FORAGING UNIT FOR AVIAN, MAMMALIAN AND REPTILIAN SPECIES AND METHOD OF USE

Mika Nurmikko, 40 Blueberry Ridge Village, North Berwick, Me. 03906
Filed Mar. 29, 1996, Ser. No. 622,887
Int. Cl.^{6} A01K *15/02*
U.S. Cl. 119—51.01 **18 Claims**



1. A natural-habitat-simulating foraging device for use by an animal wherein said device permits said animal to obtain food using foraging techniques natural to said animal, said device comprising: a primary opaque holding structure having a front face, a back face, and one or more holes extending from said front face through to said back face, said primary opaque holding structure including a plurality of cavities formed in said front face and said back face for receiving food, wherein said cavities are configured so as to require said animal to use its natural foraging characteristics in order to remove food from said cavities, wherein said cavities in said back face are not visible to said animal, and wherein said one or more holes extending from said front face through to said back face are designed such that said animal must reach therethrough in order to retrieve food from said cavities in said back face.

5,709,166
REFRIGERATED AUTOMATIC FISH FEEDER

Cheryl Rae Evans, 2408 Santa Ana Ave., Costa Mesa, Calif. 92627, and Jim Mankowski, 684 Seacoast Dr., Imperial Beach, Calif. 91932
Filed Mar. 8, 1996, Ser. No. 612,664
Int. Cl.^{6} A01K *5/02*
U.S. Cl. 119—51.04 **3 Claims**

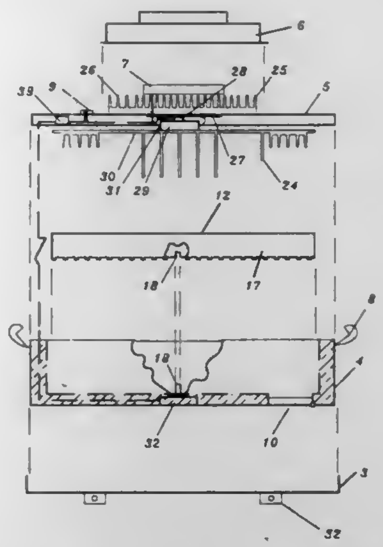
1. An apparatus to maintain fish food at a temperature lower than the surrounding environment and to dispense the fish food at predetermined intervals comprising:

an insulated container having a cover retained by a means for attachment;

the cover having a heat sink mounted thereon which heat sink has a fan mounted thereon and the heat sink covered by a heat sink shroud;

the cover having an external power connector and a means for operation and control of a fish feeder;

the insulated container having a container bottom in which there is a food drop door mounted on a hinge and said container bottom having a motor with a motor shaft;



a food tray rotatably mounted on the motor shaft at a pivot bearing aperture wherein the food tray having a plurality of food tray compartments which have compartment walls and a trap door in a compartment bottom;

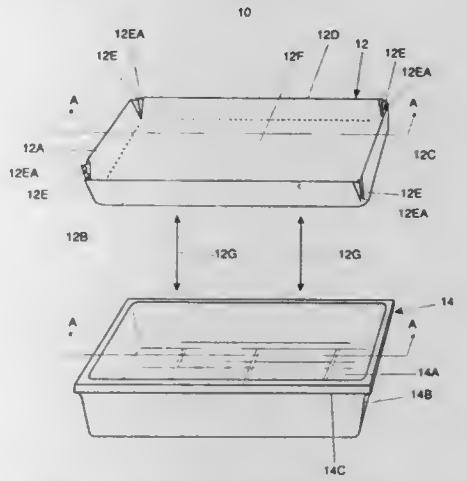
a door actuator pin attached to the trap door to rotate open the trap door when the door actuator pin is engaged by a trip lever;

the food tray having a slot associated with each food tray compartment wherein the slots are located on an outer bottom edge of the food tray to engage a trip pin having an incline which trip pin is slidably mounted in a trip pin holder attached to the container bottom; and

a heat coupler attached to the heat sink wherein the heat coupler is thermally connected through a cover aperture to a cold plate by means of a cold plate extender and a thermal electric device wherein the thermal electric device is connected to facilitate the movement of warm air out of the fish feeder.

5,709,167
FOWL FEED TRAY WITH LINER

Tony R. Kelley, 632 Rowland Rd., Bowdon, Ga. 30108
Filed Sep. 11, 1996, Ser. No. 710,034
Int. Cl.^{6} A01K *39/00*
U.S. Cl. 119—61 **3 Claims**



1. A fowl feed tray with liner (**10**) comprising:

A) a first liner (**12**) which comprises a first liner left side (**12A**) which is securely attached at one distal end to a proximal end of a first liner front (**12B**), the distal end of the first liner front (**12B**) is securely attached to a proximal end of a first liner right side (**12C**), the distal end of the first liner right side

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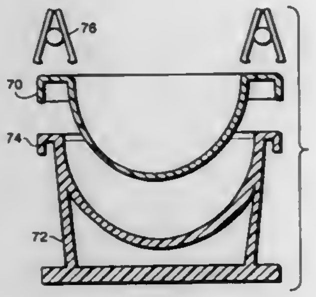
(12C) is securely attached to a proximal end of a first liner rear (12D), the first liner left side (12A) bottom edge is attached to a left edge of the first liner base (12F), the first liner front (12B) bottom edge is attached to a front edge of the first liner base (12F), the first liner right side (12C) bottom edge is attached to a right edge of the first liner base (12F), the first liner rear (12D) bottom edge is attached to a rear edge of the first liner base (12F), the intersection of each of the sides (12D, 12C, 12B, 12A) comprises a first liner corner (12E), the first liner corner (12E) comprises a plurality of first liner corner pleats (12EA) in alternating folds which function to permit the sides to fold upwardly forming a dish shape which is adapted to fit within a feed tray (14) when inserted along a first liner insertion/removal direction (12G), the first liner (12) is manufactured from a rigid absorbent material, the rigidity of the material functions to retain the first liner left side (12A), first liner front (12B), first liner right side (12C), and first liner rear (12D) in a close cooperating relation with feed tray sides (14B), the rigid material maintains the first liner left side (12A), first liner front (12B), first liner right side (12C), and first liner rear (12D) from falling inwardly;

b) the feed tray (14) comprises a plurality of sides complementary in length and height to the first liner left side (12A), first liner front (12B), first liner right side (12C), and first liner rear (12D), the first liner base (12F) is adapted to fit within a feed tray bottom (14A).

5,709,168
FOOD RECEIVING LINER FOR AN ANIMAL FEEDER

Robert T. Walker, 13027 Blairwood Dr., Studio City, Calif. 91604
Continuation of Ser. No. 354,428, Dec. 12, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 706,770
Int. Cl.⁶ A01K *5/01;7/00*
U.S. Cl. 119—61 8 Claims



1. A combination of a removable and disposable Liner for use with and in combination with an animal feeder of the type having an exterior wall and an inwardly presented continuous interior wall defining an interior cavity for receipt of food or liquid and an upper rim which is integral between and connects the interior wall and the exterior wall of the feeder, said combination comprising:

a) a liner enclosing side wall fitted within the interior cavity of the animal feeder and snugly engaging the inwardly presented continuous interior wall which defines the cavity of the animal feeder;

b) a peripheral exterior flange on said wall of said liner engaging the exterior wall of said animal feeder sized and shaped to snugly, but nevertheless, removably retain said liner on the animal feeder;

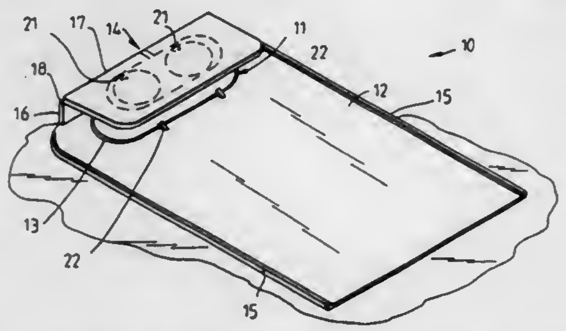
c) a rim on said liner which is integral between and connects the exterior flange of the liner to the enclosing side wall of the liner and which is engaged with the upper rim on the animal feeder, said rim of said liner and said peripheral exterior flange on said liner being in intimate contact with the rim of the feeder and the exterior wall of the feeder and the enclosing side wall of the liner being sized to be in intimate contact with the continuous interior wall of the feeder when the liner is disposed on the feeder;

d) mechanical fastener means for cooperatively connecting the liner to the animal feeder at or adjacent to the region of the upper rim on the animal feeder and the rim on the liner to prevent unauthorized removal of the liner from the interior cavity, said mechanical fastener means comprising a clip which extends through alignable openings in the rim of the liner and the upper rim of the animal feeder to enable a releasible attachment of the liner to the animal feeder; and

e) said liner being formed of a material which is of a thin plastic material, non-toxic to animals using the animal feeder and which is relatively thin so as to be crumbled and disposable.

5,709,169
ANIMAL FEEDING APPARATUS

Louis Ryles, 119 Commodore Drive, Paradise Waters Qld, Australia
PCT No. PCT/AU95/00028, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO95/19700, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 23, 1995, Ser. No. 676,343
Claims priority, application Australia, Jan. 21, 1994, PM 3481; Jan. 24, 1994, PM 4646
Int. Cl.⁶ A01K *5/01*
U.S. Cl. 119—62 9 Claims



1. Feeding apparatus comprising a platform having an opening at one end thereof adapted to pass over an open topped food or water container supported on a surface,

closure means for said open topped food or water container hinged to said platform means adjacent said aperture, and

biasing means adapted to suspend said one end of the platform when said closure means is closed over said container,

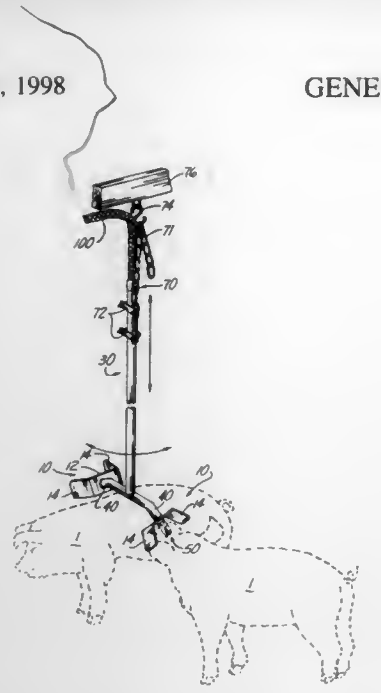
said closure means being opened to provide access to said container when said platform end is depressed by the weight of an animal upon said platform against said bias by engagement of the closure means with the rim of said container.

5,709,170
ANIMAL ALIGNMENT GUIDE FOR A NIPPLE VALVE WATERER

Michael R. Gerbo, Grinnell, and David J. Vavra, Toledo, both of Iowa, assignors to Ritchie Industries, Inc., Conrad, Iowa
Continuation-in-part of Ser. No. 444,034, May 18, 1995, Pat. No. 5,603,286. This application Dec. 6, 1996, Ser. No. 760,456
The portion of the term of this patent subsequent to May 18, 2015, has been disclaimed.
Int. Cl.⁶ A01K *7/00*
U.S. Cl. 119—72.5 30 Claims

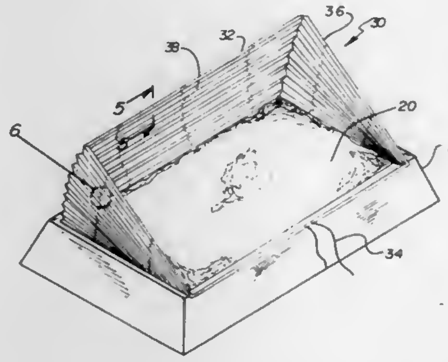
1. In an animal waterer having a vertically suspended water supply line including a terminal conduit having a discharge opening and a nipple valve having a body portion and an activation trigger, the body portion being operably attached to the terminal conduit at the discharge opening, the improvement comprising:

an animal alignment guide directly attached to the water supply line near the juncture of the terminal conduit and the nipple valve, the alignment guide including an interior portion attached to the water supply line and spaced wings extending from the interior portion and disposed on opposite sides of the nipple valve.



5,709,171
DISPOSABLE CAT LITTER BOX

Johnnie Moore, III, P.O. Box 23733, Oakland, Calif. 94623-0733
Filed Jan. 16, 1996, Ser. No. 586,108
Int. Cl.⁶ A01K *29/00*
U.S. Cl. 119—170 4 Claims



1. A new and improved disposable cat litter box comprising:

a base;

at least one disposable bag retained removably positioned within said base;

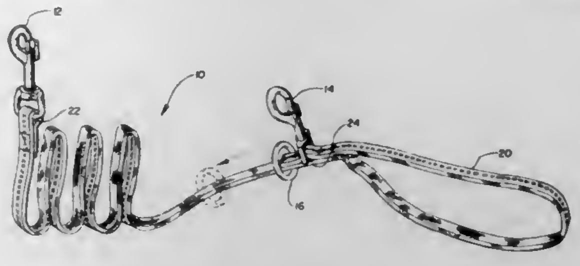
a supply of cat litter contained within said bag; and

a bag shaped retention means associated with said bag and being operable to maintain said bag in a desired shape so as to guard against a dislodgement of said bag from said base during a use thereof by said cat, said bag shape retention means comprises a section of disposable stiff cardboard positioned interiorly of said bag beneath said supply of cat litter, said bag shape retention means includes stiffened pleats for holding said bag in said desired shape; and

a litter deflection means for directing litter displaced by a cat back into said bag, said deflection means having a deflection shield formed by a sidewall of said bag, said deflection shield being selectively pulled into an upstanding litter deflection position, said deflection shield is of a pleated structure defined by a plurality of pleats formed in said side wall of sad bag.

5,709,172
LEASH

Robert Maglich, 1134 Huron Ln., Henderson, Nev. 89015
Continuation-in-part of Ser. No. 907,460, Jul. 6, 1992, Pat. No. Des. 375,587. This application Aug. 20, 1996, Ser. No. 699,928
Int. Cl.⁶ A01K *27/00*
U.S. Cl. 119—797 4 Claims



1. A dog leash comprising:

a strap having a first end and an opposing second end;

a first clip permanently attached at said first end of said strap;

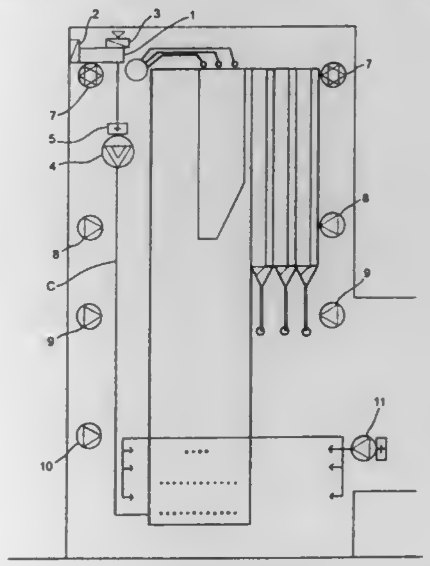
a permanent hand-hold defining a loop formed at said second end of said strap;

a second clip permanently attached to said strap proximate said hand-hold; and

a slidable ring member disposed around said strap, said ring member being freely movable between said first clip and said second clip, said second clip engaging said ring member for removably attaching said second end of said strap around a fixed object.

5,709,173
METHOD AND APPARATUS FOR CONTROLLING COMBUSTION AIR IN A BOILER PLANT

Pekka Ahtila, Espoo, and Jaakko Haapio, Tampere, both of Finland, assignors to Kvaerner Pulping Oy, Tampere, Finland
Filed Nov. 16, 1995, Ser. No. 559,095
Claims priority, application Finland, Nov. 17, 1994, 945404
Int. Cl.⁶ F22B *33/00*
U.S. Cl. 122—1 C 16 Claims



1. An apparatus for controlling combustion air in a boiler plant comprising:

a combustion air duct for conveying combustion air into a boiler located in a boiler building, said boiler having a load;

a mixing section, provided in said combustion air duct, said mixing section being connected inside of said boiler building for supplying a flow of inside air thereto and also being

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connected outside said boiler building for supplying a flow of outside air thereto, said outside air being at a certain temperature;

control devices located in said mixing section, said control devices mixing said inside air flow and said outside air flow in a desired ratio into a total air flow entering the combustion air duct, said desired ratio being defined by quantities of said air flows, said total air flow being at a certain temperature depending on said inside and outside air flows;

means for measuring the temperature of the air flow in said conduction air duct located after said mixing section in a flow direction of said air flow;

a comparator unit communicating with said means for measuring, said comparator unit being arranged to control said control devices of said mixing section for adjusting said desired ratio of said inside air flow and said outside air flow;

a meter for measuring said load of said boiler and the temperature of the outside air, said meter being connected to a computing section, said computing section being arranged to calculate a set value for said comparator unit at least on the basis of data received from said meters.

5,709,174
HOT WATER HEATER

Konstantin Ledjeff, Muehlheim; Juergen Gieshoff, Reute, and Alexander Schuler, Freiburg, all of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Germany

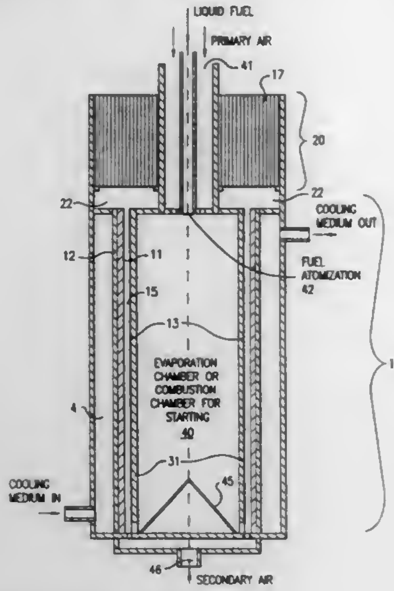
PCT No. PCT/EP94/01667, § 371 Date Nov. 27, 1995, § 102(e) Date Nov. 27, 1995, PCT Pub. No. WO94/28359, PCT Pub. Date Dec. 8, 1994

PCT Filed May 24, 1994, Ser. No. 553,371

Claims priority, application Germany, May 26, 1993, 43 17 554.6

Int. Cl.^{6} F22B *5/00*

U.S. Cl. 122—17 **12 Claims**



1. A hot water heater,comprising

a first inlet for a liquid fuel;

a plurality of inlets for air;

a second inlet for a fluid to be heated;

a first combustion stage traversed by a fuel-air mixture;

a second combustion stage traversed by the fuel-air mixture;

a fluid chamber for said fluid from the second inlet;

wherein said first combustion stage comprises a combustion chamber having an outer wall and including therein an evaporation chamber, said evaporation chamber having a catalyst layer at least partially surrounding an outer surface of said evaporation chamber; and

wherein said fluid chamber at least partially surrounds said outer wall of said combustion chamber such that exhaust gas from said evaporation chamber flows between said catalyst layer and said outer wall of said combustion chamber.

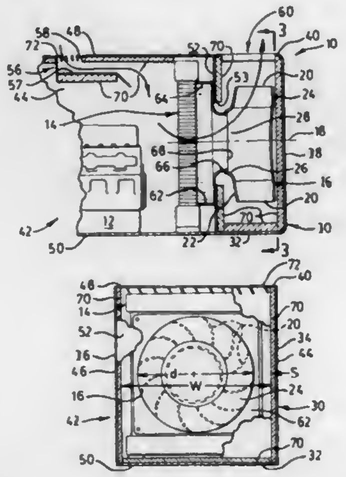
5,709,175
COOLING AIR SYSTEM FOR AN ENGINE

Jim K. Carroll, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 19, 1995, Ser. No. 574,849

Int. Cl.^{6} B60K *11/04*

U.S. Cl. 123—41.49 **15 Claims**



1. A cooling air system for an internal combustion system having a radiator, comprising:

a radial fan having an axis of rotation, first and second flanges axially spaced apart relative to the axis of rotation and a plurality of radially extending blades defining an outer diameter "d" and being disposed between the first and second flanges; and

a plenum having a bottom wall, opposed side walls and a width "w" as measured between the side walls, said plenum being of a generally rectangular configuration and being positioned about said fan blades at a location at which each of said opposed plenum side walls is respectively spaced from the fan blades outer diameter a magnitude in the range of between 0.09 to 0.14 of the plenum width "w".

5,709,176
SPLIT WABBLER DESIGN FOR AXIAL-PISTON ENGINES

Dafydd John Llewellyn, MS 544, Clifton, State of Queensland, Australia

Continuation of Ser. No. 478,550, Jun. 7, 1995, Pat. No. 5,564,372. This application Oct. 4, 1996, Ser. No. 726,193

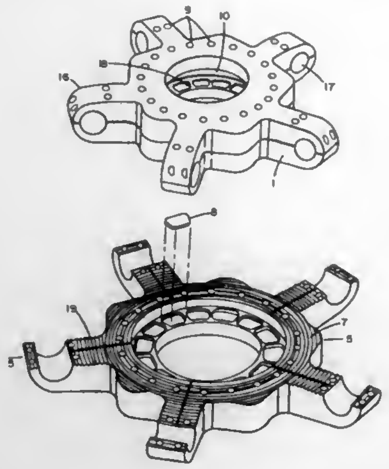
Int. Cl.^{6} F01L *11/00;* **F02B** *57/04*

U.S. Cl. 123—56.3 **10 Claims**

1. An axial piston engine including a main shaft, a swash plate having one and another sides and being secured to the main shaft, pistons within cylinders, the axis of each of which pistons extends parallel to the longitudinal axis of the main shaft, the pistons being arranged around said main shaft with the axis of each piston being located the same distance from the longitudinal axis of the main shaft;

a wabbler interengaging between the pistons and the swash plate with the wabbler having a central aperture and at least two walls the inner ends of which define the central aperture thereof;

the two walls of said wabbler being rigidly connected to one another along a connecting surface and each respectively having first and second inner surfaces facing one another, the first and second inner surfaces being spaced apart from said connecting surface to provide a swash plate receiving space; a plurality of slipper bearings located on either side of said swash plate and maintained thereagainst respectively by said first and second inner surfaces of said wabbler such that said slipper bearings are maintained within said receiving space between the swash plate and each of said first and said second inner surfaces to transfer thrust forces between the wabbler and the swash plate.



5,709,177
EXHAUST VALVE TIMING CONTROL RESPONSIVE TO ENGINE IDLING AND SHUT-DOWN

David Richard Worth, Shento Park; Mark Douglas Archer, Subiaco, and Brian Anthony Fitzgerald, Wembley, all of Australia, assignors to Orbital Engine Company, Balcatta, Australia

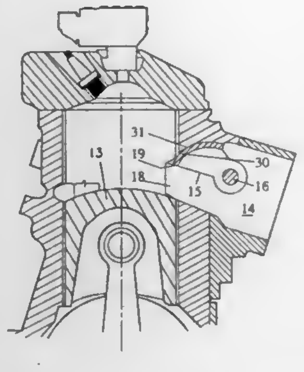
PCT No. PCT/AU94/00359, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/01504, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 29, 1994, Ser. No. 549,764

Claims priority, application Australia, Jun. 30, 1993, PL9716

Int. Cl.^{6} F02D *9/04;9/08;13/02*

U.S. Cl. 123—65 PE **16 Claims**



1. A method of operating an internal combustion engine having at least one combustion chamber having an exhaust port and a cooperating exhaust valve and means operable to vary the timing of the commencement of the opening of the exhaust port between preset limits, the method comprising advancing the timing of the opening of the exhaust port to the earliest timing within said limits, in response to the engine operating at idle or at low load and low engine speed conditions.

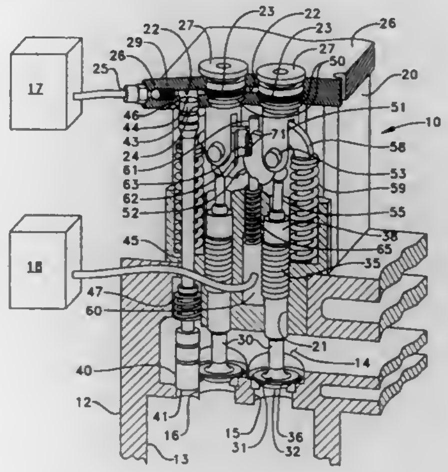
5,709,178
ELECTRONICALLY CONTROLLED OUTWARDLY OPENING VALVE SYSTEM FOR AN ENGINE

Dennis D. Feucht, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 635,799, Apr. 22, 1996, Pat. No. 5,615,646, and Ser. No. 767,746, Dec. 17, 1996, Pat. No. 5,694,893. This application Mar. 7, 1997, Ser. No. 813,558

Int. Cl.^{6} F01L *9/02;9/04*

U.S. Cl. 123—90.12 **20 Claims**



1. An outwardly opening valve system for an engine comprising:

an engine having a hollow piston cylinder in fluid communication with a gas passageway via an opening, and having a piston bore that opens to said hollow piston cylinder;

said opening including an outward valve seat adjacent said gas passageway;

an outward valve member with a valve face;

an intensifier piston positioned in said piston bore with one end contacting gas within said hollow piston cylinder;

a coupling linkage interconnecting said intensifier piston and said outward valve member that includes an over center cam mechanism with a cam rotatable between a closed position in which said valve face of said outward valve member is positioned against said valve seat closing said opening and an open position in which said valve face is away from said valve seat; and

a force generating device attached to said engine and having a control rod in contact with said cam over a portion of said cam's rotation between said closed position and said open position.

5,709,179
ENGINE CYLINDER VALVE CONTROL SYSTEM

Seinosuke Hara, and Akira Hidaka, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Division of Ser. No. 313,868, Sep. 28, 1994, Pat. No. 5,592,908. This application Nov. 18, 1996, Ser. No. 751,694

Claims priority, application Japan, Sep. 28, 1993, 5-240834

Int. Cl.^{6} F01L *13/00*

U.S. Cl. 123—90.15 **2 Claims**

1. A method of controlling an internal combustion engine with a cylinder valve control device including a driver which is operative in response to a first command to condition the cylinder valve control device to open a cylinder valve suitable for engine operation at low speeds, the driver being operative in response to a second command to condition the cylinder valve control device to open the cylinder valve suitable for engine operation at high speeds, the method comprising the steps of:

providing an output distinguishing an operation of the cylinder valve control device conditioned to open the cylinder valve suitable for engine operation at low speeds from an operation

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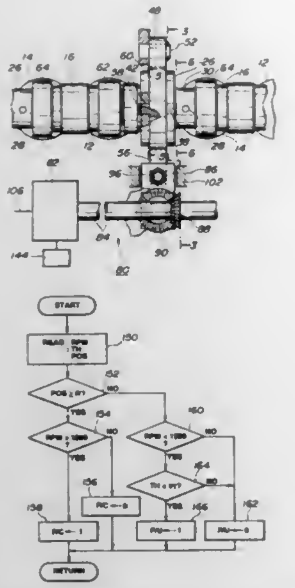


of the cylinder valve control device conditioned to open the cylinder valve suitable for engine operation at high speeds; and

suspending, responsive to said output, fuel supply to the internal combustion engine upon the engine speed exceeding a predetermined engine speed when said output represents the operation of the cylinder valve control device conditioned to open the cylinder valve suitable for engine operation at low speeds.

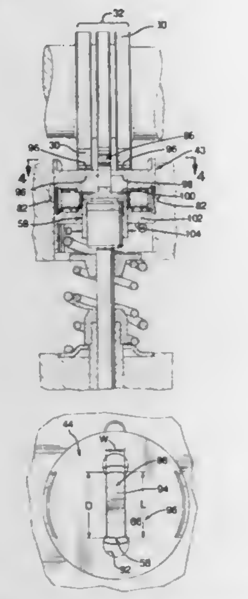
5,709,180
NARROW CAM TWO-STEP LIFTER

Mark James Spath, Spencerport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 6, 1997, Ser. No. 795,746

Int. Cl.^{6} F01L *13/00;1/25*

U.S. Cl. 123—90.16 **7 Claims**



1. A two-step valve lifter operable in response to first and second rotatable cams on a camshaft, defining a camshaft axis, to actuate a valve member in an internal combustion engine comprising an outer cam follower, having a cam-engaging upper surface with a cylindrical body depending therefrom, and an inner cam follower disposed within said cylindrical body, said inner follower including a hollow cylinder having a first diameter "D" and including an upper, closed end and a lower, open end, said open end configured to receive, for disposition between said two-step valve lifter and the valve member, a lash adjusting, hydraulic element assembly therein, a follower foot, having a length "L" normal to said camshaft axis and a width "W" parallel to said camshaft axis and less than said length "L", extending from said upper, closed end and terminating in a cam engaging surface extendable through an opening in said cam engaging surface of said outer cam follower, said follower foot width "W" less than said first diameter "D" of said hollow cylinder of said inner cam follower, said first cam operable in a first mode of operation of said two-step valve lifter to contact said cam engaging surface of said follower foot, and said second cam operable in a second mode of operation of said two-step valve lifter to contact said cam engaging surface of said outer cam follower radially inwardly of said first diameter of said hollow cylinder of said inner cam follower.

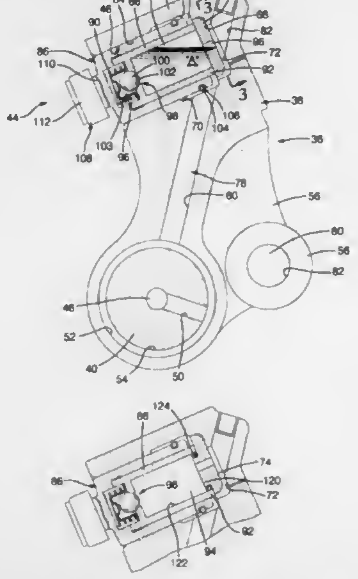
5,709,181
ROCKER ARM ASSEMBLY

Antonio St. Clair Lloyd Williams, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 6, 1997, Ser. No. 795,749

Int. Cl.^{6} F01L *1/24*

U.S. Cl. 123—90.46 **3 Claims**



1. A rocker arm and hydraulic lash adjuster assembly including a shaft mounted rocker arm having a valve actuating arm portion, said valve actuating arm portion including a stepped bore for slidingly receiving a hydraulic element therein, said bore including an open end, a cylindrical wall and a closed end having a recess formed therein, and fluidly connected via a passage in said rocker arm to a source of pressurized fluid, said stepped bore configured to receive a flat wear plate in abutment with said closed end and said hydraulic element such that said wear plate and said hydraulic element cooperate to define a fluid reservoir therebetween for pressurized fluid, and said wear plate including a centrally located through-bore extending therethrough to fluidly connect said fluid reservoir and said spot face formed integrally with said closed wall to define a passage from said source of pressurized fluid to said fluid reservoir to thereby fill said hydraulic element with pressurized fluid.

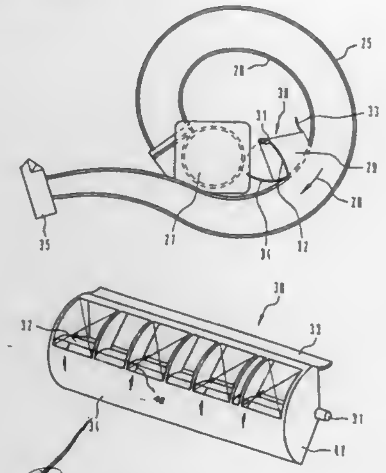
5,709,182
AIR INTAKE DEVICE HAVING A VARIABLE SUCTION PIPE LENGTH

Carsten Espe, Thalmassing, and Peter Fischer, Regensburg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 15, 1997, Ser. No. 782,428

Int. Cl.^{6} F02M *35/10*

U.S. Cl. 123—184.55 **6 Claims**



1. An air intake device for an internal combustion engine, comprising:

a cylindrical manifold for intake air, said manifold having a longitudinal axis;

individual suction pipes disposed at a given spacing, said suction pipes each associated with a respective cylinder of an internal combustion engine for connecting the associated cylinder to said manifold;

entry ports each leading into a respective one of said suction pipes; and

a closing device constructed as a cylinder sector and having a closing part and a rotary shaft mounted approximately parallel to the longitudinal axis of said cylindrical manifold, said closing device having chambers spaced apart from one another by said given spacing, said chambers having passage ports, and said closing device pivoting through a predetermined angle about said rotary shaft within said manifold between a first position in which said closing device closes said entry ports and a second position in which said closing device opens said entry ports, permitting the intake air to flow from said manifold into said chambers and through said passage ports toward said entry ports.

5,709,183
SHROUD AND COMBUSTION CHAMBER FOR AN INTERNAL COMBUSTION ENGINE

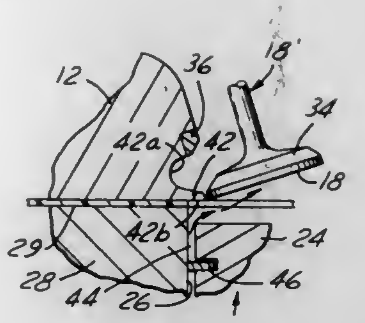
Glen R. Macfarlane, Howell, and John R. Jaye, Northville, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 23, 1996, Ser. No. 774,286

Int. Cl.^{6} F02F *1/42*

U.S. Cl. 123—193.3 **11 Claims**

1. An exhaust shroud in a combustion chamber of an internal combustion engine having an engine block defining a cylinder bore for mounting a movable piston therein adapted to reciprocate in the cylinder bore, a cylinder head assembly with an exhaust throat connected to an exhaust port to transport exhaust out from the combustion chamber, an exhaust valve having a head portion disposed across the exhaust throat when in a closed operative position and defining a peripheral edge, wherein the exhaust valve is selectively moved from a closed position, through intermediate partially opened positions to a fully opened position, the exhaust shroud comprising:



a portion of the cylinder head assembly forming an exhaust valve shroud which projects into the combustion chamber and is spaced with respect to the exhaust valve's head portion, said shroud having a side surface cooperative with the peripheral edge portion of said exhaust valve head portion to inhibit flow of exhaust therebetween under some portions of the engine's operating cycle as the piston moves toward the cylinder held assembly and whereby the inhibited exhaust flow has undesirably high quantities of unburned hydrocarbons originating in a region of the combustion chamber between the piston's upper portion and the encircling surface of the cylinder bore.

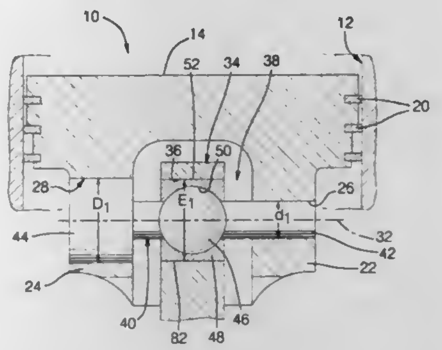
5,709,184
PISTON PIN AND ROD BUSHING FOR NON-ROUND PISTON

Amjad Ali, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 13, 1997, Ser. No. 785,143

Int. Cl.^{6} F01P *1/04*

U.S. Cl. 123—193.6 **3 Claims**



1. A piston assembly for an internal combustion engine comprising a piston having a pair of opposed piston pin bosses including first and second coaxial bores extending therethrough to define a piston pin bore having an axis, a connecting rod having an end including a journal opening, and a piston pin assembly comprising a first journal end disposed within said first coaxial bore and, a second journal end disposed within said second coaxial bore and a spherical journal portion disposed intermediate of said first and said second ends and having a bushing assembled thereabout, said bushing having a spherical inner surface corresponding to said spherical journal portion and an outer surface corresponding to and disposed in said connecting rod journal opening, said spherical journal portion operable to rotate relative to said spherical inner surface of said bushing so as to facilitate rotation of said piston in an engine cylinder bore.

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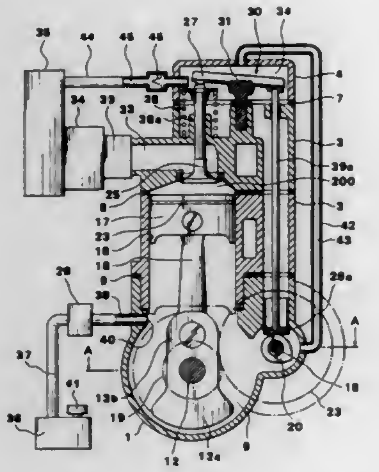
5,709,185
LUBRICATING SYSTEM FOR FOUR-STROKE-CYCLE ENGINE

Shigemitsu Aizawa; Naohiro Maruyama, both of Matsumoto, and Toshio Hirabayashi, Higashichikuma, all of Japan, assignors to Ishikawajima-Shibaura Machinery Co., Ltd., Tokyo, Japan
Filed Nov. 15, 1995, Ser. No. 558,148
Claims priority, application Japan, Nov. 29, 1994, 6-294166; Dec. 8, 1994, 6-304768
Int. Cl.^{6} F01M *9/06*
U.S. Cl. 123—196 R **23 Claims**

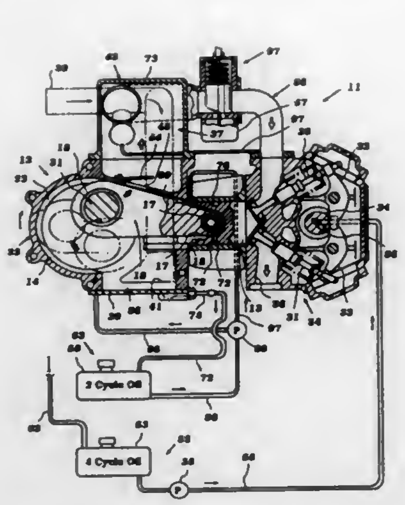


1. A lubricating system for lubricating each moving part in a four-stroke-cycle engine, comprising:
- an oil tank for holding oil;
- an oil passage communicating with said oil tank and a crank chamber of the engine;
- an oil supply means for supplying the oil from said oil tank in a form of fine particles to the moving parts in the crank chamber via said oil passage; said oil supply means being constituted of at least one of means for striking the oil of a liquid form on the moving parts in the crank chamber to make fine particles of the oil and for mixing the oil of a liquid form with a gas flowing into the crank chamber to produce fine particles of the oil; and
- an oil removing means for removing the fine particles of oil supplied to the moving parts in the crank chamber without forming oil accumulation in the crank chamber; said oil removing means being constituted of at least one of means for leading the oil supplied to the moving parts up to a combustion chamber through a piston of the engine, and for returning the oil to said oil tank with a pressure produced by the reciprocation of the piston.

5,709,186
LUBRICATION DEVICE FOR CRANK CHAMBER SUPERCHARGED ENGINE

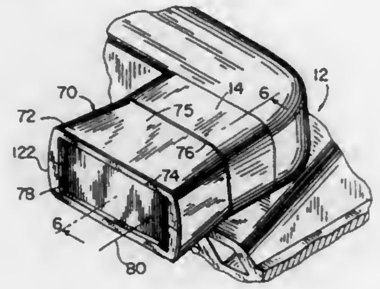
Jun Taue, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Nov. 29, 1995, Ser. No. 563,971
Int. Cl.^{6} F01M *3/00*
U.S. Cl. 123—196 W **24 Claims**

1. An internal combustion engine comprised of a cylinder block, cylinder head assembly defining a cylinder bore, a piston reciprocating in said cylinder bore and forming a combustion chamber at one end of said cylinder bore, a crankcase chamber formed at the other end of said cylinder bore and containing a rotatably journaled crankshaft, a connecting rod for connecting said piston to said crankshaft for driving said crankshaft upon reciprocation of said piston, said connecting rod, said piston and said crankcase chamber being formed so that said crankcase chamber functions as a compressor as said piston reciprocates in said cylinder bore, said crankcase chamber forming a portion of an induction system for delivering atmospheric air under pressure to said combustion chamber, said induction system comprising in addition to said crankcase chamber an atmospheric air inlet for supplying atmospheric air to said crankcase chamber and a pressure air conduit for communicating compressed air to said combustion chamber through a poppet type intake valve reciprocally supported in said cylinder head, a valve actuating mechanism contained within said cylinder head for effecting opening and closing of said poppet type intake valve and driven in timed relationship to said crankshaft, a first lubricating system for delivering lubricant from a first lubricant reservoir to said cylinder head for lubricating said valve actuating mechanism, return means for returning lubricant from said engine to said first lubricant reservoir, said first lubricant reservoir containing a first type of lubricant for lubricating said engine, a second lubricant reservoir, means for delivering lubricant from said second lubricant reservoir to said engine through said crankcase chamber for lubricating components contained therein, said second lubricant reservoir containing a lubricant different from the lubricant contained in said first lubricant reservoir.



5,709,187
FLAME ARRESTOR

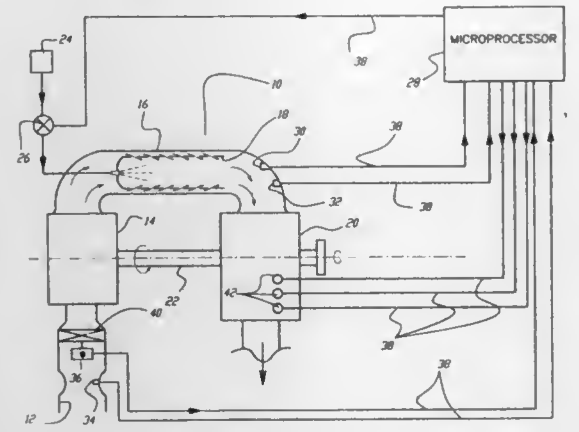
Matthew W. Jaeger; Richard C. Todhunter, both of Stillwater, Okla.; David J. Dickson, DesMoines, Iowa, and Douglas P. McIntire, Daveville, Va., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed Apr. 30, 1996, Ser. No. 641,209
Int. Cl.^{6} F02M *35/10*
U.S. Cl. 123—198 D **33 Claims**



1. A flame arrestor for a marine engine having a combustion air intake, comprising an air box mounted to said air intake and having an upstream end receiving combustion air and a downstream end supplying said combustion air to said air intake, a planar flame arresting element mounted to said air box and passing combustion air therethrough in a first direction into said air intake and blocking flame propagation in a second opposite direction out of said air intake.

5,709,188
HEAT ENGINE

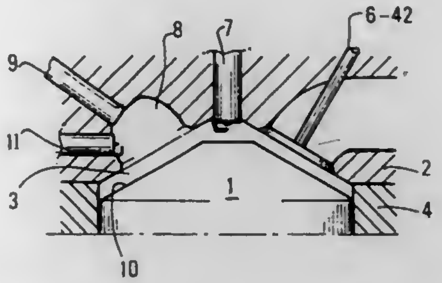
Amro Al-Qutub, P.O. Box 913, Dhahran, Saudi Arabia
Continuation-in-part of Ser. No. 163,724, Dec. 9, 1993, abandoned. This application May 16, 1995, Ser. No. 442,500
Int. Cl.^{6} F02G *3/00*
U.S. Cl. 123—204 **19 Claims**



1. A rotary expansible chamber device, comprising:
- a housing having an open interior, an interior surface, an inlet, and an outlet, said housing having a plurality of valve openings communicating between said housing open interior and the atmosphere, said plurality of valve openings being distributed between said inlet and said outlet in order of increasing distance from said outlet with a first one of said plurality of valve openings being positioned closest to said outlet relative to others of said plurality of valve openings, and each subsequent one of said plurality of valve openings being positioned farther from said outlet than a previous one of said plurality of valve openings in said order;
- a plurality of valves provided for each of said plurality of valve openings, each of said plurality of valves being selectively movable between a closed and an open position, each of said plurality of valves obstructing fluid communication through a respective one of said plurality of valve openings when in said closed position, and enabling fluid communication through said respective one of said plurality of valve openings when in said open position;
- a shaft rotatably supported in said housing, said shaft having an axis of rotation; and
- a rotor mounted within said housing and on said shaft, and having a longitudinal dimension disposed within said open interior, said rotor having a plurality of vanes supported therein, said vanes being disposed selectively to move to and from a retracted condition and an extended condition, said vanes sealing a gap existing between said housing interior surface and said rotor, the gap extending along said rotor longitudinal dimension, there being one arm for each said vane, each said arm pivotally mounted on said rotor about a pivot axis and controlling a respective said vane to move to the retracted and extended conditions, each said arm having guide bearing means rotatably projecting therefrom and extending from said rotor,
- said housing further having track means defining a guiding surface cooperating with said housing interior, said guide bearing means contacting and being guided by said guiding surface, said arms constraining said vanes to project, responsive to said guiding surface, from said rotor for a predetermined dimension between said rotor and said housing interior surface, said rotary expansible chamber device having an expansion ratio, and said expansion ratio being setable at a selected one of a plurality of expansion ratio values by opening respective ones of said plurality of valves.

5,709,189
CONTROLLED-IGNITION DIRECT FUEL INJECTION FOUR-CYCLE INTERNAL COMBUSTION ENGINE

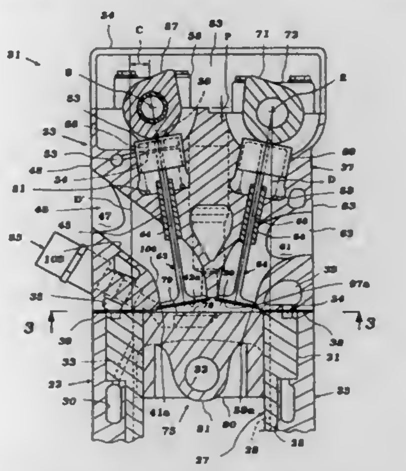
Gaétan Monnier, Rueil-Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France
Filed Oct. 10, 1996, Ser. No. 728,195
Claims priority, application France, Oct. 13, 1995, 95 12263
Int. Cl.^{6} F02B *19/00*
U.S. Cl. 123—260 **11 Claims**



1. Controlled-ignition direct fuel injection four-cycle internal combustion engine including a combustion chamber (**3**) in which at least two intake lines (**31**, **32**) terminate via ports (**21**, **22**, **23**) and an exhaust line (**5**), each of which can be closed by a means such as a valve (**41**, **42**, **6**), at least one ignition means (**7**; **11**), a means (**9**) for direction injection of fuel into said combustion chamber (**3**), characterized in that intake ports (**21**, **22**) are disposed diametrically opposite to each other and in that it also comprises a prechamber (**8**) opening into said combustion chamber (**3**) in which injection means (**9**) terminates, said prechamber (**8**) being located in the half-cylinder that does not contain exhaust port (**23**) and contains one of intake ports (**21**).

5,709,190
COMBUSTION CHAMBER AND INDUCTION SYSTEM FOR ENGINE

Yuichi Suzuki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Apr. 29, 1996, Ser. No. 641,025
Claims priority, application Japan, Apr. 27, 1995, 7-104023
Int. Cl.^{6} F02B *3/00*
U.S. Cl. 123—302 **22 Claims**



1. A direct injected internal combustion engine having a cylinder block defining a cylinder bore, a piston reciprocating in said cylinder bore, a cylinder head affixed to said cylinder block and closing said cylinder bore at one end of said piston, said cylinder head, said piston and said cylinder bore forming a combustion chamber, a pair of intake valve seats formed in said cylinder head with their centers being positioned on a line that lies at a distance from the axis of said cylinder bore which is less than one-fourth of

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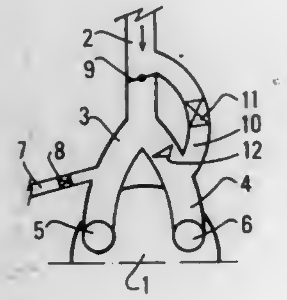
the cylinder bore radius, a fuel injector mounted in said cylinder head between said intake port openings and disposed at an angle so as to spray toward the other side of a plane containing the cylinder bore axis from the main portion of said intake valve seats.

5,709,191

PROCESS AND DEVICE FOR CONTROLLING THE INTAKE AIR OF A SPARK-IGNITION FOUR-STROKE ENGINE

Gaétan Monnier, Rueil-Malmaison, France, assignor to Institut Francais du Peetrole, Rueil-Malmaison, France
Filed Jun. 17, 1996, Ser. No. 664,516
Claims priority, application France, Jun. 19, 1995, 95 07384
Int. Cl.^{6} F02M *25/07;35/108*
U.S. Cl. 123—302 **11 Claims**



1. A device for controlling the intake air of a spark-ignition four-stroke engine with direct injection of fuel into combustion chamber (**1**), comprising a main pipe (**2**) equipped with a throttling means (**9**) and opening into or near to combustion chamber (**1**), and a means for controlling the intake air flow supplied to the combustion chamber, wherein said air flow control means comprises a pipe (**10**) mounted as a bypass on said main pipe (**2**), around the throttling means (**9**) thereof, said pipe (**10**) having a section substantially equal to that of main pipe (**2**), and a means (**11, 12; 14**) allowing to seal at least said bypass (**10**) as a function of the running conditions of the engine.

5,709,192

METHOD FOR DETERMINING THE DIFFERENCES BETWEEN NON-UNIFORM CYLINDER TORQUE MOMENTS IN AN INTERNAL COMBUSTION ENGINE AND APPLICATION OF THE METHOD

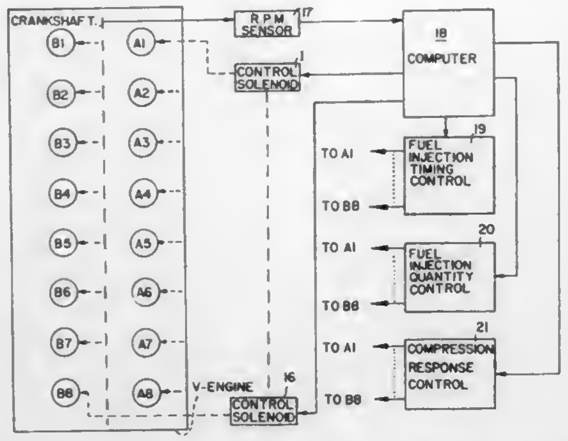
Uwe Zimmermann, Fell, Germany, assignor to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany
Filed Sep. 13, 1996, Ser. No. 712,589
Claims priority, application Germany, Sep. 14, 1995, 195 34 057.4; Dec. 23, 1995, 195 48 604.8
Int. Cl.^{6} F02D *41/04;41/32*
U.S. Cl. 123—436 **9 Claims**

1. A method for determining relative differences in nonuniform cylinder torques of an internal combustion engine having a plurality of cylinders and operating with an engine r.p.m. under the load of inner and outer resistance moments and inertia moments of masses to be accelerated comprising the following steps:

(a) randomly selecting any one of said plurality of cylinders as a reference cylinder,

(b) analyzing said engine r.p.m. to determine individual cylinder torques for each cylinder including said reference cylinder, and

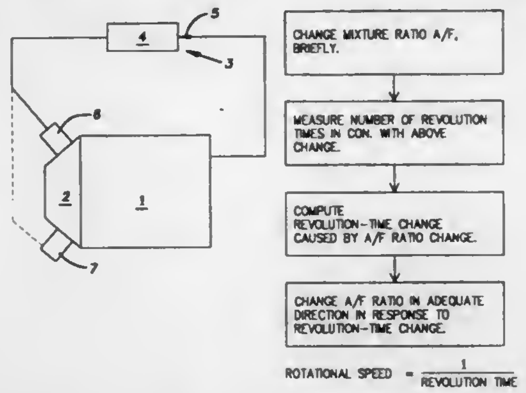
(c) forming a difference between a reference torque moment of said reference cylinder and torque moments of each remaining cylinder of said plurality of cylinders for determining said relative differences in said non-uniform cylinder torques.



5,709,193

ENGINE AIR/FUEL RATIO CONTROL

Ulf Malte Svensson, Lerum, and Ulf Johan Petersson, Tollered, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
PCT No. PCT/SE94/00791, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO95/06199, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 29, 1994, Ser. No. 602,738
Claims priority, application Sweden, Aug. 27, 1993, 9302769
Int. Cl.^{6} F02D *41/14*
U.S. Cl. 123—333 **23 Claims**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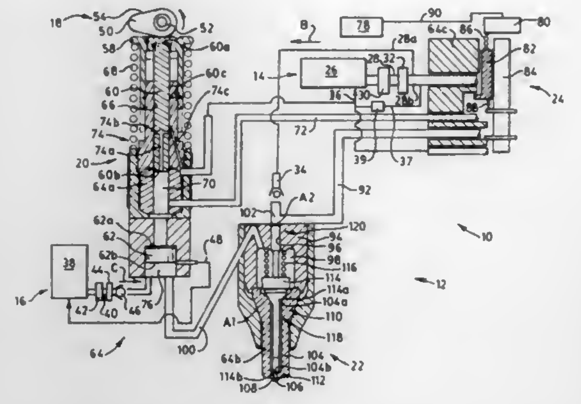
CHANGE MIXTURE RATIO A/F, BRIEFLY.
MEASURE NUMBER OF REVOLUTION TIMES IN CON. WITH ABOVE CHANGE.
COMPUTE REVOLUTION-TIME CHANGE CAUSED BY A/F RATIO CHANGE.
CHANGE A/F RATIO IN ADEQUATE DIRECTION IN RESPONSE TO REVOLUTION-TIME CHANGE.
ROTATIONAL SPEED = 1 / REVOLUTION TIME

1. A method for controlling at least one of a fuel supply and an air supply to an internal combustion engine (**1**), in a fuel supply section (**2**) thereof, such that an A/F-ratio is adjusted automatically to a desired level in response to various operational conditions, said method comprising the steps of receiving information (**5**) on rotational speed from the engine (**2**) at a feed-back control unit (**4**) of a rotational-speed feed-back regulating circuit (**3**), briefly affecting an adjustment means (**6, 7; 10, 11**) with the feed-back control unit to provide a brief change of the A/F-ratio, measuring a number of revolution times in connection with the brief A/F-ratio change, wherein at least one revolution time refers to a rotational speed that is essentially unaffected by the brief A/F-ratio change and at least one revolution time refers to a rotational speed which is affected by the brief A/F-ratio change, computing at least one difference in revolution times between unaffected and affected rotational speeds, affecting an adjustment means (**6; 10**) with the feed-back control unit to change the A/F-ratio in a desired direction based on the computed at least one difference and on stored information, and repeating each of the steps so that an A/F-ratio curve, uncorrected with regard to rotational speed dependency, is moved towards a desired A/F-ratio level.

5,709,194

METHOD AND APPARATUS FOR INJECTING FUEL USING CONTROL FLUID TO CONTROL THE INJECTION'S PRESSURE AND TIME

Michael E. Moncelle, Bloomington, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Dec. 9, 1996, Ser. No. 762,093
Int. Cl.^{6} F02M *41/00*
U.S. Cl. 123—446 **16 Claims**



1. An electronically controlled fuel injector comprising:

a housing having a check control chamber, a bore, and an injection chamber;

pressurizing means including a pressurizing chamber and a reciprocatable pressurizing member for pressurizing fuel in said pressurizing chamber, said pressurizing chamber being in fluid communication with a fuel supply means;

means for injecting fuel into an engine's combustion chamber including an orifice through the housing and a check reciprocatably disposed in the bore to move between a first position and a second position, said check having first and second ends, said first end having a control area in fluid communication with said check control chamber, said second end respectively obstructing and providing fluid communication through the orifice when said check in is its first and second position and including an opening area in fluid communication with said pressurizing chamber, said control area being continuously fluidly isolated from said second end; and

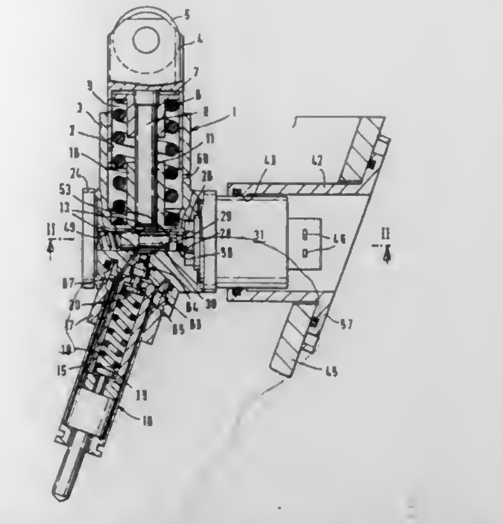
control means for regulating pressure in the pressurizing chamber and in the control chamber.

5,709,195

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Eugen Drummer, Steyr; Maximilian Kronberger, Steyr; Helmut Sattmann, Eferding; Herbert Strahberger, Gallneukirchen, and Gerhard Weisz, Neuhofen/Krems, all of Austria, assignors to Robert Bosch GmbH, Stuttgart, Germany
Division of Ser. No. 392,885, Mar. 1, 1995, Pat. No. 5,606,953.
This application Nov. 18, 1996, Ser. No. 748,736
Claims priority, application Germany, Jul. 7, 1993, 43 22 546.2
Int. Cl.^{6} F02M *37/04*
U.S. Cl. 123—509 **1 Claim**

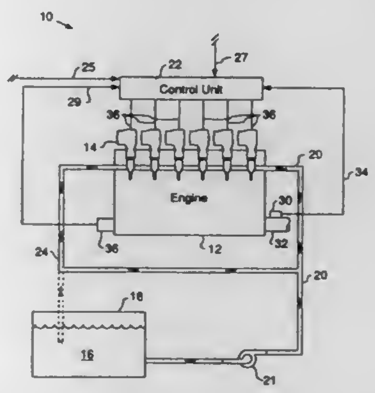
1. A fuel injection device for internal combustion engines, comprising a pump plunger (**8**) in a cylinder bore (**11**), said pump plunger delimits a pump working space (**13**) and is driven in reciprocation, an inlet bore (**35**) which admits fuel to said pump working space, a delivery line (**15**) connects the pump working space (**13**) to an injection valve member the injection valve member is opened counter to a closing force spring (**18**) under an injection pressure of the fuel which is pumped out of the pump working space (**13**) via the delivery line (**15**), a fuel passage (**22, 26, 32, 33**) leads from the pump working space (**13**) via an electrically controlled valve (**31**) to a fuel reservoir space at a lower pressure than the injection pressure, said plunger (**8**) is driven by means of a tappet (**4**) which is guided in sliding fashion in a tappet bore (**2**) of a pump housing stub (**3**) and together with a bottom of the tappet bore, encloses a compression spring (**6**) in a spring space (**9**) by means of which the pump plunger (**8**) is driven for the performance of fuel suction strokes, the spring space (**9**) is enclosed in the tappet bore (**2**) by the tappet (**4**) and is connected to ambient air by a throttle opening (**68**) in a wall of said housing stub, and said throttle opening is closed by the roller tappet (**4**) by a certain stroke of the said roller tappet onwards toward said pump working space as the roller tappet passes across the throttle.



5,709,196

FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE USING A LOW CETANE QUALITY FUEL

Gerald N. Coleman, Peoria, and James E. Sibley, Metamora, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 6, 1996, Ser. No. 760,938
Int. Cl.^{6} F02M *59/20*
U.S. Cl. 123—672 **18 Claims**



1. A fuel control system for a compression ignition engine that utilizes a low cetane quality fuel, the fuel control system comprising:

one or more fuel injectors adapted to inject said fuel into engine cylinders for combustion;

a control unit operatively associated with said fuel injectors for generating a fuel delivery control signal operatively controlling the quantity of fuel introduced into said engine cylinders and the timimg of fuel injection by said fuel injectors;

an exhaust gas sensor disposed in operative association with an exhaust stream from said engine and adapted for determining a level of selected exhaust products present in said exhaust stream; and

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said exhaust gas sensor further coupled to said control unit and wherein said control of the timimg of fuel injection is a function of the level of said selected exhaust products present in said exhaust stream.

5,709,197
FUEL PUMP

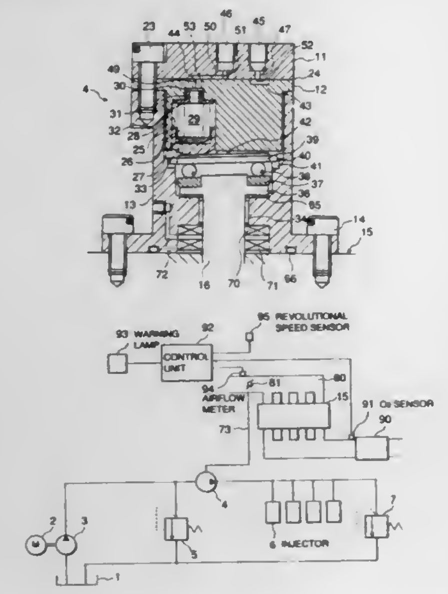
Toshikazu Oshidari, Yokosuka; Atsuhiro Sakamoto, Zushi; Shigeru Kamegaya, Tokyo, and Iwane Inokuchi, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1996, Ser. No. 701,057

Claims priority, application Japan, Aug. 30, 1995, 7-221515

Int. Cl.^{6} F02M *25/00;* **F04B** *27/08;25/02*

U.S. Cl. 123—679 **4 Claims**



1. A fuel pump for supplying pressurized fuel to an engine, comprising:

a casing:

a pump chamber defined inside said casing:

a power input shaft which penetrates from the outside of said casing into the inside of said casing;

a means for expanding and contracting said pump chamber according to the rotation of said power input shaft;

a first seal member which is provided between said casing and said power input shaft;

a second seal member which is provided in series with said first seal member between said casing and said power input shaft; and

a drain conduit which drains fuel which has leaked into a space defined between said first seal member and said second seal member,

wherein said engine comprises an intake port for aspirating air and said drain conduit communicates with said intake port.

5,709,198
OXYGEN CONCENTRATION DETECTING APPARATUS

Yasuo Sagisaka, Komaki, and Yukihiro Yamashita, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

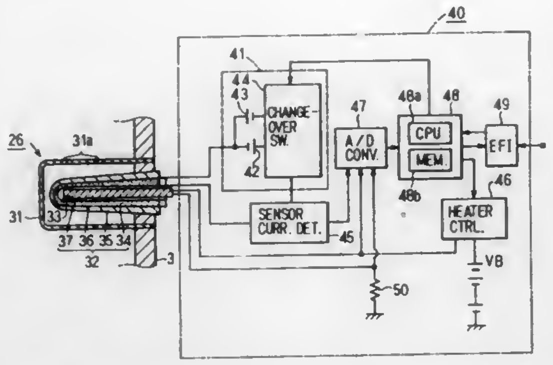
Filed Mar. 26, 1996, Ser. No. 621,692

Claims priority, application Japan, Mar. 31, 1995, 7-076338

Int. Cl.^{6} F02D *41/22;* **G01N** *27/417*

U.S. Cl. 123—684 **9 Claims**

1. An oxygen concentration detecting apparatus comprising:



an oxygen sensor having an oxygen concentration detecting element

element resistance detecting means for detecting an element resistance of said detecting element; and

sensor diagnostic means for performing diagnosis of said oxygen sensor in accordance with whether said element resistance of said detecting element detected by said element resistance detecting means is within a predetermined range defined by first and second nonzero, finite values.

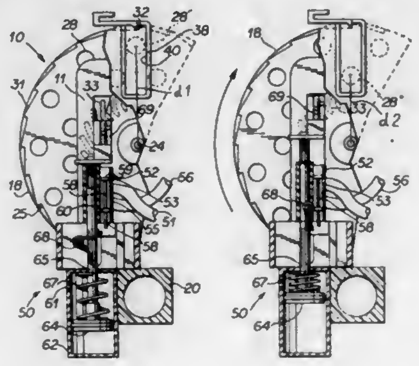
5,709,199
RAPID FIRE COMPRESSED AIR GUN

Lonnie G. Johnson, Smyrna, and John T. Applewhite, Atlanta, both of Ga., assignors to Johnson Research & Development Co., Inc., Smyrna, Ga.

Continuation-in-part of Ser. No. 699,431, Aug. 19, 1996, which is a continuation-in-part of Ser. No. 494,407, Jun. 26, 1995, Pat. No. 5,592,931, which is a continuation-in-part of Ser. No. 441,229, May 15, 1995, Pat. No. 5,596,978. This application Oct. 21, 1996, Ser. No. 730,619

Int. Cl.^{6} F41B *11/00;* **F41A** *9/61*

U.S. Cl. 124—69 **15 Claims**



1. A rapid fire compressed air gun comprising:

a magazine in which a plurality of projectiles may be loaded, said magazine having a first annular array of openings therethrough, and a second annular array of openings therethrough oriented concentrically with and generally between said opening of said first annular array of opening;

indexer means for sequentially indexing said magazine openings in a firing position;

pump means for compressing air;

conduit means for conveying compressed air from said pump means to said magazine; and

a sealing plate having a passage therethrough with an entry in fluid communication with said conduit means and an exit configured to sequentially overlay and seal one said opening of said first and second annular array of openings in said firing position,

whereby the indexer means rotates the magazine so that the openings of the first array of openings and the openings of the second array of openings are alternatively sequenced in alignment with the exit of the sealing plate for firing of the projectiles.

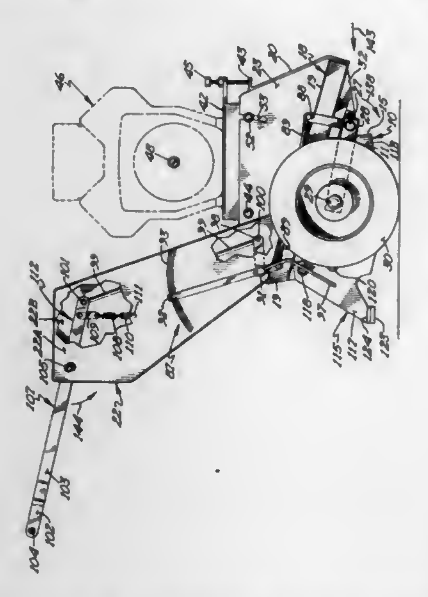
5,709,200
ROUTER MACHINE

Anthony J. Mertes, Chanhassen, Minn., assignor to Cimline Inc., Minneapolis, Minn.

Filed May 30, 1996, Ser. No. 656,884

Int. Cl.^{6} B28D *1/04*

U.S. Cl. 125—13.01 **26 Claims**



25. A router machine for cutting a groove in a pavement or the like, comprising, in combination: a frame having opposite sides; ground engaging wheels; means mounting the wheels to the frame in transverse spaced relationship; a cutter bead assembly rotatably mounted to the frame for cutting a groove in the pavement; an engine mounted to the frame and drivingly connected to the cutter head assembly; a brake member movable between a braking position for exerting a braking force against the rotation of the wheels and a brake release position; a handle movable relative to the frame between a datum position and a braking position, with the handle having a front end portion and a rear end portion adapted to be gripped by an operator; means interconnected between the handle and the brake member for moving the brake member from its release position to its braking position as the handle is moved toward its braking position; and means for resiliently urging the handle to the datum position.

5,709,201
METHOD AND APPARATUS FOR HEATING A LIQUID MEDIUM

Edwin E. Puett, Jr., Stuart, Fla., assignor to Anser Thermal Technologies, Inc., Stuart, Fla.

Filed Oct. 3, 1995, Ser. No. 538,339

Int. Cl.^{6} F24C *9/00*

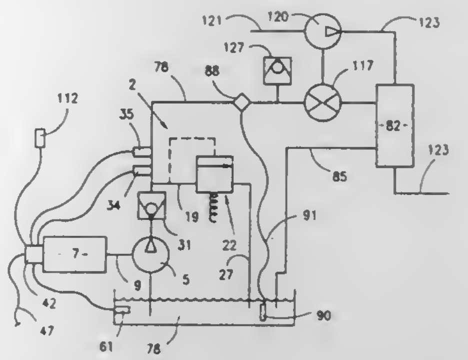
U.S. Cl. 126—247 **19 Claims**

1. An apparatus for heating a liquid medium comprising:

a liquid passage;

means for drawing a liquid medium into said liquid passage at a first pressure and a first temperature;

means for retaining said liquid medium in said liquid passage until said liquid medium is pressurized to a second pressure which is multiple times higher than said first pressure and



frictionally heated to a second temperature which is greater than said first temperature;

means for releasing said liquid medium in a heated state from said liquid passage at a third pressure which is lower than said second pressure;

a first fluid motor arranged in fluid communication with said liquid passage, wherein said first fluid motor is adapted to be driven by said liquid medium;

means for sensing an operating parameter of said liquid medium downstream of said drawing means; and

means for automatically controlling the operation of said drawing means based on the sensed operating parameter.

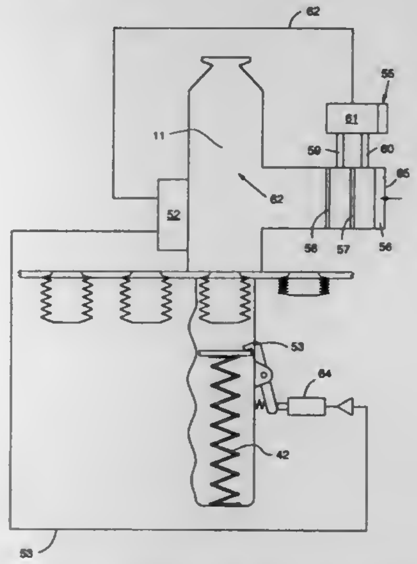
5,709,202
INTRAPULMONARY DELIVERY OF AEROSOLIZED FORMULATIONS

Lester John Lloyd, Orinda; Peter M. Lloyd, Oakland, and Reid M. Rubsamen, Berkeley, all of Calif., assignors to Aradigm Corporation, Hayward, Calif.

Filed May 21, 1993, Ser. No. 65,660

Int. Cl.^{6} A61M *11/00*

U.S. Cl. 128—200.14 **13 Claims**



1. A hand-held, self-contained drug delivery system for intrapulmonary delivery of drugs, comprising:

a cellular array comprised of a plurality of interconnected individual containers with each container having a disposable membrane thereon wherein the membrane includes a plurality of pores therein which pores are provided in a pore density of about 1×10^5 to about 1×10^8 pores/cm^2 and which have a diameter in the range of about 0.5 to about 5 microns the container having therein a liquid formulation comprising a pharmaceutically active drug wherein each container includes a wall which is collapsible by the application of sufficient

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pressure to force the liquid formulation out of the container and form particles sufficiently small such that a patient can inhale the particles;
a transport mechanism for successively moving each individual container into a drug release position for release of the drug therefrom;
a mechanical mechanism for applying force to the collapsible wall of an individual container upon actuation;
a housing interconnecting the transport mechanism and mechanical mechanism, while allowing the cellular array to be moved so that successive containers on the cellular array are placed in the drug release position; and
an instrument for measuring inspiratory flow and sending an electrical signal as an indication of the measurement; and
a microprocessor programmed to receive, analyze and store the electrical signal of the instrument for measuring flow and upon receipt of a threshold signal value sending an actuation signal to the mechanical mechanism for applying force.

5,709,203

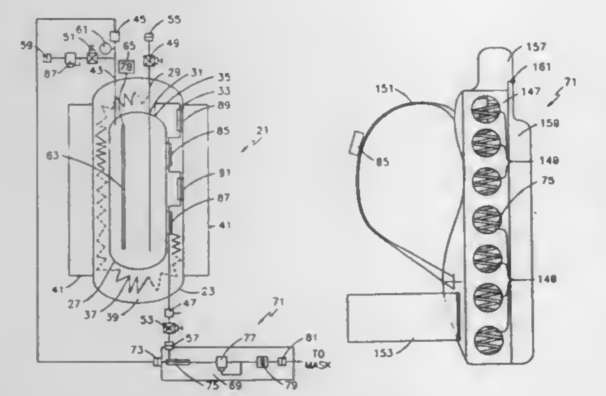
SELF CONTAINED, CRYOGENIC MIXED GAS SINGLE PHASE STORAGE AND DELIVERY SYSTEM AND METHOD FOR BODY COOLING, GAS CONDITIONING AND UTILIZATION

Harold L. Gier, Boulder, Colo., assignor to Aerospace Design and Development, Inc., Boulder, Colo.

Continuation of Ser. No. 328,743, Oct. 24, 1994, abandoned, and a continuation-in-part of Ser. No. 480,555, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 879,581, May 7, 1992, abandoned, said Ser. No. 328,743is a continuation-in-part of Ser. No. 879,581. This application Nov. 22, 1996, Ser. No. 755,249

Int. Cl.^{6} A62B *7/06;17/00;* **A61M** *15/00;* **F17C** *7/02*

U.S. Cl. 128—201.21 17 Claims



14. A method for storing and delivering mixed gas to provide both body cooling and conditioning of the mixed gas for use comprising the steps of:
loading cryogenic temperature mixed gas into a container at a pressure so that the mixed gas is in a single phase in the container;
mounting said container on a body mountable pack for carriage by a user;
selectively expelling the mixed gas from said container;
circulating fluid through a garment worn by the user at a rate determined by sensed work rate of the user, said fluid thus being warmed by body heat;
exchanging heat between said circulating fluid and said expelled mixed gas at said pack to cool said circulating fluid to thus cool the body and to warm said expelled mixed gas; and
utilizing said warmed expelled mixed gas after heat exchange with said circulating fluid to introduce heat into said container to maintain mixed gas remaining in said container in a single phase.

5,709,204

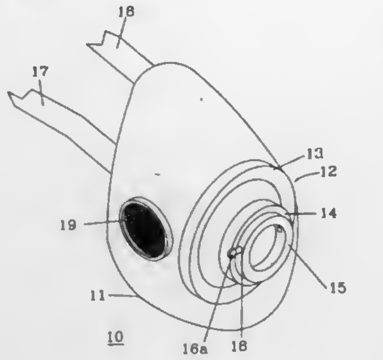
AIRCRAFT PASSENGER OXYGEN, SURVIVAL AND ESCAPE MASK

Richard Lester, 4010 Rolinda St., Dallas, Tex. 75211

Filed Nov. 4, 1996, Ser. No. 740,735

Int. Cl.^{6} A62B *7/14*

U.S. Cl. 128—205.25 16 Claims



1. A multi-purpose oxygen mask, comprising:
a connector ring;
a mask body for covering the nose and a part of the face sealed to said connector ring;
a movable valve in said connector ring for allowing oxygen into the mask;
a connector insertable into the connector ring for connecting oxygen to the mask, said connector moving said movable valve into a position to admit oxygen into the mask when the connector is inserted into the connector ring;
a pin and openings for said pin to secure the connector to said connector ring; and
a break-away ring in said connector ring to allow removing the connector from the connector ring while said pin is in place.

5,709,205

PULSOXIMETRY SENSOR

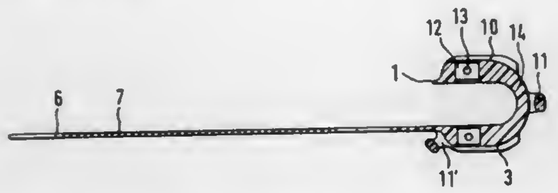
Anton Bukta, Sindelfingen, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 12, 1995, Ser. No. 501,384

Claims priority, application Germany, Aug. 23, 1994, 44 29 845.5

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 128—633 12 Claims



1. A pulsoximetry sensor comprising:
a support body including two fastenings;
an arcuate elastic web interconnecting the two fastenings of the support body so that the two fastenings are adapted to be positioned on the opposite sides of a hand or a foot when the support body is fixed to the hand or foot; and first and second sensor elements, each of which is located in a depression of a respective one of the two fastenings so that the sensor elements are retained opposite one another,
wherein the support body is adapted to be fixed to the body part by means of a flexible clip shaped onto the first fastening and which is oriented in the same direction as the web, so that the support body is adapted to be laterally engaged on the foot or hand and is held by the clip, which is guided via the second fastening and which spans the foot or hand.

5,709,206

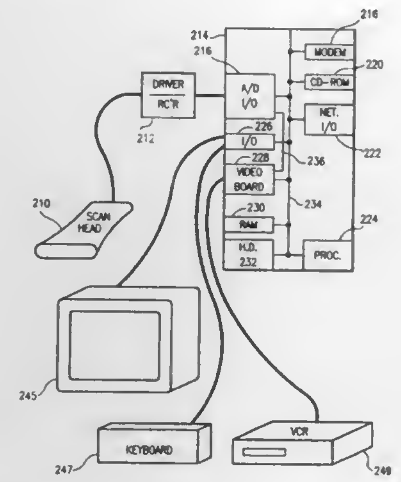
IMAGING SYSTEM FOR BREAST SONOGRAPHY

Michel Teboul, 81, Boulevard Suchet, 71016 Paris, France

Filed Nov. 27, 1995, Ser. No. 562,696

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 128—653.1 32 Claims



1. A method of displaying, on a display monitor of an ultrasound imaging machine, a plurality of ultrasound images obtained from a plurality of ultrasound scans of a ductal system in a breast comprising the steps of:
obtaining and electronically storing a plurality of axial ductal ultrasound scan images of said breast, each image including an image of a longitudinal segment of a duct in said breast;
obtaining and electronically storing a plurality of transaxial ductal ultrasound scan images over said longitudinal duct segment;
electronically scaling said ductal images to a known, measured feature of said breast;
directionally orienting said ductal image to said known feature of said breast;
providing an electronic imaging template outlining predetermined features of a breast;
displaying the plurality of axial ductal images substantially concurrently with said imaging template representing said breast on said display monitor; and,
concurrently displaying said axial ductal images and said transaxial ductal images on corresponding regions on said display monitor upon command.

5,709,207

AUDIO INFORMATION INCORPORATED WITHIN MRI PULSE SEQUENCES

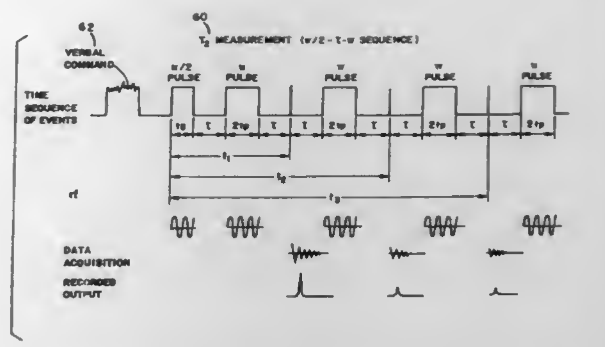
Jeffrey L. Duerk, Avon Lake; Meera S. Nair; Dee Hung Wu, both of Cleve Hts, and Jonathan S. Lewin, Beachwood, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Mar. 20, 1996, Ser. No. 618,750

Int. Cl.^{6} A61B *5/05*

U.S. Cl. 128—653.2 18 Claims

1. A method of incorporating audio information into a pulse sequence of a Magnetic Resonance Imaging (MRI) system, the method comprising the steps of:
projecting audio information in the form of a spoken voice into a microphone;
digitizing and storing the projected audio information in a first electronic file;
converting the stored digitized audio information to a format of data useable with the MRI system;



storing the converted digitized audio information and information specific to the MRI system, in a second electronic file;
selecting a pulse sequence; and
incorporating the converted digitized verbal information and information specific to the MRI system as part of the pulse sequence.

5,709,208

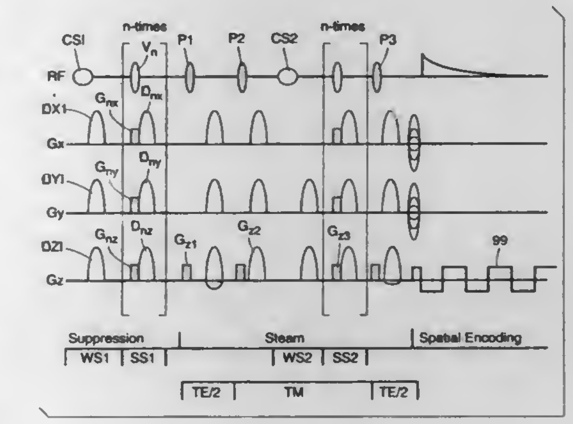
METHOD AND SYSTEM FOR MULTIDIMENSIONAL LOCALIZATION AND FOR RAPID MAGNETIC RESONANCE SPECTROSCOPIC IMAGING

Stefan Posse, Washington, D.C., and Denis Le Bihan, Rockville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 224,942, Apr. 8, 1994, abandoned. This application Jul. 25, 1996, Ser. No. 682,338

Int. Cl.^{6} A61B *5/055*

U.S. Cl. 128—653.2 21 Claims



1. A method of prelocalizing magnetic resonance within a volume of interest comprising the steps of:
applying a first suppression pulse sequence; and
applying, after said first suppression pulse sequence, a stimulated echo pulse sequence to induce a stimulated echo in said volume of interest, wherein said stimulated echo pulse sequence includes a second suppression pulse sequence during a mixing time period of said stimulated echo pulse sequence, said first and second suppression pulse sequences each including a substantially identical spatial suppression pulse sequence to define said volume of interest.

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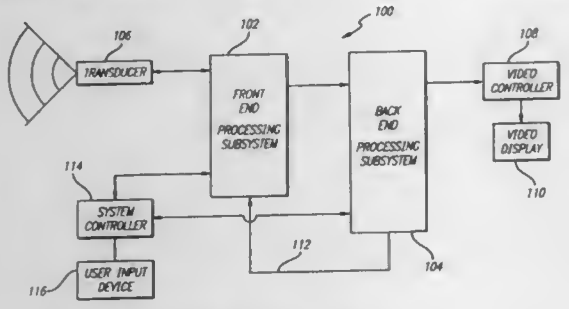
5,709,209
ULTRASOUND SIGNAL PROCESSING SYSTEM

Barry Friemel, Issaquah; John Klepper, Seattle, both of Wash.; Wolf DeLong, Erlangen, Germany; Rodney Boleyn, East Windsor, N.J.; Ekkehard Blanz, Belle Mead, N.J., and Abdelaziz Chiboub, Plainsborough, N.J., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Continuation-in-part of Ser. No. 625,183, Mar. 29, 1996, abandoned. This application Oct. 10, 1996, Ser. No. 729,057

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 128—660.07 **35 Claims**



1. An ultrasound imaging system, comprising:
a transducer for sending acoustical signals towards a subject, the acoustical signals being formed in accordance with electrical scan signals;
a front end subsystem, operatively connected to said transducer, for producing the electrical scan signals based on scan parameters, for receiving echo signals from the subject in response to the acoustical signals, and for producing vector signals from the echo signals;
a back end processing subsystem for receiving the vector signals from said front end subsystem and processing the vector signals to produce image data and parameter information;
a feedback link for feeding back the parameter information from said back end processing subsystem to said front end processing subsystem; and
a display device for displaying an image in accordance with the image data.

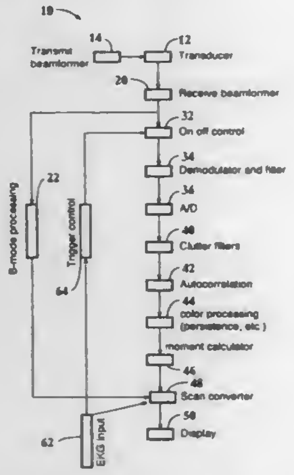
5,709,210
ULTRASOUND SYSTEM FOR IMAGING

J. Michael Green, Pleasanton, and Bhaskar Ramamurthy, Santa Clara, both of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Jul. 30, 1996, Ser. No. 692,865

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 128—661.07 **91 Claims**



1. An ultrasound method for imaging tissue and/or blood flow, comprising the steps of:
providing a begin trigger indicative of a first point in a cardiac cycle; and
acquiring in response to the begin trigger a color Doppler first imaging sequence of multiple frames of color Doppler data at different times in said cardiac cycle.

5,709,211
ULTRASONIC DIAGNOSTIC APPARATUS

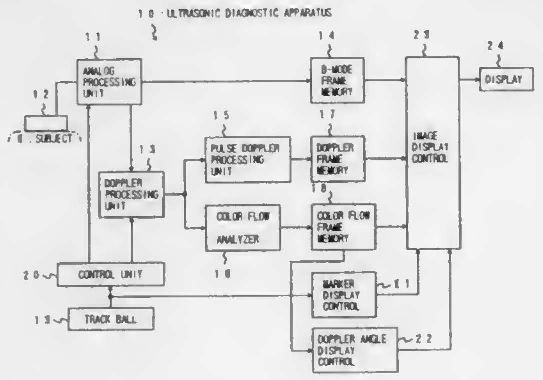
Etsuro Machida, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 2, 1996, Ser. No. 626,611

Claims priority, application Japan, Jun. 30, 1995, 7-166250

Int. Cl.^{6} A61B *8/06*

U.S. Cl. 128—661.08 **12 Claims**



1. An ultrasonic diagnostic apparatus in which ultrasonic beams are transmitted into a subject and ultrasonic waves reflected within the subject are received thereby forming received signals, and information as to the inside of the subject is displayed on the basis of the received signals, the ultrasonic diagnostic apparatus comprising:
first blood flow velocity measurement means for evaluating on the basis of the received signals a blood flow velocity distribution covering a plurality of pixels within a tomographic plane spreading on a two-dimensional basis within the subject;
observed point setting means for optionally setting a point of interest to be observed within the tomographic plane;
second blood flow velocity measurement means for evaluating on the basis of the received signals a blood flow velocity, at the point of interest set by said observed point setting means, in a direction in which ultrasonic beams passing through the point of interest are extended, said second blood flow velocity measurement means evaluating the blood flow velocity with greater accuracy than said first blood flow velocity measurement means;
blood flow direction arithmetic means for evaluating a direction of a blood flow at the point of interest within said tomographic plane on the basis of the blood flow velocity distribution evaluated by said first blood flow velocity measurement means; and
blood flow velocity conversion means for converting the blood flow velocity at the point of interest evaluated by said second blood flow velocity measurement means into a blood flow velocity in the direction of the blood flow evaluated by said blood flow direction arithmetic means.

5,709,212
BLOOD PRESSURE MEASURING APPARATUS

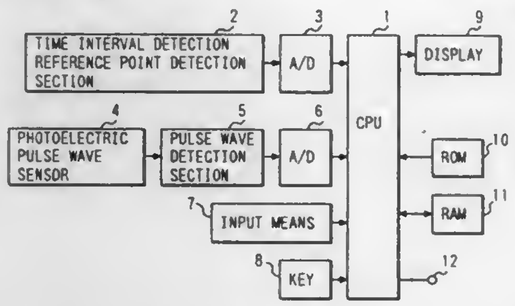
Yoshihiro Sugo, and Takeshi Sohma, both of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,223

Claims priority, application Japan, Mar. 30, 1994, 6-061550

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 128—681 **6 Claims**


2
TIME INTERVAL DETECTION REFERENCE POINT DETECTION SECTION
3
A/D
1
CPU
9
DISPLAY
4
PHOTOELECTRIC PULSE WAVE SENSOR
5
PULSE WAVE DETECTION SECTION
6
A/D
10
ROM
11
RAM
7
INPUT MEANS
8
KEY
12

1. A blood pressure measuring apparatus comprising:
a memory for storing a constant α by which a pulse wave propagation time is multiplied in calculating a blood pressure value from the pulse wave propagation time;
input means for inputting a blood pressure value for calibration;
time interval detection reference point detecting means for detecting a time interval detection reference point in a pulse wave on a side of an aortae of a living organism;
pulse wave detection means for detecting a pulse wave on a side of peripheral blood vessels appearing with a time lag with respect to the pulse wave on the side of the aortae;
pulse wave propagation time measurement section for measuring a pulse wave propagation time based on respective detected outputs from the time interval detection reference point detection means and the pulse wave detection means;
first operation means for determining a constant β to be added in calculating the blood pressure value from the pulse wave propagation time using the inputted calibrated blood pressure value, a single pulse wave propagation time measured for calibration, and the prestored constant α;
second operation means for calculating the blood pressure value from the pulse wave propagation time measured at a predetermined time interval for measuring a circadian blood pressure fluctuation, the constant α, and the constant β;
memory for consecutively storing the measured pulse wave propagation time and the blood pressure value calculated from the pulse wave propagation time; and
output means for outputting at least one of the blood pressure value and pulse wave propagation time data stored in the memory as a result of the circadian blood pressure fluctuation measurement.

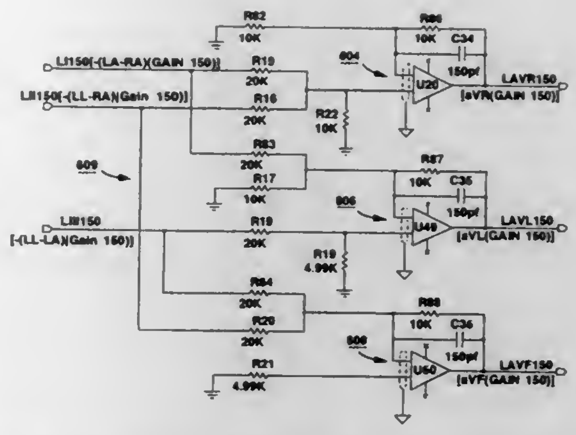
5,709,213
LOW NOISE, HIGH BANDWIDTH, AUGMENTED LEAD CIRCUIT FOR ACQUISITION OF CARDIAC PACING ARTIFACTS

John M. Kruse, New Brighton, and Dave R. Jurek, Coon Rapids, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 17, 1996, Ser. No. 714,910

Int. Cl.^{6} A61B *5/0428*

U.S. Cl. 128—696 **7 Claims**



1. An apparatus for deriving augmented lead electrocardiograph (ECG) signals from electrical signals sensed at three skin surface, limb electrodes attached to a patient's limbs without the use of a high impedance resistor network, comprising:
means for combining first, second and third pairs of the three limb electrodes to provide fast, second and third, positive and negative, limb lead signal pairs;
means for combining and amplifying the first positive and negative limb lead signal pair into a first limb lead signal (LI);
means for combining and amplifying the second positive and negative limb lead signal pair into a second limb lead signal (LII);
means for combining and amplifying the third positive and negative limb lead signal pair into a third limb lead signal (LIII); and
low impedance resistor network and amplifier means for combining the first, second and third lead limb signals into augmented lead signals.

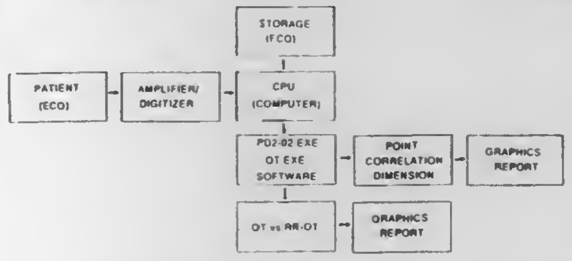
5,709,214
PD2I ELECTROPHYSIOLOGICAL ANALYZER

James E. Skinner, Bangor, Pa., assignor to Enhanced Cardiology, Inc., Lubbock, Tex.

Filed May 2, 1996, Ser. No. 641,944

Int. Cl.^{6} A61B *5/04*

U.S. Cl. 128—702 **2 Claims**



1. In combination in a system for detecting and predicting biological anomalies, comprising:
(a) means for receiving electrophysiological signals;
(b) means for amplifying and digitizing said electrophysiological signals;
(c) means for storing a data processing routine, said data processing routine for analyzing said digitized electrophysiological signals, said routine comprised of a set of application parameters associated with biological data correlating with biological anomalies, said routine capable of processing said digitized electrophysiological signals into signals detecting and predicting the onset of said biological anomalies, wherein said routine comprises:

$$PD2i \sim \log C(n,r,nref\star)/\log r,$$

where ~ means scales as, C is the correlation integral for PD2i, in which n equals the data length, r equals the scaling range, and nref★ equals a location of the reference vector for estimating the scaling region slope of log C / log r in a restricted small log-r range that is devoid of the effects of nonstationary data, and
wherein said data processing routine for analyzing said digitized electrophysiological signals, further comprises a set of parameters for defining nref★, in data in which nonstationarities

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exist, said parameter selected from the group consisting of parameter LC, a linearity criterion for defining the linearity of the scaling region; parameter PL, a criterion for the plot length from the smallest log-r value to the largest log-r value of the linear scaling region; parameter MS, a criterion for the minimum length of the linear scaling region; and parameter CC, a convergence criterion for the plot of the linear scaling region slope vs embedding dimension.

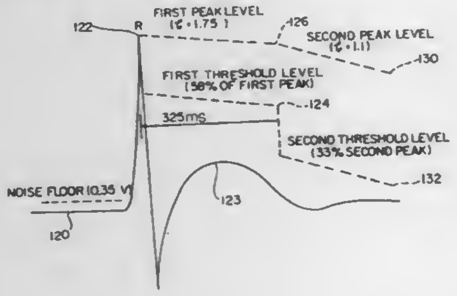
5,709,215

R-WAVE DETECTION METHOD FOR IMPLANTABLE CARDIOVERTER DEFIBRILLATORS

Joseph S. Perttu, Chanhassen; Dennis A. Brumwell, Bloomington; James E. Brewer, Maplewood, and Theodore P. Adams, Edina, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Sep. 6, 1995, Ser. No. 524,391
Int. Cl.^{6} A61B *5/0456*

U.S. Cl. 128—708 **15 Claims**



1. An improved detection method for sensing the occurrence of an R-wave associated with a heart beat event from electrical signals provided by at least two electrodes implanted in the heart, the method including the device implemented steps of: (a) receiving an electrical signal from the electrodes implanted in the heart, and (b) limiting recognition of the electrical signal as a R-wave event to those events in which the amplitude of the electrical signal exceeds a decreasing threshold level and a floor level, the improvement to step (b) comprising:

using a time constant of decay, selected from a plurality of time constants, as the decreasing threshold level, each time constant corresponding to a classification of the amplitude of the electrical sign of at least one most recent previously recognized R-wave events.

5,709,216

DATA REDUCTION OF SENSED VALUES IN AN IMPLANTABLE MEDICAL DEVICE THROUGH THE USE OF A VARIABLE RESOLUTION TECHNIQUE

Drury L. Woodson, III, Alvin, Tex., assignor to Sulzer Intermedics, Inc., Angleton, Tex.

Filed Jun. 7, 1995, Ser. No. 478,473
Int. Cl.^{6} A61B *5/04*

U.S. Cl. 128—710 **44 Claims**

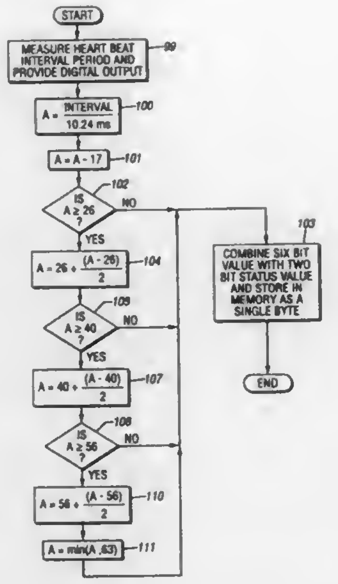
44. An implantable medical device for sensing a physiological parameter and storing encoded signals indicative of the sensed physiological parameter, comprising:

a sensor for sensing the physiological parameter and providing an output signal indicative of said physiological parameter;

a signal processing device for receiving the output signal from said sensor and providing a digital signal representing the sensed physiological parameter;

a data compression device for compressing the distal signal into a digital encoded signal with a predetermined bit width n, wherein the data compression device divides the digital signal from said signal processing device into a plurality of sub-ranges, and applies a different resolution value to each sub-range during compression; and

a memory device for storing said digital encoded signal.



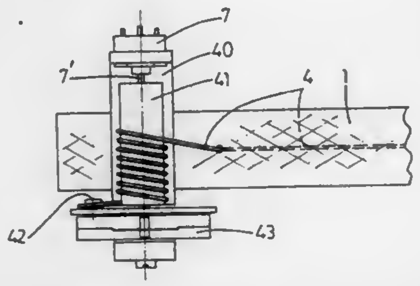
5,709,217

DEVICE FOR MEASURING THE RESPIRATION OF A PERSON

Johannis Van Groningen, Achthuizen, Netherlands, assignor to B.V. Optische Industrie De Oude Delft, Delft, Netherlands

Filed Oct. 28, 1992, Ser. No. 967,717
Int. Cl.^{6} A61B *5/08*

U.S. Cl. 128—721 **7 Claims**



1. An assembly for measuring respiration, which comprises:

a.) a strap member of elastic material having means for connecting a free end portion to a position remote thereof for fitting said strap under tension about a body to be measured for respiration;

b.) an elongated member of non-stretchable material extending along said strap member and connected proximate said free end portion;

c.) detector means connected to said elongated member for providing a measurement signal of variation in circumferential length;

d.) circuit means for processing said measurement signal and including an adjusting device; and

e.) display means for displaying results of said processed signal, said circuit including means for adjusting display range of said display means.

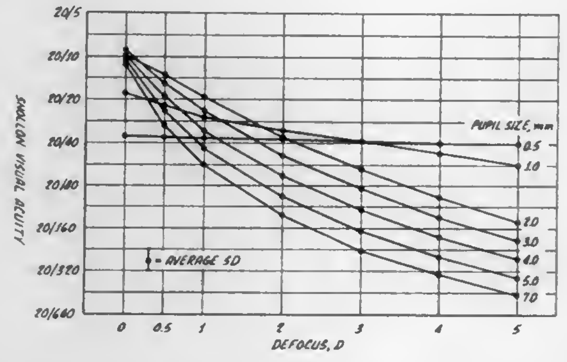
5,709,218

METHOD OF PREDICTING VISUAL ACUITY WITH CHANGE OF SPHEROCYLINDRICAL REFRACTIVE ERROR

Jack T. Holladay, Belaire, Tex.; Alan J. Lang, Long Beach, and Valdemar Portney, Tustin, both of Calif., assignors to Allergan, Waco, Tex.

Filed Apr. 15, 1996, Ser. No. 631,150
Int. Cl.^{6} A61B *13/00*

U.S. Cl. 128—745 **4 Claims**



1. A method for predicting visual acuity of a subject due to a change in spherocylindrical refractive error of the subject's eye, said method comprising the steps of:

measuring an uncorrected visual acuity, ucVA, of the subject's eye;

measuring a best corrected visual acuity, ccVA, of the subject's eye;

measuring a spherocylindrical refractive error, Rx, of the subject's eye, the spherocylindrical refractive error being comprised of spherical error and cylindrical error;

calculating a spherocylindrical equivalent, Seq., defined as the optimum spherical refraction needed to correct for the spherocylindrical refractive error;

calculating a defocus equivalent, Deq, from an absolute value of the spherical equivalent and cylindrical error;

determining from a Defocused Acuity Group a pupil diameter corresponding to the measured uncorrected visual acuity, ucVA, and the calculated defocus equivalent, Deq;

determining a new equivalent defocus Deq due to a change in surgical procedure on the subject's eye or insertion of an IOL in the subject's eye; or a change of IOL in the subject's eye; and

determining from the Defocused Acuity Graph, a predicted uncorrected visual acuity, ucVA corresponding to the determined pupil diameter and the new equivalent defocus, Deq.

5,709,219

METHOD AND APPARATUS TO CREATE A COMPLEX TACTILE SENSATION

Elaine Chen; Brian Eberman, both of Somerville, and Beth A. Marcus, Lexington, all of Mass., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 187,646, Jan. 27, 1994, abandoned. This application Aug. 1, 1996, Ser. No. 682,951
Int. Cl.^{6} A61B *5/103*

U.S. Cl. 128—782 **10 Claims**

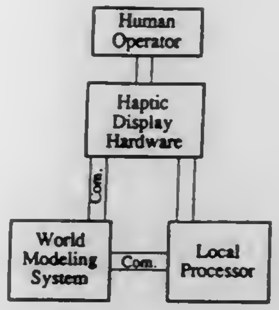
1. An apparatus for creating a complex tactile sensation that is sensed by a hand of a human operator, the apparatus comprising:

(a) an articulating device dimensioned and constructed for receiving the hand of said operator, said articulating device including means for detecting a position and an orientation of said hand, and means for encoding the position and the orientation as data;

(b) means associated with the articulating device for sensing a force produced by the hand and producing a force signal in response thereto that is indicative of the force;

(c) computation means electrically coupled to the articulating device to receive said data and said force signal, said computation means calculating a set of commands based thereon; and

(d) at least two display means for producing said complex tactile sensation, said display means receiving said set of commands from the computation means and producing said complex tactile sensation for the hand in response thereto.



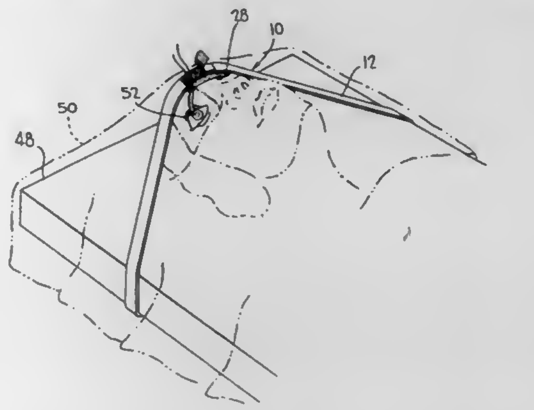
5,709,220

HEAD STABILIZER AND SUPERIOR RECTUS BRIDLE SUTURE FIXATOR DEVICE FOR USE IN EYE SURGERY AND METHODS THEREFOR

Robert E. Kellan, 60 East St., Suite 1100, Methuen, Mass. 01844

Filed Dec. 17, 1991, Ser. No. 808,724
Int. Cl.^{6} A61B *19/00*

U.S. Cl. 128—849 **5 Claims**



5. A system for performing eye surgery comprising an operating table for supporting a patient in a supine position, a surgical drape for covering the patient's head with an opening exposing an eye to be operated, and a head stabilizer device for holding the patient's head in a stabilized non-moving position, said head stabilizer device extending across the forehead of the patient and around the operating table and having opposing ends with means on said opposing ends for fastening said opposing ends together to hold the head of the patient against the operating table, said surgical drape being disposed between said head stabilizer device and the head of the patient whereby said head stabilizer device holds said surgical drape in position on the head of the patient.

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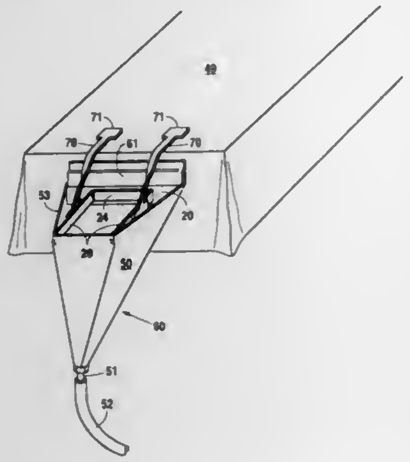
5,709,221
DISPOSABLE SURGICAL DRAPE

Thierry G. Vancaillie, San Antonio, Tex., and Robert K. Mitchiner, Longmont, Colo., assignors to Aquintel, Inc., Mountain View, Calif.

Continuation of Ser. No. 617,352, Mar. 18, 1996, Pat. No. 5,620,010, which is a continuation-in-part of Ser. No. 109,121, Aug. 19, 1993, Pat. No. 5,395,354. This application Dec. 19, 1996, Ser. No. 770,015

Int. Cl.⁶ A61B *19/00*

U.S. Cl. 128—849 **4 Claims**



1. A disposable surgical drape, comprising

a splash shield for substantially horizontal placement to direct fluid flow to a folding funnel;

a folding funnel for receiving fluid flow from said splash shield, said folding funnel comprising a funnel body having a funnel mouth and a funnel mouth edge, at least a portion of said funnel mouth edge being sealingly coupled to said splash shield; and

folding frame means coupled to said folding funnel for holding open said funnel mouth, wherein said folding frame means further comprises a base having a first end, a second end, a substantially centered longitudinal axis extending between said first and second ends, and a longitudinal bending compliance along said longitudinal axis; at least one resilient elongated strut, each said strut having a proximal end and a distal end and a longitudinal bending compliance greater than said base longitudinal bending compliance, each said strut proximal end being coupled to said base, wherein, each said strut distal end comprises edge coupling means for coupling said strut to a funnel mouth edge; and hinge means for coupling each said strut to said base.

5,709,222
BODY WASTE DETECTION AND ALARM SYSTEM

Harry H. Davallou, P.O. Box 2629, La Jolla, Calif. 92038

Filed Jan. 7, 1997, Ser. No. 779,686

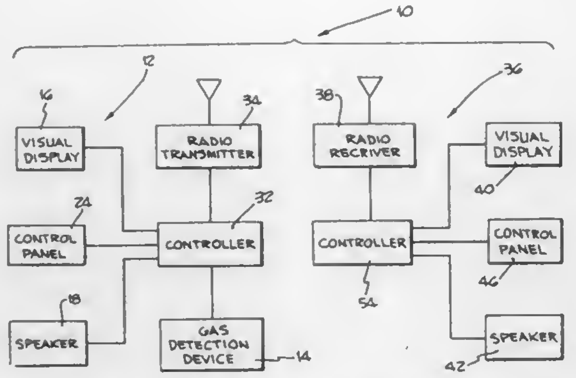
Int. Cl.⁶ A61F *5/48*

U.S. Cl. 128—885 **30 Claims**

1. A body waste detector, comprising:

a housing defining at least one gas inlet aperture;

a gas sensor located substantially within the housing and adapted to detect the presence of at least one of gas associated with urine and gas associated with solid body waste; and



an indicator, operably connected to the gas sensor, adapted to provide an indication that waste has been detected.

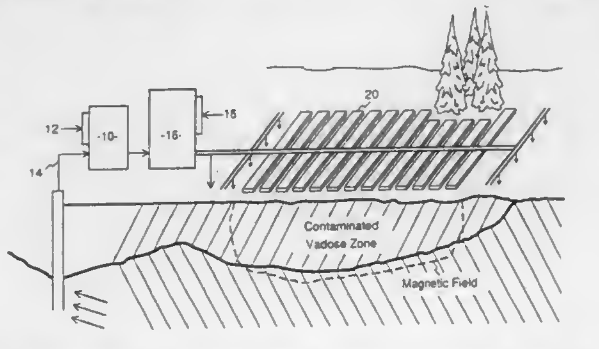
5,709,223
MAGNETICALLY MODIFIED MICROBIAL METABOLISM

Walter C. Rawls, Jr., Jacksonville, Fla., and Gregory J. Provell, Somerset, N.J., assignors to Bio Magnetics Systems, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 821,028, Jan. 15, 1992, Pat. No. 5,318,045, which is a continuation-in-part of Ser. No. 674,923, Mar. 26, 1991, Pat. No. 5,197,492, which is a continuation-in-part of Ser. No. 380,873, Jul. 17, 1989, Pat. No. 5,002,068. This application Jun. 7, 1994, Ser. No. 254,940

Int. Cl.⁶ A61B *19/00*

U.S. Cl. 128—898 **2 Claims**



1. The method of modifying the reproduction rate of cells by exposing said cells to north directional unipolar magnetic fields, thereby decreasing said reproduction rate.

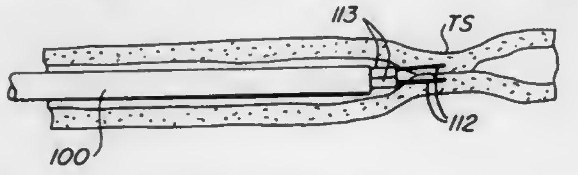
5,709,224
METHOD AND DEVICE FOR PERMANENT VESSEL OCCLUSION

Robert S. Behl, Palo Alto; Thomas Palermo, San Jose, and Colin J. Nichols, Fremont, all of Calif., assignors to Radiotherapeutics Corporation, Mountain View, Calif.

Filed Jun. 7, 1995, Ser. No. 488,444

Int. Cl.⁶ A61B *17/36*

U.S. Cl. 128—898 **18 Claims**



1. A method for occluding a body lumen, said method comprising:

applying from within the lumen a force to draw opposed portions of the inner lumen wall at least partially together over an occlusion region, wherein said opposed portions are disposed across the lumen from each other; and

injuring opposed portions of the inner wall while they are held together by the applied force, wherein the injured region heals to form an occlusion blocking the body lumen.

5,709,225
COMBINED MAGNETIC FIELD DETECTOR AND ACTIVITY DETECTOR EMPLOYING A CAPACITIVE SENSOR, FOR A MEDICAL IMPLANT

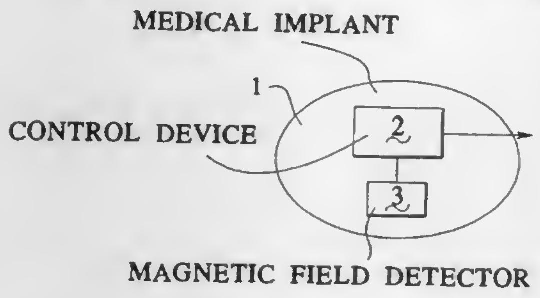
Göran Budgifvars, and Inga Bergström, both of Stockholm, Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Sep. 20, 1995, Ser. No. 531,274

Claims priority, application Sweden, Sep. 22, 1994, 9403188

Int. Cl.⁶ A61B *5/11;* **A61N** *1/365*

U.S. Cl. 128—899 **6 Claims**



1. A medical implant comprising:

a capacitive accelerometer having a capacitance which changes upon motion of said capacitive accelerometer and at least partially coated with a material sensitive to magnetic fields which causes a change in the capacitance of said sensor in the presence of a magnetic field;

means connected to said capacitive sensor for generating a signal including a first component dependent on a change in said capacitance due to motion of said capacitive accelerometer and a second component dependent on a change in capacitance of said capacitive accelerometer in the presence of a magnetic field having a predetermined field strength;

means for generating an activity signal dependent on said first component;

means for generating a magnetic field detection signal dependent on said second component;

means for generating a medical therapy, said medical therapy being adjustable and having a plurality of therapy modes;

means connected to said means for generating a medical therapy adapted for delivering said medical therapy to a subject; and

control means, supplied with said activity signal and with said magnetic field detection signal, for controlling said means for generating a medical therapy for adjusting said medical therapy dependent on said activity signal and for changing a mode of said medical therapy dependent on said magnetic field detection signal.

5,709,226
ROLLING UNIT FOR PRODUCING FILTER-TIPPED CIGARETTES

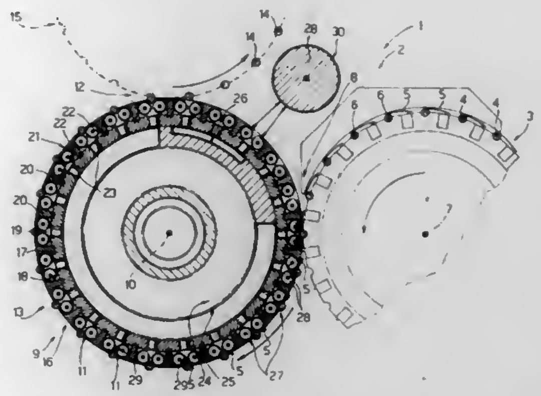
Fiorenzo Draghetti, Medicina, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Jan. 17, 1996, Ser. No. 587,509

Claims priority, application Italy, Jan. 17, 1995, BO95A0009

Int. Cl.⁶ A24C *5/50*

U.S. Cl. 131—94 **6 Claims**



1. A rolling unit (**2**) for producing filter-tipped cigarettes (**14**); the unit comprising an input conveyor (**3**), an intermediate conveyor (**9**) and an output conveyor (**15**); the intermediate conveyor (**9**) being tangent to the input and output conveyors (**3**, **15**) at a first (**8**) and second (**12**) transfer station respectively; the input conveyor (**3**) supplying the first transfer station (**8**) with a succession of items (**4**), each comprising at least one cigarette portion and at least one coaxial filter with their respective ends contacting each other, and a distended adhesive strip (**5**) connected to the outer periphery of the item (**4**) and astride said cigarette portion and said filter; the output conveyor (**15**) being adapted to receive from the intermediate conveyor (**9**) at least one succession of filter-tipped cigarettes (**14**); the intermediate conveyor (**9**) being a rolling conveyor having a number of suction seats (**11**), each for receiving and retaining a said item (**4**) and feeding said item crosswise; and each said seat (**11**) being defined by rolling means (**27**) movable with said intermediate conveyor (**9**) and revolving in relation to the intermediate conveyor (**9**) to rotate each item (**4**) about a longitudinal axis thereof; said rolling means (**27**) comprising, for each said seat (**11**), a pair of motorized rollers (**28**) parallel to each other and defining a respective said seat (**11**); suction retaining means (**25**) being provided between said two motorized rollers (**28** to maintain each said item (**4**) contacting the respective rolling means (**27**) such that the items (**4**) are rolled at a speed independent of the peripheral speed of said intermediate conveyor (**9**).

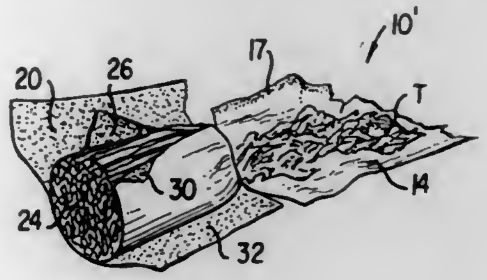
5,709,227
DEGRADABLE SMOKING ARTICLE

Barbara Walker Arzonico, Winston-Salem; Michael Francis Dube; Glenn Edward Creamer, both of Pfafftown; Robert Leslie Oglesby, Kernersville; Charles Ray Ashcraft, Winston-Salem, and Robin Kent Wilson, Clemmons, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 5, 1995, Ser. No. 567,655

Int. Cl.⁶ A24D *3/06*

U.S. Cl. 131—341 **18 Claims**



1. A degradable smoking article comprising a tobacco rod and a filter component, said filter component comprising a gathered web of moisture disintegrative sheet material overwrapped with a moisture disintegrative plug wrap, said plug wrap being bonded along a longitudinal seam thereof with a water soluble adhesive, a moisture disintegrative tipping paper overwrapping and securing together

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said tobacco rod and filter component, said tipping paper having an adhesive coating on one side thereof for adhesively bonding said tipping paper to the plug wrap of the filter component and the tobacco rod.

5,709,228

CIGARETTE WITH DECREASED SIDESTREAM SMOKE

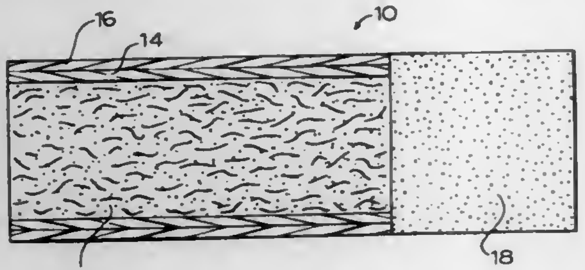
Norman Cohen, Scarborough, and Larry Bowen, Orangeville, both of Canada, assignors to Rothmans, Benson & Hedges, Inc., Don Mills, Canada

Continuation-in-part of Ser. No. 348,855, Nov. 28, 1994, which is a continuation of Ser. No. 773,931, Nov. 5, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,277

Claims priority, application United Kingdom, Jun. 2, 1989, 8912688; Jun. 21, 1989, 8914267; Jul. 26, 1989, 8917089

Int. Cl.⁶ A24D *1/02*

U.S. Cl. 131—365 **6 Claims**



1. A cigarette, comprising a tobacco filler rod wrapped in two different paper wrappers comprising an inner wrapping and an outer wrapping which overlie one another in non-adhered relationship, wherein:

(i) the inner wrapping is formed of a paper having a Coresta porosity of about 1 to about 10 units and having a filler content of about 1 to about 8 wt. %, and

(ii) the outer wrapping is formed of a cigarette paper having a weight of about 35 to about 65 g/sq.m. and a filler content of about 18 to about 40 wt. %,

whereby a cigarette is provided having a decreased tendency to produce sidestream smoke when compared to said tobacco filler rod wrapped only in said outer wrapping.

5,709,229

METHOD OF PRODUCING A TOBACCO PRODUCT FOR SMOKING

Friedrich Priehs, Am Sonnenhang 3, D-28832 Achim, and Dietrich Mueller, Hamburg, both of Germany, assignors to Friedrich Priehs, Achim, and H.F. & Ph.F. Reemtsma GmbH & Co., Hamburg, both of Germany

PCT No. PCT/DE95/00109, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO96/22706, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 28, 1995, Ser. No. 704,768

Int. Cl.⁶ A24B *3/14*

U.S. Cl. 131—375 **16 Claims**

1. A method of producing a tobacco product for smoking comprising:

a) mixing tobacco particles, starch or a starch-containing product as binder, and additives to produce a mixture;

b) compressing and plasticizing the mixture in an extruder by the application of thermal and mechanical energy;

c) forcing pressurized steam through the mixture so as to form channels;

d) on leaving the extruder, expanding or foaming the mixture, rendered porous by the channels by a drop in temperature and pressure, hardening said mixture to form a continuous, porous, cylindrical rod and cutting said rod to desired lengths to form rod sections.

5,709,230

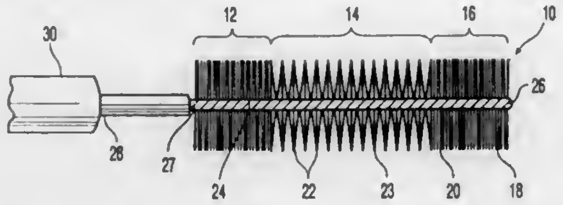
TRIPLE ZONE MASCARA BRUSH

Loretta A. Miraglia, Monsey, N.Y., assignor to E-L Management Corporation, New York, N.Y.

Filed Mar. 29, 1996, Ser. No. 623,762

Int. Cl.⁶ A45D *40/26*

U.S. Cl. 132—218 **18 Claims**



1. A mascara brush, comprising:

a twisted wire core extending longitudinally; and

a plurality of bristles mounted to said twisted wire core, said plurality of bristles comprising:

a middle cylindrical section containing a plurality of at least first and second different bristle types of relatively uniform length intermingled throughout the length of said middle section;

two end sections containing a plurality of bristles comprising one of said first or second bristle types; and

said middle section being less densely packed than at least one of said end sections.

5,709,231

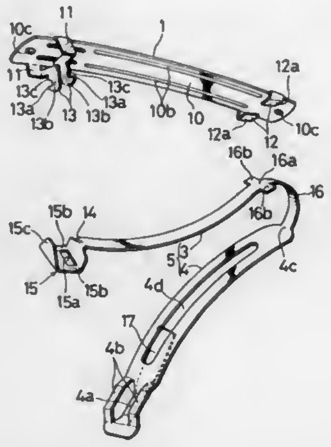
HAIR CLIP

Masahiro Yasuda, Osaka, Japan, assignor to Kabushiki Kaisha Yasuda Corporation, Osakashi, Japan

Filed Nov. 8, 1996, Ser. No. 745,611

Int. Cl.⁶ A45D *8/24*

U.S. Cl. 132—278 **9 Claims**



1. A hair clip, comprising:

a relatively elongated base plate having first and second ends;

a pair of hooking arms on said base plate first end capable of overlapping each other;

a relatively elongated hair retaining portion having first and second ends, said hair retaining portion further having at the first end thereof an engaging part releasably latched by said pair of hooking arms; and

a relatively elongated spring board portion having first and second ends and interposed between said base plate and said hair retaining portion;

wherein said spring beard portion is at its second end connected to the second end of said hair retaining portion by way of a bent portion, the bent portion having a base end, and wherein the base end of the bent portion is slidably retained, along the length of said base plate, to the second end of the base plate.

5,709,232

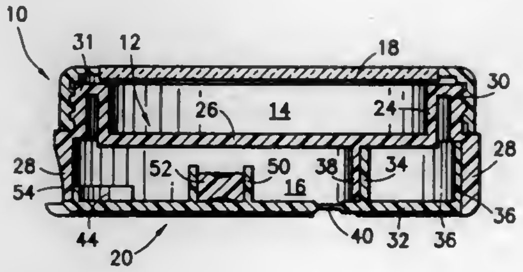
COSMETIC JAR AND STORAGE DEVICE

Robert J. Sheffler, Morganville, N.J., and Charles Chang, 127 E. Edsall Ave., Palisades Park, N.J. 07650, assignors to Charles Chang, Wayne, N.J.

Filed Nov. 15, 1995, Ser. No. 558,811

Int. Cl.⁶ A45D *33/22*

U.S. Cl. 132—295 **19 Claims**



1. A molded plastic cosmetic jar and applicator storage device comprising, in combination:

a) a structural body providing a pair of back-to-back shallow recesses which have a common molded plastic wall that seals them from each other,

b) completely removable cover means carried by said body and completely removable therefrom, enclosing one of said recesses to retain cosmetic substance therein with a screw-tight seal, and

c) a second cover means carried by said body, enclosing the other of said recesses to retain an applicator therein,

d) said second cover means having an anchorage portion attached to said body and having a closure flap connected to said anchorage portion by a thin, resilient integral living hinge,

e) said closure flap having detent means cooperable with detent means carried by said body, for yieldably holding the flap in a closed position wherein it closes the other of said shallow recesses.

5,709,233

DENTAL CLEANSING IMPLEMENT

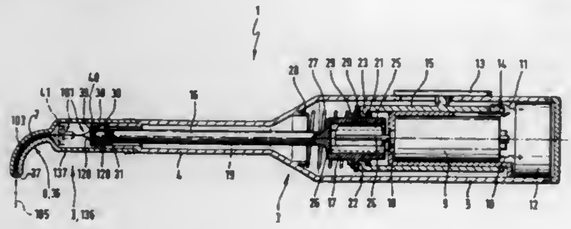
Bernhard Boland, Frankfurt, and Werner Haczek, Idstein, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 13, 1994, Ser. No. 354,597

Claims priority, application Germany, Dec. 23, 1993, 43 44 110.6; Feb. 23, 1994, 44 05 857.8

Int. Cl.⁶ A61C *15/00*

U.S. Cl. 132—322 **27 Claims**



1. A dental cleansing implement for coupling to a handle member with an electric motor drive means, the cleansing implement comprising an elongate member that includes a thin, elongate shaft having a free end portion structured for complete insertion in the interproximal spaces and a mounting portion connected with the shaft, the mounting portion including structure adapted to be coupled to the electric motor drive means, the elongate member being adapted to be at least one of rotated or oscillated by the electric motor drive means about a shaft longitudinal center line, the free end portion of the shaft being made of a flexible and resilient material, and the free end portion including a bent portion in the shape of a crescent, approximately, wherein during use the bent portion is inserted in the interproximal spaces and at least one of rotated or oscillated by the electric motor drive means, and wherein said material is sufficiently flexible for the bent portion to conform automatically to respective dimensions of individual interproximal spaces of the interproximal spaces during rotation of the bent portion.

5,709,234

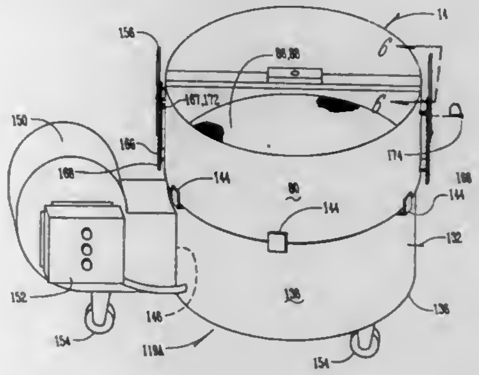
METHOD AND APPARATUS FOR REMEDIATING CONTAMINATED MATERIAL

Brent J. Lashmett, Embarrass; Doug C. Lashmett; H. W. Lashmett, both of Babbitt; Larry R. Herzog, Mt. Iron, and Thomas P. Tri, Duluth, all of Minn., assignors to B&S Research, Inc., Embarrass, Minn.

Continuation-in-part of Ser. No. 283,611, Aug. 1, 1994, Pat. No. 5,492,139. This application Jul. 27, 1995, Ser. No. 508,351

Int. Cl.⁶ B08B *3/10*

U.S. Cl. 134—92 **3 Claims**



3. Apparatus for washing and drying remediated materials comprising:

a washer tank holding a liquid washing fluid;

a removable basket containing said remediated materials and fitted within said tank for holding said remediated materials during washing;

said basket comprising side walls, a top wall, and a bottom wall, said side walls of said basket being shaped into a predetermined configuration, said bottom wall of said basket comprising a screen shaped in said predetermined configuration and having a plurality of openings therein said top wall having openings therein;

a dryer housing having side walls forming an upwardly presented dryer opening corresponding in size and shape to said predetermined configuration of said side walls and said screen of said basket;

guide brackets on one of said basket and said dryer housing for holding said basket in a stacked position above said dryer housing with said screen registered in covering relation over said dryer opening whereby said side walls of said basket and said side walls of said dryer housing form a substantially continuous conduit for the passage of air through said screen;

a blower connected to said dryer housing for directing a stream of air through said dryer opening and through said screen;

a heating element for heating said stream of air before said stream of air passes through said dryer opening and said screen lifting brackets on said basket for facilitating the lifting of said basket to place said basket on or remove said basket from said stacked position.

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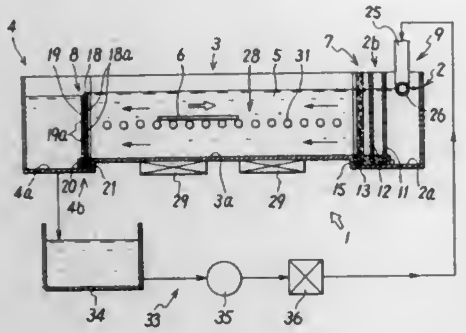
5,709,235
RUNNING WATER TYPE WASHING MACHINE

Shigeo Akanuma, and Yoshinobu Terui, both of Ayase, Japan, assignors to Speedfam Clean System Co., Ltd., Ayase, Japan
Filed Sep. 16, 1996, Ser. No. 714,356
Claims priority, application Japan, Feb. 2, 1996, 8-040580
Int. Cl.^{6} B08B *3/12*
U.S. Cl. 134—111 **14 Claims**



1. A running water type washing machine, comprising:

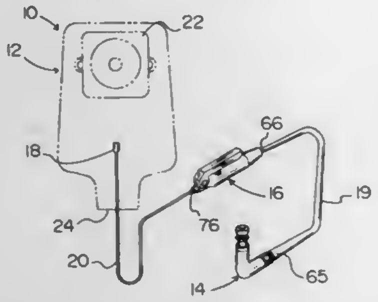
a washing vessel defining for a wash liquid a flow passage having in series a liquid feed section for supplying said wash liquid, an intermediate washing section for washing work in a submerged state under streams of said wash liquid from the liquid feed section, and a liquid discharge section for discharging used wash liquid from said washing section, at least either one of said liquid feed section and liquid discharge section being formed in a greater width than said intermediate washing section in the transverse direction thereof and at the same time formed in a greater depth to have a bottom level sunken from that of said washing section through a stepped portion;

an upstream flow regulator means located on the side of said liquid feed section, and having at least one perforated flow regulator plate mounted in position by abutting engagement with said stepped portion bordering on said washing section in such a way as to hold only perforated portions of said flow regulator plate in the flow passage to said washing section; and

a downstream flow regulator means located on the side of the liquid discharge section and having at least one perforated flow regulator plate.

5,709,236
COLOSTOMY POUCH RINSING DEVICE

Ernest L. Rodriguez, 15736 Wedgeworth Dr., Hacienda Heights, Calif. 91745
Filed Nov. 1, 1996, Ser. No. 743,009
Int. Cl.^{6} B08B *3/02*
U.S. Cl. 134—167 R **7 Claims**



1. A new and improved colostomy pouch rinsing device for use in association with a faucet including a head and water, the apparatus comprising, in combination:

a colostomy pouch formed in a generally rectangular configuration with a front, a top and a bottom, the front including attachment means to couple the pouch to a patient's abdomen, the bottom including a generally cylindrical aperture therein;

a faucet coupling assembly including a central elbow member formed in a hollow generally cylindrical configuration and contoured in an L-shaped orientation, the faucet coupling assembly having an upper section including faucet coupling means and a lower section including a first compression unit, the upper and lower sections each being threadedly coupled to the central elbow member, the faucet coupling means comprising an inner section including male screw threads and an outer section including a snap-on coupling, the male screw threads being coupled within a faucet head, the outer section being securely fastened around a faucet head, the outer section including cross-hatching to frictionally engage the upper section, the first compression unit regulating the flow of water therethrough, the upper and lower sections having a smaller diameter than the central elbow member;

a water control handle including a main body and an L-shaped control lever hingedly coupled thereto, the main body being formed in a generally cylindrical configuration and having a central region, an inboard end, an outboard end and a hollow interior, the outboard end including a projection member extending therefrom, the projection member having a hollow interior and including male screw threads therearound, the central region including a pin projecting therefrom, in an operative orientation a user grasping the control lever thereby depressing the pin and actuating the flow of water;

the inboard end including a handle sleeve being formed in a hollow, generally conical configuration with first and second open free ends, the first free end being coupled to the handle, a reducer, PVC tubing and a second compression unit being positioned within the handle sleeve and regulating the flow of water therethrough, the compression unit and reducer each being threadedly coupled to the PVC tubing;

a flexible rubber hose having an inboard end, an outboard end and a length of six feet, the inboard end of the hose being coupled to the first compression unit of the faucet coupling assembly, the outboard end of the hose being positioned through the second free end of the handle sleeve and coupled to the second compression unit;

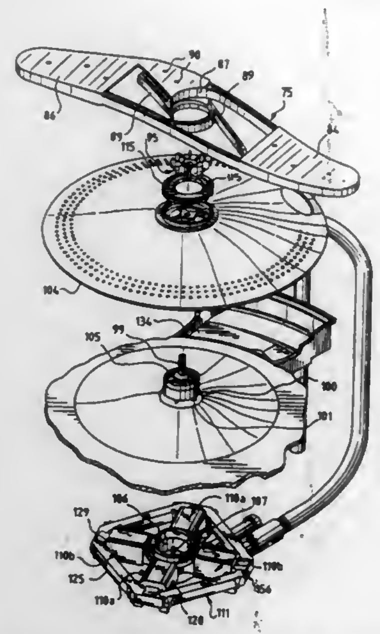
a spray head formed in a hollow, generally cylindrical configuration with a upper end and a lower end, the upper end having a greater diameter than the lower end, the upper end including a plurality of water apertures projecting therethrough; and

copper tubing formed in a elongated generally cylindrical configuration and contoured as a loop with an inboard end and an outboard end, the inboard end being positioned horizontally and including a nut, a rubber seal and a PVC washer, the inboard end of the copper tubing being threadedly coupled to the projection member of the handle and secured by the nut, the outboard end of the copper tubing being positioned vertically and being formed contiguously with the lower end of the spray head, in an operative orientation a user placing the spray head within the cylindrical aperture in the colostomy pouch, the user then connecting the faucet coupling assembly to a faucet and turning on the water, the user regulating the flow of water with the water control handle and washing the colostomy pouch.

5,709,237
DISHWASHER

Adrian Anthony Sargeant; William Hugh Currie, both of Dunedin; Willem Ouwens, Outram; Philip John Brace, Auckland; Robert William Todd, Dunedin, and Hans-Joachim Scholz, Otago, all of New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand
Division of Ser. No. 480,685, Jun. 8, 1995, Pat. No. 5,651,382, which is a division of Ser. No. 992,828, Dec. 18, 1992, Pat. No. 5,470,142. This application Jan. 28, 1997, Ser. No. 789,874
Claims priority, application New Zealand, Dec. 20, 1991, 241093
Int. Cl.^{6} A47L *15/22*
U.S. Cl. 134—174 **4 Claims**

1. A dishwasher comprising;



(a) a wash chamber adapted to accommodate dishes and within which wash liquid is circulated, said wash chamber having a floor which is dished upward in the center,

(b) a rotatable spray arm having liquid discharge nozzles which is located in the bottom of said wash chamber, said spray arm in turn comprising a hub portion and at least two diametrically opposed wing portions extending outwardly therefrom towards the side walls of said chamber, the hub portion mounted on the upwardly dished portion of said chamber floor and said wing portions shaped such that they droop downwardly away from the hub portion substantially parallel to the dished curvature of the chamber floor,

(c) a rack within said chamber which supports dishes above the floor of said chamber, such that the lowest point of any circular vertically supported dish is substantially above the lowest point of the top surface of said spray arm,

(d) a pump which pressurizes said spray arm with wash liquid,

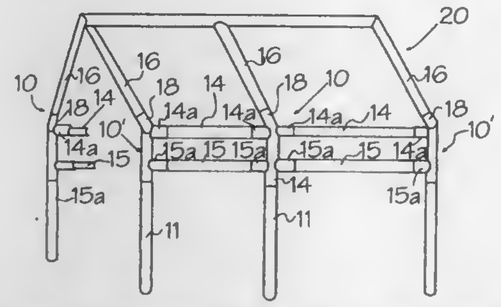
(e) a shallow depth pancake shaped electric motor for driving said pump located under the upwardly dished portion of said chamber floor, and

(f) the configuration and juxtaposition of the spray arm and electric motor being such that the distance from the bottom of the motor to the lowest point of the top surface of the spray arm is of the order of 55 mm.

5,709,238
TENT-FRAME CONSTRUCTION

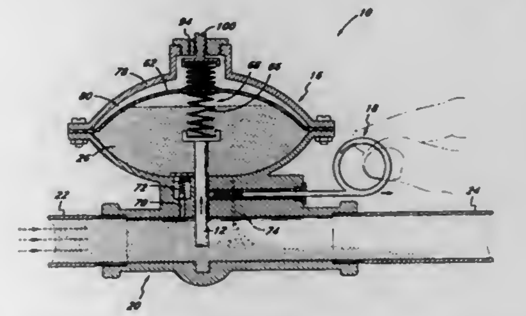
Anthony Mattioli, 3501 Vestal Pkwy. East, Vestal, N.Y. 13850
Filed Mar. 20, 1996, Ser. No. 619,056
Int. Cl.^{6} A45F *3/00;* **E04H** *15/34*
U.S. Cl. 135—87 **8 Claims**

1. A frame support supporting a tent having a roof cover and side covers, said frame support comprising a double-joint supporting a roof support member, a vertical side support member and two, spaced-apart, horizontal supports for allowing said roof cover to overlap with said side covers, thus providing an effective seal against the weather, and wherein said two, spaced-apart, horizontal supports comprise a first, upper, horizontal support member and a second, lower, horizontal support member.



5,709,239
AUTOMATIC SHUT-OFF SAFETY DEVICE

Frank Macalello; Christine Macalello, both of 26061 Red Corral, and Ed Sapigao, 24985 Sutter Dr., all of Laguna Hills, Calif. 92653
Continuation-in-part of Ser. No. 334,405, Nov. 4, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 563,190
Int. Cl.^{6} F16K *17/22*
U.S. Cl. 137—465 **39 Claims**



1. An automatic shut-off safety device which stops a fluid flow through at least a portion of a fluid delivery system when abnormal fluid flow occurs, said safety device comprising:

a conduit including an influent port and an effluent port adapted to be installed within the fluid delivery system;

a valve positioned between said influent and effluent port of said conduit and arranged to selectively block fluid flow through said conduit;

a housing comprising a control chamber in which a movable partition is enclosed, said movable partition dividing said control chamber into at least first and second compartments separated by said movable partition, said first compartment being in fluid communication with said conduit through an inlet opening upstream of said valve and through an outlet opening downstream of said valve, said inlet opening having a larger effective cross-sectional flow area than that of said outlet opening;

a first biasing member disposed inside said first compartment and coupled between said valve and said movable partition; and

a second biasing member disposed inside said second compartment and coupled between said movable partition and said housing.

5,709,240
CHECK VALVE AND BACKFLOW PREVENTER

James F. Martin, West Greenwich; Leo W. Fleury, North Smithfield, both of R.I., and Gregory Fuchs, Framingham, Mass., assignors to Grinnell Corporation, Cranston, R.I.
Continuation-in-part of Ser. No. 2,194, Aug. 11, 1995. This application Aug. 7, 1996, Ser. No. 692,944
Int. Cl.^{6} F16K *15/00*
U.S. Cl. 137—527.2 **16 Claims**

1. A check valve comprising:

a valve housing defining a passageway for flow of fluid therethrough between an inlet and an outlet, a chamber region of said passageway disposed between said inlet and said outlet, a valve bore between said inlet and said chamber region, an access opening to said chamber region, and a valve seat with an annular valve seat seal surface in said valve bore;

a valve swing arm mounted for movement within said valve housing; and

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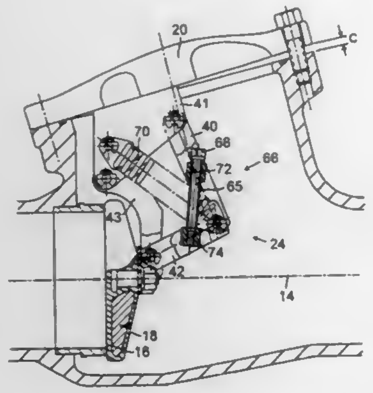


a valve element, defining a valve element seal surface, mounted, within said valve housing, upon said valve swing arm for pivoting movement between a first position of said valve element seal surface in sealing engagement with said valve seat for resisting flow of fluid between said inlet and said outlet of said passageway, and a second position of said valve element seal surface removed from said valve seat to allow flow of fluid between said inlet and said outlet, said valve element comprising:

a clapper plate formed of relatively rigid material and surrounding an aperture extending therethrough;

a clapper body of resilient material spanning and encapsulating said aperture and encapsulating at least a portion of said clapper plate; and

a support stud having a first end and a second end, said first end of said support stud extending into said resilient material of said clapper body and disposed within said aperture of said clapper plate, said first end of said support stud in resilient, supporting engagement with said clapper body and in spaced engagement from said clapper plate surrounding said aperture, and said second end of said support stud disposed for mounting of said valve element upon said valve swing arm.

5,709,241

BUTTERFLY VALVE

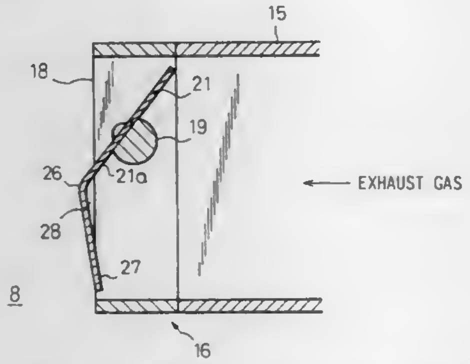
Minoru Iwata, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 4, 1996, Ser. No. 582,796

Claims priority, application Japan, Jan. 9, 1995, 7-001318

Int. Cl.^{6} F16K ***15/03;*** **F01N** ***1/08***

U.S. Cl. 137—527.6 **19 Claims**



1. A butterfly valve adapted to be arranged in a pipe through which fluid can flow, the pipe having an axis and an outlet end, the valve comprising:

a valve shaft having an axis eccentric to the pipe axis; and

a valve element integrally supported by the valve shaft,

wherein the valve is opened by a fluid pressure acting on the valve element,

wherein a part of the valve element on one side of the valve shaft has a tip portion bent along a pleat line substantially parallel to the shaft axis toward an upstream side of a fluid flow, and

wherein the valve is arranged at the outlet end of the pipe to form a clearance between the valve element part around the pleat line and the outlet end of the pipe, to thereby allow the fluid to flow out through the clearance, when the valve opens from a closed position thereof.

5,709,242

DEVICE FOR BLOCKING A LIQUID FLOW THROUGH A PIPE IN ONE DIRECTION

Ludovicus Frederikus Bergen, Purmerend, Netherlands, assignor to Metalo Monti V.O.F., Zaandam, Netherlands

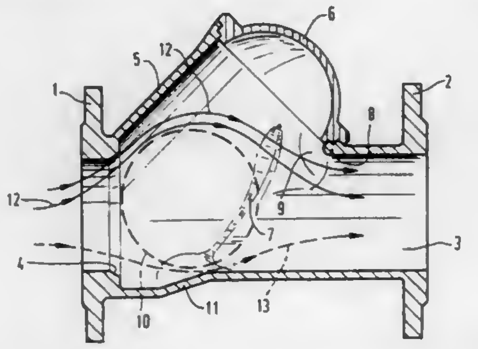
PCT No. PCT/EP94/02803, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO95/06833, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 24, 1994, Ser. No. 602,822

Claims priority, application Netherlands, Sep. 1, 1993, 93.01504

Int. Cl.^{6} F16K ***15/04***

U.S. Cl. 137—533.11 **5 Claims**



1. A ball check valve assembly having a housing defining a generally cylindrical passageway and an annular valve seat coaxial with said passageway and disposed transversely thereto, said valve seat having a diameter substantially the same as the diameter of said passageway, a spherical valve body received within said housing and having a diameter greater than the diameter of said valve seat thereby preventing the flow of liquid through said passageway in a first direction when said valve body is in a first position in engagement with said valve seat and permitting flow in a second direction opposite said first direction when said valve body is in spaced relationship with said valve seat, said housing including a generally cylindrical valve casing including a detachable cover defining a closed chamber, said valve casing communicating with said passageway along an imaginary line of intersection between said cylindrical valve casing and said cylindrical passageway, said imaginary line extending from a first location adjacent said valve seat to a second location remote from said valve seat, said second location being downstream with respect to said first location and being adjacent an axil interconnecting said valve casing and said passageway, said valve casing having a diameter larger than the diameter of said valve body and being configured for receiving said valve body in said chamber in a second position wherein said valve body is in substantial adjoining relationship with said detachable cover, said detachable cover extending angularly outwardly from said axil relative to said imaginary line of intersection and being substantially out of said passageway, said housing including guide means projecting into said passageway for being engaged by said valve body to guide the valve body from said first position toward said second position, said housing including at least one outwardly extending projection adjacent said second location forming a space inside said housing between said valve casing and said passageway adjacent said axil for enabling liquid to flow from said valve casing into said passageway through said space thereby decreasing liquid pressure in an area between the valve body and the detachable cover to a value less than the liquid pressure in an area between the valve seat and the valve body such that the imbalance in liquid pressure will cause the valve body to be moved to its second position in substantial adjoining relationship with said detachable cover.

5,709,243

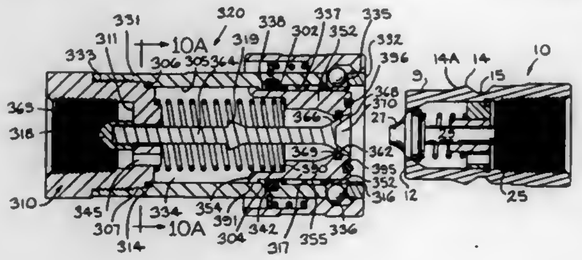
LOW SPILL FEMALE COUPLING

Michael P. Wells, Holland; Todd J. Vogel, Waterville, and David S. Densel, Whitehouse, all of Ohio, assignors to Aeroquip Corporation, Maumee, Ohio

Continuation-in-part of Ser. No. 559,623, Nov. 20, 1995, abandoned. This application Dec. 3, 1996, Ser. No. 759,998

Int. Cl.^{6} F16L ***37/28***

U.S. Cl. 137—614.03 **32 Claims**



1. For use with a male coupling member having (1) a body portion with an entrance end including an annular surface defining an opening communicating with an axial passageway and (2) an axially extending stem valve axially movable in said axial passageway between a closed position and an open position, said stem valve including a nose with extends through said opening and outwardly from said annular surface when said stem valve is in said closed position, a female coupling member comprising:

(a) a body having a passageway extending along an axis from a receiving end to an opposing end, said receiving end (1) sized to receive said male coupling member body portion and (2) defining an opening to said passageway;

(b) a sleeve having an engagement end and an opposing end positioned in said passageway for axial movement therein from a forward position in the vicinity of said receiving end to a retracted position closer to said opposing end;

(c) a stem valve mounted on said body and extending through said sleeve and having an enlarged head sealingly engageable with said sleeve, said sleeve and said stem valve being relatively moveable between an engaged, closed position and an open position, said enlarged head having a cavity sized to receive said nose when said male coupling member entrance end engages said sleeve engagement end; and

(d) a spring yieldingly urging said sleeve toward said forward position,

movement of said male coupling member into said female coupling member engaging said annular surface against said sleeve engagement end and said nose in said cavity and thereafter axially displacing said sleeve out of engagement with said stem valve, said female coupling member being configured such that engagement of said annular surface against said engagement end prior to axially displacing said sleeve to open position causes those portions of the joined male coupling member and female coupling member in the area of said annular surface and said engagement end to be occupied substantially entirely by portions of said male coupling member body and stem valve and by portions of said female coupling member body, sleeve and stem valve with substantially no spaced apart areas for the accumulation of fluid.

5,709,244

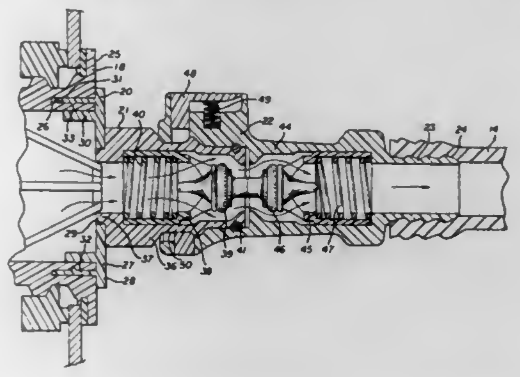
COLLAPSIBLE CONTAINER CONNECTOR

Lawrence J. Patriquin, Phillips Ranch, and Rory F. Ramirez, Yuba City, both of Calif., assignors to Condiment Master, Inc., Los Angeles, Calif.

Filed Oct. 6, 1995, Ser. No. 539,997

Int. Cl.^{6} F16L ***37/28***

U.S. Cl. 137—614.04 **2 Claims**



1. In a connector for a collapsible container having a container outlet fitting, the combination of:

a container cap having means for mounting said cap on a container outlet fitting;

a coupling insert for attaching to said container cap; and

a coupling body, said coupling insert and coupling body having interengaging means for connecting said body to said insert and for disconnecting said body from said insert,

said coupling insert having a first poppet valve with a valve seal ring engagable with a valve seat in said coupling insert, and a spring in said coupling insert urging said poppet valve seal ring into engagement with said poppet valve seat,

said coupling body having a second poppet valve having a valve seal ring engagable with a valve seat in said coupling body, and a spring in said coupling body urging said poppet valve seal ring into engagement with said poppet valve seat,

said first and second said poppet valves having exposed ends positioned for engaging each other when said coupling insert and said coupling body are connected by said interengaging means,

said interengaging means including means for latching said coupling body to said coupling insert bringing said popper valve exposed ends into engagement with each other moving each of said poppet valves seal rings out of engagement with the corresponding poppet valve seat permitting fluid flow through said connector,

said interengaging means including means for latching said coupling body to said coupling insert bringing said poppet valve exposed ends into engagement permitting fluid flow through said connector and for unlatching said coupling body from said coupling insert with said poppet valve springs pushing said connector body from said connector insert when said body and insert are unlatched and blocking fluid flow through said connector, with said connector body moving only axially relative to said connector insert, with actuation of the poppet valves providing only full flow and zero flow through the connector,

said coupling body having an outer end for connection to a hose line,

said container cap having a flange with a threaded central opening and said coupling insert having a threaded end for insertion into said threaded opening mounting said coupling insert on said container cap flange, and

said container cap means for mounting including a first annular rim projecting from said flange for insertion into said container outlet fitting.

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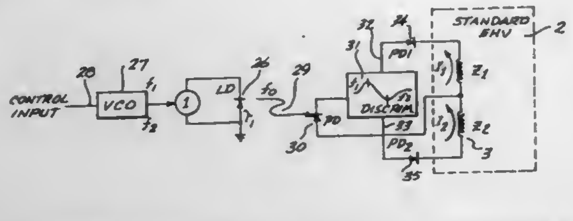
5,709,245
OPTICALLY CONTROLLED ACTUATOR

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 634,079, Apr. 17, 1996, abandoned, which is a continuation of Ser. No. 311,465, Sep. 23, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 720,320

Int. Cl.^{6} F15B *13/043*

U.S. Cl. 137—625.64 **2 Claims**



2. An optical system for an electrohydraulic valve having first and second coils comprising in combination:

a controllable light source intensity modulated by a frequency modulated oscillator;

a photovoltaic device;

a fiber optic path coupled between said controllable light source and said photovoltaic device;

a double tuned frequency discriminator having a first output and a second output;

a first diode rectifier responsive to said first output;

a second diode rectifier responsive to said second output;

said first diode rectifier having an output coupled to said first coil; and,

said second diode rectifier having an output coupled to said second coil.

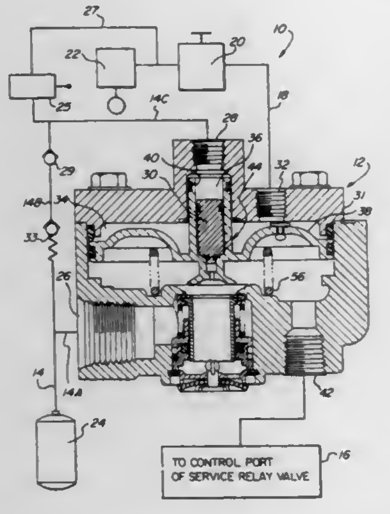
5,709,246
BOOSTER VALVE WITH CONTAMINANT EJECTION FOR USE IN A PNEUMATIC BRAKE SYSTEM

Robert Koelzer, Kearney, Mo., assignor to Midland Brake, Inc., Kansas City, Mo.

Filed Nov. 4, 1996, Ser. No. 743,251

Int. Cl.^{6} F15B *13/042*

U.S. Cl. 137—627.5 **15 Claims**



1. A contaminant-ejecting booster valve for a pneumatic brake, comprising:

a housing enclosing a chamber;

a control port in the housing in fluid communication with the chamber;

an exhaust port in the housing permitting removal of contaminants from the chamber;

a main piston mounted within the chamber and movable between a first position and a second position, the main piston having at least two sides and an orifice therethrough;

an exhaust passage through the main piston connecting the chamber and the exhaust port in fluid communication;

a blocking member movable between an open and closed position for opening and closing the exhaust passage, such that when the blocking member is in the open position it permits pressurized air from the control port to eject contaminants from the chamber; and

a check valve covering the orifice of the main piston and movable between an open and a closed position, wherein the check valve is closed to prevent the flow of control air through the orifice when control air is applied and open to allow the flow of delivery air into the chamber when control air is released to equalize pressure on both sides of the main piston.

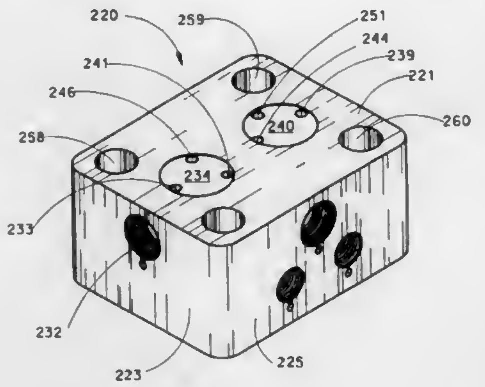
5,709,247
MULTIPLE VALVE MANIFOLD FOR USE WITH A PRESSURE PROCESSING APPARATUS

Peter B. Hutton, c/o Century Valve & Machine Ltd., 1915-30th Ave. N.E., Calgary, Alberta, Canada, T2E 6Z5

Filed Mar. 4, 1996, Ser. No. 610,756

Int. Cl.^{6} F16K *11/20*

U.S. Cl. 137—884 **35 Claims**



13. A valve manifold for use with a pressure sensing apparatus, comprising, in combination:

(a) an integral body including a first face section, a second face section generally parallel with the first face section, and a peripheral section extending between the first and second face sections;

(b) a process fluid inlet port means in said second face section, and a process fluid outlet port means in said first face section, said outlet port means being complementary with inlet ports of an associated pressure sensing apparatus;

(c) vent outlet port means disposed at said second face section;

(d) a plurality of peripheral apparatus mounting holes provided about the periphery of the first face section, compatible with bolts for operatively securing the associated pressure sensing apparatus to the body at said first face section thereof, the axes of said apparatus mounting holes being generally perpendicular to said first face;

(e) a plurality of valve mounting bores each said bore being machined in said peripheral section and having an axis directed inwardly of the body for selectively manipulating passage of fluid through passageways provided in said body.

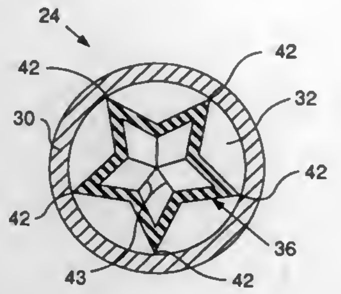
5,709,248
INTERNAL ACCUMULATOR FOR HYDRAULIC SYSTEMS

C. Nickolas Goloff, Secor, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 30, 1996, Ser. No. 723,407

Int. Cl.^{6} F16L *55/04*

U.S. Cl. 138—30 **10 Claims**



1. An accumulator adapted for use in a hydraulic system having a source of pressurized fluid, the accumulator comprises:

a housing defining a closed chamber therein and a conduit interconnecting the closed chamber with the source of pressurized fluid; and

a hollow, fluid filled member disposed in and spaced at least in part from the closed chamber and having a non-extensible cover that maintains a relatively fixed maximum surface to volume ratio and capable of being compressed when subjected to a pressure greater than the pressure within the hollow, fluid filled member.

5,709,249
LOCKING STRUCTURE

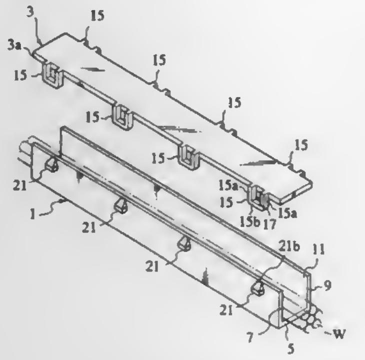
Eiji Okada; Tomoyasu Murakami, and Mitsunari Tashiro, all of Hiroshima, Japan, assignors to Yazaki Corporation, Tokyo, Japan

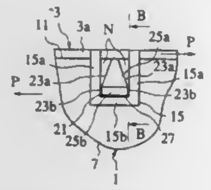
Filed Jun. 22, 1995, Ser. No. 493,567

Claims priority, application Japan, Jun. 27, 1994, 6-144752

Int. Cl.^{6} F16B *5/00*

U.S. Cl. 138—162 **3 Claims**





1. A locking mechanism comprising:

a bottom plate;

a pair of side walls extending upward from both side edges of the bottom plate;

a cover for closing an opening defined between top ends of the pair of side walls;

a plurality of stopping projections provided in a spaced manner on each of said side walls; and

a plurality of engaging frames each of which is formed in a spaced manner at each side end of the cover and has a window to be engaged with each stopping projection;

each of said engaging frames comprising:

  a pair of frame side portions which extend in a direction from said cover to said bottom plate; and

  a frame bottom portion for coupling distal ends of said frame side portions;

  each of said stopping projections comprising:

    a pair of oblique side faces which respectively face an inside face of said pair of frame side portions when said stopping projection is fitted in the window of the engaging frame, wherein a space is defined between the inside faces of said frame side portions and said oblique side faces when said stopping projection is fitted in the window of the engaging frame, said space increasing in size in a direction from said frame bottom portion to said cover and permitting an absorption of a bending deformation of the cover upon an application of a torsional moment to the locking mechanism.

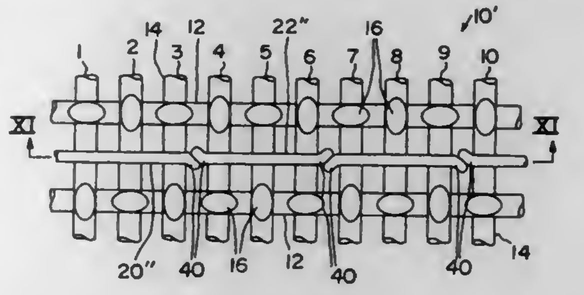
5,709,250
PAPERMAKERS' FORMING FABRIC HAVING ADDITIONAL FIBER SUPPORT YARNS

Kevin J. Ward, Coldbrook, Canada, and Robert G. Wilson, Wake Forest, N.C., assignors to Weavexx Corporation, Wake Forest, N.C.

Continuation-in-part of Ser. No. 307,937, Sep. 16, 1994, Pat. No. 5,518,042. This application Mar. 5, 1996, Ser. No. 611,203

Int. Cl.^{6} D03D *13/00*

U.S. Cl. 139—383 A **17 Claims**



1. A papermakers forming fabric comprising:

a base fabric layer including cross machine direction fabric yarns and machine direction fabric yarns interwoven to form a papermaking surface with alternating single knuckles in the machine direction and cross machine direction on said papermaking surface;

first additional cross machine direction yarns positioned between adjacent ones of said cross machine direction fabric yarns on said papermaking surface of said base fabric layer, said first additional cross machine direction yarns not forming part of said alternating knuckles of said base fabric layer; and

second additional cross machine direction yarns positioned between said adjacent ones of said cross machine direction fabric yarns on said papermaking surface of said base fabric layer, said second additional cross machine direction yarns not forming part of said alternating knuckles of said base fabric layer;

wherein said first and second additional cross machine direction yarns are interwoven in opposite weaves with said base fabric layer, said first additional cross machine direction yarn passing over a first odd number of first adjacent machine direction fabric yarns and under a second odd number of the next adjacent machine direction fabric yarns, said second additional cross machine direction yarn passing under said first odd number of said first adjacent machine direction fabric

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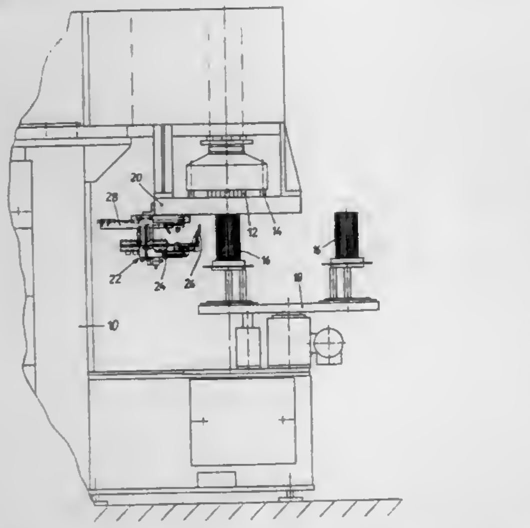
yarns and over said second odd number of said next adjacent machine direction fabric yarns; and

wherein said first additional cross machine direction yarn serves as a fiber supporting yarn while passing over said first odd number of adjacent machine direction fabric yarns and serves as a locator yarn for locating said second additional cross machine direction yarn in a substantially central position between said adjacent ones of said cross machine direction fabric yarns while passing under said second odd number of adjacent machine direction fabric yarns, and said second additional cross machine direction yarn serves as a locator yarn for locating said first additional cross machine direction yarn in a substantially central position between adjacent ones of said cross machine direction fabric yarns while passing under said first odd number of adjacent machine direction fabric yarns and serves as a fiber support yarn while passing over said next adjacent machine direction fabric yarns.

5,709,251
METHOD AND DEVICE FOR WINDING COILS FOR ELECTRIC MOTORS OR GENERATORS
Filippo Leame, Schoneck, Germany, assignor to STATOMAT Spezialmaschinen GmbH, Germany
PCT No. PCT/EP95/00092, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO95/19655, PCT Pub. Date Jul. 20, 1995
PCT Filed Jan. 11, 1995, Ser. No. 676,184
Claims priority, application Germany, Jan. 12, 1994, 44 00 610.1; Feb. 8, 1994, 44 03 919.0
Int. Cl.^{6} B21F *3/00*
U.S. Cl. 140—92.1 **14 Claims**



1. A method of winding coils comprising conductor wire for electric motors and generators, the method comprising the steps of:

creating a first coil or group of coils on a template by means of a circulating wire guide;

stripping the first coil or group of coils off the template into a receiver having circularly disposed slits;

grasping the wire by a holder between the wire guide and the template after said step of creating or during said step of stripping;

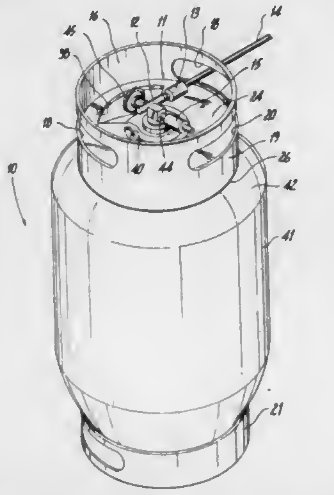
indexing the receiver by a rotating movement;

clamping the wire in the holder and temporarily holding it radially outside of the receiver while starting winding of the next coil or group of coils;

repeating said steps of creating, stripping, grasping, indexing and clamping to form additional sequential coils or groups of coils until creation of a last continuously wound coil; and

creating a defined length of an end section of the wire by clamping the wire at a first clamping point between the wire guide and the template, loosely grasping the wire between the first clamping point and the wire guide, pulling the end section away from the wire guide and the first clamping point, cutting through the end section of the wire at a defined distance from the first clamping point and clamping the wire between the cutting point and the wire guide to form a second clamping point, such that the wire has a defined end length projecting away from the last continuously wound coil.

5,709,252
NATURAL GAS DISTRIBUTION SYSTEM
Joseph Princiotta, Manalapan, N.J., and Alfred De Tomaso, East Meadow, N.Y., assignors to Progas, Inc., Manalapan, N.J.
Filed Jun. 6, 1995, Ser. No. 465,814
Int. Cl.^{6} B65B *1/04;3/04;31/00;* **B67C** *3/00*
U.S. Cl. 141—18 **38 Claims**



1. A natural gas distribution system comprising:

at least one gas cylinder having a first axial end with a valve and a second axial end,

a first protective collar detachably connected to said first axial end, the valve at said first axial end being disposed within said first protective collar, said first protective collar permitting access to the valve for operation; and

a second protective collar being detachably connected to said second axial end, whereby a threaded end plug is received through a mounting hole formed in said second collar and threadingly engages a plug boss formed in said second axial end.

5,709,253
METHOD FOR REFILLING AN INKJET CARTRIDGE AND APPARATUS TO MODIFY A CARTRIDGE WITH A NEGATIVE PRESSURE RESERVOIR
James T. Maerzke, Kenosha, Wis., assignor to Procubed Corporation, Kenosha, Wis.
Filed Jul. 30, 1996, Ser. No. 689,031
Int. Cl.^{6} B65B *1/04*
U.S. Cl. 141—18 **3 Claims**

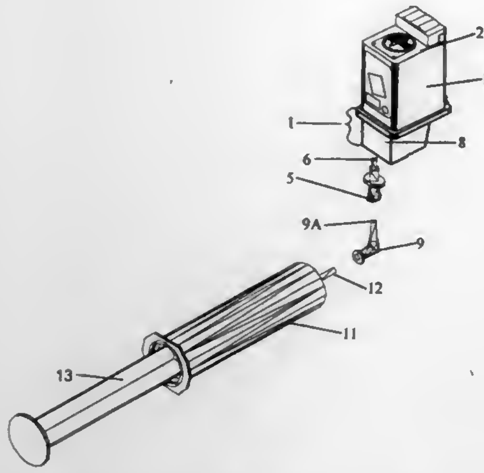
1. A method for refilling and inkjet cartridge having an ink reservoir, a vent opening and a fill port, the method comprising:

orienting the ink jet cartridge such that the vent opening is disposed above the fill port;

connecting a fill adapter and elbow connector, having associated tapered Luer connections, in fluid communication with the fill port;

connecting a syringe filled with ink to said elbow connector;

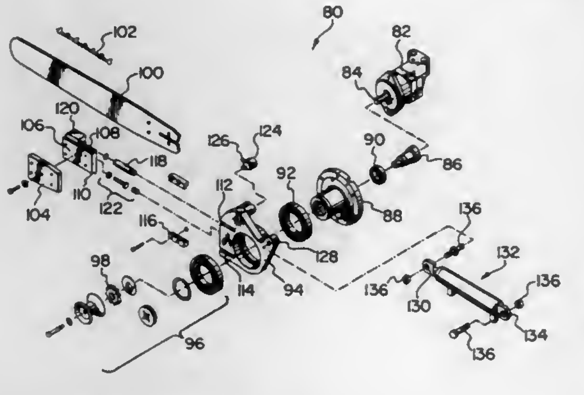
filling the reservoir of the inkjet cartridge with ink from said syringe through the fill port while venting air via the vent opening;



sealing the vent opening with adhesive tape; and

removing said fill adapter, elbow connector and syringe from the fill port and connecting a finger actuated negative pressure reservoir to the fill port so as to maintain the filled inkjet cartridge operational prior to use.

5,709,254
TREE HARVESTING APPARATUS
Fletcher Argue, P.O. Box 509, Plaster Rock, New Brunswick, Canada, E0J 1 W0
Filed Jun. 18, 1996, Ser. No. 666,603
Int. Cl.^{6} A01G *23/08;* **B27B** *17/14*
U.S. Cl. 144—34.1 **16 Claims**



1. A chain saw comprising:

a chassis;

a saw bar extending from said chassis;

a saw chain positioned about said saw bar;

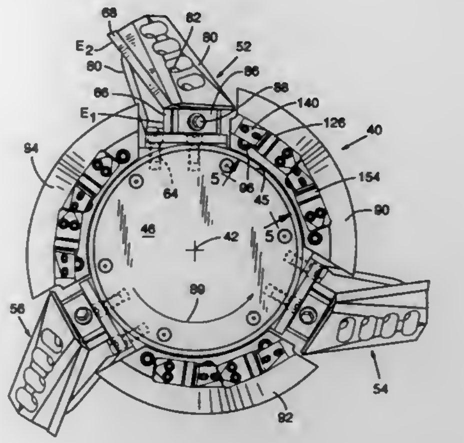
adjustable tensioning means for adjustably effecting axial movement of said bar relative to said chassis to adjust the tension of said saw chain on said saw bar; and

fluid control valve means operatively connected to said tensioning means to actuate said tensioning means.

5,709,255
CHIPPER WITH DETACHABLE FACING KNIVES
William C. Toogood, Beaverton, Oreg., assignor to Key Knife, Inc., Portland, Oreg.
Filed Oct. 18, 1996, Ser. No. 733,809
Int. Cl.^{6} B27C *9/00*
U.S. Cl. 144—220 **12 Claims**

1. A rotary chipping head comprising:

a chipping head body mountable for rotation about an axis in an operative direction,



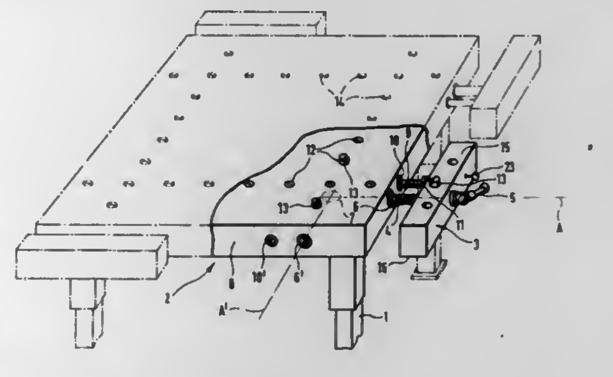
said body having a face at one end thereof delineating the end of the body and said face extending generally normal to said axis and said body having an outer periphery extending about said axis disposed in an axial direction inwardly from said face,

knife structure detachably mounted on the periphery of said body having one cutting edge extending in an axial direction and effective to cut chips from a workpiece as a workpiece is advanced into the knife structure and a second cutting edge producing a cut in the workpiece in a plane disposed perpendicular to said axis,

an end-located facing knife mounted on said end of said body having a third cutting edge disposed normal to the axis of said body for producing a facing cut in a workpiece which trails the cut produced by the second cutting edge, with said body rotated in an operative direction, and

an anvil portion mounted on the end of said body disposed in a circumferential direction intermediate the said second and third cutting edges operable to press against the workpiece immediately prior to the workpiece being cut by said third cutting edge.

5,709,256
WORKBENCH, IN PARTICULAR AS A TEACHING AID IN THE FORM OF AN ERGONOMICALLY DESIGNED MULTIPURPOSE WORKBENCH
Klaus Haus Thormeier, Ackerstrasse 37, D-51519 Odenthal, Germany
PCT No. PCT/DE94/00377, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. Nu. WO94/23908, PCT Pub. Date Oct. 27, 1994
PCT Filed Mar. 31, 1994, Ser. No. 535,274
Claims priority, application Germany, Apr. 10, 1993, 43 11 965.4
Int. Cl.^{6} B25N *1/00*
U.S. Cl. 144—286.1 **14 Claims**



1. A workbench comprising

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a rectangular worktop having four intersecting side faces, and having four corners with each corner formed by two intersecting side faces, and a flat top surface with cylindrical receiving openings;

a vise provided at at least one corner of the workbench; said vise being a cuboid having a top surface level with and parallel to the flat top surface of said worktop and having a bottom surface parallel to and below said vise top surface; said vise having a first side face adjacent to and parallel to said side face of said worktop side face and said vise having a second side face parallel to said first side face of said vise;

said first side face of said vise being rectangular and having a center point; a clamping spindle having a diameter located at said center point of said first side face of said vise; an additional guide means located adjacent to said clamping spindle on said first side face of said vise;

each side face at at least one corner of said worktop having a first receiving means having a diameter for accommodating the clamping spindle and said first receiving means adjacent to a corner of said worktop; and each side face of said worktop having a second receiving means for accommodating the additional guide means and located adjacent to said first receiving means; and said first receiving means being closer to said corner of said worktop and said second receiving means being farther from said corner of said worktop;

said first receiving means and said second receiving means in each side face of said worktop being aligned symmetrically with said clamping spindle and said additional guide means, such that said vise provided at at least one corner of said workbench can be fitted into each of the two intersecting side faces of said worktop forming said corner by having the top surface of the vise for one intersecting side face of said worktop be the bottom surface of the vise by inversion thereof for another intersecting side face of said worktop.

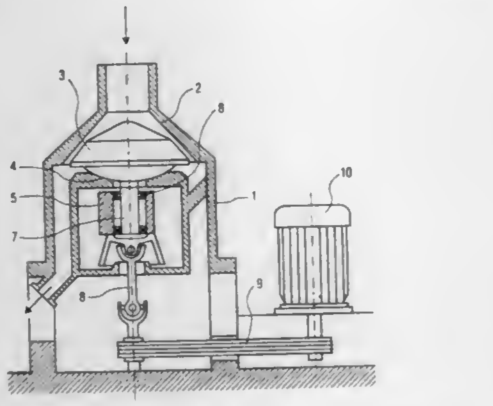
5,709,257
REMOVING BARK FROM WOOD CHIPS

Viktor N. Vinogradov; Svetlana G. Vinogradova; Leonid P. Zarogatsky; Simon S. Litvin; Vladimir M. Gerasimov; Viktor E. Dubrov, all of St. Petersburg, Russian Federation; Alexander L. Ljubomirsky, Brookline, Mass., and Alexey M. Piniaev, St. Petersburg, Russian Federation, assignors to Invention Machine Corporation, Boston, Mass.

Filed Sep. 13, 1996, Ser. No. 714,885

Int. Cl.^{6} B27L *1/00*

U.S. Cl. 144—341 **9 Claims**



1. A method of removing bark from wood chips comprising:

charging wood chips bearing bark between two surfaces,

relatively moving said surfaces in a first direction to apply squeezing pressure to the wood chips bearing bark,

simultaneously with said squeezing pressure relatively moving said surfaces in a second direction to apply rubbing forces to said wood chips bearing bark, said rubbing forces being directed substantially normal to said first direction.

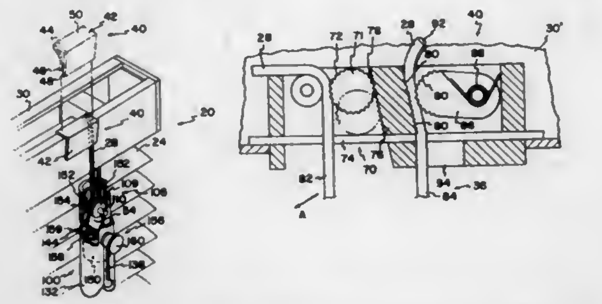
5,709,258
SAFETY ARRANGEMENT FOR WINDOW BLINDS

Robert T. Coccoluto, Orono, Minn., assignor to Advanced Design Group, LLC, Orono, Minn.

Filed May 2, 1996, Ser. No. 643,031

Int. Cl.^{6} E06B *9/30*

U.S. Cl. 160—168.1 R **16 Claims**



1. In combination, a headrail and window blinds having liftcords with a first end attached to the blinds and a free region to vertically adjust the blinds responsive to a pulling force, the combination comprising:

(a) a locking ball having a first plurality of teeth and being moveable between first and second positions, the first position including the first teeth engaging the liftcords to lock the blinds in a desired vertical location, and the second position including the first teeth free from liftcords to allow the liftcords to move responsive to a pulling force; and

(b) a pawl having a second plurality of teeth and being adjacent to the locking ball, the second teeth for releasably engaging the free region of the liftcords.

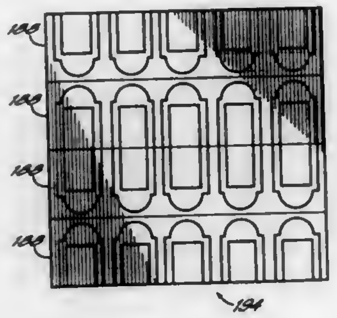
5,709,259
MULTIPLE SECTION MODULAR DOOR AND JOINT STRUCTURE

Richard J. Lewis, Loveland; Bobby G. Bailey, Trenton; Alan R. Leist, Cincinnati; Frank R. Wilgus, Powell, and Frank A. Wilgus, Jr., Westerville, all of Ohio, assignors to Clopay Building Products Company, Inc., Cincinnati, Ohio

Continuation of Ser. No. 435,887, May 5, 1995, abandoned. This application Aug. 1, 1995, Ser. No. 509,955

Int. Cl.^{6} E05D *15/16*

U.S. Cl. 160—201 **21 Claims**



1. A modular sectional door comprising:

a plurality of door panels, each door panel including upper and lower longitudinal and generally horizontal edges and a front face having three dimensional design elements thereon, wherein the design elements of at least two adjacent door panels cooperate to form a continuous first design pattern; and,

joints joining adjacent door panels of said door and, each joint including a hinge affixed along a rear side of said door and an intermediate elongate member having a curved front surface and presenting said curved surface when two adjacent door panels are pivoted with respect to each other, wherein said joints are formed by connecting structure allowing each panel to be flipped about an axis orthogonal to its front face so that the upper edge of the flipped panel becomes the lower edge and vice versa the flipped panel cooperate with the design elements of an adjacent panel to form a second design pattern which is different than the first design pattern.

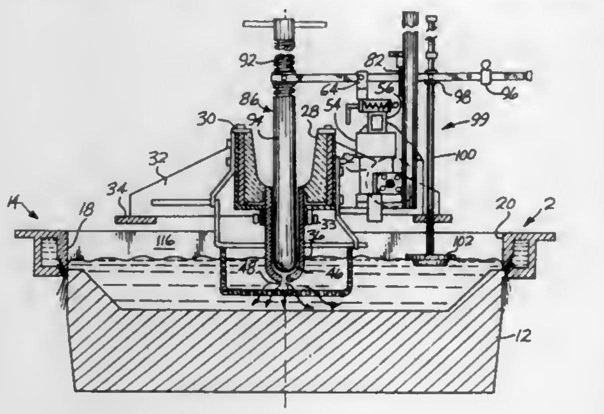
5,709,260
MOLTEN METAL ADMISSION CONTROL IN CASTING

Frank Everton Wagstaff, Media, Pa.; Aaron David Sinden, Latah, and David Alan Salee, Spokane, both of Wash., assignors to Wagstaff, Inc., Spokane, Wash.

Filed Aug. 22, 1995, Ser. No. 517,701

Int. Cl.^{6} B22D *11/10;11/18*

U.S. Cl. 164—453 **30 Claims**



1. In the process of casting molten metal into elongated bodies of metal by the steps of introducing the molten metal into one end of an elongated trough which is arranged above a molten metal casting apparatus and has means in the bottom thereof defining a series of valve openings which are spaced apart from one another in a line extending along a parallel to the bottom of the trough and are in registry with relatively upper end openings of a series of open ended mold cavities in the casting apparatus which are spaced apart on vertical axes and disposed so that relatively lower end openings of the respective cavities coincide with a plane parallel to the line of valve openings, and which also have a series of bottom blocks telescopically engaged therein at the relatively lower end openings thereof to form sumps within the cavities for the temporary retention of molten metal therein so that the molten metal admitted to the respective cavities at the valve openings corresponding thereto forms columns of molten metal upright on the tops of the blocks which escalate up the axes of the cavities at the upper surfaces thereof to partially fill the sumps, and then when the upper surfaces of the respective molten metal colunms have risen to an elevation above the tops of the blocks at which the colunms sufficiently fill the sumps to warrant start-up of the casting operation, withdrawing the blocks relatively downwardly away from the casting apparatus along the axes of the cavities to release the columns for travel along the axes while continuing to admit molten metal to the respective cavities at the series of valve openings to maintain the upper surfaces of the respective molten metal columns at an operating elevation in which, as the respective molten metal colunms cool, the columns also increase their length to form elongated bodies of metal supported upright on the blocks,

controlling the admission of the molten metal to the cavities during the casting procedure by:

supporting on sets of first and second carrier means which are each arranged in a line extending parallel to the line of valve openings and each supported so that the respective carrier means therein are reciprocable relatively transverse the line thereof, sets of valve closure devices and sensor devices which are operable to control the admission of molten metal to the respective cavities at the respective valve openings corresponding thereto, and to sense the elevation of the upper surfaces of the respective molten metal columns formed in the respective cavities during the casting procedure and to transmit signals representing the elevations of the respective upper surfaces, respectively, the set of valve closure devices being suspended from the set of first carrier means so as to be disposed in cooperative engagement with the respective valve openings corresponding thereto, and to be reciprocated in conjunction with the respective first carrier means corresponding thereto between variable positions in relation to the respective valve openings at which the molten metal is admitted to the respective cavities at variable flow rates commensurate the respective positions, and the set of sensor devices being suspended from the set of second carrier means so as to be spaced above the tops of the blocks forming the respective sumps corresponding thereto, and to generate the respective signals thereof at points spaced above the upper surfaces of the respective molten metal columns formed in the sumps during the fill operation,

at the commencement of the fill operation, prepositioning the set of valve closure devices at positions in which the respective valve closure devices admit the molten metal to the respective sumps corresponding thereto in amounts that are varied commensurate with the distance lying along the line of valve openings between each of the respective valve openings and a vertical through the one end of the trough, so that as the upper surfaces of the respective molten metal columns escalate up the axes of the cavities toward the sensor devices corresponding thereto during the initial phase of the fill operation, the upper surfaces of the respective molten metal columns establish a state of substantial equilibrium with one another at an intermediate elevation between the tops of the blocks and the start-up elevation for the casting operation, and

when the upper surfaces of the respective molten metal columns have established a state of substantial equilibrium with one another at the intermediate elevation, interconnecting with each of the respective sensor devices and the respective first and second carrier means corresponding thereto, a control device which is operable to transmit to the respective valve closure devices corresponding thereto, input signals which are both a function of the vertical distance between the line of second carrier means and a reference plane parallel to the plane with which the relatively lower end openings of the cavities coincide, and a function of the vertical distance between the signal generation points of the respective sensor devices and the upper surfaces of the respective molten metal columns corresponding thereto,

reciprocating one of the sets of first and second carrier means relatively transverse the line thereof to impose a desired value on the rate at which the upper surfaces of the respective molten metal columns escalate up the axes of the cavities in the direction of the start-up elevation from the intermediate elevation, and

reciprocating the other of the sets of first and second carrier means relatively transverse the line thereof so that as the upper surfaces of the respective molten metal columns escalate up the axes of the cavities at the desired value, the elevation of the signal generation points of the respective sensor devices is raised at a rate sufficiently commensurate with the desired value to render the input signals transmitted to the respective value closure devices by the control device substantially consistent with the desired value.

5,709,261
BILLET GUIDING UNIT OF A CONTINUOUS CASTING PLANT FOR THIN SLABS

Hans Streubel, Erkrath, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Mar. 22, 1996, Ser. No. 621,778

Claims priority, application Germany, Mar. 25, 1995, 195 11 113.3

Int. Cl.^{6} B22D *11/20*

U.S. Cl. 164—454 **5 Claims**

1. A billet guiding unit of a continuous casting plant for thin slabs, the guiding unit comprising oppositely located frames, guide rolls mounted on each frame, the frames having stop surfaces facing each other, tension rods extending through the frames and comprising means for tensioning the tension rods relative to the

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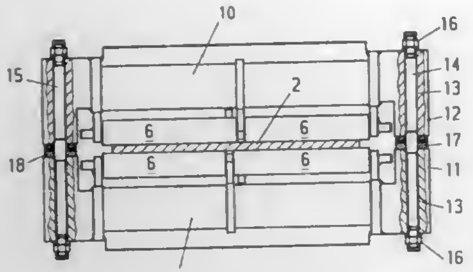


frames, and hydraulic cylinders mounted between the stop surfaces of the frames for extending the tension rods.

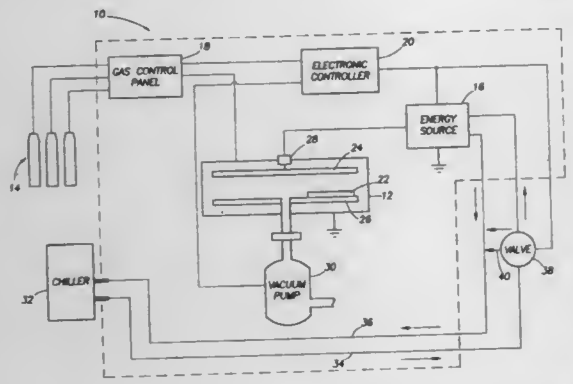
5. A method of adjusting a distance between oppositely located frames of a billet guiding unit of a continuous casting plant for thin slabs, the guiding unit including oppositely located frames, guide rolls mounted on each frame, the frames having stop surfaces facing each other, tension rods extending through the frames and comprising means for tensioning the tension rods relative to the frames, and hydraulic cylinders mounted between the stop surfaces of the frames for extending the tension rods, the method comprising determining a lower deviation side of the slab by carrying out a continuous measurement of the thickness of the slab sides, determining from the dimensional difference a required extension of the tension rods on the lower deviation side, and applying a pressure to the hydraulic cylinders for effecting the required extension of the tension rods.

5,709,262
ELECTRONIC VALVE FOR COOLING SEMICONDUCTOR PROCESSING EQUIPMENT
Roger A. Sikes, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 16,036, Feb. 10, 1993, abandoned. This application Aug. 5, 1994, Ser. No. 286,405

Int. Cl.^{6} F24H *3/00*

U.S. Cl. 165—47 **16 Claims**



1. A cooling unit for a semiconductor processing device comprising:

a semiconductor processing device coupled to receive energy from an energy source;

a pair of conduits coupled between said energy source and a chiller;

a solenoid valve coupled to said conduits and adapted to receive a coolant from said chiller through one of said pair of conduits, and further adapted to discharge said coolant to said energy source during a first time period; and

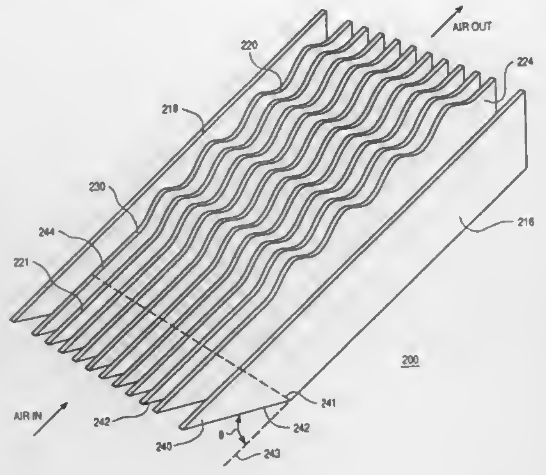
an electronic controller means electrically coupled to said solenoid valve for electrically activating said valve during said first time period in which said energy source is active, whereby solely an electrical function and mode of operation is used to achieve communication from said controller and operation of said valve.

5,709,263
HIGH PERFORMANCE SINUSOIDAL HEAT SINK FOR HEAT REMOVAL FROM ELECTRONIC EQUIPMENT
Ali Mira, San Jose, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Oct. 19, 1995, Ser. No. 551,070

Int. Cl.^{6} F28F *7/00*

U.S. Cl. 165—80.3 **5 Claims**



1. A heat sink comprising:

a thermally conductive base plate having a top surface, said base plate having a first end and a second end opposite to said first end;

a plurality of thermally conductive fins upwardly extending from said top surface, each fin being integral with said base plate, each fin having a first portion with a flat lateral surface, said first portion having a first lateral edge inclined backwardly from said first end at a predetermined acute angle, said fin having a second portion contigous with said first portion, said second portion having an undulating fin surface, the fin surfaces of adjacent fins defining a space therebetween for passing a cooling fluid.

5,709,264
HEAT EXCHANGER
Paul Alfred Sweeney, Basking Ridge, and Venkat Natarajan, Scotch Plains, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Mar. 18, 1996, Ser. No. 617,460

Int. Cl.^{6} F28D *5/02;* F28F *3/00*

U.S. Cl. 165—115 **12 Claims**

1. A heat exchanger for exchanging heat between first and second fluids, said heat exchanger comprising:

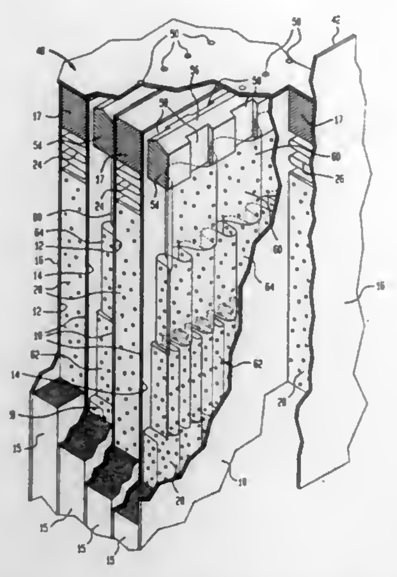
a plurality of vertically oriented, spaced apart passage walls defining a plurality of alternating first and second passages located between said passage walls to respectively receive said first and second fluids in an indirect heat transfer relationship;

first inlet and outlet means for respectively introducing and discharging said first fluid into and from said first passages;

second inlet means for introducing said second fluid into said second passages as a liquid;

slotted dividing bars located between said passage walls defining said second passages, said slotted dividing bars having spaced, vertically oriented slots to cause said liquid to flow against said passage walls defining said second passages, thereby to enhance formation of liquid film on said passage walls; and

each of the slotted dividing bars having a lengthwise extending peak to cause the liquid to flow towards the slots and



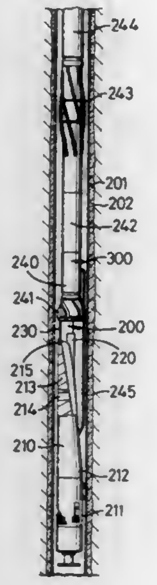
second outlet means for discharging said second fluid from said second passages after having indirectly exchanged heat with said first fluid.

5,709,265
WELLBORE WINDOW FORMATION
David M. Haugen, League City, and Guy L McClung, III, Spring, both of Tex., assignors to Weatherford/Lamb, Inc., Houston, Tex.

Continuation-In-part of Ser. No. 568,878, Dec. 11, 1995, Pat. No. 5,636,692. This application Jul. 30, 1996, Ser. No. 688,301

Int. Cl.^{6} E21B *43/116*

U.S. Cl. 166—55.2 **20 Claims**



1. Apparatus for making a window in a tubular member, the apparatus comprising

a cutter diversion device disposable in a tubular member along which a cutter is movable so that the cutter is directed against the tubular member for cutting by the cutter to form a window in the tubular member for wellbore sidetracking operations, and

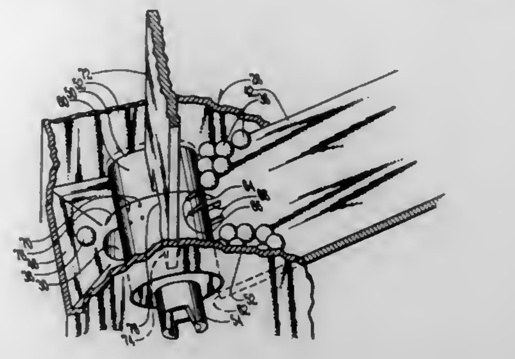
explosive apparatus connected to and below the cutter diversion device for explosively making an initial opening in the tubular member as an initial part of the window.

5,709,266
PELLET DISPENSING DEVICE
Gary H. Kruse, 1022 Zien Circle Dr., Box 259, Lake View, Iowa 51450

Filed Feb. 26, 1996, Ser. No. 606,841

Int. Cl.^{6} E21B *33/068*

U.S. Cl. 166—75.15 **4 Claims**



1. An improved device for dispensing chemical pellets into a well, the device including a housing defining a pellet chamber, a motor operatively connected to a well pump, and a tube providing communication between the housing and the well, the improvement comprising:

a feed cell rotatably mounted within the housing and being rotatable by the motor, the cell having an outer surface;

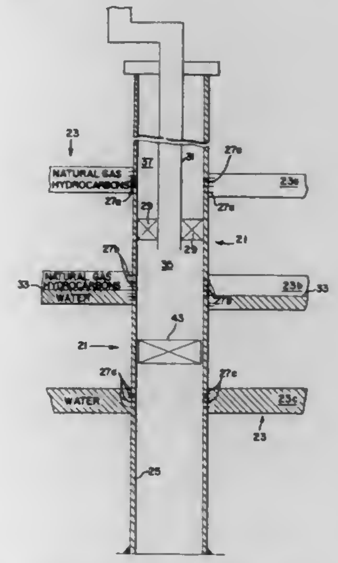
a first pellet pickup member extending outwardly from the surface of the cell so as to carry a pellet during rotation of the cell and deposit the pellet in the tube for entry into the well.

5,709,267
AQUEOUS PARTICULATE DISPERSION FOR REDUCING THE WATER INFLUX RATE INTO A WELLBORE
Edward A. Long, Highlands Ranch, Colo., and George E. King, Sand Springs, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 23, 1995, Ser. No. 551,899

Int. Cl.^{6} E21B *33/138;43/267*

U.S. Cl. 166—280 **28 Claims**



1. A method for reducing the water influx into a wellbore penetrating a subterranean formation having a communication channel extending from the wellbore into the formation, wherein the communication channel is comprised of proppant particles and an interstitial volume between the proppant particles, the intersti-

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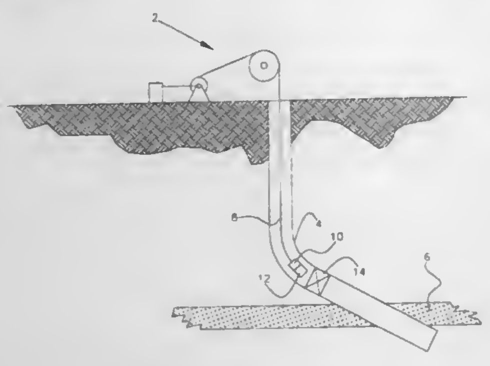
tial volume comprised of a water zone volume and a hydrocarbon zone volume, the method comprising the steps of:
- a) introducing into the communication channel an aqueous particulate dispersion comprised of dispersion particles having an average diameter less than one third an average diameter of the pore spaces within the interstitial volume; and
- b) ceasing to introduce the aqueous particle dispersion when a volume of the dispersion particles introduced in step a) is at least equal to about one half the water zone volume.

5,709,268
METHOD AND APPARATUS FOR JARRING

Felix F. Estilette, Sr., P. O. Box 39, Carencro, La. 70520
Continuation-in-part of Ser. No. 295,213, Aug. 24, 1994, Pat. No. 5,507,347. This application Feb. 7, 1996, Ser. No. 597,703
Int. Cl.^{6} E21B *31/107*
U.S. Cl. 166—301 **14 Claims**

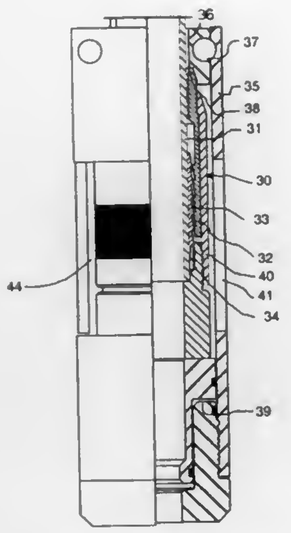


1. An apparatus for jarring comprising:
a housing having a latch member and a anvil;
a power mandrel slidably disposed within said housing, said mandrel having a hammer, and wherein said power mandrel includes: a spring adapted to urge said engaging means; and, an end adapted to contact said operating means;
engaging means for engaging and releasing said hammer for impact against said anvil from a latched position, and wherein said engaging means comprises: a collet member having a first end and a second end with the first end being disposed about said first portion of said power mandrel and a second end having protuberances cooperating with said operating means; and, a conical member disposed within said housing and set apart from said power mandrel; a locking leg adapted for cooperation with said conical member; detent means for locking said locking leg with said conical member;
operating means for resetting said hammer into said latched position;
biasing means for biasing said engaging means in a first direction;
tension means for adjusting the tension in said biasing means.

5,709,269
DISSOLVABLE GRIP OR SEAL ARRANGEMENT

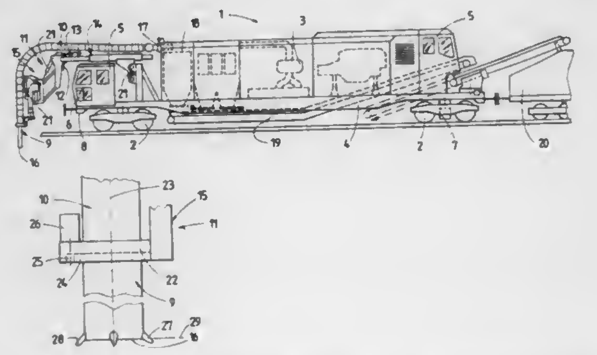
Philip Head, 6 Leith Mansions, Grantully Road, Londun W9 1LQ, Great Britain
Filed Dec. 6, 1995, Ser. No. 568,009
Claims priority, application United Kingdom, Dec. 14, 1994, 9425240
Int. Cl.^{6} E21B *29/00*
U.S. Cl. 166—376 **16 Claims**

16. A method of detachably supporting an inner tubular member in an outer tubular member of an oil or gas well which comprises the steps of:
- a) affixing said inner tubular member to an inner wall of said outer tubular member by expanding a first grip part with a second grip part, at least one of said grip parts being composed of a material soluble in a solvent; and
- b) releasing the engagement of said grip parts by passing said solvent into contact with said grip parts, thereby dissolving the grip part made of said material.



5,709,270
BALLAST SUCTION MACHINE

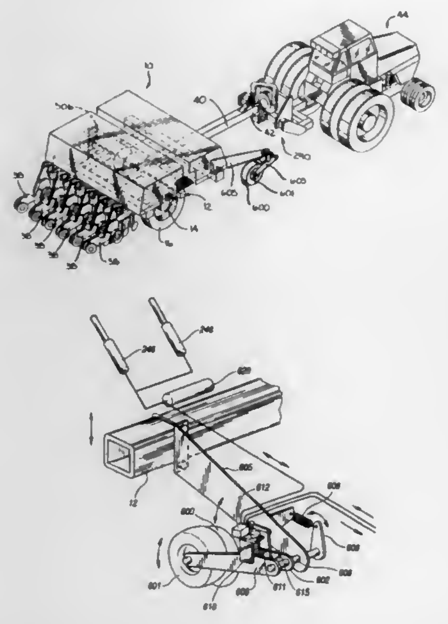
Josef Theurer, Vienna; Herbert Wörgötter, Gallneukirchen, and Friedrich Oellerer, Linz, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Continuation of Ser. No. 417,657, Apr. 5, 1995, abandoned. This application Feb. 21, 1997, Ser. No. 803,323
Claims priority, application Austria, Apr. 18, 1994, 806/04; Jul. 1, 1994, 1307/94
Int. Cl.^{6} E01B *27/00*
U.S. Cl. 171—16 **15 Claims**



1. A machine for aspirating ballast from a bed supporting a track, which comprises
- (a) a machine frame,
- (b) undercarriages supporting the machine frame on the track for mobility therealong,
- (c) a vacuum generator on the machine frame,
- (d) a ballast storage receptacle on the machine frame,
- (e) a suction tube connected to the vacuum generator,
  - (1) the suction tube terminating in a substantially vertical tubular end section having a substantially vertically extending longitudinal axis and defining a suction opening at one end thereof for aspirating the ballast, the tubular end section being rotatable about the longitudinal axis, and
  - (2) a section of the suction tube adjoining an end opposite to the one end of the tubular end section being flexible,
- (f) a bearing at the opposite end of the tubular end section for rotatably connecting the tubular end section to the adjoining flexible suction tube section for rotation of the tubular end section about the longitudinal axis,
- (g) a displacement mechanism attaching the suction tube to the machine frame for vertically and transversely displacing the tubular suction tube end section, the displacement mechanism comprising
  - (1) drive means for vertically and transversely displacing the tubular suction tube end section, and
- (h) a drive on the bearing for rotating the tubular suction tube end section about the longitudinal axis while the ballast is being aspirated.

5,709,271
AGRICULTURAL PLANTER

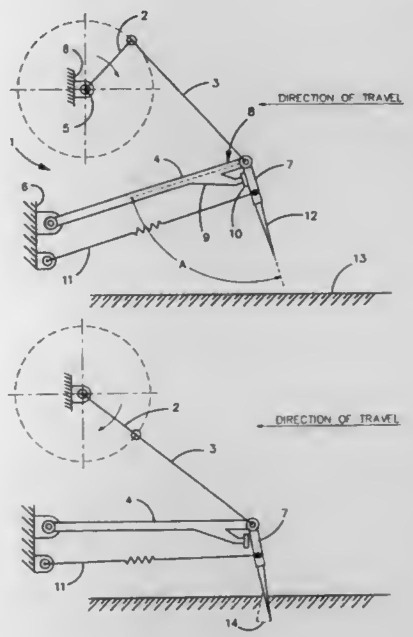
James H. Bassett, Sycamore, Ill., assignor to Dawn Equipment Company, Sycamore, Ill.
Continuation-in-part of Ser. No. 367,990, Jan. 3, 1995, which is a continuation-in-part of Ser. No. 73,573, Jun. 8, 1993, Ser. No. 97,977, Jul. 27, 1993, Pat. No. 5,499,683, Ser. No. 97,978, Jul. 27, 1993, Pat. No. 5,479,992, and Ser. No. 189,840, Feb. 1, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 531,899
Int. Cl.^{6} A01C *5/00;* **A01B** *63/00*
U.S. Cl. 172—4 **3 Claims**



1. An apparatus for generating a signal indicative of the hardness of subjacent soil in a field, said apparatus comprising:
a soil treating implement having a first frame;
a towing frame;
means for attaching the soil treating implement to the towing frame for movement of the soil treating implement vertically relative to the towing frame within a range;
sensing means on at least one of the first and towing frames for engaging subjacent soil and generating a signal indicative of the hardness of subjacent soil as the one of the first and towing frames moves relative to subjacent soil,
wherein the sensing means includes a sensing element that rolls along subjacent soil relative to which the frame is moved,
said apparatus further including means acting between the towing frame and soil treating implement for developing a variable vertical force on the soil treating implement,
there being means on the force developing means responsive to the signal from the signal generating means for causing a vertical force to be developed by the force developing means on the soil treating implement.

5,709,272
TURF AERATION DEVICE

Jerry Jones, Trenton, Tenn.; Harry Knight, Baton Rouge, La.; Kinsey Estess, Baker, La., and Ernest Randall New, Zachary, La., assignors to Southern Green, Inc., Zachary, La.
Continuation of Ser. No. 381,728, Feb. 1, 1995, Pat. No. 5,570,746. This application Aug. 14, 1996, Ser. No. 696,534
Int. Cl.^{6} A01B *45/02*
U.S. Cl. 172—21 **10 Claims**



1. A turf aeration device, comprising:
- (a) a wheeled frame having a journalled drive shaft, wherein said frame is attachable to a pulling vehicle having a power take-off portion;
- (b) power transfer means, operatively attachable between said drive shaft and said power take-off portion, for transferring power from said power take-off portion to said drive shaft;
- (c) a plurality of aerator mechanisms operatively attached to said drive shaft and said frame, each said aerator mechanism comprising:
  - a link member, having a base end and a distal end, wherein said base end is pivotally attached to said frame;
  - a tine holder, having at least one tine, pivotally attached to said distal end of said link member;
  - stop member attached to said link member for contacting said tine holder and maintaining a minimum predetermined angle between said tine holder and said link member;
  - resilient means pivotally connected between said frame and said tine holder for urging said tine holder against said stop member;
  - a drive link fixedly attached to said drive shaft; and
  - a connecting rod pivotally attached between said drive link and said link member;
  - and wherein said power transfer means comprises:
    - gear means operatively connected to said power take-off portion and having a primary shaft therethrough, parallel with said drive shaft, for transferring power from said power take-off portion to said primary shaft;
    - a plurality of primary shaft sprockets attached to said primary shaft;
    - a plurality of drive shaft sprockets, equal in number to said plurality of primary shaft sprockets, attached to said drive shaft and substantially aligned with said primary shaft sprockets; and a plurality of chains, equal in number to said plurality of primary shaft sprockets, operatively connected between said primary shaft sprockets and said drive shaft sprockets.

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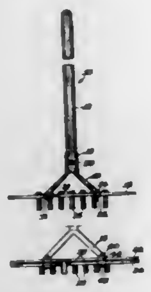
5,709,273
AERATOR

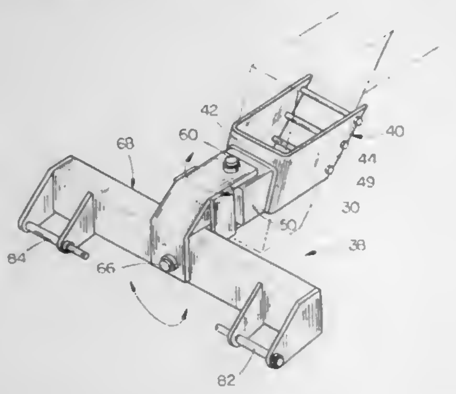
Binson L. Roth, 921 Flora La., Boothwyn, Pa. 19061
Filed Apr. 25, 1996, Ser. No. 637,540
Int. Cl.^{6} A01B *45/02*
U.S. Cl. 172—22 **37 Claims**



1. An aerator, which comprises:
a base plate with an upper and a lower surface;
a handle spaced apart from the base plate;
a bracket connected to the handle and connected to the base plate with a first portion of the bracket contacting the upper surface of the base plate and a second portion of the bracket contacting the lower surface of the base plate; and
a plurality of hollow tines of generally circular cross section in at least one row attached to the base plate wherein each tine has an earth-piercing end and a discharge end such that the earth-piercing end is downwardly directed from the base plate and the discharge end is opposite the downwardly directed earth-piercing end and discharges earth on the upper surface of the base plate.

5,709,274
CONVERSION HITCH

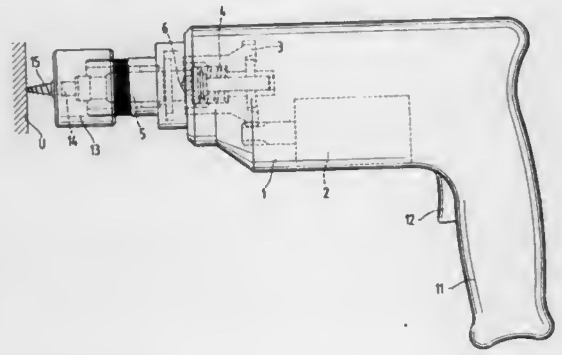
Greg H. Herbold, 1257 Lenox Ave., Pierson, Iowa 51048
Filed Feb. 22, 1996, Ser. No. 605,382
Int. Cl.^{6} B60D *1/14*
U.S. Cl. 172—248 **4 Claims**



1. In combination:
a tractor having a two-point hitch including a pair of selectively vertically movable lift arms;
a grain drill having a frame including forward and rearward ends, said frame being supported by ground engaging wheels at the rearward end thereof, a dolly wheel hitch including a rear hitch portion which is rigidly secured to said frame and which extends forwardly therefrom, an intermediate hitch portion which is rigidly secured to the forward end of said rear hitch portion which extends downwardly and forwardly therefrom; said intermediate hitch portion including upper and lower ends;
a conversion hitch for attachment to said grain drill to enable said grain drill to be connected to said two-point hitch of said tractor;
said conversion hitch comprising a connector member having a rearward end removably connected between to said intermediate hitch portion between the upper and lower ends thereof; said connector member including a forwardly extending first support member having a forward end; a horizontally disposed, elongated second support member having its longitudinal axis disposed transversely to the normal direction of travel of the grain drill, said second support member being operatively pivotally secured, about vertical and horizontal axes, to said first support member; means selectively vertically connecting said connector member said intermediate hitch portion; said second support member having first and second ends having means thereon for removable connection to said lift arms of said two-point hitch whereby said lift arms may be selectively vertically moved to vertically move said intermediate hitch portion of said grain drill.

5,709,275
SCREW-DRIVING TOOL

Anton Neumaler, Fürstenfeldbruck, Germany, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein
Filed Sep. 30, 1996, Ser. No. 690,171
Claims priority, application Germany, Jul. 26, 1995, 195 27 193.9
Int. Cl.^{6} B25B *23/157*
U.S. Cl. 173—13 **7 Claims**

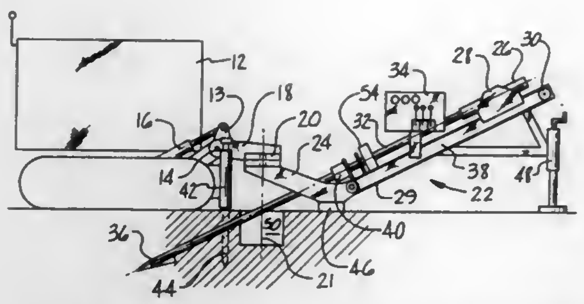


1. A manually operable screw driving tool, comprises a housing (1), said housing having a leading end a trailing end and an axially extending driving direction extending in trailing end—leading end direction, a motor (2) mounted in said housing (1), a drive pinion (3) located in said housing and powered by said motor, said drive pinion (3) being axially fixed in said housing, an axially extending spindle (5) located in said housing and being axially displaceable relative to said drive pinion (3) against a force of a spring (4), a clutch element (6) positioned in said spindle and engageable between said drive pinion (3) and said spindle (5) for driving said spindle, said clutch element (6) being disengageable from said drive pinion (3) and being axially displaceable and rotatable relative to said spindle (5) to a limited extent, and said clutch element (6) being a ball having a diameter cooperating with at least one stop face on each of said drive pinion and said spindle.

5,709,276
MULTI-POSITION DIRECTIONAL DRILL

Douglas W. Lee, Wichita, Kans., assignor to Straightline Manufacturing, Inc., Newton, Kans.
Filed Mar. 21, 1996, Ser. No. 621,156
Int. Cl.^{6} E21B *7/02;15/04*
U.S. Cl. 175—122 **7 Claims**

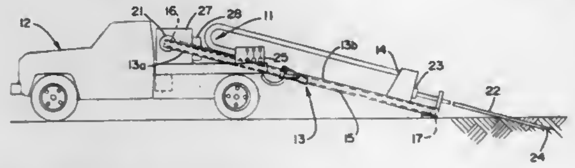
1. A multi-purpose directional drill which makes multiple bores in the ground through a common entry point from a single set-up position comprising:



a drilling rack having a drill rod axis which selectively thrusts and rotates the drill rod to control the direction of the bore, the drilling rack being angularly positioned with respect to the ground;
a movable base for supporting the drilling rack; and
a pivotal joint between the drilling rack and the base providing horizontal movement of the drilling rack with the vertical axis of rotation of the pivotal joint positioned substantially over the common entry point.

5,709,277
DIRECTIONAL BORING MACHINE

Robert L. Geldner, Rte. 1, Box 199, Cleveland, Minn. 56017
Filed Jul. 7, 1995, Ser. No. 499,615
Int. Cl.^{6} E21B *19/08*
U.S. Cl. 175—203 **15 Claims**

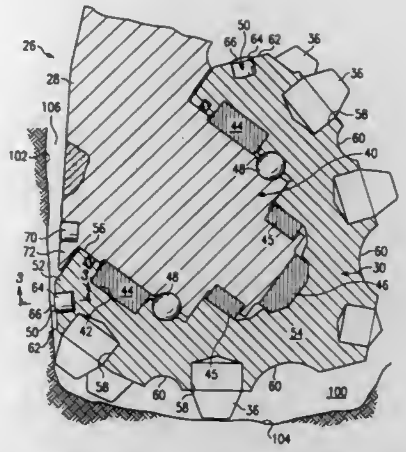


1. A directional boring machine comprising:
carriage means;
elongated boom means carried by the carriage means at a predetermined angle relative to the surface to be bored;
drill head means mounted on the boom means for longitudinal movement thereover, the drill head means comprising rotatable spindle means adapted to receive and rotatably drive at least one drill stem;
said boom means comprising first and second elongated boom sections each having inner and outer ends, the first boom section being mounted on said carriage means;
and boom connecting means for mounting the second boom section to the first boom section for pivotal movement between an operating position in which the second boom section extends substantially co-linearly from the first boom section with the inner end of the second boom section adjacent the outer end of the first boom section, and a transport position in which the second boom section is pivotally rotated to overlie the first boom section;
the boom connecting means defining a connecting pivot point that is disposed longitudinally inward of the outer end of the first boom section.

5,709,278
ROTARY CONE DRILL BIT WITH CONTOURED INSERTS AND COMPACTS

Michael Burl Crawford, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Jan. 22, 1996, Ser. No. 589,815
Int. Cl.^{6} E21B *10/46*
U.S. Cl. 175—374 **22 Claims**

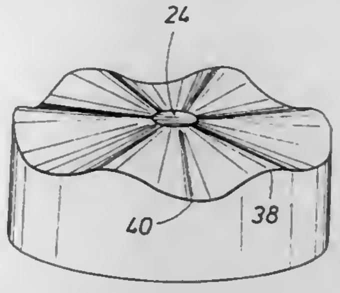
1. A rotary cone drill bit for forming a borehole with a desired radius, the drill bit comprising:



a bit body with an upper end portion adapted for connection to a drill string for rotation of the bit body;
a number of angularly spaced support arms formed with the bit body and depending therefrom, each of the support arms having an inside surface with a spindle connecting thereto;
each support arm having a shirttail portion opposite from the respective spindle;
each spindle having a generally cylindrical upper end portion connected to the respective inside surface with the spindle projecting generally downwardly and inwardly therefrom;
a plurality of cutter cones equaling the number of support arms with each cutter cone rotatably mounted on one of the respective spindles;
each of the cutter cones including a generally cylindrical cavity for receiving the respective spindle;
each cutter cone having a gauge face surface with a plurality of holes formed in the respective gauge face surface;
a corresponding number of compacts disposed respectfully in the plurality of holes in each gauge face surface;
each compact having a contoured cutting portion extending from the respective gauge face surface; and
each contoured cutting portion having a radius essentially equal to the desired radius of the borehole.

5,709,279
DRILL BIT INSERT WITH SINUSOIDAL INTERFACE

Mahlon Denton Dennis, 2020 Rankin Rd., Houston, Tex. 77073
Filed May 18, 1995, Ser. No. 444,067
Int. Cl.^{6} E21B *10/36*
U.S. Cl. 175—430 **23 Claims**



1. An insert for use in drilling or other wear applications comprising:
(a) an elongate body having a central axis there along extending from a first end to a second end wherein the first end connects with a drill bit and the second end extends from the drill bit to enable the insert to conduct drilling operations while drilling a well borehole;
(b) a covering of material having hardness greater than the metal forming said insert body wherein the material covers the second end of said insert body; and

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(c) wherein said insert body second end is formed with a surface having multiple cycles of sinusoidal undulations where said surface intersects the outer surface of said insert body, and said surface slopes downwardly from a central portion of said surface coincident with the axis through said body.

5,709,280

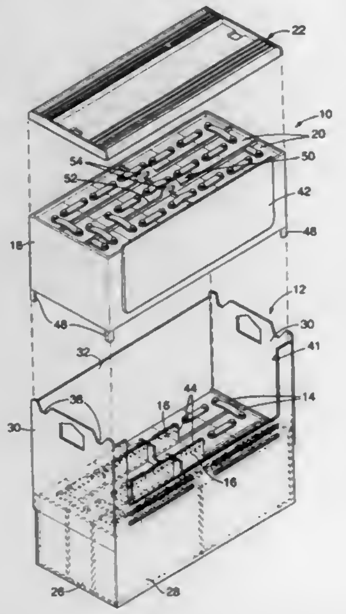
SEALED LEAD-ACID CELL TRAY ASSEMBLY AND MOTIVE POWERED VEHICLE USING SUCH CELL TRAY ASSEMBLY

Gordon C. Beckley, West Chicago; Kwok K. Chan, Morton Grove, and George Romas, Chicago Heights, all of Ill., assignors to GNB Technologies, Inc., Lombard, Ill.

Filed Oct. 13, 1995, Ser. No. 542,732

Int. Cl.^{6} B60R *16/04*

U.S. Cl. 180—68.5 **20 Claims**



1. A sealed lead-acid cell tray assembly mounted on a motive-powered vehicle having a motive power source compartment and the cell tray assembly being disposed in the motive power source compartment of said vehicle, which cell tray assembly comprises a bottom tray comprising a base, a front and back wall, and side walls connecting the front and back walls to define a lower cell-receiving space and an upper cell-receiving space, a first set of short sealed lead-acid cells each having a positive and negative terminal vertically positioned in said lower cell-receiving space, the respective terminals of each of the sealed lead-acid cells in said first set having electrical connections to provide at least one terminal cell for said first set, a top tray comprising a base, a front and back wall and side walls connecting the front and back walls to define a cell-receiving space, a second set of short sealed lead-acid cells each having a positive and negative terminal vertically positioned in said cell-receiving space, the respective terminals of each of the sealed lead-acid cells comprising said second set having electrical connections providing at least one second set terminal cell, a top tray support structure being positioned in said bottom tray, said top tray being positioned in the upper cell-receiving space of said bottom tray and being supported by said top tray support structure and being removable therefrom, the positive and negative terminals of the respective terminal cells of said first set being connected with the respective terminals of the terminal cells of said second set to provide a power source for powering said motive-powered vehicle.

5,709,281

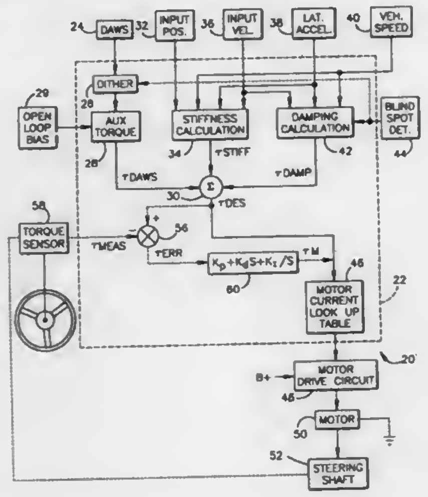
METHOD AND APPARATUS FOR ADJUSTING STEERING FEEL

Kenneth A. Sherwin, and Daniel E. Williams, both of West Lafayette, Ind., assignors to TRW Inc., Lyndhurst, Ohio

Filed Sep. 14, 1995, Ser. No. 528,425

Int. Cl.^{6} B60K *28/02;28/10;* **B62D** *6/00*

U.S. Cl. 180—272 **11 Claims**



1. A vehicle steering apparatus, said apparatus comprising:
a steering feel motor operatively connected to a vehicle steering system;
means for sensing a characteristic of a driver and providing a signal indicative thereof; and
means for controlling said steering feel motor in response to said driver characteristic signal.

5,709,282

TRAVELING CONTROL SYSTEM FOR HYDRAULICALLY DRIVEN VEHICLE

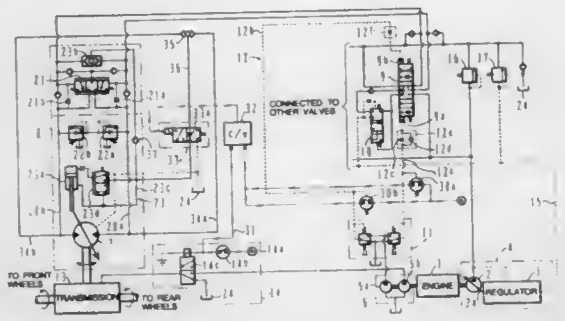
Tatsumi Akira, Ibaraki-ken, Japan; Gianni Duri, Bologna, and Dario Prealta, Torino, both of Italy, assignors to Fiat-Hatachi Excavators S.P.A., San Mauro Torinese, Italy

Filed Mar. 28, 1996, Ser. No. 625,588

Claims priority, application Japan, Mar. 31, 1995, 7-076060

Int. Cl.^{6} B60K *26/00*

U.S. Cl. 180—307 **6 Claims**



1. In a hydraulically driven vehicle having a hydraulic pump driven by a prime mover; a variable displacement hydraulic travel motor driven by a hydraulic fluid supplied from the hydraulic pump; a travel control valve for controlling a flow rate of the hydraulic fluid supplied from said hydraulic pump to said travel motor; operation means for operating said travel control valve; and first motor capacity control means for increasing the capacity of said travel motor when the load pressure of said travel motor becomes high during operation of said travel control valve, an improved traveling control system comprising:

first detecting means for detecting an operative state of said travel control valve, and
second motor capacity control means for increasing the capacity of said travel motor when said first detecting means detects that said travel control valve is in its neutral position.

5,709,283

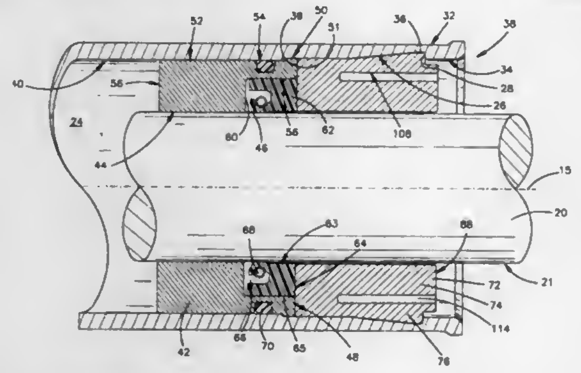
METHOD AND APPARATUS FOR A HYDRAULIC SEAL RETAINER FOR A RACK AND PINION STEERING GEAR

Glenn G. Nief, Loudon, Tenn., assignor to TRW Inc., Lyndhurst, Ohio

Filed Dec. 12, 1995, Ser. No. 571,088

Int. Cl.^{6} B62D *5/22*

U.S. Cl. 180—428 **21 Claims**



1. An apparatus comprising:
a rack operatively associated with steerable vehicle wheels, said rack being movable in opposite directions for turning said steerable wheels in opposite directions;
a pinion in meshing engagement with said rack;
a housing partially enclosing said rack and defining a fluid chamber, said housing having an internal recess;
a sealing means between said housing and said rack; and
a seal retainer for holding said sealing means in sealing position between said housing and said rack, said seal retainer comprising;
a first portion for engaging and axially supporting said sealing means and encircling said rack; and
a second portion integral with said first portion and which deflects radially inward as said seal retainer is positioned in said housing, said second portion snapping radially outward into said internal recess in said housing to hold said seal retainer and said sealing means in said housing.

5,709,284

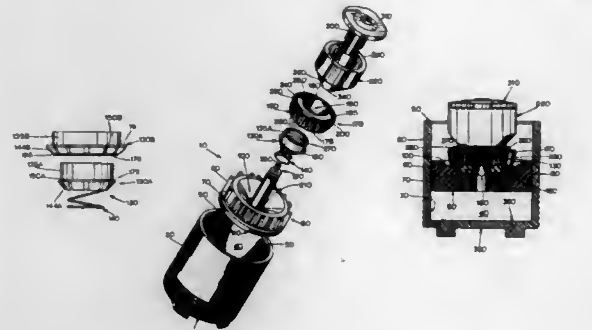
ADAPTER FOR INJECTING VISCOUS MATERIAL INTO SMALL OPENINGS AND CAVITIES

William E. Shultz, Sr., 239 North Main St., Lombard, Ill. 60148

Filed Dec. 19, 1996, Ser. No. 770,135

Int. Cl.^{6} F16C *1/24*

U.S. Cl. 184—5.1 **16 Claims**



1. In a device for lubricating a bearing including a housing for containing a lubricant, a movable piston adapted to be inserted into the housing in contact with said lubricant, said piston including an upper concave surface for communication of said lubricant with said bearing to be lubricated, said piston including a passage for flow of said lubricant, such that compression of said piston against said lubricant causes flow of said lubricant from below said piston to above said piston, the improvement comprising:
volume-filling means for filling a portion of a volume defined between said upper, concave piston surface and said bearing, said volume-filling means having an outer convex surface shaped complementary to the upper concave surface of said piston and disposed on said upper concave surface of said piston.

16. In a method of applying a lubricant to a bearing comprising inserting said bearing into a lubricant chamber to seal an outer peripheral surface of said bearing against an upper frusto-conical surface of a piston member disposed within said lubricant chamber, the improvement comprising:
sealing an inner peripheral surface of said bearing by engaging a lower peripheral surface of said bearing against a tapered volume-filling means for filling a portion of a volume defined between said upper, frusto-conical surface of said piston and said wheel bearing, said volume-filling means having an outer convex surface shaped complementary to the upper surface of the piston member and disposed on said upper surface of said piston member;
compressing a compression member against an upper surface of said bearing to force said piston against lubricant held in said chamber so that said lubricant is forced upwardly into a lubricant receiving aperture in said piston, along an exterior, piston-contacting surface of said volume-filling means and into contact with said bearing.

5,709,285

BRAKE FOR A HOISTING APPARATUS

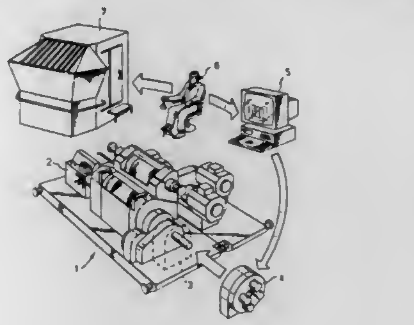
Marek Sokalski, and Erik Zachariassen, both of Kristiansand, Norway, assignors to Maritime Hydraulics AS, Kristiansand, Norway

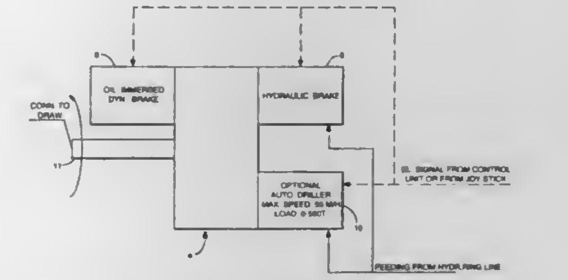
Filed Oct. 3, 1995, Ser. No. 538,218

Claims priority, application Norway, Oct. 5, 1994, 943731

Int. Cl.^{6} F16D *65/14;* **B66D** *5/02*

U.S. Cl. 188—106 F **7 Claims**





1. A hoisting apparatus for use on a derrick, comprising:
a drum journalled for rotation;
a hoisting motor for reversibly rotating the drum in two directions at variable speeds;

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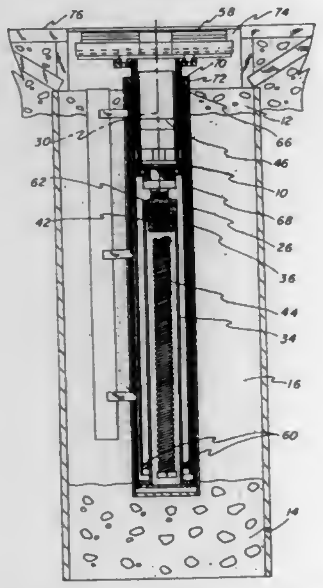
a transmission operatively connecting said hoisting motor with said drum;
a dynamic brake apparatus including a hydraulic brake and a mechanical brake, said dynamic brake being operatively associated with said transmission for braking rotation of said drum;
a controller arranged for controlling distribution of braking power between said hydraulic brake and said mechanical brake;
an operator for operating said dynamic brake apparatus;
a transmission housing containing said transmission;
said mechanical brake including a plurality of mechanical brake units operatively connected to said transmission and being prestressed to a braking position;
said hydraulic brake including a plurality of hydraulic brake units operatively connected to said transmission;
said hydraulic brake units being high pressure hydraulic brake units having variable displacement, and being arranged to set themselves, in the absence of overriding hydraulic control pressure, to a position of greatest displacement;
an autodriller effectively coupled to said transmission and arranged for precision adjustment of rotational angular disposition of said drum in rotation, in both of said two directions;
said controller being arranged for causing said mechanical brake and said hydraulic brake to apply more and less braking power as a function of positioning of said operator; and
said controller being further arranged to determine distribution of braking power applied by said mechanical brake and said hydraulic brake depending on input to said controller of information independent of positioning of said operator and including at least one of information as to weight acting on the hoisting apparatus, as speed of rotation of said drum.

5,709,286
MECHANICAL REPLACEMENT FOR HYDRAULIC IN-GROUND VEHICLE LIFT

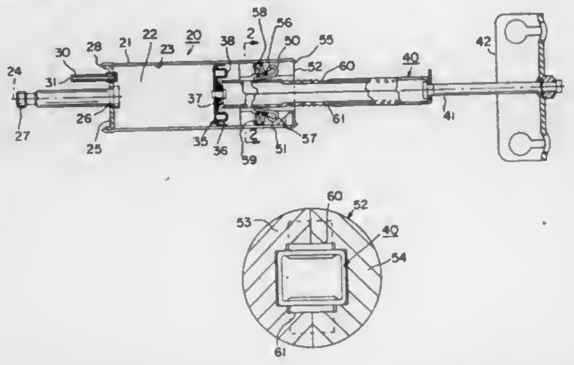
Roy W. Mead, Beavercreek; Richard J. Wourms, Brookville, and Ronald W. Hamm, Medway, all of Ohio, assignors to Joyce/Dayton Corp., Kettering, Ohio
Filed May 13, 1996, Ser. No. 645,113
Int. Cl.^{6} B66F *7/00*
U.S. Cl. 187—205 **20 Claims**



11. An in-ground vehicle lift apparatus comprising:
a cylindrical outer cylinder defining a casing interior;
a support tube located in said casing interior and rigidly attached to said outer cylinder;
a ram cylinder located between said outer cylinder and said support tube;
a drive motor mounted to said ram cylinder;
a drive screw operably connected to said drive motor;
a nut rigidly attached to said support tube and threadably engaged with said drive screw; and
a vehicle support portion located on said ram cylinder for engaging and supporting a vehicle wherein said drive motor actuates said drive screw in rotating movement to move said ram cylinder up and down within said outer cylinder.

5,709,287
IN-LINE INSERT FOR PARKING BRAKE CABLE TO MAINTAIN RESIDUAL TENSION IN THE CABLE SYSTEM

Harry Bochman, Seal Beach, Calif., assignor to Hi-Shear Automotive Corporation, Torrance, Calif.
Filed Mar. 1, 1996, Ser. No. 609,229
Int. Cl.^{6} F16D *65/38;* F16C *1/10*
U.S. Cl. 188—196 B **5 Claims**

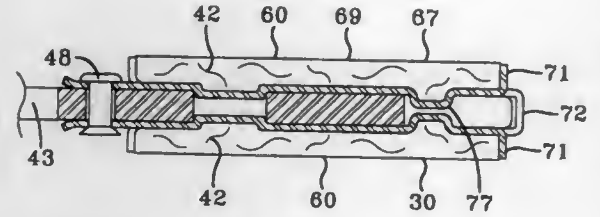


1. An in-line insert to remove slack from a parking brake cable system, comprising:
a body having an internal cylinder with a central axis and an internal axial wall, said cylinder having one closed end;
a piston slidably and fluid sealingly fitted in said cylindrical wall, said piston having a pair of opposite faces, one facing into said closed end of the cylinder, and the other exposed to atmosphere;
a rack of ratchet teeth extending axially along a stem attached to said piston, each said teeth having a locking face and a release face, each of said teeth having a pitch dimension;
a pair of pawls mounted to said body, each pawl being adapted to engage against the locking faces, and to pass the teeth along the release faces, said pawls being spaced apart by e a fraction of a whole number of pitches, whereby only one pawl is engaged at a time;
means to connect said cylinder to a source of vacuum, whereby vacuum may be exerted on the face of the piston which is in said closed end and opposite from the stem;
whereby with the insert adapted to be connected into a cable system by connection of the stem and the body therein, exertion of vacuum in the closed end of the cylinder causes the piston to move toward said closed end, drawing the teeth past the pawls, said pawls latching the stem against reverse movement.

5,709,288
CLAMSHELL CUP FRICTION ARTICLE AND METHOD

Gary Charles Riebe, Tipp City, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio
Filed Sep. 19, 1996, Ser. No. 715,704
Int. Cl.^{6} F16D *65/12*
U.S. Cl. 188—218 XL **29 Claims**

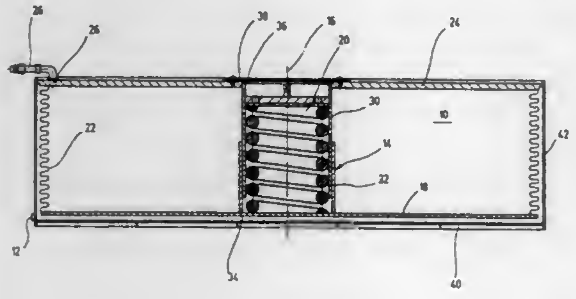
1. A friction article comprising:
a friction puck holder including a pair of cup members, each cup member having a bottom joined to a surrounding rim and



configured to contain a puck of friction material and joined to the other cup member of the pair by a deformable strap extending from the junction of the edge of the bottom and the rim of the cup member such that the strap and the cup members together define a U-shaped configuration once deformed.

5,709,289
COMPENSATING DEVICE

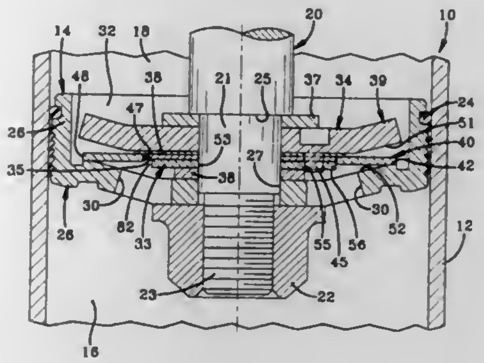
Günter Peter, Tholey, and Klaus Stemmler, Neunkirchen, both of Germany, assignors to Hydac Technology GmbH, Sulzbach/Saar, Germany
Filed Apr. 26, 1996, Ser. No. 638,236
Claims priority, application Germany, May 15, 1995, 195 17 401.1
Int. Cl.^{6} F16F *9/04*
U.S. Cl. 188—298 **19 Claims**



1. A compensating device, for railway transformers, comprising:
a compensation receptacle with stationary parts;
connecting means for coupling said receptacle in fluid communication with an interior of a transformer housing;
a compensating plate mounted in said receptacle for movement along an adjusting axis;
an accumulator engaging and biasing said compensating plate against transformer oil in said receptacle;
guide means, coupled to said receptacle and said compensating plate, for guiding movement of said compensating plate in said receptacle, said guide means including first and second sheathings which are slidably connected to and directly engage one another, said first sheathing being connected to said compensating plate, said second sheathing being connected to said stationary parts of said receptacle, one of said sheathings cooperating with a surface on one of said compensating plate and said receptacle; and
a bellows located in said receptacle, said bellows having a first end connected to said compensating plate and a second end connected with said stationary parts of said receptacle, said compensating plate and said bellows limiting an air volume within said receptacle.

5,709,290
MONOTUBE DAMPER VALVE

Edward Charles Ekert, Dayton, and James Mitchell Pees, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 20, 1996, Ser. No. 603,519
Int. Cl.^{6} F16F *9/34*
U.S. Cl. 188—322.15 **5 Claims**



1. A monotube damper valve comprising:
a piston with a piston body having an annular bearing and an extension stop surface;
a piston rod connected to the piston body;
a retainer having a compression stop surface carried about the piston rod adjacent the piston body;
a bearing washer carried about the piston rod near the retainer; and
a bi-directional monodisc valve element having an inner perimeter supported by the bearing washer and an outer perimeter supported by the annular bearing in an at-rest condition wherein during a compression stroke of the piston body the monodisc valve element is movable to a maximum compression deflected position wherein it is uniformly supported by the compression stop surface and wherein during an extension stroke of the piston body the monodisc valve element is movable to a maximum extension deflected position wherein it is uniformly supported by the extension stop surface; wherein the compression stop surface is substantially parallel in orientation relative to the extension stop surface.

5,709,291
DEVICE FOR CONTACTLESS POWER SUPPLY TO MOVING BODY

Shuzo Nishino; Michio Iwama, and Tomomi Imanaka, all of Osaka, Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
PCT No. PCT/JP93/00676, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO93/24343, PCT Pub. Date Dec. 9, 1993
PCT Filed May 19, 1993, Ser. No. 335,867
Claims priority, application Japan, May 22, 1992, 4/129178; Jun. 11, 1992, 4/151781
Int. Cl.^{6} B60L *5/00*
U.S. Cl. 191—10 **10 Claims**

1. A transport system comprising:
a magnetic field shielding member having a C-shaped cross-section, which has a concave portion formed therein and is disposed along a transport passage guiding a moving body, said moving body being arranged in a non-guiding relationship with said shielding member;
an induction wire laid out in said concave portion of the magnetic field shielding member and a power source supplying said induction wire with a high frequency sine wave current;
a coil disposed in said moving body and caused to produce an electromotive force by a magnetic flux of said induction wire, said coil extending into said concave portion;

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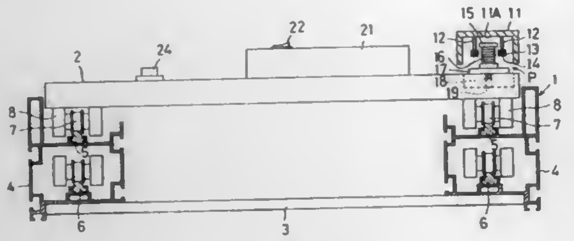
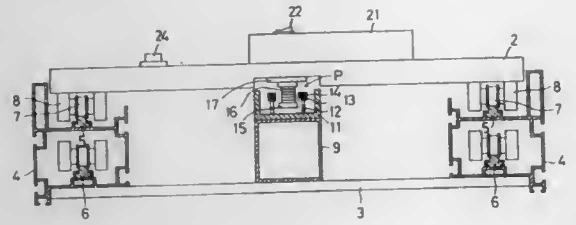




a capacitor disposed in said moving body and cooperating with said coil to form a resonance circuit which resonates at the frequency of a current flowing through said induction wire; and

a power source circuit provided in said moving body and connected to said resonance circuit so as to supply power to a power receiving device provided on said moving body.

5,709,292

CURRENT COLLECTOR FOR TRANSMITTING ENERGY BETWEEN A CONTACT WIRE AND A MOTOR COACH

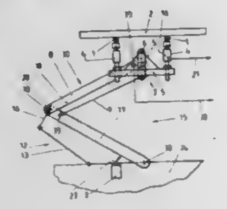
Elmar Breitbach, Göttingen, and Andreas Büter, Braunschweig, both of Germany, assignors to Deutsche Forschunganstalt fur Luft-und Raumfahrt e.V., Germany

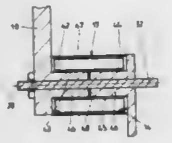
Filed Nov. 1, 1996, Ser. No. 742,717

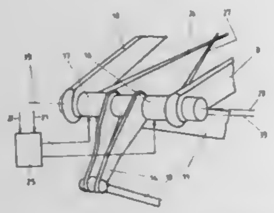
Claims priority, application Germany, Nov. 3, 1995, 195 40 913.2

Int. Cl.^{6} B60L *5/00*

U.S. Cl. 191—65 **10 Claims**







1. A current collector for transmitting energy between a contact wire and a motor coach, the current collector having a first support arm connected to the motor coach and being raisable about a first horizontal axis a pair of second support arms connected to the free end of the first support arm and being rotatably supported about a second horizontal axis, each one of said pair of second support arms being connected to an extension element protruding over the second horizontal axis; a guide bar rotatably connected to the motor coach and the extension element; and at least one collector shoe supported on a free end of the pair of the second support arms, wherein the extension element is connected with each of the two second support arms via a torsional actuator being arranged on the second horizontal axis, and a control means is provided which controls the two torsional actuators in dependence on the signal of at least one sensor means arranged on the current collector.

5,709,293

BILL PROCESSING DEVICE

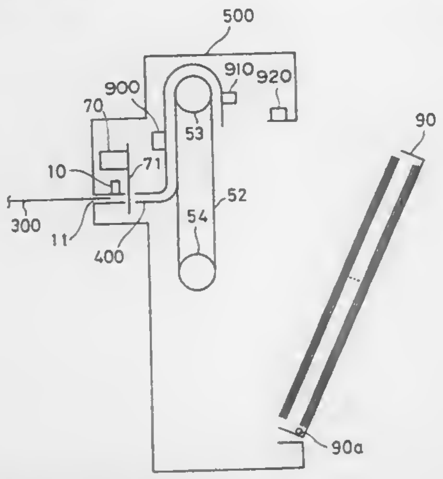
Takeshi Ishida, Sakado; Shigeru Yasuda; Seiji Yoshitake, both of Tsurugashima, and Kunio Iwakawa, Kawagoe, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,910

Claims priority, application Japan, Mar. 10, 1994, 6-039951; Mar. 31, 1994, 6-063561; Apr. 1, 1994, 6-065174

Int. Cl.^{6} G07D *7/00*

U.S. Cl. 194—200 **9 Claims**



1. A bill processing device comprising:

intake means for intaking bills that have been inserted into a bill insertion slot into the device along a bill conveying channel;

identification means for determining the authenticity of the bills drawn into the drive by the intake means;

temporary holding means for temporarily holding the bills identified as authentic by the identification means;

return means for returning the bills that have been temporarily held in the temporary holding means to the bill insertion slot in accordance with bill return commands;

stacking means for stacking in a stacking unit the bills that have been temporarily held in the temporary holding means in accordance with bill deposition commands;

bill jamming direction memory means for storing a jamming direction of a bill therein if the bill has jammed in the bill conveying channel; and

bill reverse-direction conveyance control means for conveying the bill in the direction opposite to the bill jamming direction stored in the bill jamming direction memory means when the bill that has jammed in the bill conveying channel is to be removed.

5,709,294

NON-JAMMING COIN CHUTE TRIGGER ASSEMBLY FOR PAY TELEPHONES

Gerald B. McGough, Huntsville, Ala., assignor to Quadrum Telecommunications, Inc., Huntsville, Ala.

Filed Apr. 26, 1996, Ser. No. 638,227

Int. Cl.^{6} G07F *5/22*

U.S. Cl. 194—230 **4 Claims**

1. For use in a coin telephone, including a coin relay, a non-jamming coin chute trigger assembly comprising:

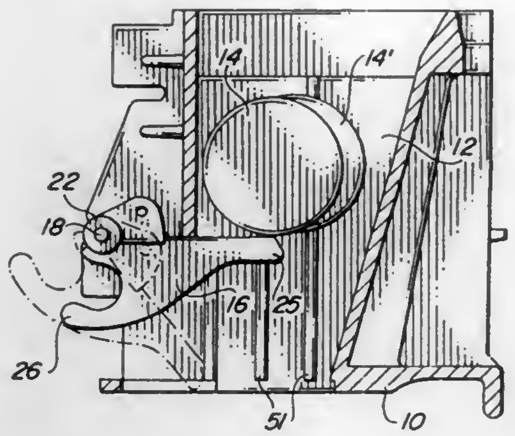
a one-piece coin chute assembly of unitary construction including a first coin path adapted to pass nickels;

a second coin path adapted to pass dimes;

a third coin path adapted to pass quarters;

at least one of said coin paths including a width dimension equal to at least twice the thickness of the coins which it is adapted to pass;

a pair of switching contacts adjacent to each of said coin paths;



first, second, and third rotating triggers, each positioned adjacent to a different one of said coin paths and each including a cam, and a first finger extending into the adjacent coin path operated in response to a coin passing through said adjacent coin path to rotate said trigger;

said cam in response to said rotation of said trigger effective to operate one of said pairs of switching contacts;

each of said triggers further including a second finger operated in response to rotation of said trigger to operate said coin relay.

5,709,295

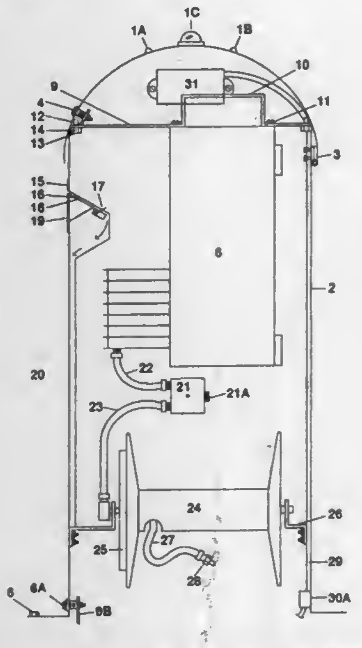
COIN OPERATED AUTOMOBILE TIRE INFLATOR ENCLOSURE

Oriz Wickline Johnson, 7086 Butterwood Dr., Cincinnati, Ohio 45241

Filed Feb. 26, 1996, Ser. No. 606,222

Int. Cl.^{6} G07F *17/06*

U.S. Cl. 194—350 **9 Claims**



1. A coin operated automobile tire inflater apparatus comprising a weather protective apparatus vertical enclosure with internally mounted air compressor, hose reel and reel retractor spring electrical controls, coin acceptor mechanism, coin storage vault and apparatus reinforced concrete mounting base having:

means for hinged lockable service access to compressor and electrical controls and to hose reel and coin vault,

means for compressor quick change and vibration isolating suspension,

means for customer electric shock protection,

means for maximizing coin and apparatus anti-theft security,

means for protecting apparatus against auto impact,

and means for attracting, advising and assisting user customers.

5,709,296

FEEDER TUBE

Göran Forsberg, Tuggelitevägen 3A, S-653 50 Karlstad, Sweden

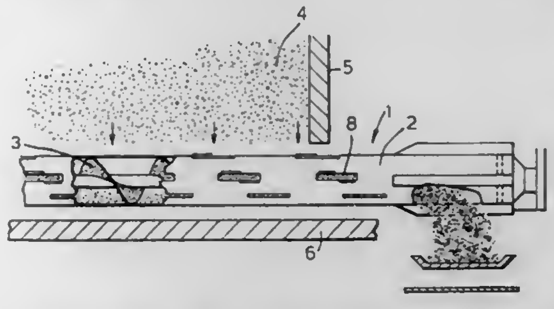
PCT No. PCT/SE95/00284, § 371 Date Sep. 11, 1996, § 102(e) Date Sep. 11, 1996, PCT Pub. No. WO95/26310, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 21, 1995, Ser. No. 704,561

Claims priority, application Sweden, Mar. 29, 1994, 9401049

Int. Cl.^{6} B65G *33/12*

U.S. Cl. 198—658 **7 Claims**



1. In a feeder tube device for conveying a bulk product, which comprises a cylindrical tube in which there are a number of inlet openings distributed along the length of the tube, a screw conveyor disposed coaxially within the tube, means for rotating the tube about its axis, means for rotating the screw conveyor relative to the tube, means for moving the feeder tube in the lateral direction, and activators for the bulk product, which activators are disposed on the tube in association with the inlet openings and form projections on an outer side of the tube, the improvement wherein each inlet opening has at least one first portion which is limited in a direction of rotation of the tube by a hole edge without an activator, and at least one second portion, at a rear end of the said first portion, which is limited by an activator.

5,709,297

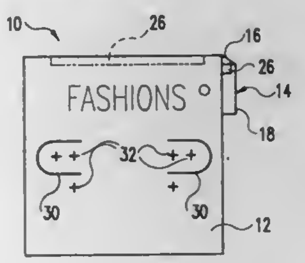
JEWELRY DISPLAY CARD

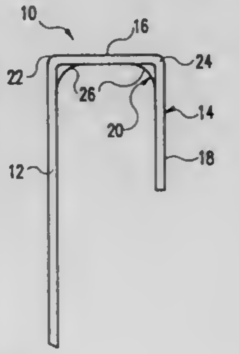
Robert C. Brandriff, 110 Creamery Brook Rd., Brooklyn, Conn. 06234; Bertrand H. Mountford, and B. Jason Mountford, both of 20 Cranberry Ridge Rd., N. Scituate, R.I. 02857

Filed Apr. 1, 1996, Ser. No. 625,191

Int. Cl.^{6} B65D *73/00*

U.S. Cl. 206—6.1 **13 Claims**





1. A hanger display card comprising:

a first panel;

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a hanger integral with said first panel, including a second panel extending in an orientation generally transverse to said first panel, said second panel defining a first corner with said first panel, and a lip extending in an orientation generally transverse to said second panel and generally parallel to said first panel; and

means for maintaining the orientation of said second panel relative to said first panel and the orientation of said lip relative to said second panel,

wherein said first panel, said second panel and said lip all are made entirely of paper.

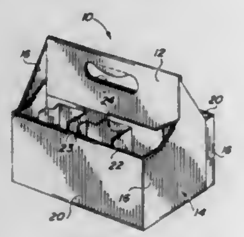
5,709,298
BASKET-STYLE CARRIER WITH NON-COLLAPSING END PANELS

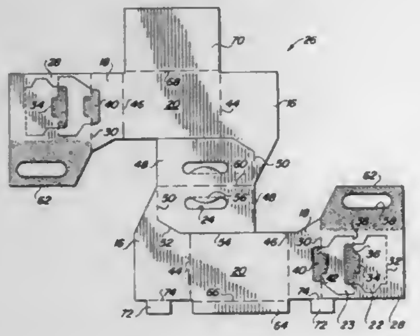
Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jul. 25, 1996, Ser. No. 687,236

Int. Cl.^{6} B65D *71/52*

U.S. Cl. 206—198 **12 Claims**





1. A basket-style article carrier, comprising:

opposite side panels connected to a bottom panel;

a centrally located handle panel having an upper portion and a lower portion;

opposite end panels connected to the side panels, each end panel being comprised of an outer end panel section overlapping and being adhered to an inner end panel section;

each inner end panel section being connected to the lower portion of the handle panel by a fold line; and

each outer end panel section having an upper portion extending upwardly beyond an associated inner end panel section, the upper portion of each outer end panel section being connected to the upper portion of the handle panel by a fold line.

8. A blank for forming a basket-style carrier, comprising:

two half-blank portions;

each half-blank portion including a handle flap connected to the handle flap of the other half-blank portion by a fold line, said fold line being the only connection between the two half-blank portions, each handle flap having first and second opposite end edges extending substantially at right angles to said fold line, the first end edge of each handle flap being substantially aligned with the second end edge of the other handle flap;

an outer end panel section in each half-blank portion, each outer end panel section having an upper portion and a lower portion, the upper portion of each outer end panel section having an outer edge and an inner edge and the lower portion of each outer end panel section having an outer edge and an inner edge;

the inner edge of the upper portion of each outer end panel section being connected by a fold line to the first end edge of an associated handle flap;

the inner edge of the lower portion of each outer end panel section being connected by a fold line to a side panel section;

the side panel section of each half-blank portion being connected by a fold line to an inner end panel section; and

the inner end panel section of each half-blank portion being connected by a fold line to a handle panel section;

the inner and outer end panel sections having dimensions such that when the blank is folded to form a carrier, the outer end panel section of each half-blank portion contacts and overlaps the inner end panel section of the other half-blank portion.

5,709,299

Patent Not Issued For This Number

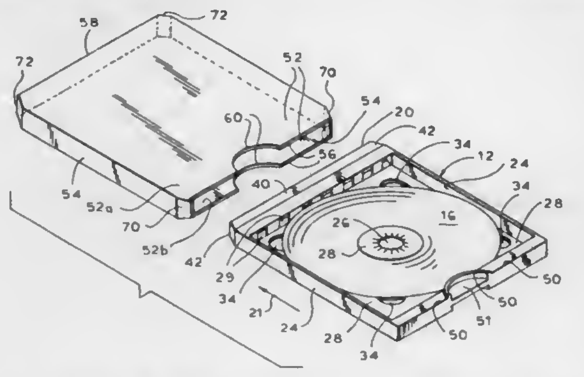
5,709,300
SLIDE TRAY PACKAGE FOR RECORDING MEDIUM

David Bolognia, Lanesboro, Mass.; Arthur Kern, Rye, N.Y.; Patrick O'Brien, Maywood, N.J.; George Rufo, Jr., Dalton, Mass., and Veronica Ann Buffington, Plainfield, N.J., assignors to Ivy Hill Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 51,759, Mar. 18, 1996. This application Jan. 24, 1997, Ser. No. 788,555

Int. Cl.^{6} B65D *85/57*

U.S. Cl. 206—308.1 **14 Claims**



1. A slide tray package comprising, in a combination, a slide tray for holding a recording medium and a housing therefor:

(A) said slide tray defining a leading end, a trailing end, a pair of opposed, laterally spaced sides connecting said ends, and means disposed between said ends and sides for receiving a recording medium for horizontal movement therewith,

(i) said slide tray leading end being adapted for automated loading of said slide tray into said housing by being both horizontally tapered and vertically beveled to facilitate telescopic insertion of said slide tray leading end through a leading end of said housing and into a trailing end of said housing,. and

(ii) said slide tray trailing end defining a vertically protruding lip configured and dimensioned as a stop for engaging a leading end of said housing to limit said telescopic insertion of said slide tray into said housing; and

(B) said housing defining a pair of opposed, vertically spaced top and bottom faces and a pair of opposed, laterally spaced sides connecting said top and bottom faces, each said face and each said housing side having a leading end and a trailing end,

(i) said leading end of each of said top and bottom faces being configured and dimensioned to enable direct grasping of said slide tray by a user, and

(ii) said leading end of each of said housing sides being configured and dimensioned to frictionally engage said slide tray, thereby to inhibit accidental telescopic slippage of said slide tray out of said housing.

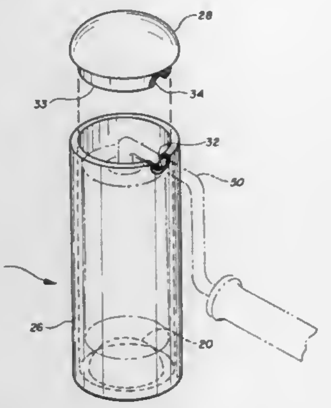
5,709,301
PAINTING IMPLEMENT KEEPER

Robert Lincoln Couch, and Ronald Norman Couch, both of 1820 Schaeffer Rd., Knoxville, Tenn. 37932

Filed Nov. 1, 1996, Ser. No. 742,746

Int. Cl.^{6} B65D *41/28;41/18*

U.S. Cl. 206—361 **2 Claims**



1. A paint implement keeper comprising:

a cylindrical container having a bottom and an open top with a first semicircular notch, said bottom including a hemispherical foam insert; and

a lid having an underside including a hemispherical foam insert, said lid including a circumferential flange for frictionally fitting with said open top of said container, said flange having a second semicircular notch for mating with said first notch to define an opening for inserting a paint roller frame.

5,709,302
PACKAGE FOR FILM PRODUCT

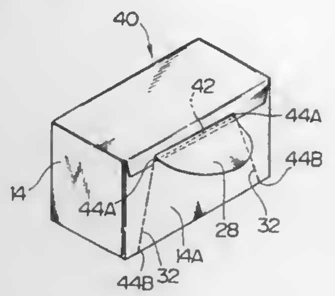
Takuya Arai, Tokyo, and Kazunori Mizuno, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 500,132, Jul. 10, 1995, Pat. No. 5,624,033. This application Jan. 28, 1997, Ser. No. 790,022

Claims priority, application Japan, Jul. 11, 1994, 6-158723; Jun. 16, 1995, 7-150373

Int. Cl.^{6} B65D *85/48*

U.S. Cl. 206—455 **29 Claims**



1. A package for a film product, comprising:

an inner holder, having an attaching portion in which a film product is contained in a sealed condition; and

an outer holder having a securing portion to which said attaching portion of said inner holder is secured, such that said attaching portion and said securing portion are at least partially overlapped so as to define an overlapped portion;

wherein said inner holder and said outer holder are torn away at the same time by manipulating said overlapped portion.

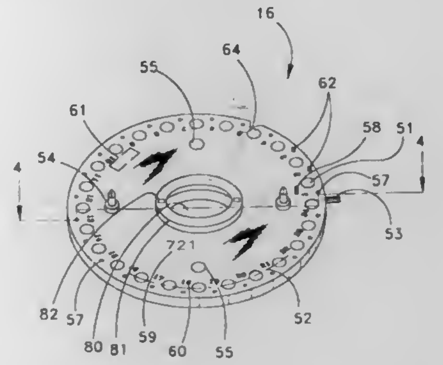
5,709,303
WORKPIECE PALLET WITH INDICATING MEANS

Norman D. Best, 63 Glenflow Ct., Glendale, Calif. 91206

Division of Ser. No. 189,118, Jan. 26, 1994, Pat. No. 5,509,191. This application Mar. 22, 1996, Ser. No. 620,177

Int. Cl.^{6} B65D *85/00*

U.S. Cl. 206—459.1 **13 Claims**



9. A rotatable pallet for retaining at least one work-piece, the rotatable pallet comprising:

a. a disk having at least one nest for retaining said at least one work-piece; and

b. at least one pin movably carried on said disk and located adjacent to said at least one nest for identifying a condition of said at least one nest.

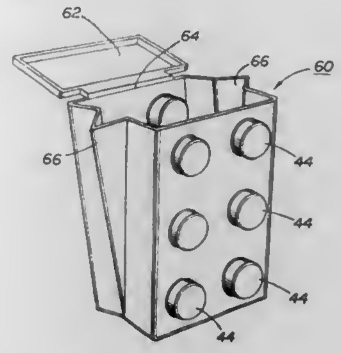
5,709,304
FOOD SERVICE KIT

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 702,166, Aug. 23, 1996, which is a continuation of Ser. No. 386,878, Feb. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 27,425, Aug. 22, 1994, Pat. No. Des. 371,281. This application Oct. 15, 1996, Ser. No. 730,602

Int. Cl.^{6} B65D *21/032*

U.S. Cl. 206—501 **21 Claims**



1. A food service kit comprising:

at least two diverse types of food containers for serving diverse food products; and

each of said at least two containers having like configurations of projections extending therefrom and like configurations of

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sockets for coupling with the projections of the other of the diverse types of containers;
one of the at least two containers including a body portion with an opening therein, said body portion being expandable between a box-like shape in a first position and a funnel-shape in a second position; and
whereby the diverse types of food containers may be coupled together as building blocks to create toy-like assemblies.

5,709,305
DISPENSER FOR SOLID PHARMACEUTICAL PREPARATIONS

Dieter Essig, Bad Kreuznach; Heribert Häusler, Klein-Winternheim; Hans-Dieter Ruthermann, Gau-Algesheim; Klaus-Dieter Eckert, Aepfingen; Frank Landwehr, Hochdorf; Thomas Zimmer, Harxheim; Dieter Berndt; Thomas Reiner, both of Berlin-Zehlendorf; Günter Horntrich, and Reiner Reeg, both of Pforzheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

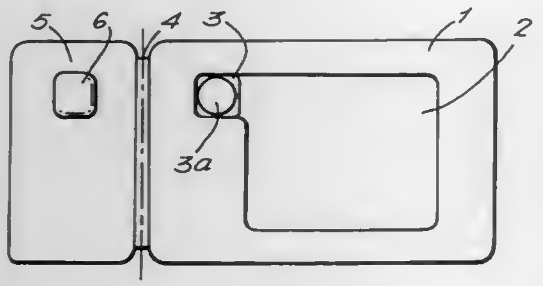
PCT No. PCT/EP94/01796, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO94/29191, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 569,090

Claims priority, application Germany, Jun. 14, 1993, 43 19 609.8

Int. Cl.^{6} B65D *83/00*

U.S. Cl. 206—536 **4 Claims**



1. A dispenser for dispensing a solid pharmaceutical preparation comprising:
a flat tray in a base plate, the tray having a narrow end which connects to a removal well,
a closure member attached to the base plate, having a convexity that engages in the removal well in the closed position, and
a cover plate with a cutout allowing the convexity to pass through it.

5,709,306
ADULT CONTAINER AND DISPENSER FOR SMALL ITEMS

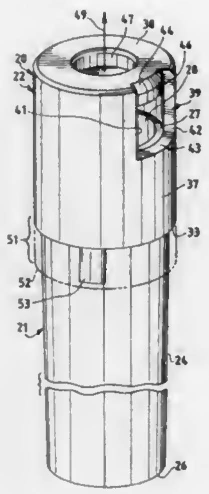
Richard W. Hofmann, Chicago, Ill., assignor to Magenta Corporation, Chicago, Ill.

Filed Jul. 1, 1996, Ser. No. 673,511

Int. Cl.^{6} B65D *55/02*

U.S. Cl. 206—536 **6 Claims**

1. An adult container comprising:
a container body, said container body having a substantially cylindrical side wall portion, and an open end;
a closure, said closure having a substantially cylindrical body wall, an orifice defined by said closure, and an open end wall, said orifice opening through said cylindrical body wall, said cylindrical side wall portion for interfacing with said closure;
at least one rib provided on said container body or said closure and a corresponding groove on the other of said container body or said closure, wherein



said at least one rib, corresponding groove, closure cylindrical body wall, and container body cylindrical side wall forming means for telescopically engaging said closure to said container body during and after an adjustment of said closure along a longitudinal length of said container body to an open and a closed position, wherein
said at least one rib and corresponding groove have a releasable frictional locking fit for retaining said closure in a selected position along said longitudinal length of said container body, and wherein
said releasable frictional locking fit can be unlocked, with said closure in any circumferential position relative to said container body.

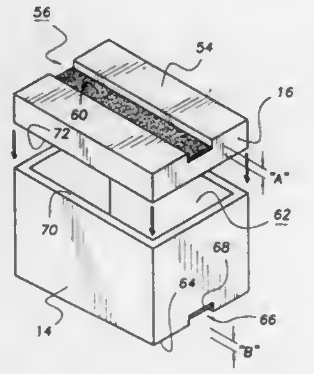
5,709,307
INSULATED LUNCH CONTAINER

Mildred M. Rosado, 3101 N. Kedzie, Chicago, Ill. 60618, and Luis R. Fasco, 4535 W. Birchwood, Skokie, Ill. 60076

Filed Mar. 28, 1996, Ser. No. 623,137

Int. Cl.^{6} A45C *11/20;* **F25D** *3/08*

U.S. Cl. 206—548 **18 Claims**



1. An insulated lunch container comprising:
a bottom insulating member constructed from a plastic foam material having a substantially open box shape having a bottom cavity formed therein, a bottom exteriorly facing surface of said bottom insulating member having a bottom fastener channel formed there along, and a first length of hook type hook-and-pile fastener strip disposed within said bottom fastener channel, said bottom fastener channel having a bottom fastener channel depth about equal to twice a first thickness of said first length of fastener strip;
a top insulating member constructed from a plastic foam material having a substantially open box shape having a top cavity formed therein, a top exteriorly facing surface of said top insulating member having a top fastener channel formed there along, and a second length of hook-and-pile fastener strip disposed within said top fastener channel, said top fastener channel having a top fastener channel depth about equal to twice a second thickness of said second length of fastener strip, said top and bottom insulating members having top and bottom opening perimeters that are positionable in registration in a manner to form a food storage cavity including said top and bottom cavities; and
a fabric cover member having a first insulating member receiving pocket defined by a first insulating pocket inner surface and sized to receive therein said top insulating member, and a second insulating member receiving pocket defined by a second insulating pocket inner surface and sized to receive therein said bottom insulating member, said cover member having a covering opening of sufficient size to allow introduction of said top and bottom insulating members into said first and second insulating member receiving pockets that is sealable with a closure mechanism provided about a cover perimeter thereof, said first insulating pocket inner surface having a third length of hook-and-pile fastener strip secured thereto and positioned thereon in a manner such that when said top insulating member is positioned within said first insulating member receiving pocket, said third length of hook and pile fastener strip is positioned within said top fastener channel and into securing contact with said second length of hook-and-pile fastener strip disposed within said top fastener channel, said second insulating pocket inner surface having a fourth length of hook-and-pile fastener strip secured thereto and positioned thereon in a manner such that when said bottom insulating member is positioned within said second insulating member receiving pocket, said fourth length of hook-and-pile fastener strip is positioned within said bottom fastener channel and into securing contact with said first length of hook-and-pile fastener strip disposed within said bottom fastener channel.

5,709,308
FOOD PRODUCT CONTAINER INCLUDING A TRAY AND A JACKET AND AN ASSOCIATED FOOD PRODUCT PACKAGE

Paul W. Gics, Sewickley Heights, Pa., assignor to Gics & Vermee, L.P., Sewickley, Pa.

Filed Jun. 6, 1995, Ser. No. 469,956

Int. Cl.^{6} B65D *1/34;85/00*

U.S. Cl. 206—557 **19 Claims**

1. A food product container comprising:
a tray having a base and a sidewall extending from said base, said sidewall terminating in a flange which together with a portion of said sidewall defines an undercut space; and
a jacket disposed generally adjacent said tray, said jacket including a bottom flap disposed adjacent said base and a side flap disposed adjacent said sidewall, said side flap terminating in a free edge portion and said jacket being positioned and dimensioned such that said free edge portion of said side flap is substantially disposed in said undercut space wherein said jacket can be restrained from separating from adjacent said tray by means of said free edge portion engaging against said flange.

17. A food package comprising:
a food product container including:
  a tray having a base and a sidewall extending from said base, said sidewall terminating in a flange which together with a portion of said sidewall defines an undercut space; and
  a jacket disposed generally adjacent said tray, said jacket including a bottom flap disposed adjacent said base and a side flap disposed adjacent said sidewall, said side flap terminating in a free edge portion and said jacket being positioned and dimensioned such that said free edge portion of said side flap is substantially disposed in said undercut space wherein said jacket can be restrained from separating from adjacent said tray by means of said free edge portion engaging against said flange; and
a lid sealed to a portion of said tray in order to enclose said food product in said food package.

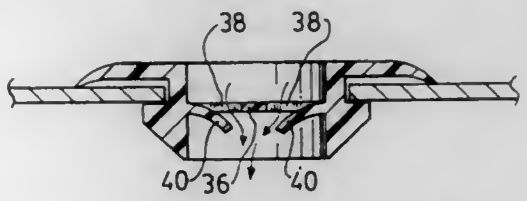
5,709,309
ORIFICE DRAIN STOP

Stephen W. Gallagher, Birmingham, and David S. Snyder, Canton, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Continuation of Ser. No. 335,013, Nov. 7, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 609,413

Int. Cl.^{6} B65D *51/00*

U.S. Cl. 220—229 **13 Claims**



1. A drain stop for an orifice in an automotive body panel having an upper surface and a lower surface, the stop comprising:
a plug portion disposed in said orifice and having a drainage bore extending axially therethrough;
retaining means for securing said plug portion to said body panel; and
means for selectively obstructing and draining said bore, means for selectively obstructing and draining comprised of a resilient bridge member spanning said bore and defining a plurality of drainage ports obstructable by a plurality of flexible flaps extending from an interior surface of said bore to said bridge member.

5,709,310
DEVICE FOR OPENING A RECEPTACLE HAVING A RIM CLOSED BY A CAPSULE

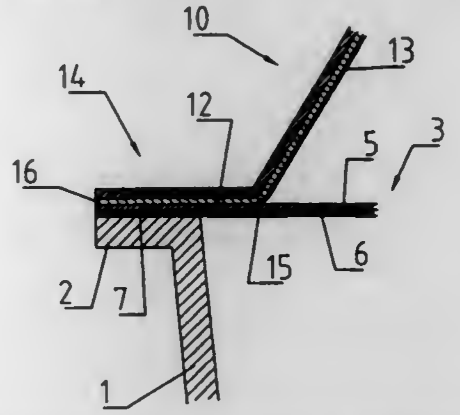
Laurent Kretz, Selestat, France, assignor to Societe Alsacienne d'Aluminium, Saint Julien en Genevois, France

Filed Feb. 18, 1997, Ser. No. 801,957

Claims priority, application France, Feb. 19, 1996, 96 02011

Int. Cl.^{6} B65D *17/34*

U.S. Cl. 220—270 **3 Claims**



1. A receptacle including a peripheral rim on which a capsule is fixed by thermosealing, said capsule including a heat-sealable bottom layer sealed against the peripheral rim and a metal top layer adhering to the heat-sealable layer, the capsule being peelable off the peripheral rim by exerting manual traction on a tongue of said capsule,
wherein the tongue is constituted by a metal sheet suitable for covering fully the metal layer of the capsule, said metal sheet

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being connected to the metal layer of the capsule in a lateral segment by means of a layer of adhesive material that adheres to the metal layer and to the metal sheet, and wherein the adhesive material covers the entire bottom face of the metal sheet, with a varnish that does not adhere to the metal layer and that is not reactivatable on heating being applied to the bottom face of the layer of adhesive material in the zone not including the lateral segment.

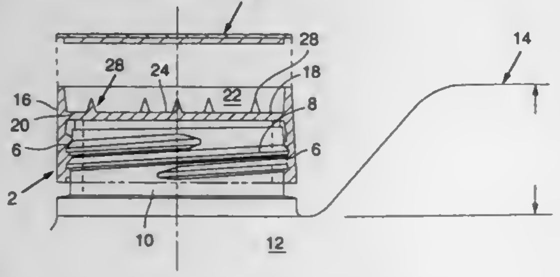
5,709,311
METHOD AND APPARATUS FOR REMOVING AND STORING A CONTAINER SEAL

Brett Butler, Dublin; David A. Wustner, and Judith R. Epstein, both of Walnut Creek, all of Calif., assignors to Valent USA Corporation, Walnut Creek, Calif.

Filed Nov. 3, 1995, Ser. No. 552,830

Int. Cl.⁶ B65D *17/44*

U.S. Cl. 220—278 **12 Claims**



6. A cap for a container having a seal, comprising:
- a sidewall having a top and a bottom;
- an intermediate wall with a surface and having a perimeter engaging the sidewall at a position between the top and bottom of the sidewall;
- a recess at least partially defined by the sidewall and intermediate wall;
- a seal cutter including cutting elements extending from the intermediate wall and having a seal retaining ledge extending parrallel to said intermediate wall disposed within the recess; and
- a removable lid covering the recess.

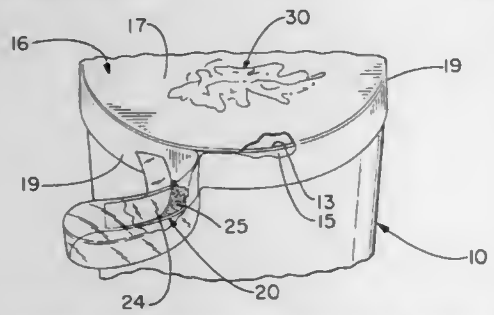
5,709,312
DISPOSABLE COVER FOR TRASH CONTAINERS

Robert D. Lake, 6918 Saint Ives Blvd., Hudson, Ohio 44236

Filed Feb. 21, 1996, Ser. No. 607,274

Int. Cl.⁶ B65D *41/01*

U.S. Cl. 220—287 **8 Claims**



1. A trash container having an exterior sidewall which define a top opening and an adjustable cover, comprising;
- a plastic flexible film having a central portion bounded by a peripheral edge integral therewith and being configured such that said central portion is capable of fully covering said top opening and said peripheral edge is capable of contacting said sidewall, said integral peripheral edge on the bottom side thereof consisting of only a single pressure sensitive adhesive sealing member extending along less than 25 percent of said peripheral edge, said peripheral edge in the vicinity of said sealing member being drawn taut about said exterior sidewall of said container, and said adhesive sealing member being attached to said taut vicinity peripheral edge to seal the top opening of said container.

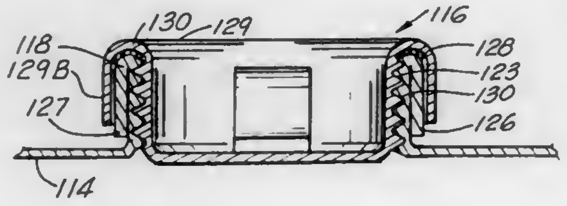
5,709,313
DRUM OUTLET CONSTRUCTION

Jimmy Richoux, Harvey, and Ty Techera, New Orleans, both of La., assignors to E & H Investments, Harvey, La.

Filed Jun. 22, 1995, Ser. No. 493,631

Int. Cl.⁶ B65D *6/40*

U.S. Cl. 220—601 **17 Claims**



1. A drum-type container construction comprising:
- a) a drum having a pair of circular ends and a cylindrically shaped side wall;
- b) one of the ends having a pair of openings including a fill opening of larger diameter and a vent opening of smaller diameter;
- c) the larger diameter opening comprising an annular shoulder that is integrally formed with the parent metal of the drum end, said shoulder comprising:
  - i) an exterior annular wall that extends at generally right angles to the drum end, said exterior annular wall having an upper end, and a lower base, said lower base beginning at and rising from the plane of the drum end, said exterior annular wall extending above the plane of the drum end from the lower base to the upper end;
  - ii) an interior annular wall that extends at generally right angles to the drum and positioned internally and concentrically to the exterior annular wall, substantially abutting said exterior annular wall, said interior annular wall having an upper end, a lower section, and an interior annular wall spaced therebetween, the interior annular wall being internally threaded;
  - iii) a curved annular upper transition portion forming the top of the shoulder and joining the upper ends of the exterior and interior annular walls;
  - iv) the interior annular wall extending both above and into the plane of the drum end, thereby defining an upper section of the interior annular wall, extending above the plane of the drum end, the lower section of the interior annular wall extending into the plane of the drum end;
  - v) the upper section of the interior annular wall internally and concentrically abutting the exterior annular wall; and
  - vi) the lower section of the interior annular wall within the plain of the drum end and curving upwardly and annularly outward away from the opening of the larger diameter opening to substantially abut the base of the exterior annular wall.

5,709,314
STACKABLE CONTAINER WITH AN EASY CLEAN SEAL

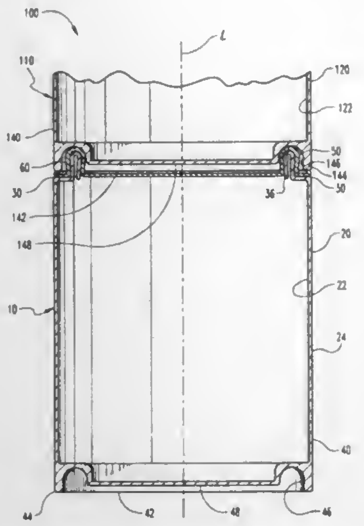
Robert W. Petry, 4390 N. Riverside Dr., Columbus, Ind. 47203

Filed Mar. 1, 1996, Ser. No. 609,773

Int. Cl.⁶ B65D *43/04*

U.S. Cl. 220—802 **16 Claims**

1. A container for storing liquid, comprising:



- a rigid vessel defining a chamber to retain liquid, said vessel having a generally vertical sidewall and an outer top surface, said outer top surface defining:
  - a mouth intersecting said chamber, said mouth being configured to move liquid to and from said chamber,
  - a circumferential ledge having an outer edge, said sidewall being connected to said ledge at said outer edge,
  - an upturned lip connected to said ledge and circumscribing said mouth, said lip being horizontally inset from said outer edge by said ledge;
- a lid removably connected to said vessel by press-on attachment, said lid having:
  - an upper surface opposing a lower surface,
  - a circumferential outer flange seated on said ledge,
  - a stacking rib projecting upward from said upper surface, said rib being circumscribed by said flange, said rib circumscribing a central portion of said lid, said central portion extending along a plane generally perpendicular to said sidewall,
  - a sealing channel defined by said lower surface and positioned within said rib, said lip interlockingly engaging said channel to seal said lid over said mouth; and,
  - wherein said outer top surface is grooveless and is configured without a cavity capable of accumulating liquid, said lip has a resilient rolled edge bead configured to elastically deform during press-on attachment to promote sealed engagement of said lid to said vessel, said flange has a generally flat flange surface, said ledge has a generally flat ledge surface, and said flange surface and said ledge surface meet in face to face contact when said flange is seated on said ledge.

5,709,315
METHOD AND APPARATUS FOR REMOVING NEWSPAPERS AND SIMILAR FOLDED SHEET UNITS FROM A STACK

Steen Kähler, Tikøb; Karl Hartmeyer, Lyngby, and Keld Boysen, Hvidovre, all of Denmark, assignors to De Berlingske Dagblade A/S, Copenhagen, Denmark

PCT No. PCT/DK93/00241, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/03877, PCT Pub. Date Feb. 17, 1994

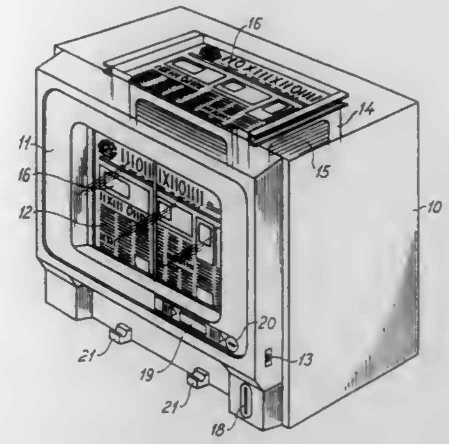
PCT Filed Jul. 16, 1993, Ser. No. 379,439

Claims priority, application Denmark, Aug. 7, 1992, 0997/92

Int. Cl.⁶ G07F *11/00;* **B65H** *3/24;3/00;* **B65G** *59/07*

U.S. Cl. 221—155 **35 Claims**

1. An apparatus for successively removing folded sheet units, such as newspapers, magazines, or the like from a stack of such sheet units, each sheet unit consisting of superposed sheet layers and forming a fold said apparatus comprising:



- a support for supporting the stack of sheet units, at least a first sheet engaging member for engaging with the sheet unit to be removed, moving means for moving the sheet engaging member so as to remove the sheet unit from the stack. said moving means including;
- a guide columns extending between a first position adjacent to the fold of the folded unit to be removed from the stack and a second delivery position substantially spaced from the first position, and driving means for moving said at least one sheet engaging member along the guide columns between said first and second positions;
- said at least first sheet engaging member being mounted so as to be moveable between a retracted inoperative position in which it is out of engagement with the sheet units of the stack, and an extended operative position in which it is engaging the fold between adjacent sheet layers of the sheet unit which is to be removed.

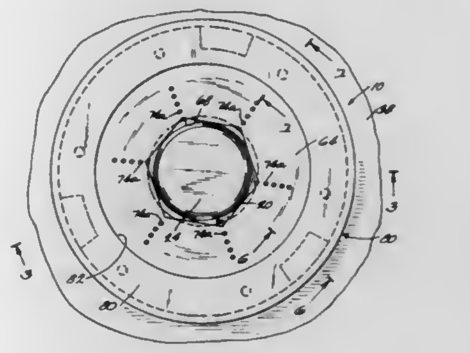
5,709,316
CUP DISPENSER

John W. Jolly, Waukesha, and Scott J. Collins, Brown Deer, both of Wis., assignors to Lake Geneva Spindustries, Inc., Lake Geneva, Wis.

Filed May 10, 1996, Ser. No. 644,253

Int. Cl.⁶ A47F *1/04*

U.S. Cl. 221—304 **20 Claims**



11. A counter top dispenser adapted to dispense different diameter portion cups having a tapered sidewall, a bottom wall and an open top surrounded by a radially outwardly extending outer rim, said dispenser comprising:
- a housing located beneath the counter for storing a plurality of the cups in an inverted, nested stack and having a discharge end extending through an opening in the counter top;
- a mounting ring surrounding and connected to a portion of the discharge end of said housing extending through the counter top opening, said mounting ring adapted to rest on the counter top in the vicinity of the counter top opening;

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a flexible diaphragm covering the discharge end of said housing and including

a web section including a central discharge opening through which the bottom of the outermost cup in the stack extends to be grasped and withdrawn from the stack, said opening having an inner periphery configured to retain a stack of the smallest cups to be dispensed in the housing while permitting the outermost cup in the stack to be withdrawn from the stack; and

a plurality of circumferentially spaced apertures in said web section and spaced radially outwardly from the inner periphery of said central opening such that, when material between all circumferentially adjacent apertures is severed, the effective size of the inner periphery of said diaphragm discharge opening is enlarged sufficiently to permit the outermost cup in a stack of predetermined larger size cups to be withdrawn from the stack while retaining the stack in the housing; and

means for holding said diaphragm in place over the discharge end of said housing.

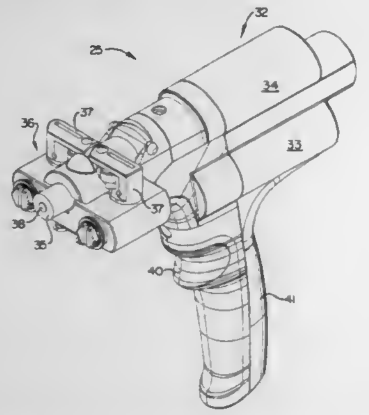
5,709,317
HAND HELD DISPENSER FOR FOAMABLE COMPOSITIONS AND DISPENSING SYSTEM

George T. Bertram, Newtown; John J. Corrigan, III, Washington; Patrick S. Lacombe, Sandy Hook, and Michael R. Knaak, New Fairfield, all of Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Continuation of Ser. No. 361,322, Dec. 21, 1994, Pat. No. 5,590,816. This application Jul. 15, 1996, Ser. No. 680,371

Int. Cl.⁶ B67D *5/60*

U.S. Cl. 222—135 **13 Claims**



1. A hand held dispenser for dispensing foamable compositions and that is particularly useful for foam-in-place packaging systems, said hand held dispenser comprising:

a housing;

a motor in said housing;

a valving cartridge in said housing and driven by said motor for dispensing foamable compositions upon demand;

said motor being positioned below said valving cartridge for providing a clear line of sight along the top of said housing.

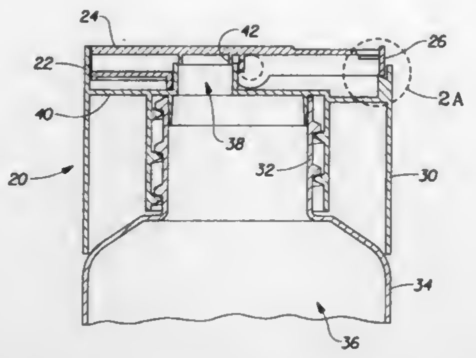
5,709,318
DISPENSING CLOSURE WITH INTEGRAL LOCKING SWITCH AND TAMPER EVIDENCY STRUCTURE

Reuben E. Oder, Hamme (Merchtem), Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 31, 1996, Ser. No. 594,743

Int. Cl.⁶ B67D *5/32*

U.S. Cl. 222—153.06 **16 Claims**



1. A dispensing closure for selectively dispensing product from a container having a product storage chamber, said closure comprising:

a closure body having a top portion, a skirt downwardly depending from the top portion, a passageway extending through the top portion, and an attachment structure for attaching the closure body to the container and thereby putting the passageway in product communication with the product storage chamber of the container;

a dispensing lid having a discharge aperture in product communication with the passageway of the closure body, the dispensing lid being dispensingly attached to the closure body so as to provide for closed and dispensing positions of the dispensing lid; and

a locking switch formed integrally to the dispensing closure, having a predetermined locked position wherein the dispensing lid is prevented from being moved to its dispensing position, and a predetermined unlocked position wherein the dispensing lid can be moved to its dispensing position; and wherein the locking switch further comprises at least two living hinges.

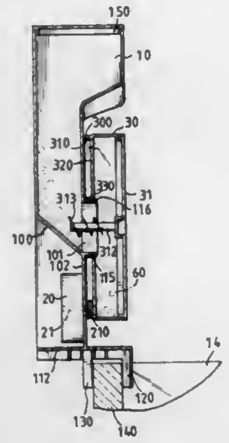
5,709,319
FOOD DISTRIBUTOR

Chia-Wang Yao, No. 9, Lane 114, Sec 1, Ta Tung Rd., Yuanlin Chen, Changhua Hsien, Taiwan

Filed Oct. 8, 1996, Ser. No. 727,228

Int. Cl.⁶ B67D *5/64*

U.S. Cl. 222—170 **5 Claims**



1. A food distributor comprising:

a box having a cover disposed to a top thereof and a first hole defined in a front side thereof which has an extending plate extending from a lower edge of said box, a motor disposed to said extending plate with a shaft thereof extending through said extending plate and a gear disposed to a distal end of said shaft;

a distributing member including a rear wall, a front wall and a peripheral wall connected between said rear wall and said front wall, at least one outlet defined in said peripheral wall, said rear wall having a first circular flange extending therefrom which has an threaded inner periphery, said rear wall having a second hole defined therein and a second circular flange extending from said rear wall to enclose-said second hole therein, said front wall having a stirring shaft extending from an inner surface thereof, said stirring shaft extending through said second hole and having a stirring element extending radtally therefrom, and

said second circular flange engaged with said first hole and said gear engaged with said threaded inner periphery of said first circular flange wherein said stirring shaft extends through said first hole.

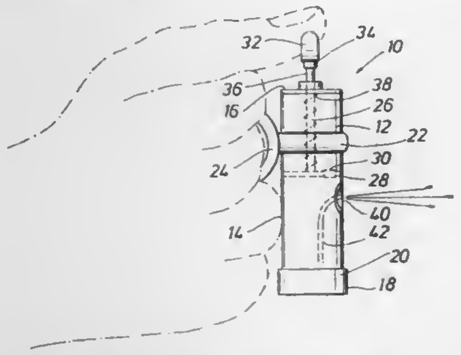
5,709,320
MANUAL SELF-DEFENSE SPRAY DEVICE

Ruben Jimenez, 1038 Woolworth St., Houston, Tex. 77020

Filed Jul. 30, 1996, Ser. No. 688,532

Int. Cl.⁶ B67D *5/64*

U.S. Cl. 222—175 **10 Claims**



7. A holder for a self defense spray comprising:

a. a canister to hold a pressurized can of a self defense spray, the canister comprising
   i. an open cylinder with a gap between mutually opposed edges; and
   ii. an adjustable latch to hold the mutually opposed edges in stationary relationship to each other;

b. a ring extending from the canister, the ring of a size to fit a human finger; and

c. an actuator extending from the pressurized can, the actuator positioned for ready access by a human thumb.

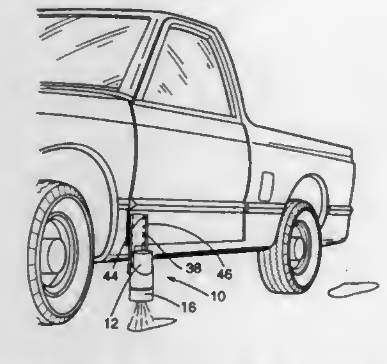
5,709,321
APPARATUS FOR REMOTELY DISCHARGING THE CONTENTS OF AN AEROSOL CONTAINER

Thomas J. Smrt, 9716 S. Grant Hwy., Marengo, Ill. 60152

Filed Feb. 22, 1996, Ser. No. 605,399

Int. Cl.⁶ B67D *5/06*

U.S. Cl. 222—181.3 **16 Claims**



1. An apparatus for discharging the contents of an aerosol container, the container having an actuator which can be moved between discharging and non-discharging positions, the apparatus comprising:

(a) means for holding the aerosol container in an inverted position,

(b) electrically-operable actuating means which effects movement of the aerosol container actuator between discharging and non-discharging positions,

(c) means in electrical connection with the actuating means for controlling movement of the actuating means, and thereby the aerosol container actuator, between discharging and non-discharging positions, wherein the controlling means is disposed remotely from the holding means and the actuating means so that an operator of the apparatus is able to discharge the contents of the aerosol container without being in physical contact with the holding means and actuating means, and

(d) means for providing electrical power to the apparatus.

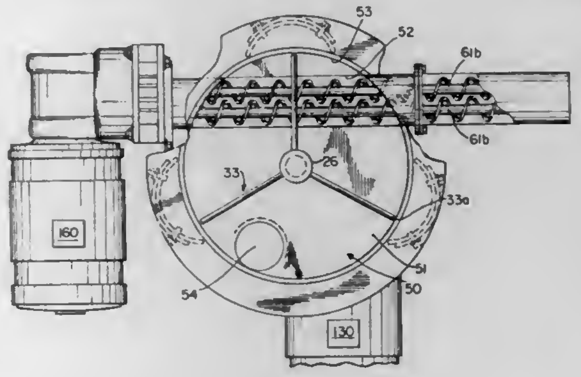
5,709,322
DRY SOLIDS METERING SYSTEM WITH MEANS FOR SELF-EMPTYING AND QUICK-EMPTYING/CLEANOUT

Ronald J. Ricciardi, Woodcliff Lake, N.J., assignor to Acrison, Inc., Moonachie, N.J.

Filed Dec. 8, 1995, Ser. No. 569,989

Int. Cl.⁶ G01F *11/00*

U.S. Cl. 222—227 **48 Claims**



1. A material feeding system comprising:

a supply hopper;

a chamber positioned below the supply hopper, the chamber having a bottom surface, a periphery, a cleanout port located proximate the periphery and a slot located in the bottom surface with a feed trough beneath the slot; and

a sweep arm disposed in the chamber adjacent to the bottom surface.

5,709,323

Patent Not Issued For This Number

5,709,324
MINIATURE DISPENSER

Stanislas Peronnet, Paris, and Alain Behar, Suresnes, both of France, assignors to Teleplastics Industries, Parigne L'Eveque, France

Filed May 20, 1996, Ser. No. 650,767

Claims priority, application France, May 19, 1995, 95 05987

Int. Cl.⁶ B65D *88/54*

U.S. Cl. 222—321.9 **5 Claims**

1. Miniature dispenser (1) comprising a receptacle (2) constituted by a reservoir (3) and a cylindrical neck (4), a cylindrical sleeve (5) carrying a piston pump mechanism having an axial nozzle, the sleeve (5) being engaged within the neck (4) of the receptacle (2), the external periphery of a lower skirt of the sleeve

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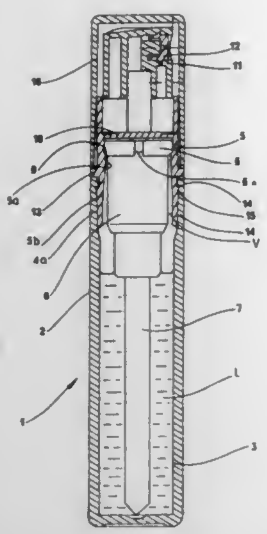


(5) being gripped by cone-on-cone engagement about an internal periphery (**4***a*) of the neck (**4**) of said receptacle (**2**) and the sleeve (**5**) comprising, on an external wall (**5***b*) thereof, an annular projection (**13**) bearing on an upper edge of said receptacle (**2**).

5,709,325
MANUAL PRECOMPRESSION PUMP FOR SPRAYING A LIQUID, AND DISPENSING ASSEMBLY EQUIPPED WITH SUCH A PUMP

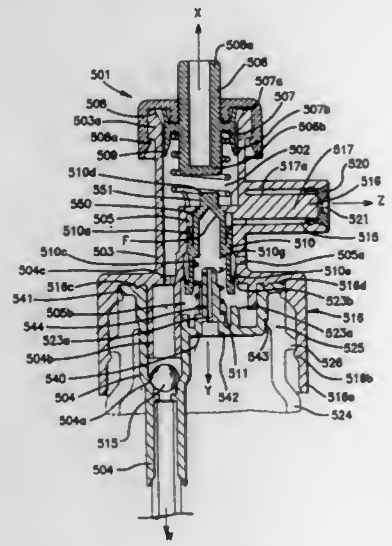
Philippe Renault, Chaville, France; Guiseppe Dalsant, Baselga Di Pine, and Adalberto Geier, Villazzono, both of Italy, assignors to L'Oreal, Paris, France

Filed Nov. 24, 1995, Ser. No. 562,626

Claims priority, application France, Nov. 23, 1994, 94 14036

Int. Cl.^{6} B67D *5/40*

U.S. Cl. 222—383.1 **20 Claims**



1. A precompression pump (**501**, **601**) for spraying a liquid under constant pressure, comprising:

a cylindrical body (**503**, **603**) defining a cylindrical pumping chamber (**502**, **602**) having a longitudinal axis (X) and in which is housed a first piston (**507**, **607**) associated with an operating member (**506**, **606**), said first piston bearing against a first elastic return means (**509**, **609**);

a cylindrical precompression chamber (**505**, **605**) having a longitudinal axis (Y) and being equipped with a second piston (**510**, **610**) bearing against a second elastic return means (**511**, **611**), the precompression chamber being in fluid communication with the pumping chamber (**502**, **602**) via a passage (**550**, **650**);

a feed channel (**504**, **604**) equipped with a non-return valve (**515**, **504***a*; **615**, **604***a*) emerging in the pumping chamber (**502**, **602**); and

a dispensing element (**517**, **617**) equipped with a spray nozzle (**520**, **620**) and with a dispensing channel (**518**, **618**) connecting the nozzle to the precompression chamber, said second piston (**510**, **610**) comprising a sliding means (F) for opening and for closing said passage (**550**, **650**) so that fluid communication between said precompression chamber and said pumping chamber is interrupted in the position of rest of the pump and so that this fluid communication is established upon precompression under the action of the operating member; the improvement wherein the longitudinal axis (Y) of the precompression chamber (**505**, **605**) is parallel but spaced from the longitudinal axis (X) of the pumping chamber (**502**, **602**), the precompression chamber (**505**, **605**) being situated in an extension of the pumping chamber (**502**, **602**); and the liquid contained in the pumping chamber (**502**, **602**) gaining direct access to the precompression chamber (**505**, **605**) upon actuation of the operating means (**506**, **606**).

5,709,326
METHOD AND APPARATUS FOR INSPECTING AND SHAPING PANTYHOSE

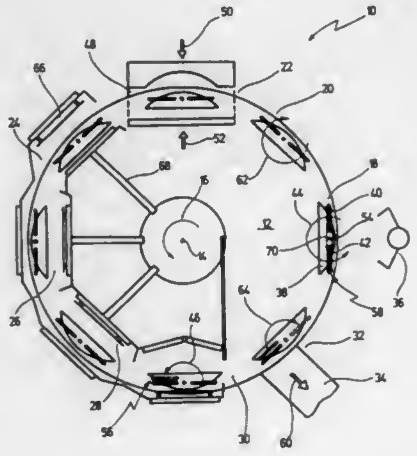
Eckhard Fröhlich, Steinheim, Germany, assignor to Wepamat Maschinenbau GmbH, Weilheim/Teck, Germany

Filed Jan. 2, 1996, Ser. No. 581,854

Claims priority, application Germany, Jan. 4, 1995, 195 00 100.1

Int. Cl.^{6} D06C *5/00*

U.S. Cl. 223—76 **6 Claims**



1. Device for shaping and inspecting pantyhose for defects comprising

flat stretchers for stretching the pantyhose, the stretchers being arranged in pairs one beside the other and so that they can be brought into a mutually aligned position;

means for heat

treating the pantyhose while mounted on the stretchers;

wherein two neighboring stretchers are mounted for rotation about a common axis by approximately 180° into a second mutually aligned position in order to permit visual inspection of both the front and the back faces of a stretched pantyhose when in said first mutually aligned position and said second mutually aligned position, respectively, said two neighboring stretchers being adapted for heat-treatment with the pantyhose mounted thereon.

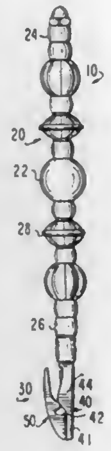
5,709,327
BRACELET FASTENING DEVICE

Ralph LaMacchia, 210-16 69th Ave., Bayside, N.Y. 11364, and Barbara Bush, 5 Humming La., Commack, N.Y. 11725

Division of Ser. No. 400,024, Mar. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 24,845, Jun. 22, 1994, Pat. No. Des. 363,042. This application Aug. 29, 1996, Ser. No. 697,638

Int. Cl.^{6} A47G *25/90;* **A41F** *1/00*

U.S. Cl. 223—111 **12 Claims**



1. A bracelet fastening device for use by a person to assist in fastening a bracelet having releasable interlocking members, the bracelet fastening device comprising:

a handle;

means for releasably clamping a portion of a bracelet, said clamping means operably attached to said handle and comprising:

a fixed first clamping jaw coupled to said handle;

a movable second clamping jaw;

a generally U-shaped resilient support having a central base member and a pair of spaced-apart legs extending outwardly from opposite ends of said base member, said pair of legs including a bottom leg mounted adjacent to said fixed first clamping jaw and a top leg having a free end;

said movable clamping jaw being coupled to said central base member and extending in a direction generally opposite to said free end of said top leg, such that, in the normal position thereof, it clampingly engages said fixed clamping jaw;

said free end of said top leg being resiliently movable in a pivot-like manner toward said bottom leg whereby said movable second clamping jaw is thereby resiliently moved in a pivot-like manner away from said fixed clamping jaw into said open position;

wherein said fixed first clamping jaw includes a cutout, said bottom leg of said generally U-shaped resilient support includes a tab, and wherein said tab is receivable in said cutout in a snap-fit manner to retain said generally U-shaped resilient support to said fixed first clamping jaw;

said handle sized and configured to be held in a hand of a person so that said clamping means is positionable proximate to a wrist adjoining the hand holding said handle; and

whereby a person using said bracelet fastening device can hold and position with one hand at least one portion of the bracelet on the adjoining wrist while using the other free hand to fasten the interlocking members of the bracelet therewith to secure the bracelet around the wrist.

5,709,328
STORAGE DEVICE FOR AN UMBRELLA FOR INSTALLATION IN A MOTOR VEHICLE

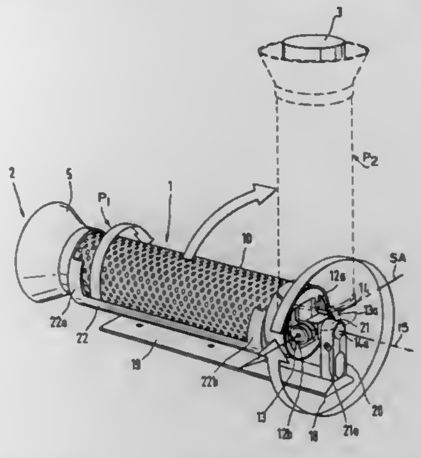
Peter Ackeret, Kuesnacht, Switzerland, assignor to fischerwerke, Artur Fischer GmbH & Co., Waldachtal, Germany

Filed Nov. 3, 1995, Ser. No. 552,580

Claims priority, application Germany, Dec. 23, 1994, 44 46 158.5

Int. Cl.^{6} B60R *7/14;* **A47G** *25/12;* **F26B** *25/06*

U.S. Cl. 224—282 **20 Claims**



1. A storage device for an umbrella in a limited space, said storage device comprising

a quiver-shaped receiving housing (**1**, **30**) having a longitudinal axis (**15**), provided with an opening (**2**) at one end for inserting and removing an umbrella (**3**) and having a base wall (**4**. **34**) at another end remote from said one end;

mounting means (**18**) for securing the receiving housing (**1**, **30**), said mounting means comprising a base plate (**19**) and a mounting pillar (**20**) arranged substantially at right angles to the base plate, said mounting pillar (**20**) including a flange (**21**); and

a joint (**13**) pivotally connecting the receiving housing (**1**, **30**) with the mounting means (**18**) so that the receiving housing (**1**, **30**) is pivotable from a stowed-away position (P1) into at least one swiveled-out position (P2) for insertion and removal of the umbrella (**3**) to and from the receiving housing (**1**, **30**);

wherein said joint (**13**) has a swivel axis (SA) about which said receiving housing (**1**,**30**) pivots and said swivel axis (SA) extends transversely to the longitudinal axis (**15**) of the receiving housing (**1**, **30**), said joint (**13**) is arranged on a side of said base wall (**4**, **34**) opposite from an interior of the receiving housing (**1**, **30**) and hingedly connects a fixing bolt (**14***a*) to the base wall (**4**, **34**) and said fixing bolt (**14***a*) is held rotatably in said flange (**21**) of said mounting means, so that said receiving housing (**1**, **30**) and said joint (**13**) are rotatable in order to facilitate insertion and removal of the umbrella in spite of limited available space.

5,709,329
EXTENDED CAB PICKUP STORAGE TRAY

Gordon Emery Johnson, P.O. Box 778, Cando, N. Dak. 58324

Filed Oct. 25, 1995, Ser. No. 548,093

Int. Cl.^{6} B60R *7/00;* **A47B** *37/00*

U.S. Cl. 224—402 **10 Claims**

1. A storage tray for use in the rear seat area of an extended cab pickup comprising:

a rectangular shelf having a left and right end said shelf further having side rails about a front edge, and a rear edge;

a left and right extendable tray floor fixedly attached to an upwardly extending left and right side rail said tray floors having a portion extending outward from said respective left and right side rail, said tray floors further being slidably connected to said rectangular shelf at said left and right end

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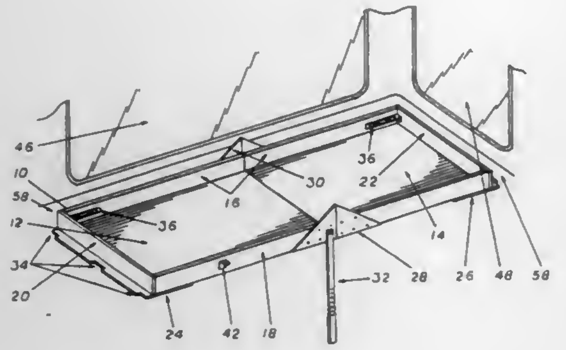


with a pair of extendable slide means so as to allow said storage tray and said left and right side rails to be extended or retracted;

a means of supporting said shelf on said right and said left end; and

a means of supporting said shelf on said rear edge.

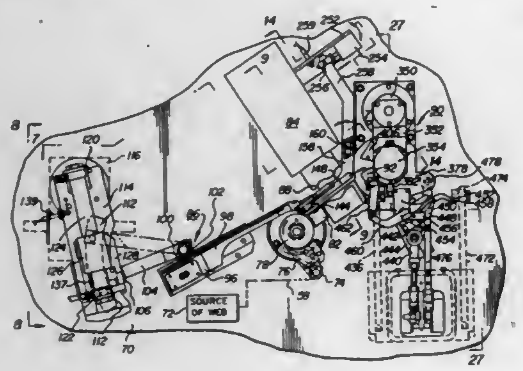
5,709,330
APPARATUS FOR PREPARING AND FEEDING STRIPS OF WEB

Joseph Albert Watkins, Rochester, and Thomas Allen Sisson, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1995, Ser. No. 427,377

Int. Cl.^{6} B65H *20/20;35/04;19/28*

U.S. Cl. 226—92 **5 Claims**



1. Apparatus for cutting and moving a leading end of a web, comprising:

a frame;

a crank mounted for rotation on the frame, the crank having at least four eccentric throws;

an upper platen;

a first pair of linear guides connected between the frame and the upper platen to permit reciprocating movement of the upper platen relative to the frame;

a first crank arm pivotably connected between the upper platen and a first of the eccentric throws;

a lower platen;

second and third crank arms pivotably connected respectively between the lower platen and a second and a third of the eccentric throws;

an upper die shoe fixedly mounted to the upper platen;

a lower die shoe fixedly mounted to the lower platen; and

a second pair of linear guides connected between the upper and the lower die shoes to guide reciprocating movement of the lower shoe relative to the upper shoe, whereby rotation of the crank causes the upper and lower die shoes to move toward and away from each other relative to the frame, to permit cutting of a web;

a slide mounted on the frame;

a shuttle arm mounted for movement on the slide along a path between the upper and lower die shoes;

an actuator arm pivotably connected to the shuttle arm;

a vacuum head pivotably mounted to the shuttle arm;

a first cam follower operatively connected to pivot the vacuum head relative to the shuttle arm;

a first cam pivotably mounted to the frame in a position to operatively engage the first cam follower;

a first link rigidly connected to the first cam;

a fourth crank arm pivotably connected between the first link and a fourth of the eccentric throws;

a first adjustable length actuator connected between the first link and the fourth crank arm, whereby timing of pivoting of the vacuum head may be changed by operating the first adjustable length actuator to pivot the first cam;

the actuator arm comprises an oscillating arm, a second, arcuate cam operatively associated with the oscillating arm, a second link pivotably connected at a first end to the shuttle arm, a second cam follower pivotably mounted to a second end of the second link and operatively engaged with the second arcuate cam, and a second adjustable length actuator connected between the oscillating arm and the second end to move the second arcuate cam follower along the arcuate cam and thereby to shorten an effective length of the actuator arm and, hence, a distance moved by shuttle arm;

means, operably cooperating with said platens, for removing a strip of web following actuation of the first and second adjustable length actuators; and,

means for rotating the crank and oscillating the actuator arm, whereby the shuttle arm is moved back and forth on the slide by the actuator arm and the vacuum head is pivoted by the first link to grip the web as the upper and lower die shoes move toward each other to cut the web, in synchronism with movement of the upper and lower die shoes.

5,709,331
METHOD FOR CALCULATING AND REGULATING THE ELONGATION OF A MOVING MATERIAL WEB, AND DEVICE FOR APPLYING THE METHOD

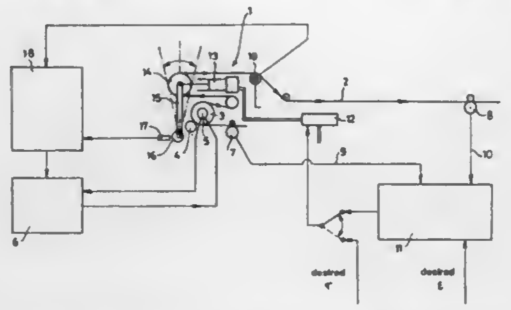
Theodorus Hendrikus Louis Maria Lam, Boven-Leeuwen, and Theodoor Antonius Buchmeijer, Geldrop, both of Netherlands, assignors to Stork Contiweb B.V., Boxmeer, Netherlands

Filed Apr. 8, 1996, Ser. No. 629,091

Claims priority, application Netherlands, Apr. 12, 1995, 1000128

Int. Cl.^{6} B65H *23/18;* **G06F** *19/00*

U.S. Cl. 226—4 **20 Claims**



1. In a web tension regulating device, a method for calculating and regulating the elongation of a moving material web that is driven by a drive roller, the method comprising the steps of:

applying a constant tensioning force on the material web downstream of the drive roller;

measuring an operating parameter of the moving material upstream of the drive roller, at discrete time intervals;

measuring the same operating parameter of the moving material web downstream of the drive roller at the same time intervals that the operating parameter is measured upstream of the drive roller;

determining the change in the operating parameter based on the measurements made upstream and downstream of the drive roller;

calculating the elongation of the material web based on the change in the operating parameters;

comparing the calculated elongation of the material web to a predetermined desired elongation value; and

adjusting the constant tensioning force applied on the material web downstream of the drive roller based upon the comparison of the calculated elongation and the desired elongation to set the elongation at the desired elongation value.

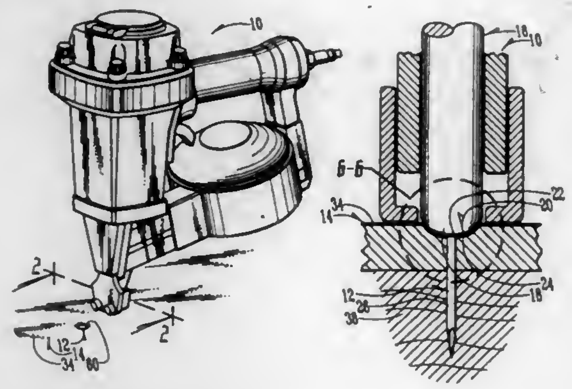
5,709,332
NAIL DRIVING SYSTEM

Jeffrey D. Coop, 4408-62nd St., Urbandale, Iowa 50322

Continuation of Ser. No. 276,783, Jul. 18, 1994, abandoned. This application Apr. 28, 1995, Ser. No. 431,099

Int. Cl.^{6} B25C *1/00*

U.S. Cl. 227—66 **3 Claims**



1. A nail gun comprising,

a housing having an outer end mounted to abut against a nailing surface of a work piece during a firing operation,

a nail having a head and a shank, said head having top and bottom surfaces with said bottom surface having a convex shape; and

a means for forming a dimple in the nailing surface of the work piece including a driver blade moveable in said housing for moving said nail, said driver blade having an outer end surface convex in shape and larger in diameter than said nail, said driver blade and nail moving independently of the housing during the firing operation of said gun such that the nail head convex bottom surface and said driver blade convex surface engage the nailing surface of the work piece as substantially one continuous convex surface.

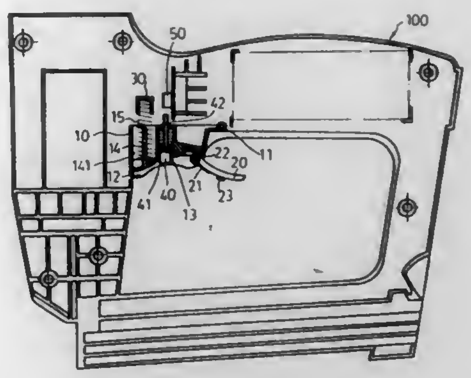
5,709,333
SAFETY DEVICE FOR A STAPLING GUN

Hsiu-Huang Wang, and Meng-Chieh Chen, both of Taichung, Taiwan, assignors to Regitar Power Tools Co., Ltd., Taiwan

Filed Nov. 25, 1996, Ser. No. 755,374

Int. Cl.^{6} B25C *1/04*

U.S. Cl. 227—130 **1 Claim**



1. A safety device for a stapling gun comprising a first switch button having an end pivotally mounted on a housing of a stapling gun, another end of said first switch button having a recess formed with a vertical rod on which is fitted a first spring, an inner side of said housing being provided with a switch and an inverted U-shaped member which is located right above said recess, said first spring being arranged between said recess of said first switch button and said inverted U-shaped member, a lower side of said first switch button having a groove, an intermediate portion of said first switch button being formed with a vertical passage which is in communication with said groove, a second switch button being pivotally connected with an end of said first switch button, a second spring being installed to push said second switch button to go outwardly from said groove, said second switch button being contoured to fit into said groove and having a protuberance adapted to fit into said vertical passage, a shaft fitted within said vertical passage and enclosed with a second spring, an upper end of said shaft extending upwardly out of said vertical passage and engaged with a C-shaped retainer thereby preventing said shaft from disengaging from said vertical passage, whereby when said first switch button is depressed, said first switch button will be blocked by said inverted U-shaped member so that said first switch button cannot go further into said housing thereby preventing the shaft from pushing on said switch and when said second switch button is depressed in said first switch button, said protuberance of said second switch button will force said shaft to move upwardly to push on said switch.

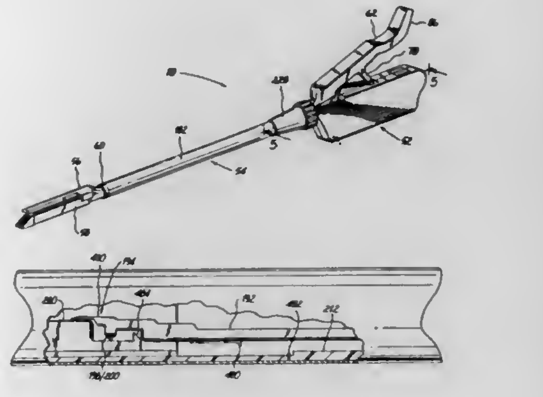
5,709,334
SURGICAL APPARATUS FOR APPLYING SURGICAL FASTENERS

Gregory Sorrentino, Wallingford, and Alim Alli, East Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 134,239, Oct. 8, 1993, Pat. No. 5,487,499. This application Jan. 25, 1996, Ser. No. 591,096

Int. Cl.^{6} A61B *17/068*

U.S. Cl. 227—175.3 **6 Claims**



1. A surgical apparatus for driving surgical fasteners comprising:

a) a frame portion;

b) an elongated body portion extending distally from said frame portion;

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- c) a fastener applying assembly operatively associated with a distal end portion of said body portion and including:
  - i) a compatible cartridge member removably mountable in said distal end portion and having a plurality of surgical fasteners disposed therein, said compatible cartridge member having a first predetermined set of firing characteristics; and
  - ii) an anvil member mounted adjacent said compatible cartridge member and against which said fasteners are driven when ejected from said compatible cartridge member, said anvil member configured to correspond to said first predetermined set of firing characteristics;
- d) fastener ejection means actuable from said frame portion for sequentially ejecting said plurality of surgical fasteners from said compatible cartridge member; and
- e) identification means associated with said fastener ejection means for permitting actuation thereof when said compatible cartridge is inserted within said distal end portion and for preventing actuation thereof when an incompatible cartridge member having fasteners disposed therein and having a second set of predetermined firing characteristics different from the first predetermined set of firing characteristics is inserted within said distal end portion of said body portion.

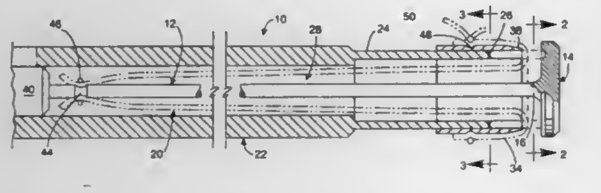
5,709,335
SURGICAL STAPLING INSTRUMENT AND METHOD THEREOF

Christopher Francis Heck, Palo Alto, Calif., assignor to Heartport, Inc., Redwood City, Calif.

Continuation of Ser. No. 261,167, Jun. 17, 1994, abandoned. This application Oct. 31, 1995, Ser. No. 550,285

Int. Cl.^{6} A61B *17/068*

U.S. Cl. 227—176.1 **43 Claims**



23. A surgical stapling instrument for stapling a tubular tissue structure having at least one distal end to a luminal structure such as a vascular lumen or another tubular tissue structure, comprising:
  - an elongated rod having a transverse cross-sectional dimension sufficient to pass within the tubular tissue structure;
  - an anvil coupled to said rod and configured to be positioned through a surgically formed opening in and to be accommodated within luminal structure;
  - a staple cartridge containing a plurality of staples and having an inner surface defining an inner passage extending from a proximal end to a distal end thereof, said passage being sufficiently dimensioned to axially accommodate the tubular tissue structure between said rod and the inner surface from the proximal end to the distal end of said staple cartridge, said staple cartridge further having an outer dimension sufficiently small to enable an everted portion of the tubular tissue structure to be everted over the distal end of said staple cartridge; and
  - at least one driver pin moveable relative to said staple cartridge for ejecting said plurality of staples through the everted portion of the tubular tissue structure and the luminal structure to engage said anvil to deform said staples and create a bond between the tubular tissue structure and the luminal structure.

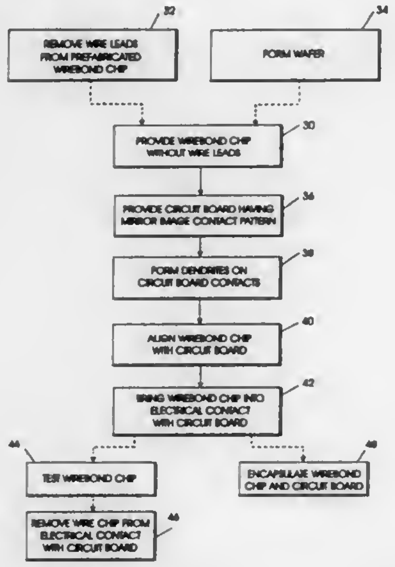
5,709,336
METHOD OF FORMING A SOLDERLESS ELECTRICAL CONNECTION WITH A WIREBOND CHIP

Anthony Paul Ingraham, and William Tze-You Chen, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1996, Ser. No. 656,628

Int. Cl.^{6} H05K *3/32*

U.S. Cl. 228—116 **7 Claims**


32
REMOVE WIRE LEADS FROM PREFABRICATED WIREBOND CHIP
34
FORM WAFER
30
PROVIDE WIREBOND CHIP WITHOUT WIRE LEADS
36
PROVIDE CIRCUIT BOARD HAVING MIRROR IMAGE CONTACT PATTERN
38
FORM DENDRITES ON CIRCUIT BOARD CONTACTS
40
ALIGN WIREBOND CHIP WITH CIRCUIT BOARD
42
BRING WIREBOND CHIP INTO ELECTRICAL CONTACT WITH CIRCUIT BOARD
44
TEST WIREBOND CHIP
48
ENCAPSULATE WIREBOND CHIP AND CIRCUIT BOARD
46
REMOVE WIRE CHIP FROM ELECTRICAL CONTACT WITH CIRCUIT BOARD

1. A method for forming a solderless electrical connection with a wirebond chip comprising:
  - providing a wirebond chip having an active surface and a plurality of electrical contacts disposed in predetermined pattern on said active surface;
  - providing an substrate having an wiring surface, a pre-defined electrical circuit disposed within said board, and a plurality of electrical contact disposed on surface and arranged in a pattern that is a matching mirror image of the predetermined pattern of electrical contacts disposed on the active surface of the wirebond chip;
  - forming a plurality of electrically conductive dendrites, on each of the electrical contacts on the substrate.
  - aligning the wirebond chip with the substrate so that each of the electrical contacts on the wirebond chip is aligned with a respective dendrite-surfaced electrical contact on the substrate;
  - bringing the electrical contacts of the wirebond chip into contact with the respectively aligned dendrite-surfaced electrical contacts on the substrate; and
  - maintaining the electrical contacts of the wirebond chip in contact with the respectively aligned dendrite-surfaced electrical contacts on the substrate with sufficient force to cause the dendrites on the surface of the electrical contacts of the substrate to penetrate the surface of the respectively aligned electrical contacts of the wirebond chip.

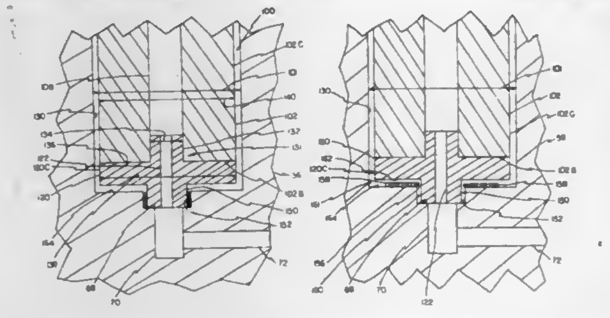
5,709,337
MOUNTING ASSEMBLY FOR A PRESSURE TRANSMITTER

Thomas M. Moser, Minneapolis; Charles R. Dolezalek, Blaine; Michael B. Jost, Savage, and Mark H. Olson, Minneapolis, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Division of Ser. No. 430,743, Apr. 28, 1995, abandoned. This application Oct. 8, 1996, Ser. No. 731,029

Int. Cl.^{6} B23K *31/02*

U.S. Cl. 228—124.6 **10 Claims**



6. A method for joining a support of a pressure transmitter used to support a pressure sensor in a sensor cavity to a support surface of a header of the pressure transmitter, the support surface having an aperture, the method comprising:
  - providing a support having an extending portion and an annular surface disposed about the extending portion;
  - positioning the support in the sensor cavity wherein the aperture receives the extending portion and the annular surface faces and is positioned in close proximity to the support surface without making contact with the support surface;
  - locating a meltable preform between the support surface and the annular surface of the support, the preform having a width less than a distance of a gap between the support surface and the annular surface;
  - heating the meltable preform to melt the preform so that the melted preform flows into the aperture in order that the support is joined to the header at only the extending portion.

5,709,338
SOLDERING METHOD

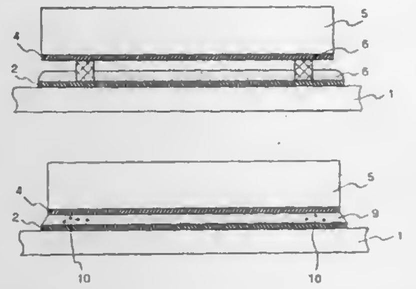
Mitugu Shirai; Hideaki Sasaki, and Takeshi Takahashi, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 636,186

Claims priority, application Japan, Apr. 24, 1995, 7-098637

Int. Cl.^{6} B23K *1/19;35/14;35/24*

U.S. Cl. 228—226 **7 Claims**



1. A soldering method comprising the steps of: supplying at least two solder portions, each portion having a height corresponding to the melting point of said each portion between said joint surfaces, wherein the highest solder portion has the highest melting point; keeping an interval of the members to be joined at a predetermined distance by said solder portion having the highest melting point; holding both of the members so that there is a gap of a predetermined distance between at least one solder portion having a lower melting point and one of the members; and melting said at least one solder portion having a lower melting point and, thereafter, melting the solder portion having the highest melting point, thereby joining the two members.

5,709,339
SANITARY MIXING FAUCET WITH THERMOSTAT CONTROL

Konrad Bergmann, Wittlich, Germany, assignor to Ideal-Standard GmbH, Bonn, Germany

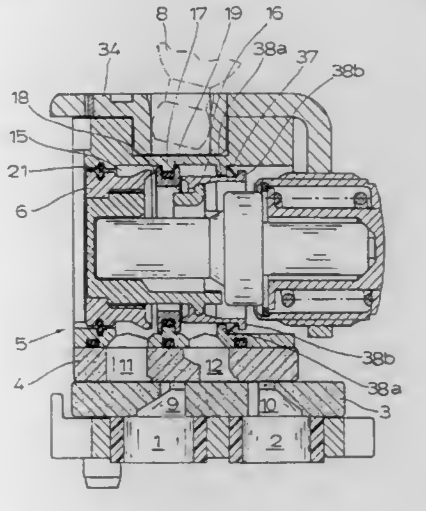
PCT No. PCT/EP94/01329, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/26989, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 553,261

Claims priority, application Germany, May 12, 1993, 43 15 702.5; Jul. 22, 1993, 43 24 547.1

Int. Cl.^{6} G05D *23/13*

U.S. Cl. 236—12.2 **16 Claims**



1. Sanitary mixing faucet with thermostat control, with cold water supply (**1**), hot water supply (**2**), and a mixed water discharge, with a means which radially surrounds control piston (**6**), preferably temperature control block (**5**), with temperature-dependent control element (**7**) which interacts with control piston (**6**), with an actuating lever and with reset spring element (**37**) which loads control piston (**6**) in the direction to control element (**7**), cold water annulus (**15**) and adjacent hot water annulus (**16**) being provided and control piston (**6**) being adjustable for temperature control relative to temperature control block (**5**) into a temperature-determining neutral position and being controllable for temperature control by means of control element (**7**), wherein reset spring element (**37**) is located between temperature control block (**5**) and control piston (**6**), and on the one hand, is supported on temperature control block (**5**), preferably on an inner jacket of the control piston, and on the other hand, on an outer jacket of control piston (**6**).

5,709,340
ARTICLE HAVING MICROENCAPSULATED ADHESIVE THEREON

Hung Ya Chan, Dayton, N.J., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 997,558, Dec. 28, 1992. This application Aug. 18, 1995, Ser. No. 516,876

Int. Cl.^{6} B32B *3/26;* **B65D** *27/16;* **G09F** *3/10*

U.S. Cl. 229—80 **3 Claims**

1. An article, having applied to at least a portion of its surface, a microencapsulated adhesive composition produced by microencapsulating a solvent-based adhesive; followed by removing at least a portion of the solvent from said microcapsules by subjecting the

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microcapsules to a selected temperature and pressure for a time sufficient to cause at least a portion of said solvent to diffuse through said microcapsule walls, thereby forming an adhesive composition that is initially non-tacky but exhibits tacky properties upon application of external forces.

2. A stamp, having applied to at least a portion of its surface, a microencapsulated adhesive composition comprising:

a solvent-based adhesive selected from the group consisting of styrene butadiene rubber and an arylic adhesive, encapsulated in microcapsules, wherein said microencapsulated adhesive is initially non-tacky but exhibits tacky properties upon application of external forces.

5,709,341

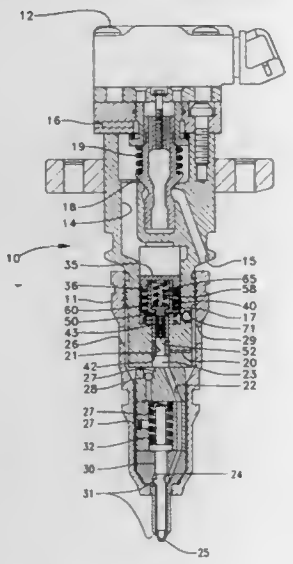
TWO-STAGE PLUNGER FOR RATE SHAPING IN A FUEL INJECTOR

Eric N. Graves, Manchester, N.H., assignor to Caterpillar Inc., Peoria, Ill.

Filed May 3, 1996, Ser. No. 642,293

Int. Cl.⁶ F02M *51/06*

U.S. Cl. 239—92 **18 Claims**



10. A fuel injector comprising:

an injector body having a plunger bore that opens to a fuel supply passage and a nozzle chamber, and having a piston bore, and also a nozzle outlet that opens to said nozzle chamber;

a piston positioned to reciprocate in said piston bore between an upper position and a lower position;

an outer plunger having an inner bore and being positioned to reciprocate in said plunger bore between an advanced position and a retracted position;

an inner plunger positioned to reciprocate in said inner bore of said outer plunger over a rate shaping distance;

portions of said plunger bore, said outer plunger and said inner plunger defining a fuel pressurization chamber that opens to said nozzle chamber;

at least one of said inner plunger and said outer plunger having a rate shaping spill port that opens said fuel pressurization chamber to a low pressure spill passage over a portion of its downward stroke;

a check valve positioned in said fuel supply passage and being operable to prevent flow of fuel from said fuel pressurization chamber back into said fuel supply passage;

a needle check positioned to reciprocate in said nozzle chamber between a closed position that closes said nozzle outlet and an open position that opens said nozzle outlet, said needle check including at least one hydraulic lift surface exposed to said nozzle chamber; and

means, within said injector body, for biasing said needle check toward said closed position.

5,709,342

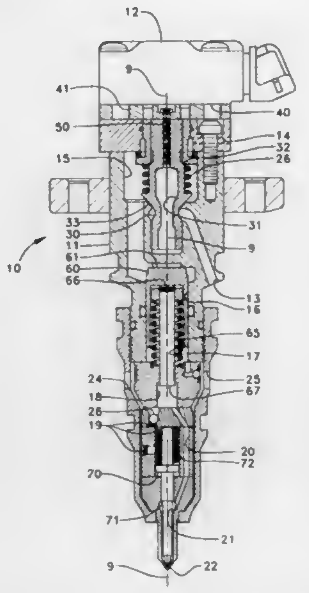
VENTED ARMATURE/VALVE ASSEMBLY AND FUEL INJECTOR UTILIZING SAME

David B. McCauley, Indianapolis, Ind., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 9, 1995, Ser. No. 555,735

Int. Cl.⁶ B05B *1/30*

U.S. Cl. 239—585.5 **20 Claims**



13. A hydraulically actuated fuel injector comprising:

an injector body having an actuation fluid cavity that opens to an actuation fluid inlet, an actuation fluid drain and a piston bore, and having a plunger bore that opens to a nozzle supply bore and a fuel supply passage, and also having a nozzle chamber that opens to said nozzle supply bore and a nozzle outlet;

an intensifier piston positioned to reciprocate in said piston bore between an upper position and a lower position;

a plunger having a side surface extending between a contact end and a pressure face end and being positioned to reciprocate in said plunger bore between an advanced position and a return position;

a portion of said plunger bore and said pressure face end of said plunger defining a fuel pressurization chamber;

a one way valve positioned in said fuel supply passage and being operable to prevent fluid flow into said fuel supply passage from said fuel pressurization chamber;

a needle check positioned to reciprocate in said nozzle chamber between a closed position that closes said nozzle outlet and an open position that opens said nozzle outlet, said needle check including a hydraulic lift surface exposed to said nozzle chamber;

means, within said injector body, for biasing said needle check toward said closed position;

a solenoid having an electromagnetic coil and an armature attached to said injector body;

said armature having an upper surface, a lower surface and a screw hole extending through said upper surface and said lower surface;

a valve member positioned in said actuation fluid cavity and having an axis, a first end, a second end, an outer surface extending between said first end and said second end, a threaded hole extending through said first end along said axis, an opening through said second end and a hollow interior that opens to said threaded hole and said opening;

a vented screw having a screw axis, a head and a rod portion aligned with said screw axis attached to said head and a vent hole extending through said rod portion and said head along said screw axis;

said rod portion having threads that fit said threaded hole of said valve member;

said vented screw extending through said screw hole of said armature and being threaded into said threaded hole such that said valve member moves with said armature;

said valve member having a first position in which said actuation fluid inlet is open to said actuation fluid cavity, but said outer surface closes said actuation fluid drain to said actuation fluid cavity, and having a second position in which said actuation fluid drain is open to said actuation fluid cavity, but said outer surface closes said actuation fluid inlet to said actuation fluid cavity; and

said valve member being shared and sized such that an amount of fluid must be dispaced toward said hollow interior through said vent hole when said valve member moves from said second position to said first position.

5,709,343

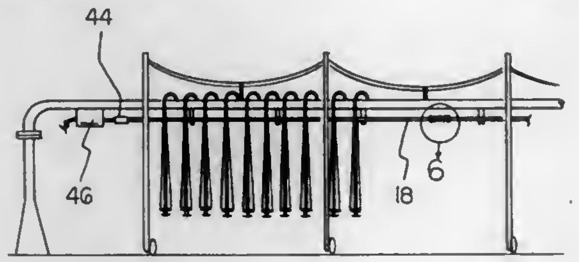
ADJUSTABLE DROP NOZZLE SYSTEM

Larry L. Myers, 58385 Hwy. 59, Haxtun, Colo. 80731-9409

Filed Jan. 3, 1996, Ser. No. 582,477

Int. Cl.⁶ B05B *3/00*

U.S. Cl. 239—730 **1 Claim**



1. A new and improved nozzle assembly for a center pivot irrigation system comprising in combination:

at least one sprinkler head;

sprinkler head support means to which the at least one sprinkler head is operably attached;

height adjustment means operably attached to said sprinkler head support means, the height adjustment means being operable to selectively raise and lower the at least one sprinkler head relative to a ground surface, the adjustment means having at least one cable attached to the sprinkler head support means, the at least one cable is selectively windable about a rotatable member, thereby to selectively raise and lower the at least one sprinkler head relative the ground surface;

the rotatable member having an elongated bar rotatably mounted along a length of water supply tubing forming a part of the center pivot irrigation system;

a coupling means attachable to a selected end of said elongated bar, said coupling means facilitating an interconnection of at least two elongated bars so as to extend an operable length thereof, whereby a plurality of sprinkler heads can be attached thereto, the coupling means being designed to transmit torque between the at least two elongated bars during a rotational movement of the at least two bars, the coupling means having a coiled spring section, the coil spring section functioning to transmit the torque while also compensating for misalignment between the at least two bars; and

the rotatable member having at least one spool fixedly secured thereto, the at least one cable of the height adjustment means being selectively windable about the at least one spool, the rotatable member having an elongated bar rotatably mounted along a length of water supply tubing forming a part of the center pivot irrigation system, the at least one spool being fixedly secured to the elongated bar, the rotatable member having at least one other spool fixedly secured thereto, the rotatable member having at least one other cable being selectively windable about the one other spool, the at least one other spool being fixedly secured to the elongated bar.

5,709,344

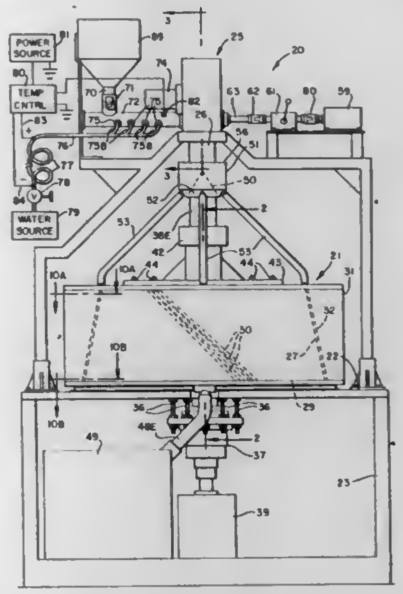
GRAIN DE-ACIDIZING PROCESS

Virgil Louis Archer, 1218 Nokomis Rd., Lancaster, Tex. 75146-5539

Continuation of Ser. No. 262,606, Jun. 20, 1994, Pat. No. 5,542,616. This application Aug. 5, 1996, Ser. No. 692,329

Int. Cl.⁶ B02C *9/00;9/04*

U.S. Cl. 241—7 **17 Claims**



1. A grain treatment process comprising:

a) transporting grain to a grain heater, said grain having grain cores and outer layers;

b) heating the grain in the grain heater for a short period of time to rapidly heat the outer layers of the grain to a desired temperature without significantly heating the grain cores;

c) temperature shocking the grain by rapidly cooling the heated outer layers, thus

d) rapidly contracting the outer layers of the grain and causing the outer layers of the grain to crack and loosen from the grain cores; and

e) removing the cracked and loosened outer layers from the grain cores.

5,709,345

FINE POWDER HEAT TREATING APPARATUS

Takahiro Yamamoto; Masahiko Takami; Hiroshi Seno; Masami Yabuuchi; Miyuki Hirase; Yoshitsugu Yamada, and Masayoshi Katsube, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 172,480, Dec. 21, 1993, abandoned. This application Apr. 15, 1996, Ser. No. 632,709

Claims priority, application Japan, Dec. 22, 1992, 4-342167; Oct. 5, 1993, 5-249321; Oct. 13, 1993, 5-255732; Nov. 2, 1993, 5-274313

Int. Cl.⁶ B02C *17/00*

U.S. Cl. 241—17 **19 Claims**

19. A method of fabricating heat-treated fine powder in which a ceramic slurry containing fine ceramic powder and a liquid component is subjected to a heat treatment operation, to obtain a fine powdered material, comprising the steps of:

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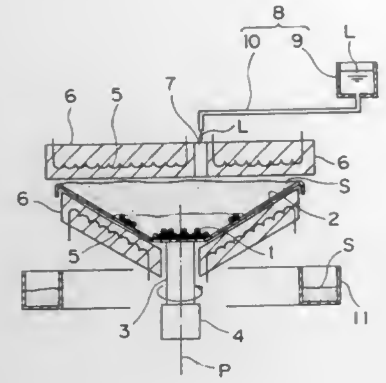


supplying said ceramic slurry to a container containing rolling media; and

heating said rolling media and said container to a temperature sufficient to vaporize the liquid component and to heat-treat the fine ceramic powder, while said ceramic slurry and said rolling media are being mixed with each other.

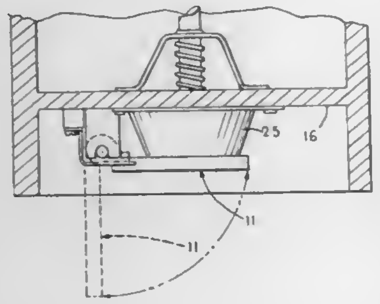
5,709,346
CATCHER DEVICE FOR CONDIMENT MILL

William E. Bounds, deceased, late of Torrance, Calif., and by Helen J. Bounds, executrix, 3737 W. 240th St., Torrance, Calif. 90505

Filed Apr. 22, 1996, Ser. No. 635,738

Int. Cl.⁶ A47J *42/38*

U.S. Cl. 241—169.1 4 Claims



1. A catcher device for catching condiment grinding from a condiment mill, said mill having a base portion and a grinder housing mounted on said base portion comprising:

- a cover,
- means for pivotally supporting said cover on the base portion of the mill, and
- spring means mounted on the base portion of the mill for resiliently urging the cover towards a closed position opposite the grinder housing and for retaining said cover in an position when the cover is manually retracted to said open position,
- said spring means comprising a leaf spring having first and second sections which are substantially parallel to each other and are interconnected by a third section which is substantially normal to said first and second sections, said first spring section being attached to the base portion of the mill, said cover having a slot formed therein, said second spring section extending into said slot when the cover is other than in its closed position, said second spring section being withdrawn from said slot when said cover is in the closed position.

5,709,347
DEVICE FOR ELECTROMAGNETICALLY BRAKING AND CLUTCHING A SPOOL

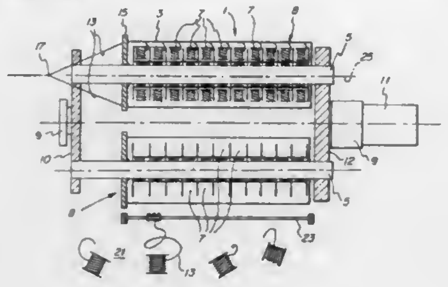
Ernst Hoffmann, Langenhagen; Wolfram Klebl, Isernhagen, and Harry Staschewski, Langenhagen, all of Germany, assignors to Alcatel Kabel AG & Co, Germany

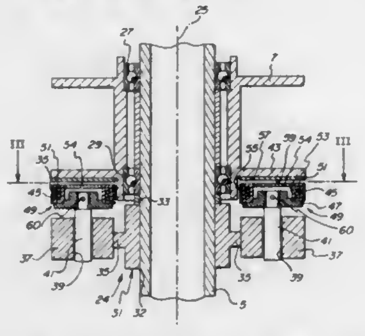
Filed Jul. 23, 1996, Ser. No. 687,081

Claims priority, application Germany, Jul. 24, 1995, 195 26 913.6

Int. Cl.⁶ B65H *75/30;59/02;* **D02G** *3/36*

U.S. Cl. 242—46.4 12 Claims





1. A device for electromagnetically braking and clutching at least one storage spool rotatably mounted on a hollow shaft for rotation around a longitudinal axis of the hollow shaft, from which strand-shaped material can be drawn and onto which strand-shaped material can be wound when the storage spool is driveably connected to the hollow shaft, the device comprising:

- (a) a generally star-shaped support unit located on the hollow shaft, the star-shaped support unit having a plurality of holding devices, each of the holding devices are on a peripheral portion of the star-shaped support, the holding devices extending outwardly in a radial direction from and being securely affixed to the hollow shaft; and
- (b) at least one electrically excitable magnet coil held by at least one of said holding devices of the support unit and spaced radially from the hollow shaft.

5,709,348
TAPE TENSION ADJUSTING DEVICE FOR USE IN A VIDEO CASSETTE RECORDER

Tae-Woo Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1996, Ser. No. 773,289

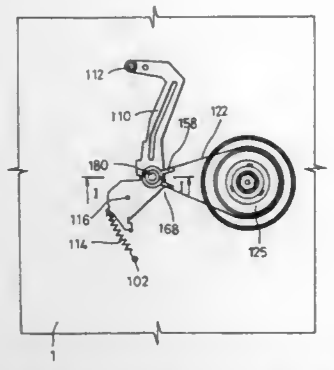
Claims priority, application Rep. of Korea, Dec. 26, 1995, 95-56874

Int. Cl.⁶ B65H *59/38;* **G11B** *15/46;23/42*

U.S. Cl. 242—334.6 8 Claims

1. A tape tension adjusting device for use in a video cassette recorder, which comprises:

- a tension lever rotatably fixed to a deck through a hinge pin, the tension lever being provided with a tension pole at one end and a boss disposed between the tension pole and the hinge pin;
- an upper and a lower band brake holders holding both ends of a band brake, respectively, the upper and the lower band brake holders being rotatably fitted on the boss of the tension lever in such a way that the band brake is partially wrapped around a supply reel table; and



- means for biasing the tension lever to allow the tension pole to exert a pressing force on a magnetic tape.

5,709,349
MOTORIZED ROLLER DEVICE EQUIPPED WITH ADJUSTABLE AUTOMATIC STOP

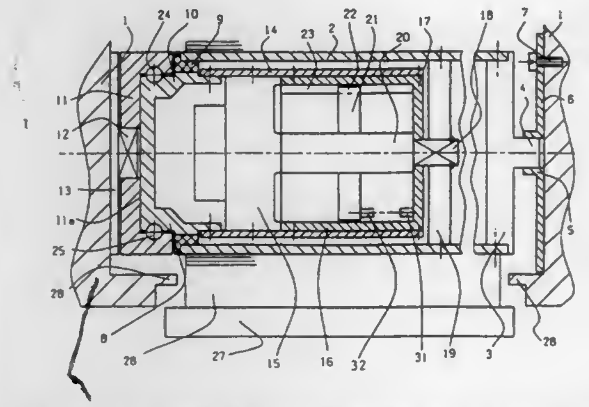
Jean Jacques Marie De Chevron Villette, Annecy le Vieux; Jean-Michel Perache, Passy, and Eric Lagarde, Sallanches, all of France, assignors to Somfy, France

Filed May 22, 1996, Ser. No. 651,346

Claims priority, application France, Jun. 14, 1995, 95 07084

Int. Cl.⁶ B65H *75/34;* **E06B** *9/88*

U.S. Cl. 242—390.1 7 Claims



1. A device for rolling up a roll-up element such as a blind, roller shutter or the like, comprising a roller tube (**2**) inside which there are housed an electric motor and speed reduction gear (**15**) which are mounted in a tubular housing (**14**) fixed by one of its ends to a cheek intended to be fixed to a support (**13**), together with means (**19**) for coupling the reduction gear to the roller tube, means for automatically stopping the motor when the roll-up element (**26**) is completely rolled up and means for automatically stopping the motor when the roll-up element has reached a desired state of unrolling, the device further comprising means for detecting that the motor is blocked, causing the motor to be stopped in the event of such blockage being detected, and means for adjusting the stopping point of the motor corresponding to the desired state of unrolling, said device comprises, mounted in said tubular housing (**14**), a screw (**20**) driven by said reduction gear and carrying a traveling nut (**21**) prevented from rotating and at least one fixed non-adjustable stop (**17;31**) limiting the travel of the traveling nut in one of the directions in which it moves along the screw, and wherein said cheek (**8**) is mounted so as to be able to rotate on said support, means (**24**, **25**; **29**) being provided for immobilizing the cheek on its support, the motor being stopped when the roll-up element is completely rolled up, by detecting blockage of the motor brought about by the end (**27**) of the roll-up element coming against a stop (**28**), the motor being stopped when the blind has reached the desired state of unrolling, by detecting blockage of the motor brought about by the traveling nut (**21**) coming against the stop (**17**; **31**), the corresponding stopping point being adjusted by manually rotating said cheek.

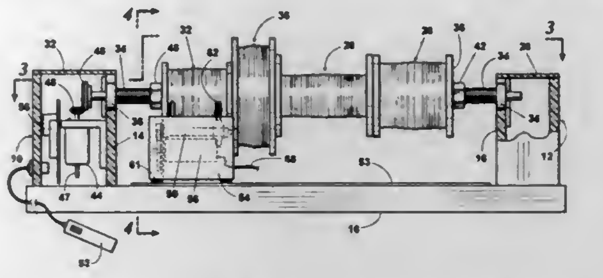
5,709,350
DEVICE FOR TRANSFERRING FISHING LINE

Joseph Louis Davis, 1708 S. 5th Pl., Broken Arrow, Okla. 74012, and Harold A. Demarest, 4715 W. 88th St., Tulsa, Okla. 74132

Filed Feb. 14, 1996, Ser. No. 601,096

Int. Cl.⁶ B65H *75/30;54/02*

U.S. Cl. 242—390.8 19 Claims



1. A device for paying out and taking in fishing line to and from a fishing reel spool which comprises;

- a base;
- two spaced apart upright support members supported from said base;
- a spool support rod between said two spaced apart upright support members;
- a supply spool mounted on said spool support rod in a manner to be rotated therewith;
- a takeup spool mounted on said spool support rod in a manner to be rotated therewith;
- said rod rotatable in a spool takeup direction or spool discharge rotational direction;
- an electric motor for driving said rod in a spool take-up rotational direction;
- means to apply drag resistance through said motor to said rod while said rod is rotating in a spool discharge direction.

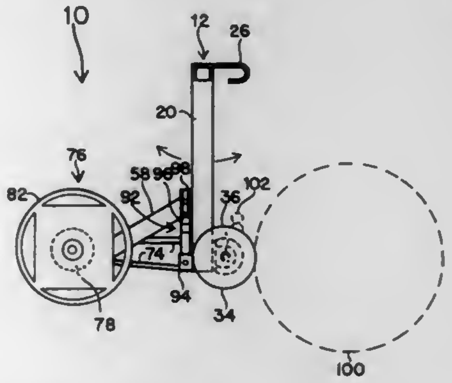
5,709,351
WIRE ROLLER

Melvin Osborn, and Esther Osborn, both of 4032 Osborn Loop, American Falls, Id. 83211

Filed Jan. 16, 1996, Ser. No. 587,139

Int. Cl.⁶ B65H *75/42*

U.S. Cl. 242—391.3 10 Claims



1. A mechanism mounted on a vehicle with a wheel for taking up or feeding out flexible material, comprising:

- a frame hingedly mountable, at one end thereof on the vehicle;
- an extension arm mounted to the frame and extending out therefrom, the outer end of the extension arm located at the other end of the frame;
- a spool rotatably attached to the outer end of the extension arm, for holding flexible material;
- a cylindrical drum mounted to the frame at the other end thereof and which is held in contact by gravity with the entire surface of the vehicle wheel and is turned by friction with said vehicle wheel and is connected to the spool by means of a belt.

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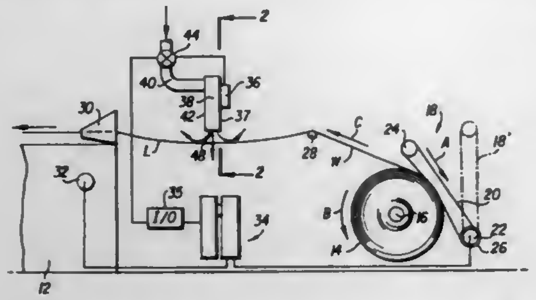
5,709,352
ZERO TENSION WEB UNWINDER APPARATUS AND METHOD

Jeffery Kane Rogers; Gary Micheal Jackson; Wallace Ray Lassiter, and Carl Carlton Greene, Jr., all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jul. 29, 1996, Ser. No. 681,737
Int. Cl.^{6} B65H *23/185*
U.S. Cl. 242—417.1 17 Claims

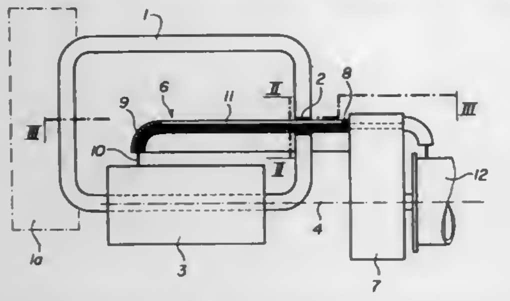


1. Apparatus for the substantially tensionless unwinding of gossamer web materials wound on a bobbin comprising:
- means supporting the bobbin for rotation;
- means for rotating the bobbin in a direction to unwind the web therefrom;
- a web handling means located downstream of the bobbin supporting means for taking up said web, said web handling means having means for generating a first output signal corresponding to the take-up speed of the web handling means, said web passing along a path of travel from said bobbin to said web handling means and forming a web loop therebetween;
- sensor means disposed in non-contacting, spaced relation to the web loop along said path of travel for sensing the position of the web loop, said sensor means having a second output signal corresponding to the position of the web loop;
- control means for receiving the first and second output signals and for transmitting a control signal generated based on the first and second output signals to said rotating means so as to rotate said bobbin at a speed sufficient to maintain said web in a substantially tensionless state; and
- means for impinging a low pressure air stream on said web loop adjacent the sensor means.

5,709,353
WINDING DEVICE FOR FORMING AN ELECTRIC COIL ON A MAGNETIC CIRCUIT WITH AN AIR-GAP

Frédéric Cattaneo, Monnetier-Mornex; Régis Mentzer, Vetraz-Monthoux, both of France, and Pierre Strubin, Bellevue-Geneve, Switzerland, assignors to Liaisons Electroniques-Mecaniques LEM S.A., Geneva, Switzerland

Filed Aug. 2, 1996, Ser. No. 691,688
Claims priority, application Switzerland, Aug. 4, 1995, 2266/95
Int. Cl.^{6} H01F *41/06*
U.S. Cl. 242—439.5 8 Claims

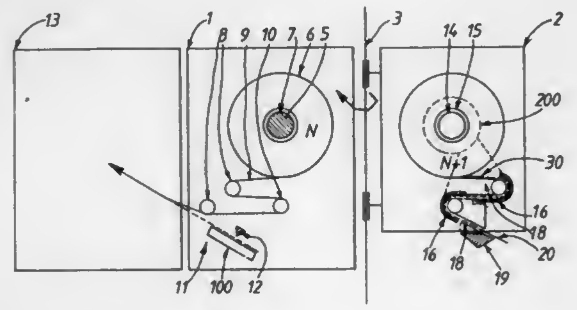


1. A winding device for forming a substantially cylindrical electric coil, having an axis, on a substantially rectilinear arm of a magnetic circuit having an air-gap of a very small length as compared to the length of the magnetic circuit, said air-gap crossing the magnetic circuit in a direction substantially parallel to said rectilinear arm, said winding device comprising at least one rigid wire guide member having a wire inlet portion and a wire outlet portion and an elongated intermediary portion extending in a direction substantially parallel to the axis of the coil to be formed, the distance from said intermediary portion to said coil axis being equal to the distance between said air-gap and said axis, said intermediary portion having a cross-section such that said intermediary portion can pass through said air-gap when said wire guide member and said magnetic circuit are effecting, with respect to each other, a rotary movement about said coil axis and a reciprocating movement in the axial direction of said coil, said wire guide member being mounted in the vicinity of its wire inlet portion on a carrier device and said magnetic circuit being supported by a supporting device, at least one of said carrier device and said supporting device being arranged for having said wire guide member and said magnetic circuit effect said rotary and reciprocating movements with respect to each other.

5,709,354
LOADING APPARATUS FOR AN UNWINDER

Christophe Louis Michel Blandin, and Guy Roulleau, both of Chalon sur Saone, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 5, 1996, Ser. No. 596,808
Claims priority, application France, Mar. 22, 1995, 95 03574
Int. Cl.^{6} B65H *19/00;21/00;69/00*
U.S. Cl. 242—551 5 Claims

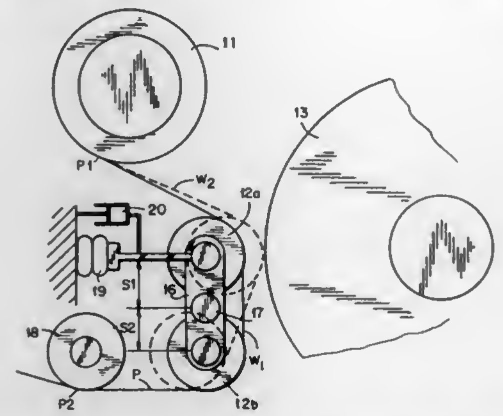


1. A loading apparatus for loading a first roll of web material for unwinding, comprising:
- an unwinding apparatus having a first rotating shaft adapted to receive the first roll, said unwinding apparatus having a first circulation loop and tensioning means for providing a predetermined tension in the web material;
- a preparation apparatus including a second rotating shaft supporting the first roll, a second circulation loop having a geometry substantially similar to said first circulation loop, and means for maintaining the web along said second circulation loop;
- moving means for moving said preparation apparatus in registration with said unwinding apparatus to substantially align said first shaft with said second shaft and said first circulation loop with said second circulation loop;
- a joining station for joining a leading end of the first roll of web material with a trailing end of a second roll of web material, said joining station being disposed downstream of said first circulation loop and said tensioning means; and
- transfer means for transferring the first roll of web material from said second shaft and said second circulation loop to said first shaft and said first circulation loop, respectively.

5,709,355
SPLICING DEVICE FOR A CONTINUOUS UNWIND STAND

Jorma Kinnunen, Helsinki, and Silvo Mikkonen, Vantaa, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

PCT No. PCT/FI95/00345, § 371 Date Feb. 15, 1996, § 102(e) Date Feb. 15, 1996, PCT Pub. No. WO95/34496, PCT Pub. Date Dec. 21, 1995
PCT Filed Jun. 14, 1995, Ser. No. 600,936
Claims priority, application Finland, Jun. 16, 1994, 942869; Apr. 28, 1995, 952038
Int. Cl.^{6} B65H *19/18*
U.S. Cl. 242—555.3 22 Claims

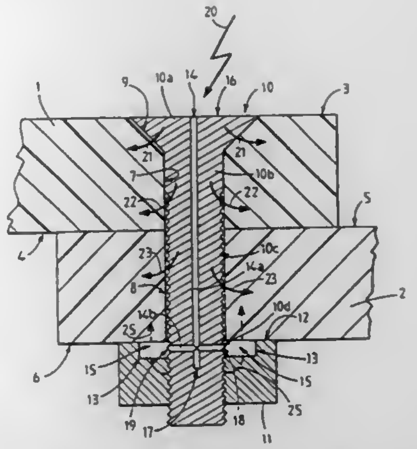


1. A splicing device for a continuous unwind stand, by means of which device a new machine reel (**13**) brought to the unwind stand is connected at full speed with a web (P) of a machine reel (**11**) that is being emptied, which splicing device comprises a splicing roll (**12***a*), by whose means the web of the machine reel (**11**) that is being emptied is pressed into contact with a splice (**14**) placed on the new machine reel (**13**), wherein the splicing device comprises at least one second roll (**12***b*), and that the splicing roll (**12***a*) and said second roll (**12***b*) are attached to a lever device (**16**), which is mounted by means of an articulation point (**17**) placed between shafts of said rolls (**12***a*, **12***b*) so that the run of the web (P) before splicing (W_1) and the run of the web (P) during splicing (W_2) are such that the length of the web (P) during splicing and during unwinding of the web before splicing is substantially equal, a first bend angle being defined as the angle of curvature of the web over said splicing roll and a second bend angle being defined as the angle of curvature of the web over said at least one second roll, the distance between the articulation point and said shaft of said splicing roll and said shaft of said at least one second roll being dependent on said first and second bend angles.

5,709,356
ANTI-SPARK STRUCTURE, IN PARTICULAR FOR AIRCRAFT

Jean-Pierre Avenet, Paris, and Pascal Gondot, Saint Georges, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

PCT No. PCT/FR95/00477, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/28319, PCT Pub. Date Oct. 26, 1995
PCT Filed Apr. 13, 1995, Ser. No. 549,670
Claims priority, application France, Apr. 15, 1994, 94 04507
Int. Cl.^{6} B64D *45/02*
U.S. Cl. 244—1 A 9 Claims

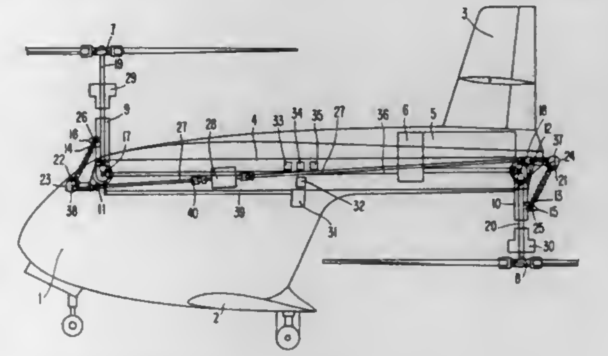


1. An anti-spark structure comprising:
- a first element and a second element each comprising a composite material and having an outer surface and an inner surface, said first and second elements being disposed such that the inner surface of the first element is at least partially superimposed on the outer surface of the second element, said first and second elements each having a hole therethrough, said holes being aligned with one another;
- a screw having a threaded shank, said shank being disposed through said holes, wherein an interface is formed between said shank and said first and second elements; and
- a threaded nut which engages the threaded shank of said screw, said nut having a bearing surface which contacts the inner surface of said second element, said bearing surface having a recess formed therein, said recess and the inner surface of said second element defining a storage chamber, said screw and nut holding the first and second elements together in a fastened position; wherein
- a communication is provided between the interface and the storage chamber such that substantially all of the gases flowing along said interface and recovered by said storage chamber, and a gas removal passage is formed through said screw and provides a communication from the storage chamber to the atmosphere outside of the anti-spark structure, said gas removal passage allowing the escape of substantially all of the generated gas from within the storage chamber.

5,709,357
TILTROTOR HELICOPTER

Kaspar Freiherr von Wilmowsky, Adalbertstrasse 47, D-80799 Munich, Germany

Filed Jun. 30, 1995, Ser. No. 497,051
Claims priority, application Germany, Jun. 30, 1994, 44 22 987.9
Int. Cl.^{6} B64C *29/00*
U.S. Cl. 244—7 R 12 Claims



1. A tiltrotor helicopter comprising:
- a fuselage,
- a wing arrangement and
- at least one power plant, and
- first and second contrarotating, cyclically controllable rotors which are spaced from one another in the longitudinal direction of the fuselage and substantially arranged on a longitudinal axis of the fuselage as well as being respectively tiltable

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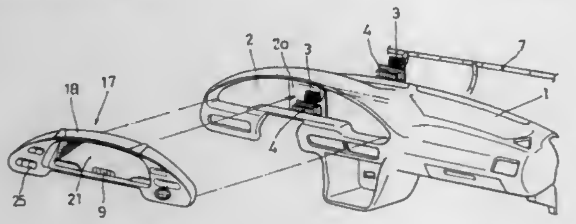
out of a first tilted position for helicopter flight into a second tilted position for airplane flight, wherein
said first rotor is disposed at and substantially above the forward end of the fuselage and the second rotor is disposed at and essentially beneath the rear end of the fuselage,
said first rotor is tiltable about a first tilting axis extending substantially perpendicularly to the longitudinal axis of the fuselage out of the first tilted position downwardly and in front of the fuselage into the second tilted position, and
the second rotor is tiltable about a second tilting axis extending substantially perpendicularly to the longitudinal axis of the fuselage out of the first tilted position upwardly and behind the fuselage into the second tilted position.

5,709,358
INSTALLING STRUCTURE OF CLUSTER MODULE

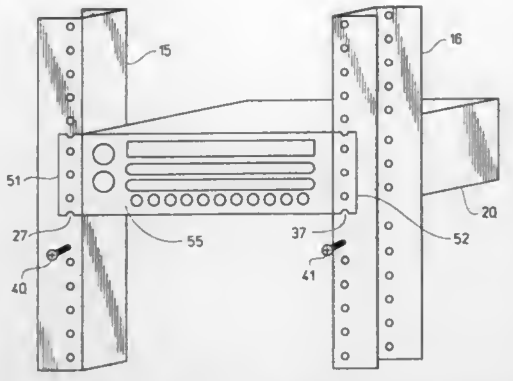
Minoru Kubota, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Oct. 29, 1996, Ser. No. 738,783
Claims priority, application Japan, Oct. 30, 1995, 7-281905
Int. Cl.^{6} H02B *1/10;* **B60K** *35/00*
U.S. Cl. 248—27.1 **4 Claims**



1. An installing structure for installing a cluster module arranged so that electric parts are put together in a concave section formed on a front surface of an instrument panel comprising:
a wire harness connector installed to a front wall surface of the concave section;
a display unit installed to the front wall surface of the concave section so as to be projected ahead than said wire harness connector;
a connector fitting section fitting to said wire harness connector, said connector fitting section being provided to a back surface of the cluster module; and
a display unit fitting section fitted to said display unit, said display unit fitting section being provided to the back surface of the cluster module.

5,709,359
EQUIPMENT MOUNTING BRACKETS

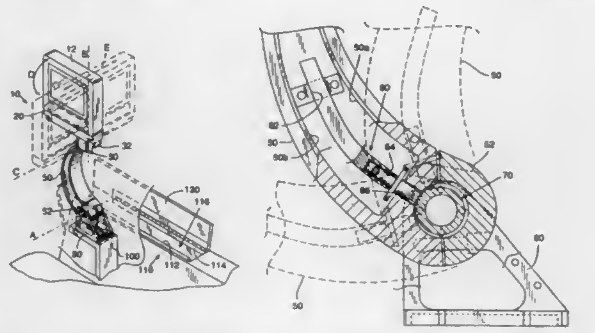
Richard F. Riley, Auburn, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 29, 1995, Ser. No. 536,293
Int. Cl.^{6} F16M *11/00*
U.S. Cl. 248—201 **13 Claims**



1. A pair of brackets for mounting equipment on an equipment rack frame having two structural side supports and a multitude of tapped bore holes vertically aligned therein, said pair of brackets comprising:
a first bracket having means for connection to one side of said equipment and having a first flange member for connection to and overlapping one of said rack frame side supports, said first flange member having at least one bore hole therein capable of being axially aligned with a desired one of said tapped bore holes in one of said side supports, said first flange member also having a first slot located at a bottom edge of said first flange member and spaced apart from said one bore hole so that both are capable of being axially aligned with at least a pair of said tapped bore holes in said one of said side supports, wherein said first slot is open at the bottom edge of said first flange member, and said one bore hole in said first flange member and said first slot are vertically aligned so that said one bore hole in said first flange member is located between a top edge of said first flange member and said first slot; and
a second bracket have a means for connection to the other side of said equipment and having a second flange member for connection to the other one of said rack frame side supports, said second flange member having at least one bore hole therein capable of being axially aligned with a desired one of said tapped bore holes in the other one of said rack frame side supports, said second flange member also having a second slot located at the bottom edge of said second flange member spaced apart from said one bore hole so that both are capable of being axially aligned with at least a pair of said tapped bore holes, wherein said second slot is open at the bottom edge of said second flange member, and said one bore hole in said second flange member and said second slot are vertically aligned so that said one bore hole in said second flange member is located between a top edge of said second flange member and said second slot;
said first and second slots capable of supporting said equipment in a stable position relative to said rack frame when said first and second slots are engaged over partially inserted screws in both of said side supports of said rack frame.

5,709,360
RATCHETING ARTICULABLE MONITOR SUPPORT AND PRESENTATION DEVICE

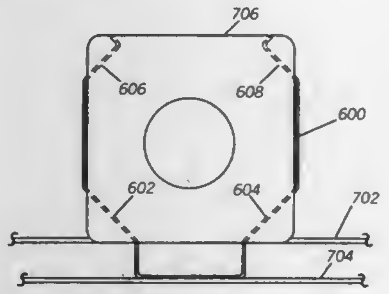
John B. Rosen, 87580 Cherry Ridge Rd., Eugene, Oreg. 97402
Filed Sep. 30, 1994, Ser. No. 315,819
Int. Cl.^{6} E04G *3/00*
U.S. Cl. 248—278.1 **13 Claims**



1. A ratcheting articulable monitor support system accommodating storage and presentation of an associated monitor, the support system being usable with a stationary base and a monitor-mounting member, the support system comprising:
an arm having a first end and a second end, wherein the first end is pivotally mounted to the stationary base allowing rotational movement of the arm about a first axis and in a first plane with a range of rotational motion characterized as having an arm-rotational-movement-restricting subrange, the range of rotational motion resulting from pivotally mounting the first end of the arm to the stationary base;
a non-rotatable ratchet member fixedly attached to the stationary base and including a body with a first subregion having arm-rotational-movement-restricting structure; and
a detent member being positioned adjacent the ratchet member and being fixedly attached to the arm intermediate the first and second ends, the detent member including an operative end that is movable to engage the arm-rotational-movement-restricting structure of the ratchet member when the arm is rotated in the arm-rotational-movement-restricting subrange.

5,709,361
FAN SUPPORT MEMBER

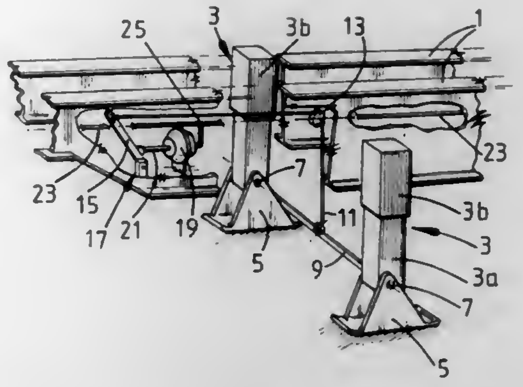
George Dalisy, Hollywood, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.
Filed Feb. 2, 1996, Ser. No. 594,629
Int. Cl.^{6} A47F *5/00*
U.S. Cl. 248—300 **5 Claims**



1. A fan assembly comprising:
a fan having an outer surface;
a fan support member, including:
a base member;
first and second resilient cantilevered members extending from opposite ends of the base member, the first and second cantilevered members oppose each other and the fan is located between the first and second cantilevered members such that they exert an inward pressure against the fan;
a fan retention means located in each of the first and second resilient cantilevered members for retaining the fan between the first and second resilient cantilevered members, the retention means located in each of the first and second resilient cantilevered members comprise a plurality of angled sections which conform to portions of the outer surface of the fan; and
height extension sections located between the base member and the angled sections located in both the first and second cantilevered members, the height extension sections raise the fan above the base member.

5,709,362
ACTUATION OF SEMI-TRAILER SUPPORT LEGS

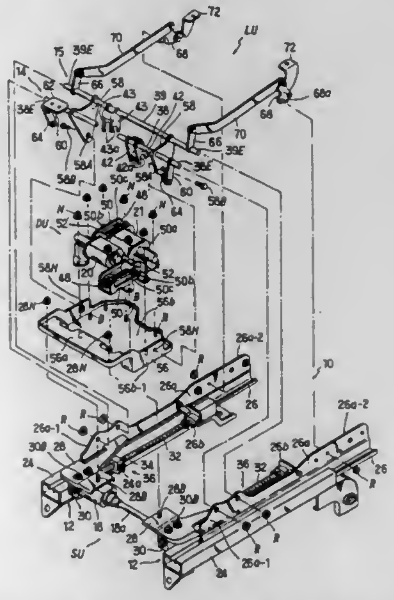
Martin Robert Clarke, Preston; Philip Pye, Rainford, and Norman Zoltan Wignall, Chorley, all of United Kingdom, assignors to Pandoro Limited, Lancashire, United Kingdom
Filed May 12, 1995, Ser. No. 440,371
Claims priority, application United Kingdom, May 14, 1994, 9409685
Int. Cl.^{6} A47F *5/00*
U.S. Cl. 248—352 **19 Claims**



1. A method of raising and lowering support means of a semi-trailer, the support means comprising a support foot mounted pivotally at the end of a landing leg extending from the trailer structure, the foot being independently pivotable between a raised position providing sufficient clearance for the semi-trailer to be moved, and a deployed position for ground engagement support purposes; and an actuator means to control pivoting of said foot, the method comprising automatically raising and lowering said pivoting foot in response to connection and disconnection respectively of a line connection between the trailer and a towing unit.

5,709,363
STRUCTURE OF POWERED SEAT

Masahiro Matsuhashi, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1996, Ser. No. 609,681
Int. Cl.^{6} F16M *13/00*
U.S. Cl. 248—421 **9 Claims**



1. A powered seat having a pair of seat fore-and-aft adjustment devices having a motor, each of said pair of seat fore-and-aft adjustment devices including an upper movable member to be moved by said motor to adjust a position of the seat in forward and backward directions, and a pair of forward and backward seat height adjustment devices, each including a linkage having one end to be connected to said pair of seat fore-and-aft adjustment devices and a drive mechanism for causing respective forward and backward portions of the seat to be adjusted in height via said linkage, said powered seat further comprising:
a main bracket to which said motor of said pair of seat fore-and-aft adjustment devices is secured, said main pair of seat fore-and-aft adjustment devices is secured, said main bracket being disposed on one end portion of said upper movable member corresponding to a forward side of the seat; and
a sub bracket detachably secured to said main bracket;
said pair of forward and backward seat height adjustment devices being secured to said sub bracket to thereby provide one unit with said seat height adjustment devices is detachably mounted on said main bracket via said sub bracket.

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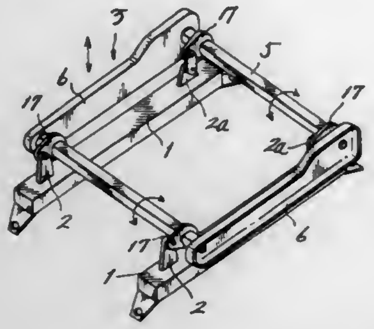
5,709,364
POWER SEAT ADJUSTING APPARATUS

Noriyuki Araki, Minokamo; Norimasa Kitoh, Inyuama; Hiroaki Banno, Ichinomiya; Masashi Mitsukuchi, Konnan, and Akinori Mori, Komaki, all of Japan, assignors to Kabushiki Kaisha Imasen Denki Seisakusho, Inuyama, Japan

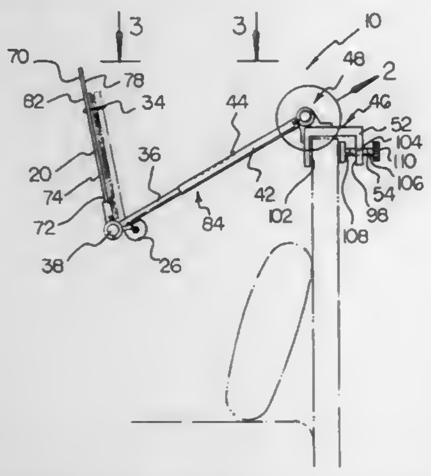
Filed Jul. 15, 1996, Ser. No. 679,906
Claims priority, application Japan, Jul. 28, 1995, 7-192717
Int. Cl.^{6} F16M *13/00*
U.S. Cl. 248—421 **3 Claims**



1. A power seat adjusting apparatus comprising a tube type motor body having a yoke formed of a tubular member, output from a motor being reduced and boosted to transmit its power to said tube type motor body so that said motor body itself is rotated, a base with a seat placed thereon being driven upwardly and downwardly by an arm secured to said tube type motor body, wherein rotational force of the output is transformed into propulsion by a wing element provided on a nut which is threadingly engaged with a feed thread mechanism and then reduced and boosted between a spiral groove and a linear groove formed within said body, so that the rotational force is transmitted to said tube type motor body.

5,709,365
ADJUSTABLE BOOK SUPPORT

Scott C. Howard, Box 9050, Hindman, Ky. 41822
Filed May 3, 1996, Ser. No. 642,448
Int. Cl.^{6} A47B *97/04;* A47G *1/16*
U.S. Cl. 248—454 **1 Claim**



1. A book holding device adapted to be secured to a backboard of a bed to enable a user to read hands free, the holding device comprising in combination:

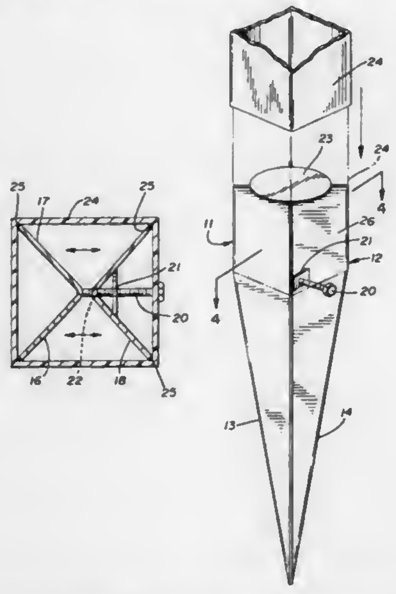
a book supporting platform having an upper extent, a lower extent, a first side, a second side, an upper surface and a lower surface, a ledge secured to the lower extent, a spine receiving channel formed intermediate the first and second sides of the book supporting platform, a pair of lamp assemblies secured to the ledge and adapted to illuminate a book secured upon the upper surface of the book supporting platform, a first slot formed within the first side, a second slot formed within the second side, a page securing band slidably coupled with and interconnecting the first and second slots;

two arm assemblies, each assembly comprising;

a minor arm pivotally secured to one of the sides of the book supporting platform, the minor arm and book supporting platform having an angular relationship means for changing the angular relationship between the minor arm and the book supporting platform, a plurality of adjustment holes formed within the minor arm a hollow major arm having a proximal and distal end, the major arm having a plurality of adjustment holes formed therein each adapted for registration with one of the adjustment holes of the minor arm, the minor arm slidably received within the proximal end of the hollow major arm, an adjustment pin secured within one of the adjustment holes of the major arm and one of the adjustment holes of the minor arm and serving to secure the major and minor arms in telescopic relation, a clamp pivotally secured to the distal end of the major arm, the clamp and major arm having an angular relationship, means associated with the distal end of the major arm for adjusting the angular relationship between the clamp and the major arm, the clamp including a C-shaped bracket with an interior surface a first end and a second end, the interior surface of the bracket having a cushioning material positioned thereon, a threaded aperture formed through the C-shaped bracket, a bolt having a first end and a second end adjustably positioned within the threaded aperture of the bracket, the first end of the bolt having a knob formed thereon, a padded engagement member positioned upon the second end of the bolt, the C-shaped bracket adapted to be secured to the backboard of the bed by way of the padded engagement member.

5,709,366
FENCE POST SUPPORT

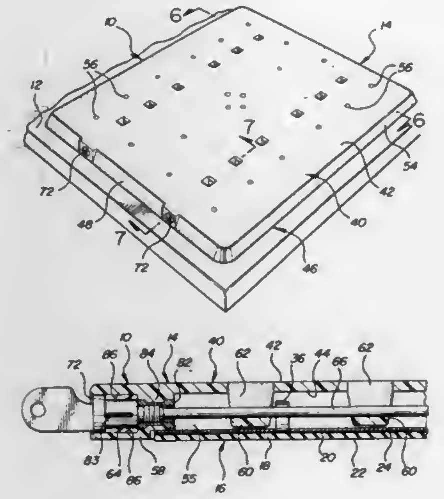
Stephen Speece, Youngstown, Ohio, assignor to Steel City Corporation, Youngstown, Ohio
Filed Jul. 3, 1996, Ser. No. 674,913
Int. Cl.^{6} A45F *3/44*
U.S. Cl. 248—530 **8 Claims**



1. A fence post support which secures a hollow fence post in the ground in a vertical generally upright position comprises: a ground engaging portion and a post engagement portion, said ground engaging portion comprises a pair of elongated tapered members secured to one another to be driven vertically into the ground, said post engagement portion having a pair of upstanding vertical aligned angles, means for selectively spreading said angles in relation to one another, and means for driving said ground engagement portion into said ground.

5,709,367
EQUIPMENT SECURITY MOUNT

Kevin J. Heintz, Marine City; Peter T. Kennedy, Grosse Pointe Woods; Michael C. Kennedy, Harrison Township, all of Mich., and Robert T. Kennedy, Centerville, Ohio, assignors to ON-X International, Ltd., Clinton Twsp., Mich.
Filed Mar. 18, 1996, Ser. No. 616,891
Int. Cl.^{6} E05B *65/00;73/00*
U.S. Cl. 248—551 **19 Claims**



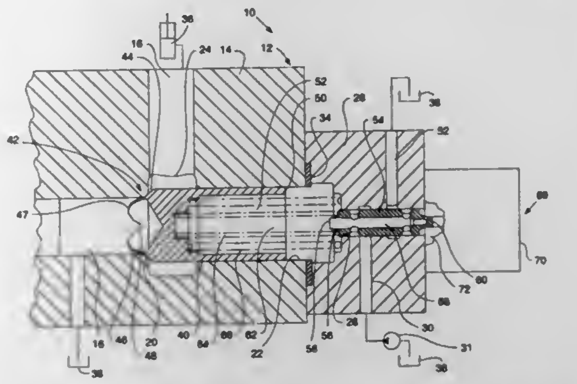
1. Equipment security mount including a base having a top surface and a bottom surface and adapted to be secured to a mounting surface, means for attaching said bottom surface to said mounting surface, and a plurality of base lugs fixed to and extending upward from said top surface and providing a plurality of aligned base openings above the top surface; a cover having a floor with an upper surface, a lower surface and a peripheral flange depending from outer edges of said floor to form a downwardly open recess within said flange, said base being received within the recess when the cover is installed so that the base is essentially exposed only to the mounting surface and to the recess within the cover; equipment attaching means for attaching to said upper surface equipment to be protected from removal, said equipment attaching means being detachable from the equipment only from said lower surface within said recess; a plurality of cover lugs fixed to and depending from said floor and providing a plurality of aligned cover openings below the lower surface and positioned to be aligned with said base openings when the cover is installed over the base; at least one lock pin extending when installed through the aligned base and cover openings to prevent removal of the cover from the base; a lock housing connecting with said flange and including a lock opening extending through the lock housing in alignment with said cover openings, said pin being removable through said lock opening; and a lock lockable within said lock opening to prevent removal of said pin from said base and cover openings; characterized by:

said cover being at least partially formed from a high strength resilient plastic material that will deform without breaking and thereby resist forcible removal of the security mount when the cover is locked to the base; and,

positioning means on said cover and operative to locate said lock pin when installed so that one end of the pin remains within said lock opening when the lock is installed, thus providing additional support against deflection of the lock housing and deformation of the flange adjacent to the lock housing.

5,709,368
HYDRAULIC CONTROL VALVE FOR FLUID METERING AND CYLINDER PROTECTION

Thomas J. Hajek, Jr., Lockport, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Aug. 26, 1996, Ser. No. 703,296
Int. Cl.^{6} F16K *31/12*
U.S. Cl. 251—30.02 **8 Claims**



1. A hydraulic control valve adapted for metering fluid from a load actuating cylinder to a tank, comprising:

a composite valve body having a first port, a second port, a valve seat disposed between the first and second ports, a first bore in communication with the first and second ports, a second bore in communication with the first bore, an inlet and an outlet opening into the second bore, the inlet being devoid of communication with the first port;

a poppet having a first end portion and a second end portion and being slidably disposed within the first bore and controllably moveable between a closed position and an open position, the first end portion being in sealing engagement with the valve seat when the poppet is in the closed position;

a pilot spool having a first end portion and a second end portion slidably disposed within the second bore, the first end portion of the pilot spool in cooperation with the second end portion of the poppet defining a chamber within the composite valve body, the pilot spool moveable, in response to an input force, between a first position at which communication is established between the inlet and the chamber and a second position at which communication is established between the chamber and the outlet;

a force feedback spring disposed between the poppet and the pilot spool;

means defining a passage communicating the chamber with the second end portion of the pilot spool; and

means for applying an input force to the second end portion of the pilot spool, said force being sufficient to urge the pilot spool to the second position.

5,709,369
SELF-ALIGNING VALVE DISC ASSEMBLY

James Chester Hawkins, Allen; Daniel Gunder Roper, Lucas; David Edward Woollums, Frisco; David Blair Davis, Whitewright; Shane Nicholson, McKinney, and Justin Wade Hart, Richardson, all of Tex., assignors to Fisher Controls International, Inc., Clayton, Mo.
Filed Jul. 5, 1996, Ser. No. 675,937
Int. Cl.^{6} F16K *25/00*
U.S. Cl. 251—86 **6 Claims**

1. A valve disc assembly for use with a valve seat in controlling the flow of fluid in a fluid pressure regulator, said valve disc assembly comprising:

a disc formed of resilient material suitable for fluid sealing engagement with the valve seat;

a rigid disc support on one side of said disc opposite said valve seat,

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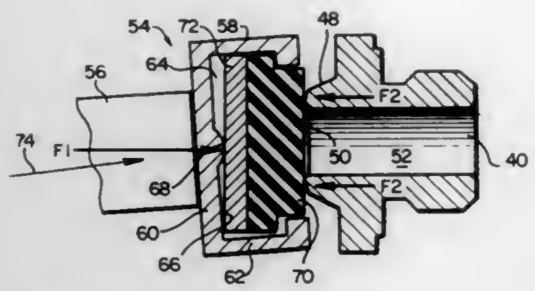
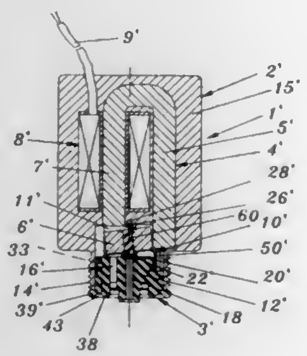


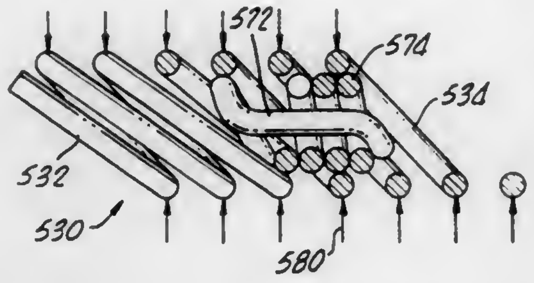
a disc holder including a base, and walls extending from the base defining a chamber therebetween,
said chamber adapted to insertably receive said disc and disc support with a limited degree of pivoting movement of said disc and disc support within said chamber;
said disc holder including a central portion extending from said base and within said chamber for substantially single point pivoting contact engagement with said disc support; and
retaining means for retaining said disc and disc support within said chamber while permitting movable pivoting engagement of said disc with said valve seat to enable pivoting self-alignment of said disc onto said seat.

5,709,370
MAGNETICALLY ACTUATED VALVE
Carl L. C. Kah, Jr., 778 Lakeview Dr., North Palm Beach, Fla. 33408
Filed Apr. 10, 1995, Ser. No. 419,133
Int. Cl.^{6} F16K *31/06*
U.S. Cl. 251—129.15 **33 Claims**



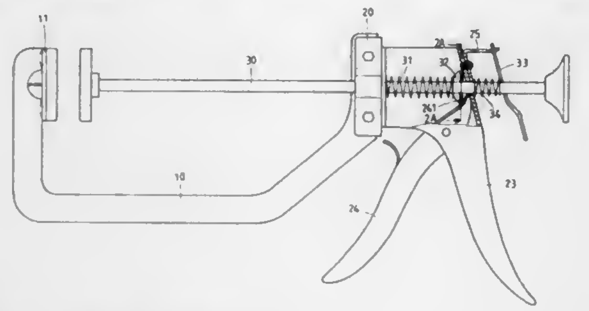
1. A magnetically actuated valve including a housing, said housing having an electric coil, a magnetic flux core extending through the coil, said magnetic flux core having two core ends, said housing having an elongated opening extending outwardly from said two core ends, an insertable valve body with a press fit in said elongated opening spaced from said two core ends, an exit passage and an inlet passage extending through said valve body, a cooperating valve closure member positioned in said opening below said two core ends, core piece being attached to said valve closure member for moving said valve closure member to an open position, said magnetic flux core is U-shaped, said moveable core piece having two end faces, and said U-shaped magnetic flux core has one side of said U-shape longer than the other to be engaged by one end face of said moveable core piece when said moveable core piece is against said U-shaped magnetic flux core.

5,709,371
COIL SPRING WITH ENDS ADAPTED FOR COUPLING WITHOUT WELDING
Peter J. Balsells, Santa Ana, Calif., assignor to Bal Seal Engineering Company, Inc., Santa Ana, Calif.
Division of Ser. No. 456,662, Jun. 2, 1995, Pat. No. 5,615,870. This application Sep. 13, 1996, Ser. No. 710,196
Int. Cl.^{6} F16F *1/06*
U.S. Cl. 267—167 **7 Claims**



1. Spring apparatus comprising:
a coiled spring having two ends and a plurality of intermediate coils, each coil having a leading portion disposed at a front angle to a normal line to one centerline and a trailing portion disposed at a back angle to said normal line;
female end coils disposed within one end of the coiled spring and having a diameter smaller than the intermediate coils; and
male end coils disposed at another end of the coiled spring and including latch means for insertably engaging the female end coils and causing the two ends of the coiled spring to be locked with even spacing between adjacent intermediate coils surrounding the locked ends of the coiled spring.

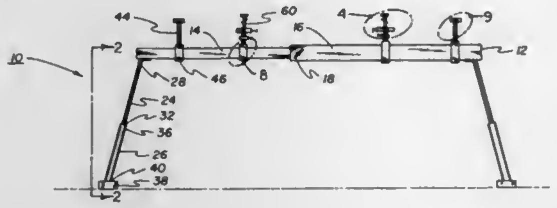
5,709,372
C CLAMP
Liang-Kuen Lii, 58, Ma Yuan West St., Taichung, Taiwan
Division of Ser. No. 501,424, Jul. 3, 1995, abandoned. This application Nov. 27, 1995, Ser. No. 562,930
Int. Cl.^{6} B66F *3/00*
U.S. Cl. 269—6 **1 Claim**



1. A C-clamp comprising:
a generally C-shaped frame;
a fixed jaw disposed in front end of said frame;
a connecting end and an adjacent rectangular shaped recess disposed at a rear end of said frame;
a holding seat connecting a front portion of a fixed handle;
a square hole formed at a center of said holding seat;
a fixed handle which has a groove to receive a driving handle connecting said holding seat;
a driving handle being fastened to said fixed handle;
a square spindle being inserted through a square hole of said fixed handle and said square hole of said holding seat;
a spring and a pushing plate which has a square hole receiving said spindle so that said spring and said pushing plate are blocked by said holding seat;

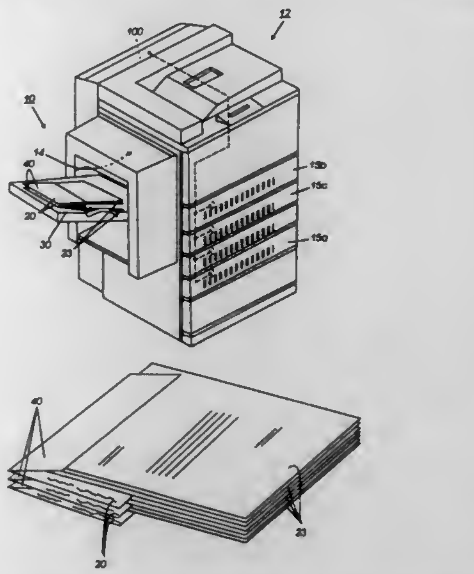
a flange which is disposed on the upper end of said driving handle pushing said pushing plate forwardly;
a generally L-shaped plate disposed on the upper back portion of said fixed handle;
a through hole formed on the end of said L-shaped plate to receive an upper end of a braking plate;
said braking plate having an upper portion to be blocked by said L-shaped plate;
a square hole formed on said braking plate to receive said spindle;
a second spring which receives said spindle is blocked between a back portion of said fixed handle and said braking plate.

5,709,373
PORTABLE SKI AND SNOWBOARD TUNING TABLE
David E. Wasylynko, 1877 Laronde Drive, Surrey British Columbia, Canada, U4A 9M9
Filed Dec. 4, 1995, Ser. No. 567,115
Int. Cl.^{6} B23Q *1/04*
U.S. Cl. 269—16 **2 Claims**



1. A portable ski and snowboard tuning table for allowing a user to tune a pair of skis or a snowboard in any location comprising, in combination:
a horizontal support bar having a first extent and a second extent, the first extent being telescopically received within the second extent, the second extent having a wing nut and bolt extending therethrough to removably couple the second extent to the first extent;
a pair of legs, each of the legs having an upper portion and a lower portion, each upper portion hingedly secured to opposing ends of the horizontal support bar at a proximal end thereof, each upper portion having a spring biased male detent element secured within a distal end thereof, each lower portion having an aperture formed through a proximal end thereof and rubber feet secured to a distal end thereof, each lower portion telescopically receiving a corresponding upper portion therein with the spring biased male detent element cooperating with the aperture thereof to secure the lower portion to the upper portion;
a pair of stabilizers, each of the stabilizers having a securement bracket slidably secured to the horizontal support bar, each securement bracket having a tightening screw to tightly secure the stabilizers to the horizontal support bar, each securement bracket having a threaded rod extending upwardly therefrom, each threaded rod having a T-shaped bar adjustably coupled thereto, an upper portion of the T-shaped bar having a rubber layer disposed thereon;
a pair of vices, each of the vices having a securement bracket slidably secured to the horizontal support bar inwardly of the pair of stabilizers, each securement bracket having a tightening screw to tightly secure the vices to the horizontal support bar, each securement bracket having a threaded rod extending upwardly therefrom, each threaded rod having a spring biased clamp secured thereto, each spring biased clamp having an adjustable vice removably coupled thereto, each adjustable vice having a rubber protective tip on end portions thereof;
a carrying case adapted to hold the tuning table therein when in a collapsed configuration, the carrying case having a plurality of pockets disposed thereon to carry wax and ski tuning tools therein.

5,709,374
SYSTEM FOR AUTOMATIC PRINT JOBS SEPARATIONS IN CONTAINER WITH VERTICALLY PROJECTING FOLDERS
Thomas N. Taylor, Rochester; Robert A. Panos, Penfield, and Sudarshan S. Bains, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 18, 1996, Ser. No. 732,760
Int. Cl.^{6} B41F *13/54;* **B65H** *39/02*
U.S. Cl. 270—1.02 **5 Claims**



1. In a reproduction system in which a printer outputs a plurality of different plural sheet print jobs to a common print jobs stacking output, which print jobs are printed on copy sheets fed from a paper feed source of said reproduction system and fed to said common print jobs stacking output, the improvement comprising a system for automatically separating respective said print jobs into separate folders in an inclined but substantially vertically positioned plural print jobs container by loading folder paper stock into a said paper source for said same reproduction system, automatically feeding said folder paper stock from said paper source to said same print jobs stacking output in the correct sequence with said feeding of copy sheets for said print jobs to said print jobs stacking output, automatically inserting the said copy sheets of a respective print job into a respective open folder of said folder paper stock, and then closing said open folder around said print job to substantially enclose said print job within said folder, and inserting said closed folder with said print job substantially enclosed therein into said plural print jobs container, wherein at least one minor portion of said folder stock is offset from said copy sheets of said enclosed print job in said folder to define a projecting folder tab, and then repeating said process for subsequent folders and their respective substantially enclosed print jobs, and placing plural said enclosed print jobs in said substantially vertically positioned plural print jobs container with said projecting folder tabs extending vertically above said enclosed print jobs to provide clear distinctions and separations of respective print jobs between respective folders and so that a selected said print job can be readily removed as a unit within a folder from other said print jobs.

5,709,375
SHEET MATERIAL COLLATING SYSTEM
Andrew L. Klopfenstein, Tipp City, Ohio, assignor to Heidelberg Finishing Systems, Inc., Dayton, Ohio
Filed Sep. 25, 1996, Ser. No. 719,997
Int. Cl.^{6} B65H *39/00*
U.S. Cl. 270—52.26 **15 Claims**

1. A sheet material handling apparatus comprising:
an elongate guide rail;

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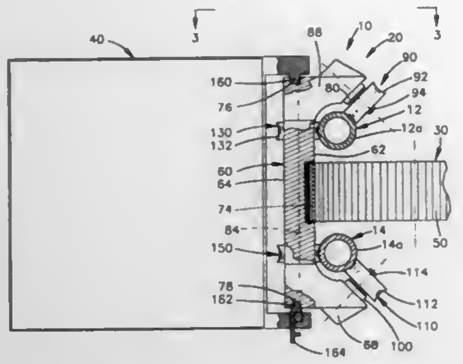


a plurality of interconnected carriers supported on a first side of said guide rail for movement in a first direction along said guide rail; and

a plurality of sheet material receivers for receiving and supporting sheet material, each one of said receivers being connected with and movable with a respective one of said carriers;

said carriers being disposed intermediate said receivers and said guide rail and said receivers being cantilevered out from said guide rail in a second direction transverse to said first direction.

5,709,376
SHEET FINISHER

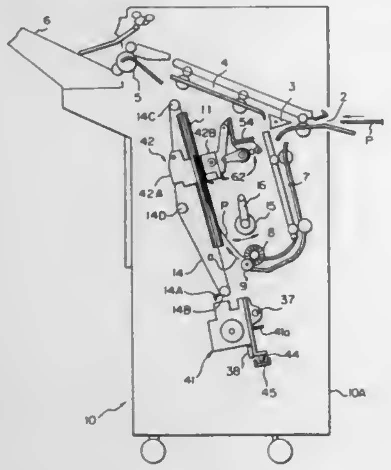
Yoshiaki Ushirogata, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 31, 1996, Ser. No. 655,865

Claims priority, application Japan, Jan. 30, 1995, 8-035583; Jun. 1, 1995, 7-158393; Jun. 13, 1995, 7-170162; Jun. 13, 1995, 7-170163; Feb. 29, 1996, 8-69178; Mar. 4, 1996, 8-073274

Int. Cl.^{6} B42C *1/12*

U.S. Cl. 270—58.11 **7 Claims**



1. A sheet finisher for finishing at least one sheet introduced into a body thereof and conveyed within said body, said sheet finisher comprising:

sheet truing means for positioning the sheet at a truing position in an intended direction of sheet transport and a direction perpendicular thereto;

a clamp member for clamping the sheet positioned by said sheet truing means at said truing position;

finishing means for finishing the sheet at a position difference from said truing position;

clamp member drive means for shifting the sheet away from said truing position until a part of said sheet arrives at said finishing means, and for positioning said sheet such that a position of said sheet relative to said finishing means is variable in a direction in which said sheet is shifted; and

positioning means for moving said finishing means in a direction perpendicular to said direction in which said sheet is shifted, and positioning said finishing means at a desired position in said direction in which said finishing means is moved.

5,709,377
IMAGE FORMING APPARATUS

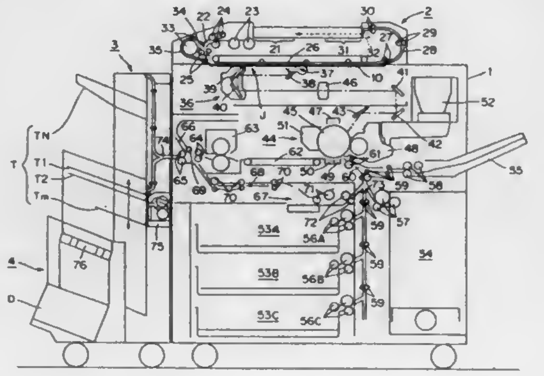
Yoshiki Yoshioka; Yoshiyuki Fujiwara, and Ken Nishio, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1996, Ser. No. 606,413

Claims priority, application Japan, Mar. 6, 1995, 7-045987

Int. Cl.^{6} B65H *3/44;5/26*

U.S. Cl. 271—9.02 **6 Claims**



1. An image forming apparatus having a plurality of sheet feeding decks each accommodating a plurality of copy sheets, with each feeding deck holding either normal copy sheets or special copy sheets, wherein one of the group of either the normal copy sheets or special copy sheets are blank on both sides, and the other of the group of the normal copy sheets and the special copy sheets has markings on at least one side, said apparatus being adapted to form an image of an original document on a selected copy sheet previously accommodated in any one of the sheet feeding decks, comprising:

an operating section accessible by an operator, and including:

mode selecting means activatable by the operator for selecting a specific sheet mode;

displaying means having a display for displaying a schematic diagram illustrating the positions of the respective sheet feeding decks when the specific sheet mode is selected;

selecting means activatable by the operator for selecting a specific sheet feeding deck from the sheet feeding decks displayed by said displaying means;

designating means activatable by the operator for designating the specific sheet feeding deck as accommodating the special sheets; and

identifying means for identifying in the display the designated specific sheet feeding deck, so as to distinguish the designated specific sheet feeding deck from the other sheet feeding decks; and

control means operatively connected to said operating section for permitting and prohibiting selected reproduction procedures on at least one of the special copy sheets accommodated in the designated specific sheet feeding deck and the copy sheets accommodated in the other sheet feeding decks.

5,709,378
MECHANISM FOR COUNTING STACKED SHEETS

Martin Gordon Snook, Colchester, Great Britain, assignor to Pelcombe Limited, Great Britiain

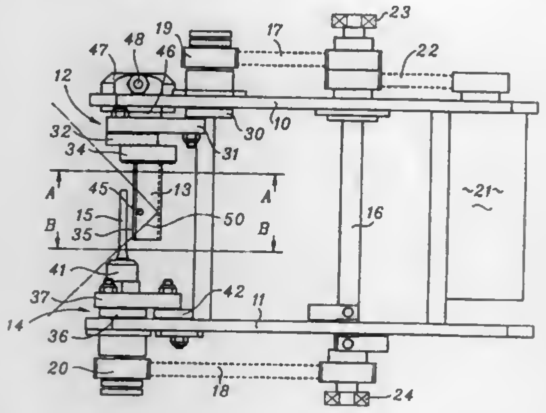
PCT No. PCT/GB94/02416, § 371 Date May 3, 1996, § 102(e) Date May 3, 1996, PCT Pub. No. WO95/12561, PCT Pub. Date May 11, 1995

PCT Filed Nov. 3, 1994, Ser. No. 640,938

Claims priority, application United Kingdom, Nov. 6, 1993, 9322903

Int. Cl.^{6} B65H *3/08*

U.S. Cl. 271—100 **15 Claims**



12. A sheet transfer mechanism, comprising:

an elongate element adapted to operate on the corner region of a stack of sheets, a suction port being provided in a region of the elongate element which region generally faces uncounted sheets in the stack;

means to apply suction to said port to separate a next sheet to be counted from the stack and draw said next sheet on to the elongate element;

an elongate member arranged to extend substantially parallel to said elongate element; and

mounting means for said elongate member to cause said elongate member to orbit around the elongate element thereby to transfer sheets from one side of the elongate element to the other side thereof, which mounting means comprises:

a carrier defining first, second and third parallel axes, the elongate member being disposed along said first axis;

a link pivotally connected to the carrier about said second axis which link is also pivoted to a fixed part of the mechanism; and

a rotatable crank drivingly coupled to the carrier about said third axis whereby rotation of the crank causes the elongate member to perform said orbiting motion.

5,709,379
SHEET-FANNING DEVICE

Kurt Lötsch, Wiesenbach; Paul Nicola; Kurt Sandmeier, both of Heidelberg; Günter Zobl, Nussloch; Günter Andl, Sandhausen; Klaus Herzog, St.-Leon-Rot; Wolfgang Kretz, Meckesheim; Ulli Zeck, Nussloch, and Gabriele Vetter, Kronau, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

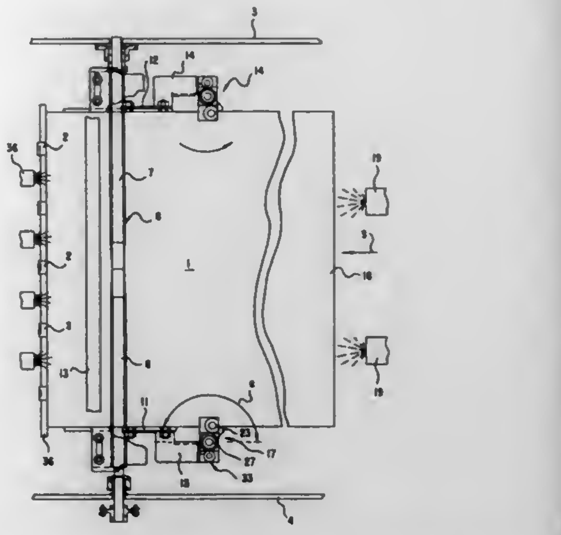
Filed Mar. 4, 1996, Ser. No. 610,522

Claims priority, application Germany, Mar. 3, 1995, 295 03 618 U

Int. Cl.^{6} B65H *3/46*

U.S. Cl. 271—105 **4 Claims**

1. Auxiliary device for assisting in singling or separating sheets in an upper region of a sheet pile provided for single-sheet transport in a sheet transport direction within a sheet processing machine, a respective top sheet of the sheet pile being removable therefrom at a given time by at least one singling or separating device including at least one sheet trailing edge blasting or blowing device for feeding the sheet to the sheet processing machine, comprising at least one feeler rod disposed transversely to the sheet transport direction for measuring the height of the sheet pile, and respective fanning or loosening blowers disposed laterally of the sheet pile upstream of said feeler rod, as viewed in the sheet transport direction.



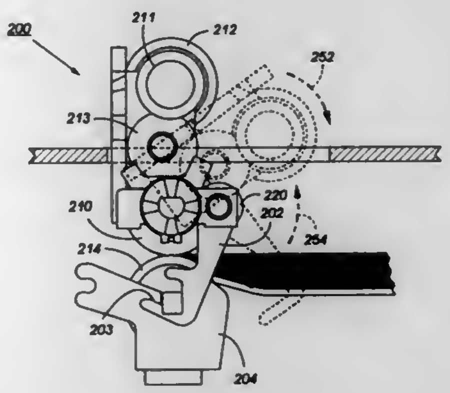
5,709,380
REPLACEABLE COMPACT FEED ROLL UNIT

Ermanno C. Petocchi, and Bruce J. DiRenzo, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1995, Ser. No. 515,779

Int. Cl.^{6} B65H *3/52*

U.S. Cl. 271—125 **18 Claims**



1. A unitary feed member apparatus for a feed head assembly for feeding cut sheets from a stack of sheets, comprising:

an articulating frame having a first portion and a second portion pivotally attached to said first portion;

a plurality of rotatable members mounted in said first portion of said frame;

a retaining member, located in the feedhead assembly; and

a retard member removably mounted in said second portion of said frame adjacent one of said plurality of rotatable members so that when said frame is inserted in the feed head assembly and pivotally moved about one of said plurality of rotatable members from a first position to a second position, said retard member is released from said second portion of said frame and captured in said retaining member to form a nip with said adjacent one of said plurality of rotatable members, said second portion of said frame pivoting toward said first portion of said frame to shorten the length of said frame.

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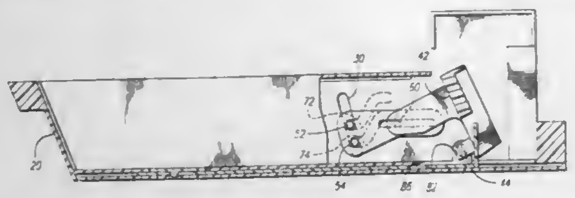
5,709,381
PRINTER MEDIA TRAY WITH AUTOMATIC SKEWING OF STACK OF MEDIA

Arjang Hourtash; William H. Schwiebert, both of San Diego; Richard Kemplin, Poway, and Charles W. Dodge, Escondido, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1996, Ser. No. 755,266
Int. Cl.^{6} B65H *1/08*
U.S. Cl. 271—147 **11 Claims**



1. A paper tray assembly for a computer controlled printer, said assembly comprising:

a) a paper tray having a generally flat bottom wall, a pair of generally vertical side walls and a paper discharge wall extending upwardly from said bottom wall, said discharge wall being inclined in the direction of paper movement and a cam track being provided in at least one of said side walls;

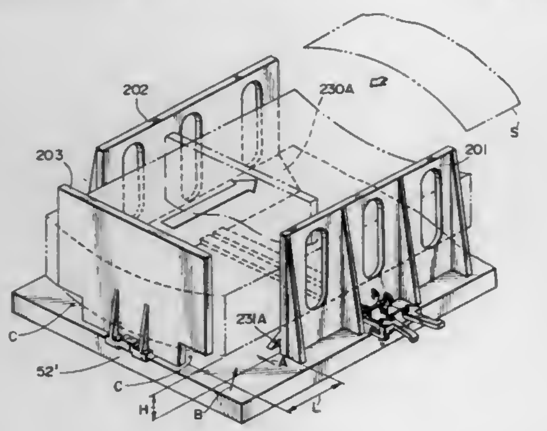
b) a paper stack skewer mounted on said paper tray proximate a paper loading end thereof, said stack skewer comprising a paper engaging wall pivotally affixed in said paper tray such that said paper engaging wall is moveable between a substantially vertical paper loading position and an inclined paper skewing position parallel to said paper discharge wall;

c) at least one stack skewer actuator slide mounted proximate at least one side wall of said tray, said slide and said stack skewer having interengaging means thereon to pivotally move said stack skewer between said positions, said slide further including cam follower means thereon which engage said cam track in said at least one paper tray side wall and for engaging at least one cam track means on a printer chassis to translate said slide vertically relative to said at least one side wall whereby said interengaging means pivotally move said skewer from said paper loading position to said paper skewing position as said paper tray is inserted into a tray receiving slot in a printer and for moving said skewer from said paper skewing position to said paper loading position as said paper tray is withdrawn from said slot in said printer.

5,709,382
SHEET DISCHARGING DEVICE FOR A PRINTER

Masayuki Shima, Sendai, Japan, assignor to Tohoku Ricoh Co., Ltd., Miyagi-ken, Japan

Filed Mar. 19, 1996, Ser. No. 618,104
Claims priority, application Japan, May 15, 1995, 7-116080
Int. Cl.^{6} B65H *31/00*
U.S. Cl. 271—209 **14 Claims**



1. A sheet stacking device having a base for stacking sheets driven out of an image forming apparatus, said device comprising:

a pair of side fences mounted on said base and facing each other, and each being movable in a widthwise direction of the sheets perpendicular to an intended direction of sheet discharge, and comprising a guide surface parallel to the intended direction of a sheet discharge at a position thereof facing one of opposite edges of the sheet in the widthwise direction; and

an end plate mounted on a front portion of said base in the intended direction of the sheet discharge, and having a surface for stopping a leading edge of the sheet in the intended direction of sheet discharge;

said pair of side fences each further comprising an inclined portion in a lower portion of said guide surface facing the one edge of the sheet, said inclined portion protruding toward a center in the widthwise direction of the sheets from an upper portion to a lower portion of said side fence, and having an angle for causing the edge of the sheet to warp upward, wherein the sheets fall due to their own weight while changing shape into a convex shape and are aligned in a concave shape in the widthwise direction of the sheets due to the relation between the sheets and the side fences.

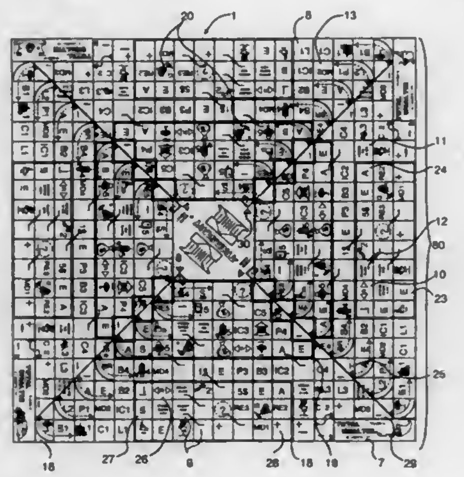
5,709,383

Patent Not Issued For This Number

5,709,384
BOARD GAME

Frederick Miller, Rt. No. 02 Box 1577A, Lancaster, Va. 22503

Filed Mar. 8, 1996, Ser. No. 613,187
Int. Cl.^{6} A63F *3/00*
U.S. Cl. 273—256 **6 Claims**



1. A game apparatus, comprising:

a plurality of distinctive groups of tokens, each group being indicative of one of a plurality of players, each group being further divided into a first subgroup and a second subgroup;

board means having a plurality of playing paths, said paths having a first and second end and being divided into a plurality of squares for indicating the movement of the players through said paths, each of said squares arranged upon said game board such that all squares form a grid pattern upon said game board, a contiguous sequentially arranged series of such squares further defining a plurality of inwardly spiraling playing paths, wherein said squares are suitably dimensioned for occupancy by said tokens, wherein at least some of said squares bear a first plurality of indicia comprising a plurality of penalizing indicia directing the player whose first subgroup token lands thereon to be penalized in some manner, and a plurality of rewarding indicia directing the player whose first subgroup token lands thereon to be rewarded in some manner; and wherein some of said squares form a second plurality of indicia comprising distinctive groups, each group being indicative of one of said players, said distinctive groups of squares forming zones in which said penalizing indicia do not effect the movement of said second subgroup of said tokens of the same distinctive group and wherein the movement of said second subgroup of said tokens is confined to said zone and further penalizes said first subgroup of said tokens if said second subgroup token lands upon said first subgroup token;

a plurality of distinct groups of subject cards each distinct group providing instructions as well as additional rewards or penalties which the player must follow; wherein said rewards further comprise both monetary rewards and movement advances for said first subgroup of said tokens, said penalties further comprise both monetary penalties and movement setbacks for said first subgroup of said tokens, and said instructions detail specific means to provide said rewards and penalties referenced upon said subject cards;

means for selecting by chance a number to determine the extent of movement of said tokens on said squares of said playing paths;

means for designating and tracking value of said rewards and penalties by awarding player's equivalent monetary value of said rewards and penalties in play money;

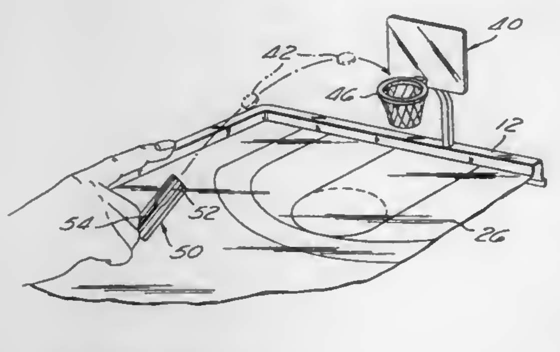
starting means, located at the first end of each of said paths, which determine the initial position of said first subgroup of said tokens; and

finishing means, wherein said first subgroup of said tokens finish said game by first entering center of said gameboard therein gaining a card redeemable in said play money and returning with said card to said starting means, and wherein a winner is determined by said player possessing the greatest quantity of play money at games end after receiving play money for all assets and paying for all debts.

5,709,385
SPORTS BOARD GAME

Brian F. Fitzpatrick, and Chase L. Fitzpatrick, both of Dove Canyon, Calif., assignors to Finger Sports, Inc., Dove Canyon, Calif.

Filed Sep. 26, 1995, Ser. No. 534,261
Int. Cl.^{6} A63F *7/06;7/20*
U.S. Cl. 273—317.3 **13 Claims**



1. A board game comprising:

a game board;

a game piece positionable upon the game board; and

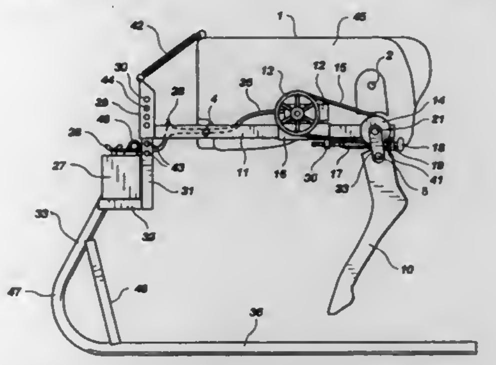
a movable ramp positionable upon the game board for selectively propelling the game piece into airborne movement above the game board, said ramp including a game piece slot which extends partially therewithin and defines a bottom end;

said game piece slot being used to control the launch direction of the game piece and sized to slidably receive the game piece in a manner wherein the game piece rests at the bottom end prior to being propelled from the ramp.

5,709,386
APPARATUS FOR ROPING TRAINING

Leland Nelson, 401 W. Maple, Mapleton, Utah 84664

Filed Apr. 24, 1996, Ser. No. 644,661
Int. Cl.^{6} F41J *9/02;* A63B *69/00;* A63G *19/00;* A63H *11/00*
U.S. Cl. 273—370 **29 Claims**



1. A mobile roping training apparatus comprising:

a) a simulated animal torso, including simulated hind quarters;

b) a pair of simulated hind legs;

c) rear body pivoting means for pivotally attaching the simulated hind legs to the rear of the simulated animal torso, said means providing for one of said legs to be pivotally attached to a side of the simulated animal torso in an anatomical position and the other of said legs to be pivotally attached to an opposite side of the simulated animal torso in an anatomical position, said rear body pivoting means providing for forward and backward pivoting of said hind legs about said rear body pivoting means;

d) support means for maintaining said simulated animal torso and pivotally attached legs in a desired position for roping training;

e) front body pivoting means providing for pivotal attachment of the simulated animal torso to the support means and providing for up and down pivoting of the simulated animal torso about said body pivoting means, thereby providing for up and down movement of the simulated animal torso and the pivotally attached hind legs;

f) energy supply means;

g) drive means connected to said energy supply means and pivotally connected to the hind legs, said drive means providing for the transfer of energy from said energy supply means to the hind legs and the torso, providing for repetitive back and forth pivoting of the legs about the rear body pivot means, and providing for said up and down movement of the simulated animal torso and the attached hind legs, whereby the drive means causes the hind legs to pivot and move in a rearward direction as the animal torso moves toward a down position, and causes the hind legs to pivot and move in a forward direction as the animal torso moves toward an up position, thereby simulating the torso and hind leg movement of a running animal.

5,709,387
AXLE SEAL

Stanley E. Matczak, Ellington, Conn., assignor to Seals-It, East Hartford, Conn.

Filed Jan. 14, 1994, Ser. No. 181,855
Int. Cl.^{6} F16J *15/32*
U.S. Cl. 277—35 **12 Claims**

1. An axle seal comprising:

a generally cylindrical member having opposing ends with an opening longitudinally therethrough; and

first and second spaced apart seal means secured to said cylindrical member, each of said first and second seal means having an aperture therethrough, said apertures in said first and second seal means being in general alignment with said opening in said cylindrical member, each of said apertures in

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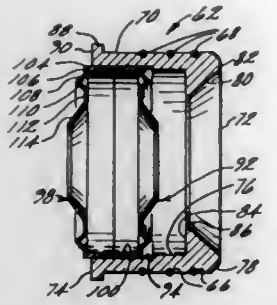


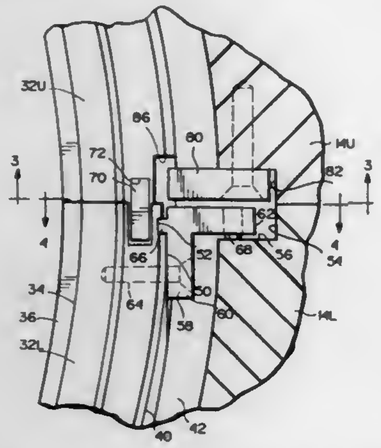
said first and second seal means having a diameter less than a diameter of said opening in said cylindrical member, said diameter of each of said apertures in said first and second seal means being about thirty-five percent smaller than a diameter of an axle passing therethrough, said first and second seal means for sealingly engaging an axle passing through said apertures in said first and second seal means, each of said first and second seal means comprising,

an outer first generally flat portion,
a first inclined portion depending from said first flat portion,
a second opposing inclined portion depending from said first inclined portion,
a second generally flat portion depending from said second inclined portion, and
a third inclined portion depending from said second flat portion and terminating at said aperture.

5,709,388
VARIABLE CLEARANCE PACKING RING WITH GUIDE FOR PREVENTING CIRCUMFERENTIAL DISPLACEMENT

David Robert Skinner, Pattersonville; Victor John Knorowski, Rexford; Martin Francis O'Connor, Scotia; Richard Jon Chevrette, Cohoes, and Thomas William Swart, Niskayuna, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Sep. 27, 1996, Ser. No. 721,655
Int. Cl.⁶ F16J *15/447*
U.S. Cl. 277—53 **9 Claims**



1. Apparatus for preventing circumferential displacement of a segment disposed in a stationary component of a rotary machine having a component rotatable about an axis, the stationary component having an annular groove about the axis, at least one axially directed locating flange about the axis and in part defining a slot opening into the groove, and a stop, said apparatus comprising:

a segment body for forming one of a plurality of annular segments about the axis of the machine and for partial disposition in the groove of the stationary component;
said segment body having an arcuate seal face, at least one axially directed flange for disposition in the groove and a neck portion receivable in the slot and interconnecting said flange and said seal face; and
a member carried by said segment body and projecting generally outwardly thereof for engagement with the stop carried by the stationary component for preventing circumferential displacement of the segment body about the groove;
wherein said member comprises a bracket secured to an outer face of said segment body and having a portion of said bracket projecting outwardly of said segment body for slidable engagement with and support by the stationary component; and
wherein an outer face of said segment body is arcuate from end to end, said segment body having a fiat along said outer face, said bracket having a leg thereof secured to said segment body against said flat thereof and another leg projecting outwardly of said segment body.

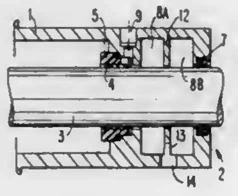
5,709,389
SHAFT SEALING ARRANGEMENT HAVING FLUID FLUSHING MEANS

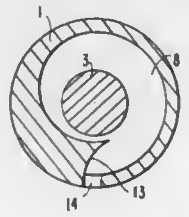
Bengt Algers, Nol, and Leo Kotkaniemi, Älvängen, both of Sweden, assignors to ADS Pump Production, Mölndal, Sweden

Division of Ser. No. 234,668, Apr. 28, 1994, Pat. No. 5,540,449. This application Apr. 22, 1996, Ser. No. 636,043

Claims priority, application Sweden, Apr. 28, 1993, 9301425-6

Int. Cl.⁶ F16J *15/447*
U.S. Cl. 277—65 **6 Claims**





1. A sealing dog for providing a mechanical planar seal about an operatively rotatable shaft, said sealing dog comprising:

a housing;
a primary mechanical planar seal defined by a seat member fixed to the housing and a confrontingly-opposed movable part located at a first position axially along the shaft for rotation with the shaft relative to said seat member and housing;
a secondary seal located at a second position axially along the shaft and axially spaced from said first position;
an inlet defined in said housing for admitting a flushing liquid into the housing and between said seat member and movable part for lubricating and cooling said primary seal;
a liquid collection chamber defined within said housing between said primary and secondary seals for receiving and collecting flushing liquid from said primary seal;
an outlet defined in said housing for discharging flushing liquid from within said housing;
a drain passage connecting said collection chamber and said outlet for communicating flushing liquid from the chamber to the outlet; and
a predeterminately-configured wall disposed in said housing and dividing said collection chamber into a first portion and a second portion in liquid communication with each other and with said drain passage;

wherein said wall comprises a radially-peripheral boundary of said collection chamber having a substantially spiral shape such that the collection chamber has an increasing cross-sectional width in a circumferential direction toward said outlet.

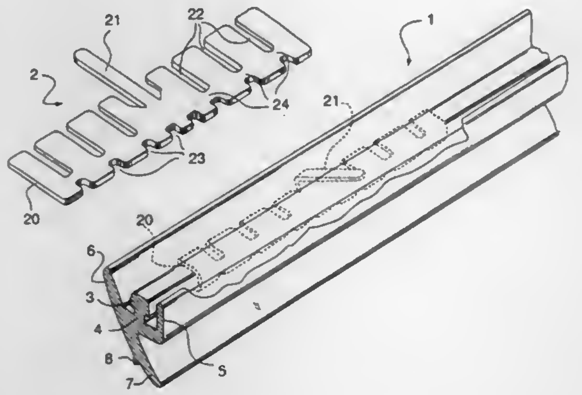
5,709,390
ELASTOMERIC SEALING GASKET FOR COOKING OVEN DOORS

Angelo Faccoli, Brescia, Italy, assignor to Posa S.p.A., Milan, Italy, and Techno, L.L.c., Northport, Mich.

Filed Aug. 5, 1996, Ser. No. 693,864

Claims priority, application European Pat. Off., Aug. 4, 1995, 95830359

Int. Cl.⁶ F16J *15/12*
U.S. Cl. 277—166 **11 Claims**



1. An elastomeric sealing gasket of continuous length for cooking oven doors, the gasket comprising an elastomeric strip having a longitudinal rib, the strip being provided with at least one elongated metal element, the metal element having a base, the base having a first series of transverse notches extending from a bridge of a longitudinal continuous strip of unbroken area of material, the notches being longer than the width of the bridge creating a metal element which is asymmetrical with respect to its longitudinal axis, the metal element also having a protruding element extending therefrom which can be bent to form a hook able to engage in apertures provided in the over, the base of the metal element being mechanically seamed to the rib of the strip so that the bridge is disposed on one side of the longitudinal axis of the rib, the metal element facilitating the bending of the gasket to follow a corner of the oven door, and to facilitate proper positioning of the hook and gasket.

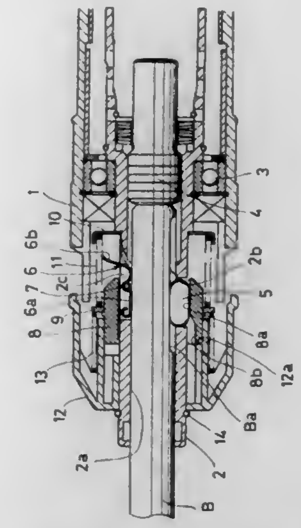
5,709,391
BIT MOUNTING DEVICE

Takuo Arakawa; Yasutoshi Shimma, and Eiichi Futamura, all of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

Filed Sep. 4, 1996, Ser. No. 706,229

Claims priority, application Japan, Sep. 6, 1995, 7-229215

Int. Cl.⁶ B23B *31/11;45/16*
U.S. Cl. 279—19.4 **15 Claims**



1. A bit mounting device for removably mounting a mounting tool which has a barrel including a mounting hole adapted for receiving the bit, comprising:

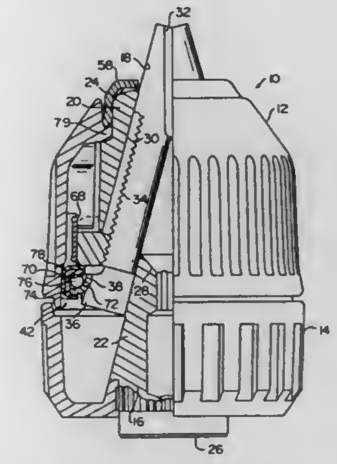
an engaging member engageable with the bit;
a control member mounted on the barrel and movable between a holding position and a releasing position, said control member in said holding position being operable to fix said engaging member in an engaging position for engagement with the bit, and said control member in said releasing position being operable to permit said engaging member to move from said engaging position to a disengaging position for disengagement from the bit;
stopper means operable to hold said control member in said releasing position when the bit is removed from the barrel;
said stopper means includes a stopper member mounted on the barrel, an engaging portion and a protruding portion;
said engaging portion being in engagement with said control member, said protruding portion protruding into the mounting hole of the barrel when the bit is removed from the barrel; and
said stopper member being pushed by the bit at said protruding member, so that said engaging portion is disengaged from said control member when the bit is inserted in the mounting hole.

5,709,392
TOOL CHUCK

Christopher B. Barton, and Stephen W. Steadings, both of Seneca, S.C., assignors to Power Tool Holders Incorporated, Wilmington, Del.

Continuation of Ser. No. 289,922, Aug. 12, 1994, Pat. No. 5,501,473, which is a continuation-in-part of Ser. No. 106,063, Aug. 13, 1993, Pat. No. 5,348,317. This application Jun. 7, 1995, Ser. No. 472,181

Int. Cl.⁶ B23C *31/12*
U.S. Cl. 279—62 **17 Claims**



1. A chuck for use with a manual or powered driver having a rotatable drive shaft, said chuck comprising:

a) a generally cylindrical body member having a nose section and a tail section, said tail section adapted to mate with said

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drive shaft of said driver and said nose section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;
b) a plurality of jaws slidably positioned in said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof;
c) a nut rotatably mounted on said body member and in engagement with threads on said jaws;
d) a primary retainer member axially fixed on said body for maintaining said nut on said body;
e) a generally cylindrical front sleeve member in driving engagement with said nut and overlying said nose section of said body member whereby when said front sleeve member is rotated with respect to said body member, said jaws will be moved thereby; and
f) a secondary retainer member axially fixed on said body for maintaining said sleeve on said body.

5,709,393

TOOL BIT CHUCK FOR DRILLING AND CHISELING BITS

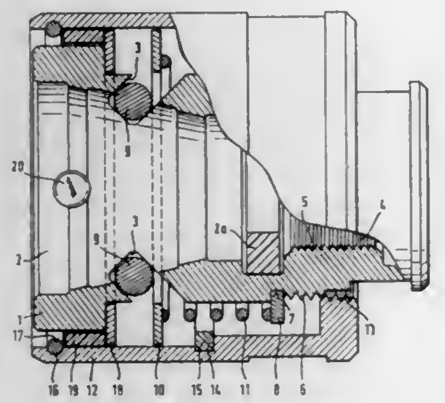
Leopold von Keudell, Eching; Klaus Nagelschmied, Germering, both of Germany, and Bernhard Plunger, St. Anton, Austria, assignors to Hilti Aktiengeschaft, Schaan, Liechtenstein

Filed Sep. 27, 1996, Ser. No. 722,285

Claims priority, application Germany, Sep. 28, 1995, 195 36 154.7

Int. Cl.⁶ B23B *31/107*

U.S. Cl. 279—97 **8 Claims**



1. Tool bit chuck for drilling and chiseling bits comprises an axially extending receiving sleeve (**1**, **21**) forming an axially extending conically shaped receiving passageway (**2**, **22**) with at least one opening (**3**, **23**) extending through said receiving sleeve transversely of the axial direction thereof, an annular shaped actuating element (**10**, **30**) encircles said receiving sleeve, a spring element (**11**, **31**) acting on said actuating element, at least one latching element (**9**, **29**) radially displaceable inwardly through said opening (**3**, **23**) in said receiving sleeve into said receiving passageway (**2**, **22**) by said actuating element (**10**, **30**), an axially extending actuating sleeve (**12**, **32**) laterally encircling and axially displaceable of said receiving sleeve and located outwardly of said actuating element, said actuating sleeve (**12**, **32**) having a stop (**14**, **34**) on an inside surface thereof and arranged to provide an axially directed force against said actuating element, and means (**6**, **13**, **26**, **33**) for axially displaceably connecting said actuating sleeve to said receiving sleeve.

5,709,394

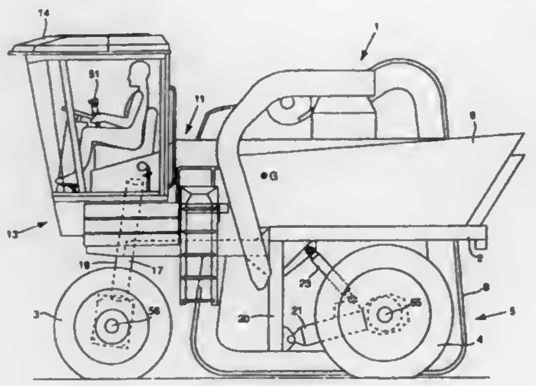
SUSPENSION MEANS FOR A UTILITY VEHICLE

Jean-Paul Marcel Lucien Martin, Le Fenouiller, and Louis Jean-Baptiste Pambrun, La Roche sur Yon, both of France, assignors to New Holland Braud S.A., Coex, France

Filed Jan. 10, 1997, Ser. No. 779,747

Int. Cl.⁶ B60S *9/00*

U.S. Cl. 280—6.11 **14 Claims**



1. A utility vehicle (**1**).comprising:
a generally horizontal, rectangular frame (**2**) with opposed sides and opposed ends;
lwo first ground-engaging members (**3**) at a first end of said frame (**2**) and two second ground-engaging members (**4**) at an opposite, second end thereof;
first suspension means, supportingly mounted between said frame (**2**) and said first ground-engaging members (**3**) and comprising first oscillation means (**27**) for accomplishing movement of one first ground-engaging member (**3**) in opposition to the movement of the other first ground-engaging member (**3**);
suspension control means (**26**, **49**), comprising first oscillation control means (**85**), operatively linked to said first oscillation means (**27**) and changeable between an enabling and an inhibiting state, wherein said movement of the first ground-engaging members (**3**) is permitted and obstructed respectively; and
second suspension means, supportingly mounted between said frame (**2**) and said second ground-engaging members (**4**)
characterized in that:
  said second suspension means comprise second oscillation means (**77**) for accomplishing movement of one second ground-engaging member (**4**) in opposition to the movement of the other second ground-engaging member (**4**); and
  said suspension control means (**26**, **49**) further comprise second oscillation control means (**85**), operatively linked to said second oscillation means (**77**) and changeable between an enabling and an inhibiting state, wherein said movement of the second ground-engaging members (**4**) is permitted and obstructed respectively.

5,709,395

THREE WHEEL ROLLER SKATE

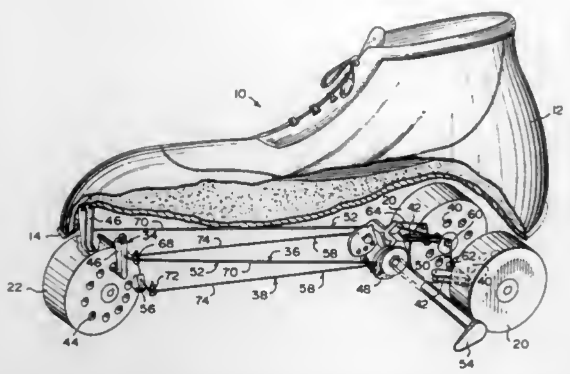
Charles Lee, P.O. Box 22887, GMF, Barrigada, Guam, 96921

Filed Jan. 16, 1996, Ser. No. 586,367

Int. Cl.⁶ A63C *17/04;17/14;17/20*

U.S. Cl. 280—11.2 **12 Claims**

1. A three wheel roller skate which comprises:
a) a boot having a sole, wherein said boot is worn on a foot of a roller skater;
b) a support frame which is a generally U-shaped bracket attached to said sole of said boot in an inverted manner, said U-shaped bracket including:
  i) a base attached to said sole of said boot;
  ii) a pair of rear wheels mounted in a rotatable manner to a rear end of said support frame; and



  iii) a front wheel mounted in a rotatable manner to a front end of said support frame, so that said roller skate can be better maneuvered by the roller skater; and
  iv) a pair of arms extending downwardly from said base, wherein each axle of said rear wheels is mounted to an exterior surface of one said arm, while an axle of said front wheel is mounted between interior surfaces of said arms;
c) means for locking said rear wheels and said front wheel, so as to prevent said rear wheels and said front wheel from rotating, said locking means including:
i) each said rear wheel having a plurality of apertures radially positioned on an inner surface about the axle and facing the exterior surface of one said arm;
ii) a pair of rear wheel stop levers, in which each said rear wheel stop lever is spring biased hinged to the exterior surface of one said arm, so that each said rear wheel stop lever will normally engage with one said aperture in one said rear wheel;
iii) said front wheel having a plurality of bores radially positioned on opposite surfaces about the axle and facing the interior surfaces of said arms; and
iv) a pair of front wheel stop levers, in which each said front wheel stop lever is spring biased hinged to the interior surface of one said arm, so that each said front wheel stop lever will normally engage with one said bore in said front wheel.

5,709,396

ROLLER SKATE WITH IMPROVED COMFORT

Claudio Zorzi, Paderno di Ponzano Veneto, and Francesco Caeran, Montebelluna, both of Italy, assignors to Nordica S.p.A., Trevignano, Italy

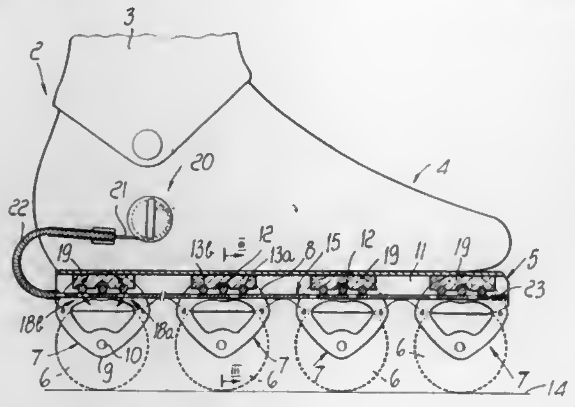
Continuation of Ser. No. 456,457, Jun. 1, 1995, abandoned.

This application Apr. 2, 1997, Ser. No. 816,198

Claims priority, application Italy, Jun. 9, 1994, TV94A0065

Int. Cl.⁶ A63C *17/06*

U.S. Cl. 280—11.28 **22 Claims**



1. Roller skate with improved comfort comprising:
a frame having a horizontal extension;
a plurality of wheels; and
a damping means connecting each of said wheels to said frame for exclusively damping forces applied to the wheels acting in a direction which extends essentially in a direction other than 90 degrees to the extension of the frame;
wherein said damping means comprise:
  a plurality of oscillating supports;
  a first pivot which rotatably connects a wheel of said plurality of wheels to a respective support of said plurality of supports about a first axis extending in a horizontal plane;
  a second pivot which rotatably connects each said respective support of said plurality of supports to said frame exclusively about a single second axis extending in a horizontal plane such that each said respective support is capable of rotating only about said single second axis; and
  means for elastically biasing a rotation of each said respective support of said supports about said single second axis;
  wherein said first axis and said single second axis for each said respective support lie in a single vertical plane which is perpendicular to said horizontal extension of said frame when said respective support is in a non-oscillated position whereby for each said respective support a force acting on said wheel extending in the single vertical plane fails to cause each said respective support to rotate about said single second axis.

5,709,397

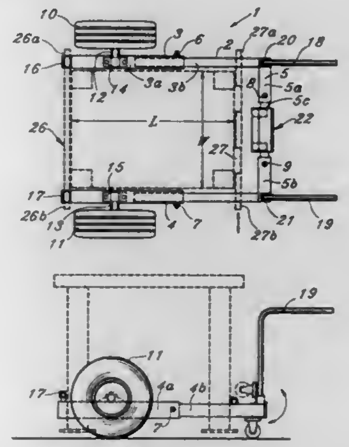
HEAVY EQUIPMENT MOVING DOLLY

John R. Hall, 38 Willow La., New Hartford, Conn. 06057

Filed May 8, 1996, Ser. No. 646,960

Int. Cl.⁶ B62B *1/00*

U.S. Cl. 280—47.17 **14 Claims**



1. Apparatus for moving heavy equipment including a substantially rectangular supporting structure having a longitudinal dimension and a transverse dimension, said apparatus comprising:
  first transverse support means adapted for attachment to one end of said supporting structure and having a pair of first support arms extending transversely beyond the transverse dimension of the supporting structure,
  second transverse support means adapted for attachment to the other end of the supporting structure and having a pair of second support arms arranged to be selectively extended beyond the transverse dimension of the supporting structure,
  a dolly having a substantially U-shaped frame with an internal length and an internal width,
  said frame comprising a pair of longitudinal beams each having first and second ends, and a cross member extending between the first ends of the longitudinal beams, the longitudinal beams and the cross member having means for adjusting a variable internal length and a variable internal width of the frame over ranges which include said respective longitudinal and transverse dimensions of the supporting structure,
  a pair of wheels, each rotatably mounted on a respective one of said longitudinal beams toward the second end thereof,

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a pair of receiving brackets disposed on the respective second ends of the longitudinal beams and dimensioned and arranged to receive the first transverse support arms when the second ends of the longitudinal beams are first tilted below a horizontal plane and positioned beneath the first transverse support arms, said receiving brackets being so located and dimensioned as to allow an operator to elevate one end of the supporting structure using the wheels as a fulcrum when the first ends of the longitudinal beams are lowered below a horizontal plane,

said selectively extendable second support arms arranged to be supported on the first ends of the longitudinal beams when the beams are returned to a horizontal plane.

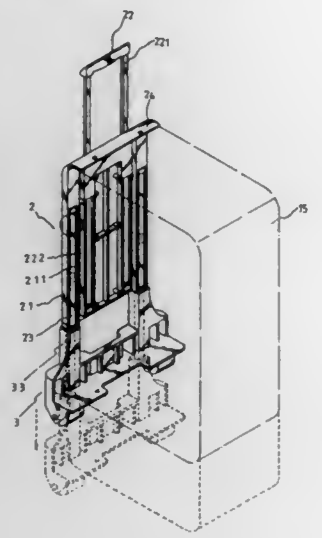
5,709,398
TELESCOPIC PULL LEVER STRUCTURE FOR LUGGAGE CASE

Lien-Ching Lu, No.12, Tien Hsin Li, Yuan Li Chen, Miao Li Hsien, Taiwan

Filed Mar. 13, 1996, Ser. No. 596,919

Int. Cl.^{6} B62B *1/12*

U.S. Cl. 280—47.24 **3 Claims**



1. A telescopic pull lever structure for luggage case, comprising a pull lever receiving board, a pair of telescopic pull levers and a base seat, wherein:

a handle, handle pull levers and inner slide channels are disposed at a middle portion of the pull lever receiving board, said handle pull levers are received in said inner slide channels and outer slide channels are disposed on outer sides of the receiving board, on inner sides of the outer slide channels are disposed wave-shaped teeth, an upper edge of the receiving board having a locking end formed with threaded holes;

each telescopic pull lever is a hollow lever received in the outer slide channel of the receiving board, an upper and a lower engaging hole being formed at an upper end of the pull lever and a detachment proof cap being fitted with the upper end, the detachment proof cap having circular holes on two sides corresponding to the upper engaging holes of the pull lever, a U-shaped spring and a locating block being disposed in the upper and lower engaging holes; and

the base seat includes a pair of casters and a bottom board at a bottom end, a pair of connecting seats formed with connecting holes being disposed on the bottom board for the telescopic pull levers to be inserted into the connecting holes and locked therein by screws.

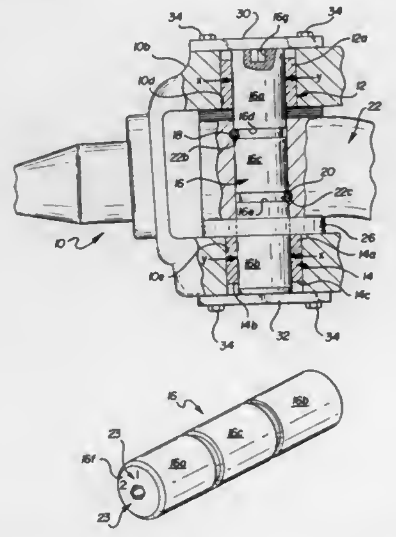
5,709,399
MOTOR VEHICLE STEERING ASSEMBLY

Joseph E. Smith, Jr., 24 Newhail Rd., Hilton Head, S.C. 29928

Filed Jun. 5, 1996, Ser. No. 658,548

Int. Cl.^{6} B62D *7/18*

U.S. Cl. 280—96.1 **24 Claims**



1. A motor vehicle steering assembly comprising a steering knuckle including a spindle for mounting a vehicle wheel and upper and lower yoke arms vertically spaced to receive the free end of an axle therebetween and respectively defining upper and lower bores; upper and lower bushings in the upper and lower bores; a kingpin having upper and lower portions journaled in the upper and lower bushings and an intermediate portion passing through a vertical bore in the axle free end; and at least one lock pin adapted to pass through a transverse bore in the axle free end for locking coaction with locking means on the intermediate portion of the kingpin; characterized in that:

the assembly includes indicia means on the kingpin indicating the angular position of the kingpin relative to the axle and means for rotating the kingpin to a new angular position relative to the axle in compensation for wear between the kingpin and the bushings.

5,709,400
FOLDING ASSEMBLY FOR THE SUPPORT OR TRANSPORTATION OF A PERSON

Michel Bonnier, Trevoux; Georges Bonnier, Villeurbanne, and André Taillard, Chessy-les-Mines, all of France, assignors to MGB, Trevoux, France

PCT No. PCT/FR94/00064, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/16928, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 19, 1994, Ser. No. 491,996

Claims priority, application France, Jan. 20, 1993, 93 00697; Aug. 6, 1993, 93 00926; Aug. 24, 1993, 93 10338

Int. Cl.^{6} B62B *7/00*

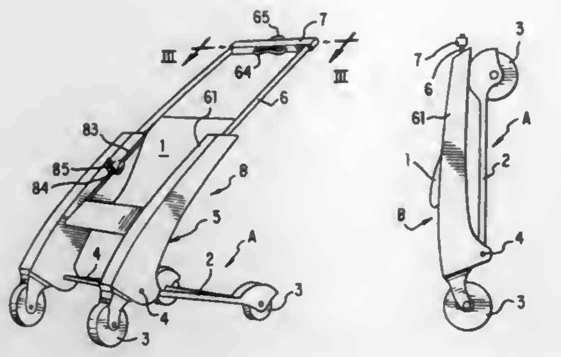
U.S. Cl. 280—650 **15 Claims**

1. A folding and height-adjustable assembly for supporting or transporting an individual comprising:

a bearing structure with two longitudinal members,

a support for the individual,

a carrying structure for carrying the support for the individual including two upright members articulated at their base to ends of the longitudinal members, said carrying structure being articulatable between a storage position in which the upright members are substantially parallel to the longitudinal members, and an operating position in which the upright members form an acute angle with respect to the longitudinal members,



an immobilization device which immobilizes the upright members and the longitudinal members in the storage position and the operating position, and

a guiding handle having branches mounted so that they can slide with respect to the upright members of the carrying structure, wherein the support for the individual is fixed between the branches of the guiding handle, a mechanism for locking the support for the individual in at least two predetermined positions is interposed between at least one of said upright members of the carrying structure and one of said branches of the guiding handle, and an unlocking control mechanism located on the guiding handle for unlocking the support for the individual.

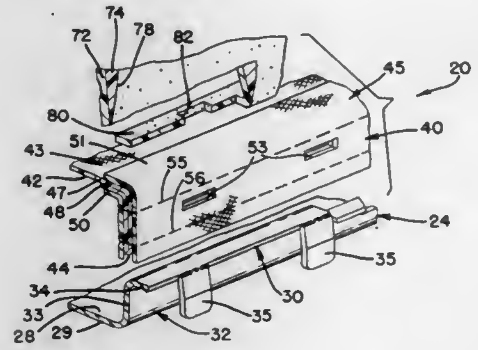
5,709,401
AIR BAG ATTACHMENT TO MODULE

David Patrick Schenck, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1995, Ser. No. 548,763

Int. Cl.^{6} B60R *21/16*

U.S. Cl. 280—728.2 **18 Claims**



1. An air bag module for a vehicle comprising:

a base structure including a plurality of hook portions;

an inflator for discharging inflator gas, the inflator coupled to the base structure;

an air bag made of flexible fabric air bag material, the flexible fabric air bag material of the air bag including a plurality of air bag apertures therethrough; and

the hook portions of the base structure extending through the air bag apertures such that the air bag is captured on the hook portions;

whereby upon air bag deployment the air bag is securely anchored to the base structure by engagement of the air bag with the hook portions of the base structure.

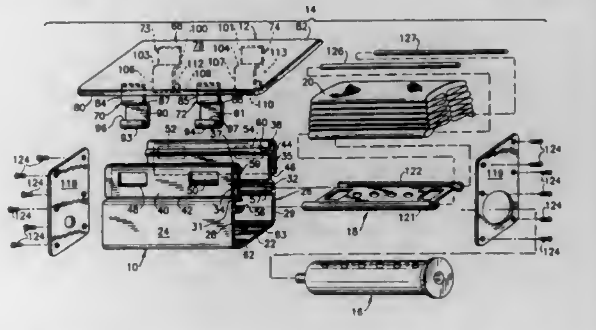
5,709,402
ATTACHMENT FINGERS FOR AIRBAG MODULE COVER

Timothy J. Leonard, Stuttgart, Germany, assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 29, 1996, Ser. No. 681,813

Int. Cl.^{6} B60R *21/16*

U.S. Cl. 280—728.2 **16 Claims**



1. A module cover defining at least one tear seam, the module cover comprising:

a lid having a first side edge and a second side edge, the first side edge opposite the second side edge;

at least one attachment finger having a first segment extending downwardly from a bottom surface of the lid adjacent the first side edge to a transverse section, the transverse section extending generally perpendicular to the first segment and towards the second side edge, and a second segment extending downwardly from the transverse section to a hook curved away from the second side edge and upwardly to a distal end of the finger; and

at least one attachment finger having a first segment extending downwardly from a bottom surface of the lid adjacent the second side edge to a transverse section, the transverse section extending generally perpendicular to the first segment and towards the first side edge, and a second segment extending downwardly from the transverse section to a hook curved away from the first side edge and upwardly to a distal end of the finger.

5,709,403
AIRBAG DEVICE PROVIDED WITH AIRBAGS LOCATED ON DRIVER'S SEAT SIDE AND PASSENGER'S SEAT SIDE

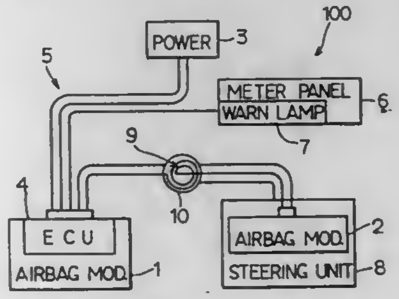
Masahiro Taguchi, Hazu-gun; Kazutaka Katoh, Okazaki; Masatada Yoshida, Ichinomiya, and Masayasu Kato, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 3, 1995, Ser. No. 485,555

Claims priority, application Japan, May 18, 1994, 6-103919

Int. Cl.^{6} B60R *21/32*

U.S. Cl. 280—735 **24 Claims**



1. An airbag device comprising:

an electronic control unit for determining a vehicle collision and outputting a detection signal in response to the vehicle collision;

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a passenger seat airbag module including a first inflator for generating gas based on said detection signal from said electronic control unit, a first airbag inflated at a passenger seat side due to the gas from said first inflator and a first case for housing said first inflator and said first airbag;

a driver's seat airbag module including a second inflator for generating gas based on said detection signal from said electronic control unit, a second airbag inflated at a driver's seat side due to the gas from said second inflator and a second case for housing said second inflator and said second air bag;

at least one power source for supplying electrical power to said electronic control unit, and to said first and second inflators; and

wiring for electrical connection of said electronic control unit and said first and second inflators,

wherein said electronic control unit and said passenger seat airbag module are composed as a single unit.

5,709,404

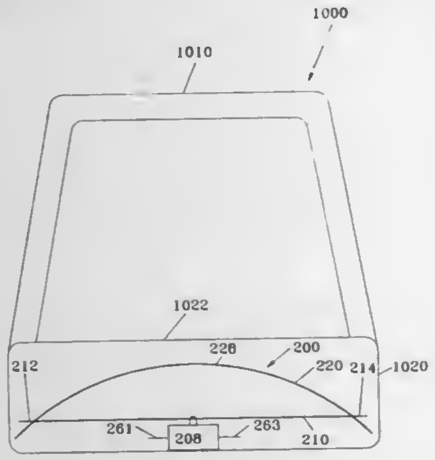
AIR BAG SYSTEM

Richard C. Brooks, P.O. Box 651, Merrimack, N.H. 03054

Filed Dec. 28, 1995, Ser. No. 579,867

Int. Cl.^{6} B60R *21/22*

U.S. Cl. 280—735 **14 Claims**



1. In a vehicle air bag system having a first switch means therein responsive to a current flow for placing the air bag system in a standby mode upon buckling of a seat belt of an associated seat belt system, the seat belt system including an open circuit when the seat belt is disengaged and a closed circuit upon seat belt buckling, the current flow in the closed circuit delivered to the switch means of the air bag system, the improvement comprising:

a normally open second switch means in the circuit for delivering current to the air bag system means upon closure;

means connected to said second switch means and positioned within a vehicle seat for response to a user sitting on the seat, said responsive means closing said normally open second switch means connected thereto, said closed second switch means delivering current to said first switch means, whereby to place the air bag system in a ready mode.

5,709,405

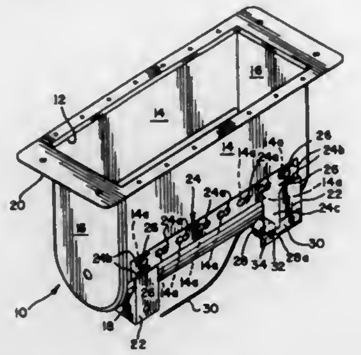
VARIABLE MASS FLOW AIRBAG MODULE

Davin G. Saderbolm, Salt Lake City; Kevin E. Hauppa, Ogden; Daniel R. Leininger, Layton, all of Utah, and Ian C. Faye, Stuttgart, Germany, assignors to Morton International, Inc., Chicago, Ill., and Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 10, 1996, Ser. No. 630,379

Int. Cl.^{6} B60R *21/26*

U.S. Cl. 280—736 **6 Claims**



1. A variable mass flow, airbag module system for use in a vehicle comprising:

an airbag module, said airbag module including a housing in communication with an inflatable airbag;

gas supply means for said housing for rapidly providing inflation gas for inflating said airbag;

vent means in a wall of said housing; and

valve means movable between a first position closing off said vent means and a second position for opening said vent means for venting a portion of said gas supplied in said housing;

valve actuator means for operatively controlling said valve means; and

electronic control means for controlling both said gas supply means and said valve actuator means, said electronic control means being responsive to multiple sensed inputs for selectively activating said valve actuator means and thus selectively varying the mass flow of said inflation gas directed to inflate said airbag.

5,709,406

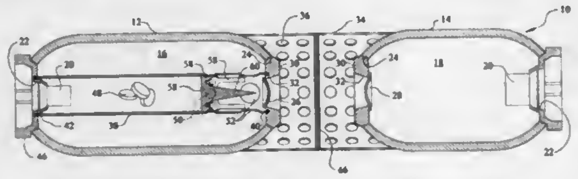
HYBRID INFLATOR WITH PROJECTILE GAS RELEASE

Eric S. Buchanan, North Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Feb. 28, 1996, Ser. No. 608,585

Int. Cl.^{6} B60R *21/26*

U.S. Cl. 280—737 **20 Claims**



1. An adaptive hybrid airbag inflator, comprising:

first and second chambers, each containing a quantity of stored inflation gas, and having an exit;

a burst disc sealing each of said exits;

a heating device operatively associated with each of said chambers;

a quantity of gas generating material mounted within at least one of said chambers, said material being operatively associated with said heating device of said chamber for ignition of said material;

a projectile mounted in said one of said chambers, said projectile including a nicking prong for inducing a flaw into an associated one of said burst discs, said projectile being movable between initial and final positions, in said initial position said nicking prong being spaced from said associated burst disc, and in said final position said nicking prong being in engagement with said associated burst disc, said projectile being mounted such that ignition of said gas generating material moves said projectile from said initial to said final position.

5,709,407

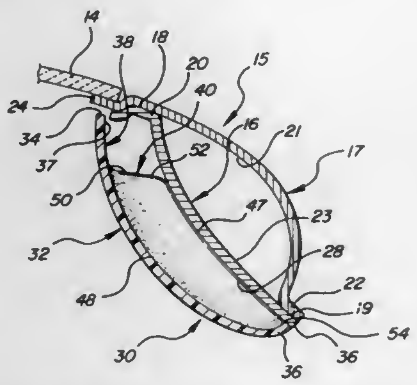
ENERGY ABSORBING VEHICLE TRIM MOLDING

James E. Stephens, Ortoville; Messaoud Founas, Auburn Hills; Fred Daris, Clarkston, and Sukhbir S. Bilkhu, Rochester Hills, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 13, 1995, Ser. No. 542,980

Int. Cl.^{6} B60R *21/04*

U.S. Cl. 280—751 **3 Claims**



1. A trim molding in combination with a vehicle body support having forward and aft opposite body joining flanges, the trim molding comprising:

a generally elongated molding panel made of synthetic resin material having a generally concavo-convex curved sectional shape defining an inwardly facing concave surface extending generally over the length of the panel and an outer convex surface;

a plurality of saber-shaped parallel transversely disposed ribs equally spaced apart over said panel concave surface, each said rib having a proximal convex curved base edge integrally formed with said panel concave surface, and a distal concave curved free edge positioned in juxtaposed matching conformity with an opposed convex curved surface of the vehicle body support;

each said rib having a forward free edge spaced from a portion of the vehicle body support wherein each said rib convex base edge and said rib concave free edge converge to a rib aft juncture adjacent an aft end of the vehicle body supports whereby

said ribs are adapted to cooperate with the vehicle body support providing an energy absorbing composite arrangement for absorbing forces exerted thereon by an occupant striking the molding panel, the energy absorption being provided by initial non-permanent deflection of the panel together with non-permanent deflection-of one or more of said ribs, and thereafter permanent deformation of the panel and one or more of the ribs if the force is sufficiently great.

5,709,408

MOTORIZED SAFETY BELTS FOR VEHICLES

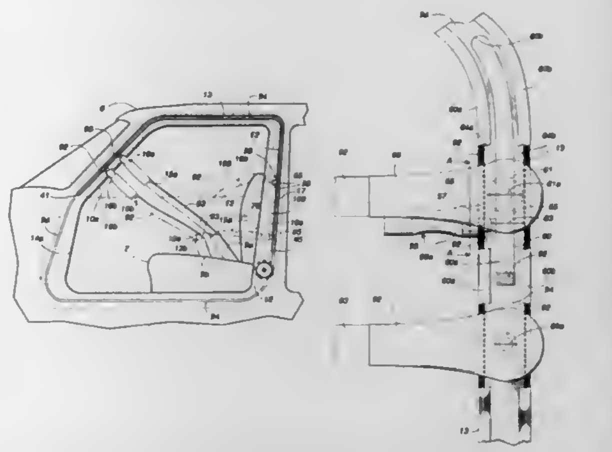
Bruce H. Carraway, Jr., 12 King's Bridge, Atlanta, Ga. 30329

Filed Jun. 12, 1996, Ser. No. 662,791

Int. Cl.^{6} B60R *22/06*

U.S. Cl. 280—804 **19 Claims**

19. A restraint system for a vehicle, comprising:



a shoulder belt being movable between a first inoperative position and a first operative position and having a first connector;

a lap belt being movable between a second inoperative position and a second operative position and having a second connector;

a movable drive belt having a slot therein, said belt coupled to the first and second connectors of said shoulder belt and said lap belt, respectively, at the slot, said drive belt reversibly driven to move said shoulder belt between the first inoperative position and the first operative position and to move said lap belt between the second inoperative position and the second operative position;

a catch affixed to said drive belt releasably coupled to the first connector of said shoulder belt during transition between the first inoperative position and the first operative position; and

wherein the slot maintains said shoulder belt in said first operative position when said lap belt is in the second operative position.

5,709,409

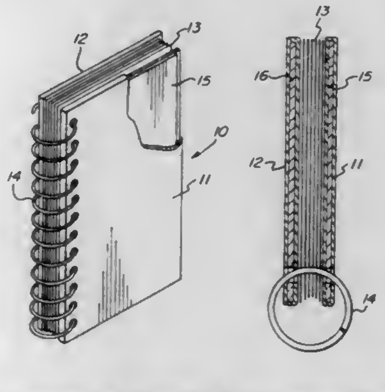
MAGNETIC SPIRAL BOUND BOOK

Peter H. Engel, 144 N. Robertson Blvd., Los Angeles, Calif. 90048-3102

Filed Apr. 10, 1996, Ser. No. 631,617

Int. Cl.^{6} B42D *1/00;3/00;* **F42F** *11/03*

U.S. Cl. 281—29 **5 Claims**



1. A book construction adapted to be supported on a vertical surface in an open position comprising:

a pair of opposed covers,

a plurality of pages disposed between said covers,

a spiral binding extending along one edge of said covers and pages therebetween for hingedly binding said covers and pages together,

a permanent magnet incorporated in at least one of said covers,

a weight incorporated in the other of said covers so that when said cover incorporating said magnet is magnetically attracted to a vertical supporting surface, said spiral binding is

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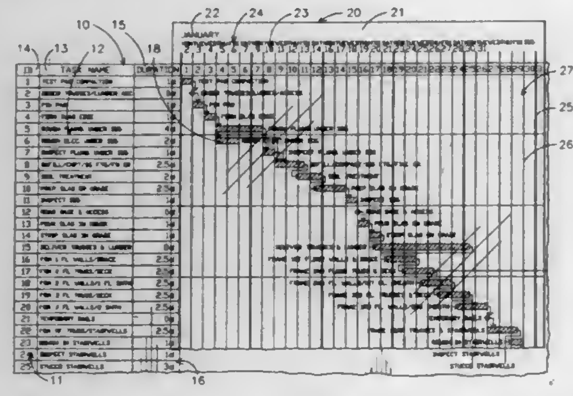
extended horizontally along the lower edge of said cover incorporating said magnet,

and said cover incorporating said weight under the influence of gravity being automatically disposed to an open book position when said one cover is magnetically supported on a vertically disposed support surface.

5,709,410
DEVELOPMENT AND CONSTRUCTION JOB SCHEDULING METHOD

Joe F. Reeves, Jr., 1730 Urbana Ave., Deltona, Fla. 32725
Filed Sep. 4, 1996, Ser. No. 707,763
Int. Cl.^{6} B42D *15/00*
U.S. Cl. 283—67 **9 Claims**



1. A development project scheduling method for scheduling a plurality of development tasks comprising the steps of:

selecting a development project schedule chart having a list of a plurality of discrete development project tasks for completion of the development project, said development project tasks being listed in the order that each task is to be performed relative to the other tasks and said development project schedule having a bar chart bar for each listed development project task scaled to the days required to complete each task;

making a calendar overlay having calendar days along one side portion thereof and a plurality of lines thereon marking calendar days and scaled to the selected development project schedule job schedule chart development task bar chart bars, said calendar overlay having selected calendar days missing therefrom;

overlaying said calendar overlay onto said selected development project schedule chart and aligning said calendar overlay calendar day plurality of lines over the current development task days and chart bars to thereby indicate the calendar days that each development project task is to be performed and completed and the completion date of the development project.

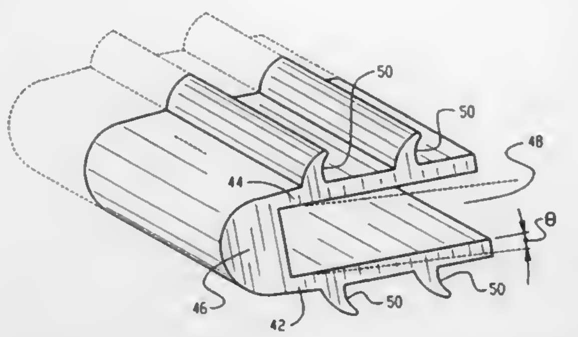
5,709,411
DRAFT COMPENSATING COUPLING MEMBER

Michael D. Bank, South Euclid, Ohio, and Michael R. Miller, Churubusco, Ind., assignors to The Lamson & Sessions Co., Cleveland, Ohio
Filed Apr. 22, 1996, Ser. No. 635,643
Int. Cl.^{6} F16L *17/06*
U.S. Cl. 285—110 **24 Claims**

1. A coupling member for joining two sections of conduit which each have circumferential end grooves, said coupling member comprising:

a ring for fitting into the respective end grooves, said ring having a predetermined draft angle;

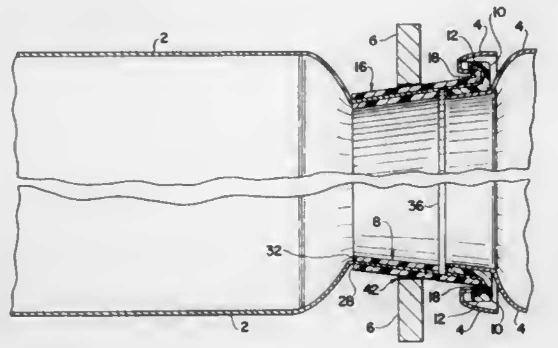
a gasket for creating a seal between said ring and said end grooves, said gasket comprising:



a first wall and a second wall, joined at a nose end, each of said walls having an exterior surface, said walls and nose end defining an interior cavity having an open end for receiving the ring, wherein the respective thicknesses of said first wall and said second wall vary from the nose end to the open end, resulting in walls with tapered cross sections, so as to accommodate the draft angle of the ring.

5,709,412
APPARATUS FOR CONNECTING TUBES

John P. Vadas, c/o JPV Services, 7206 Southeastern Ave., Hammond, Ind. 46324-2132
Filed Oct. 3, 1995, Ser. No. 538,443
Int. Cl.^{6} F16L *3/04*
U.S. Cl. 285—158 **17 Claims**



1. A tube connection apparatus for use with flexible tubing comprising:

a. an inner tapered sleeve having a proximal end with a proximal opening and a distal end with a distal opening that is generally smaller than the proximal opening; and

b. an outer tapered sleeve having a proximal end with a proximal opening and a distal end with a distal opening that is generally smaller than the proximal opening,

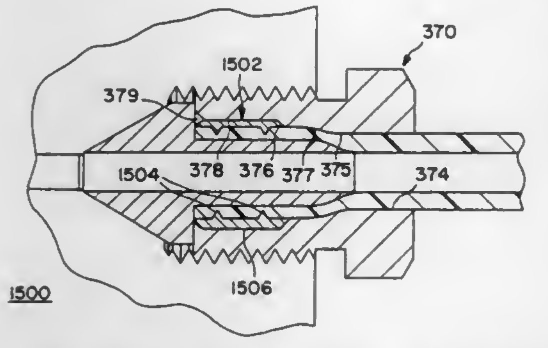
said proximal end of the inner tapered sleeve having an outside dimension that is larger than the distal opening of the outer tapered sleeve;

the distal end of the inner tapered sleeve being inserted into the proximal opening of the outer tapered sleeve and moved in the direction of the distal end of the outer tapered sleeve to affect a snug fit between at least a portion of an outer surface of the inner tapered sleeve and at least a portion of an inner surface of the outer tapered sleeve; and

the flexible tubing comprises a first flexible tube that passes over the distal end of the inner tapered sleeve which is lockingly secured between at least a portion of the outer surface of the inner tapered sleeve and at least a portion of the inner surface of the outer tapered sleeve and said first flexible tube extends outwardly from the distal end of the outer tapered sleeve which is snugly fit to the inner tapered sleeve.

5,709,413
LOW CARRYOVER FITTING AND METHOD FOR COUPLING TUBING TO A DEVICE USING THE SAME

Marshall L. Salyers, 641 S. Warren Ave., Malvern, Pa. 19355
Continuation-in-part of Ser. No. 40,426, Mar. 31, 1993, Pat. No. 5,423,581. This application Apr. 26, 1995, Ser. No. 429,120
Int. Cl.^{6} F16L *19/00*
U.S. Cl. 285—219 **17 Claims**



1. A fitting assembly for coupling tubing to a device having a sealing surface, comprising:

a ferrule for seating against the sealing surface, the ferrule having a head and a tail, one end of the tubing fitting over the tail of the ferrule;

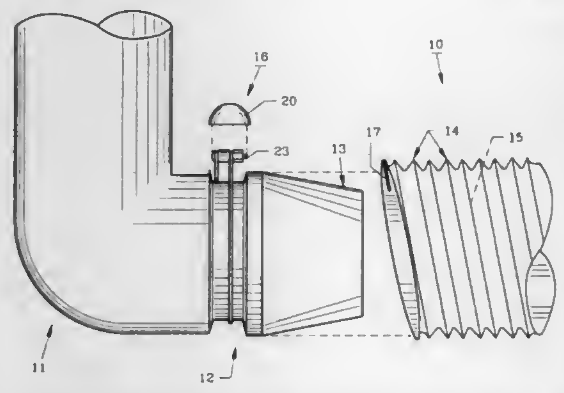
a cylindrical collar having a beveled rear surface and an inner surface for gripping the tubing, the collar being split along a longitudinal direction; and

coupling means for engaging the head of the ferrule to push the ferrule against the sealing surface, the coupling means having a ramped inner surface for engaging the rear surface to push the collar against the head of the ferrule without compressing the collar radially until the ferrule engages the sealing surface,

the coupling means compressing the collar radially only after the ferrule engages the sealing surface, to grip the tubing between an outer surface of the ferrule and the inner surface of the collar, the tubing forming a seal between the ferrule and the coupling means.

5,709,414
HOSE CLAMP CONNECTION AND METHOD

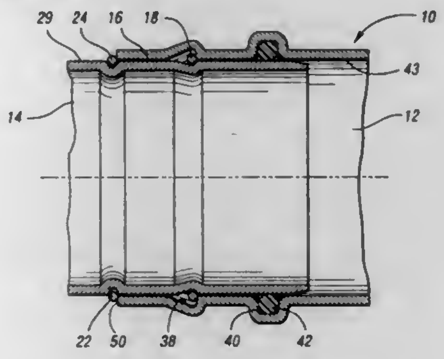
Mark R. Bailey, Madison, and David P. Tickle, Summerfield, both of N.C., assignors to Camco Manufacturing Inc., Greensboro, N.C.
Filed Dec. 1, 1995, Ser. No. 565,784
Int. Cl.^{6} F16L *33/00*
U.S. Cl. 285—242 **12 Claims**



1. A helical clamp to secure a convoluted hose to a fitting, said clamp comprising: a helical ring, a first and a second radial extension, each of said radial extensions including an upper end and a lower end, the lower end of each radial extension connected to said helical ring, an elongated member connecting the upper end of the first radial extension to the upper end of the second radial extension, said radial extensions separated along the axis of said helical ring to allow a hose convolution to fit between said radial extensions.

5,709,415
QUICK CONNECT DISCONNECT COUPLING

Melvin L. Witter, Dallas, Tex., assignor to XYZYX International Corporation, Dallas, Tex.
Filed Sep. 10, 1996, Ser. No. 709,860
Int. Cl.^{6} F16L *37/08*
U.S. Cl. 285—304 **15 Claims**



1. A quick connect telescopic connecter comprising:

a male member and a female member having an end portion, the members engageable in telescopic relation with the male member entering into the female member through the female member end portion and configured to provide a gap between the members sufficient to allow relative axial movement;

said female member having a recess in communication with the gap with a section of the recess forming a camming surface;

said male member having a first notch axially alignable with the recess in said female member;

a spring normally positioned within the female recess for selectively restricting said members against movement of withdrawal of the male member in an axial direction and releasing said members for unrestricted axial movement;

said spring having a outer diameter which will span the gap when the spring is in a seated position within the male member first notch and where an attempt to withdraw the male member when the spring is in the notch will cause the camming surface to wedge the spring into the seated position within the notch thereby defining a maximum withdrawal position with respect to the members;

an insertion restraint member for selectively restricting said members against relative movement of the male member into the female member in an axial direction and for releasing said members for unrestricted axial movement;

the male member having a second notch axially outward of the female member end portion when the members are in the maximum withdrawal position; and

the insertion restraint member positioned in the second notch, attempted movement of the male member into the female member will be limited by the abutment of the insertion restraint member against the female member end portion.

9. A method for maintaining a male member with a telescopic end and first and second notches, and a female member, with an end for receiving the male telescopic end in a recess, which members are configured to provide a gap therebetween sufficient to allow relative axial movement, in a relative telescopic relationship with a defined amount of axial movement allowed, comprising the steps of:

positioning in the recess a spring having a normal outer diameter allowing a portion to extend into the recess with a thickness that spans the gap;

inserting said male member into the female member through said spring until the first notch is aligned with the first spring;

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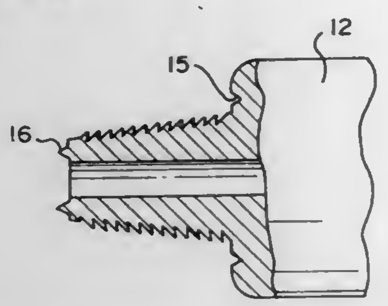
moving the male member axially in an outward direction until a cam portion of the recess seats the spring within the first notch to wedge the spring between the members to prevent further outward movement;

positioning an insertion restraint member in the second notch which will abut the female member during inward axial movement to prevent further inward movement.

5,709,416

THREADED COUPLING-TOOL JOINT

Roy Wood, 119 Persimmon St., Birmingham, Ala. 35214
Continuation-in-part of Ser. No. 286,178, Aug. 5, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,621
Int. Cl.⁶ F16L *25/00*
U.S. Cl. 285—330 **5 Claims**



1. A tool joint coupling including a box section and a complementary pin section comprising:

said box section having threads on an internal surface thereof and having an internal and an external shoulder;

a mortise member centrally disposed on one of said shoulders and a tenon member centrally disposed on the other thereof;

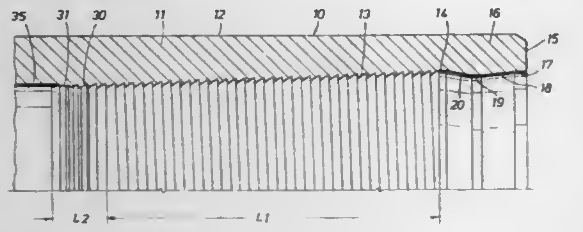
said pin section having threads on an external surface thereof and having an internal shoulder and an external shoulder, a mortise member centrally disposed on one of said shoulders and a tenon member centrally disposed on the other of said shoulders such that when said box and said pin sections are threaded together said centrally disposed tenon members will engage said centrally disposed mortise members to provide a tool joint upon which vector forces resulting from drilling operations conducted with said tool joint are aligned with and parallel to the central axis of said tool joint and will assist in keeping said tool joint together; and

said inner and outer mortise and tenon member on said box and pin sections providing identically matched tapered load bearing surfaces when seated together.

5,709,417

INTERFERENCE PIPE COUPLING

Ronald J. Verbeck, 2409 Bering Dr., #17, Houston, Tex. 77057
Continuation of Ser. No. 659,540, Jun. 6, 1996, abandoned, which is a continuation of Ser. No. 277,988, Jul. 20, 1994, abandoned. This application Jan. 31, 1997, Ser. No. 792,260
Int. Cl.⁶ F16L *13/14*
U.S. Cl. 285—382 **8 Claims**



1. A pipe joint comprising:

a sleeve having an outer end, an axial bore, and a central portion;

a section of helical threads formed on the wall of said axial bore and extending from a first location adjacent said outer end to a second location inwardly thereof, the inner diameter of said axial bore tapering inwardly from said first location to said second location with said helical threads providing a first set of tapering gripping edges;

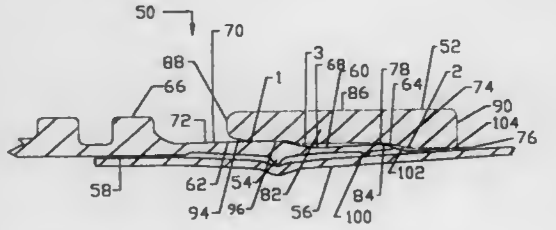
a section of circumferential threads formed on the wall of said axial bore extending from said second location to a third location adjacent said central portion, the inner diameter of said axial bore being uniform between said second location and said third location with said circumferential threads providing a second set of parallel gripping edges; and;

a pipe member having a plain end of an outer diameter greater than the inner diameter of said second set of parallel gripping edges and greater than the inner diameter of said first set of tapering gripping edges at said first location, the outer surface of said pipe member upon being forced within said sleeve engaging said first and second sets of gripping edges in gripping relation to provide a rigid and leak-proof intereference fit there between.

5,709,418

PIPE FITTING WITH COUPLING BODY AND SWAGE RING WITH KICKDOWN DEVICE TO PREVENT REDUCTION IN SEALING TOOTH CONTACT FORCE

Robert W. Benson, San Carlos; Melvin C. Biersteker, Portola Valley, and Andy Song, South San Francisco, all of Calif., assignors to Lokring Corporation, Foster City, Calif.
Filed Mar. 20, 1995, Ser. No. 406,551
Int. Cl.⁶ F16L *13/14*
U.S. Cl. 285—382.2 **17 Claims**



1. An apparatus for making pipe connections with a pipe comprising:

a coupling body with a first surface adapted for receiving a pipe;

a swage ring which is urgeable relative to the coupling body in order to cause at least part, of the first surface to engage the pipe to create a seal;

said first surface of the coupling body having a first tooth for substantially biting into the pipe as said swage ring is urged relative to the coupling body;

said first surface having a second tooth for making at least a minimal bite into the pipe as said swage ring is urged relative to the coupling body;

said swage ring having a first portion for causing the first tooth to bite into the pipe and a second portion for causing the second tooth to bite into the pipe, wherein the first portion is spaced from the second portion so that the second tooth bites into the pipe subsequent to when the first tooth bites into the pipe;

said swage ring having a third portion for causing the first tooth to additionally bite into the pipe, one of (1) substantially simultaneously with the biting into the pipe by the second tooth or (2) subsequent to the biting into the pipe by the second tooth;

said coupling body having a second surface, with fourth and fifth portions, against which said swage ring contacts as said swage ring is urged relative to said coupling body;

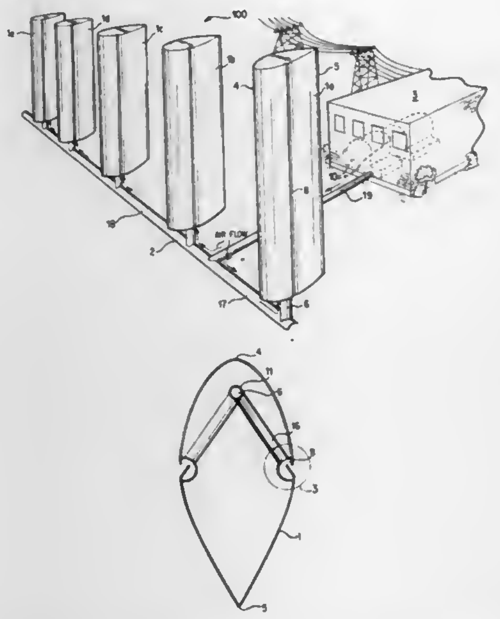
said coupling body having said fourth portion located in association with the first tooth such that as said first portion of the swage ring is urged against said fourth portion of said coupling body said first tooth bites into the pipe in order to create a seal; and

said coupling body having said fifth portion located in association with the second tooth such that as said second portion of the swage ring is urged against said fifth portion of said coupling body said second tooth bites into the pipe.

5,709,419

WIND ENERGY COLLECTION

John E. Roskey, 7456 Old Hwy. 395, Carson City, Nev. 89704
Continuation-in-part of Ser. No. 191,581, Feb. 3, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,548
Int. Cl.⁶ H02P *9/04;* F03D *9/02*
U.S. Cl. 290—55 **14 Claims**



1. A method of collecting energy from wind comprising the steps of:

a. providing an airfoil having an outer surface defining a leading edge, a central section of greatest breadth adjacent to which a Bernoulli effect reduced pressure region results as an air flow passes over the airfoil from the leading edge to a trailing edge, a trailing section defined between said section of greatest breadth and the trailing edge, an air passage contained within the outer surface, and at least one edge nozzle penetrating the outer surface within said section of greatest breadth, said at least one edge nozzle having an outlet orifice oriented toward the trailing edge and an inlet orifice feeding into the air passage and being positioned to communicate between the air passage and the Bernoulli effect reduced pressure region, the outer surface within said trailing section being substantially smooth and unpenetrated,

b. providing an airflow-driven turbine capable of converting an airflow into rotational mechanical energy, said turbine being in airflow communication with the air passage,

c. positioning the airfoil in the wind with the leading edge facing substantially into the wind and with the wind passing over the at least one edge nozzle,

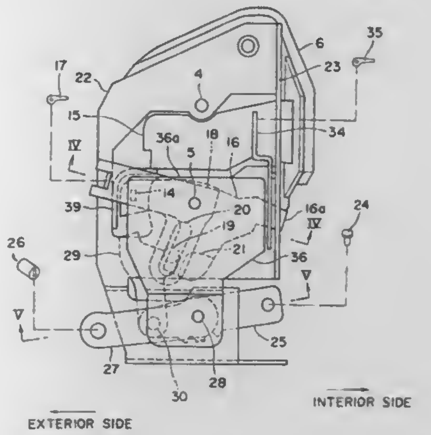
d. permitting a flow of air to be drawn through the airflow-driven turbine, thence through the air passage and out through the at least one edge nozzle into the Bernoulli effect reduced pressure region created as the wind passes over the at least one edge nozzle, and

e. permitting the flow of air through the airflow-driven turbine to drive the turbine and thereby convert the flow of air into the rotational mechanical energy.

5,709,420

VEHICLE DOOR LATCH DEVICE

Masaaki Umino, Yamanashi-ken, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 26, 1996, Ser. No. 704,797
Claims priority, application Japan, Aug. 24, 1995, 7-237844; Aug. 24, 1995, 7-237846
Int. Cl.⁶ E05C *3/16;* E05B *9/00*
U.S. Cl. 292—216 **9 Claims**



1. A vehicle door latch device for use on a vehicle door comprising:

a synthetic resin latch body for being mounted on the vehicle door and having a recess at a front side thereof;

a latch rotatably accommodated in the recess and engageable with a striker secured to a vehicle body when the vehicle door is closed;

a ratchet rotatably accommodated in the recess for holding engagement between the latch and the striker;

said latch body having a substantially horizontal bulged portion at a rear side thereof which is rearward bulged to define a passage for receiving the striker when the door is closed;

a door opening mechanism provided on the rear side of the latch body for releasing the engagement between the latch and the striker so as to open the door;

a locking mechanism provided on the rear side of the latch body and displaceable between a locked condition for disabling an opening operation of the door opening mechanism and an unlocked condition for enabling the opening operation of the door opening mechanism;

said door opening mechanism and said locking mechanism being located below the bulged portion when the door latch device is in use on the door in a manner to divert an intruding tool away from said door opening mechanism;

a metallic plate attached to an interior side of the rear side of the latch body, said metallic plate having an angled plate projecting rearwardly;

an inner lever journalled to the angled plate by a supporting shaft for operating the door opening mechanism, said inner lever being coupled to an inner open handle for the vehicle door; and

a protecting plate attached to the rear side of the latch body for substantially covering the door opening mechanism, said protecting plate attached to said latch body at a lower end of the protecting plate and at a position on the latch body spaced from a lower surface of the bulged portion, the door opening mechanism being located between said position and said lower surface, and said protecting plate extending from said position over the door opening mechanism and ending at an upper side edge which is adjacent and proximate said lower surface of the bulged portion, said protecting plate extending to and ending at an interior side edge which does not reach the angled plate the upper side edge and interior side edge lying in a plane.

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5,709,421
ELECTROMAGNETIC LOCKING DEVICES

Peter James Gillham, Cranbrook, United Kingdom, assignor to Newman Tonks Group P.L.C., United Kingdom

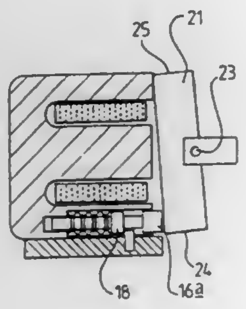
PCT No. PCT/GB95/02253, § 371 Date May 24, 1996, § 102(e) Date May 24, 1996, PCT Pub. No. WO96/10122, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 22, 1995, Ser. No. 649,608

Claims priority, application United Kingdom, Sep. 27, 1994, 9419404

Int. Cl.⁶ E05C *19/16*

U.S. Cl. 292—251.5 **8 Claims**



1. An electromagnetic locking device, comprising: an actuating assembly including an energizable electromagnet having side faces and an operative face which extends transversely between said side faces of the electromagnet, an abutment adjacent to one of said side faces, said abutment extending in a direction substantially perpendicular to said operative face and projecting beyond said operative face, and a cooperative assembly including an armature mounted for movement towards and away from said operative face in a direction substantially perpendicular to said operative face when the electromagnet and the armature are aligned and arranged so as to engage behind said abutment when the electromagnet is energized, said armature being mounted so as to allow the armature pivotally to move progressively onto and off the electromagnet across said transversely extending operative face, said actuating assembly further including at least one member adjacent said one side face of the electromagnet at which the abutment is provided, said at least one member being mounted for movement in a direction substantially perpendicular to said operative face between a retracted position and an extended position relative to said operative face, and means for driving said at least one member into said extended position to displace said armature clear of said abutment and out of contact with said electromagnet progressively across said transversely extending operative face when the electromagnet ceases to be energized.

5,709,422
SECURITY DEVICE FOR DOUBLE DOORS

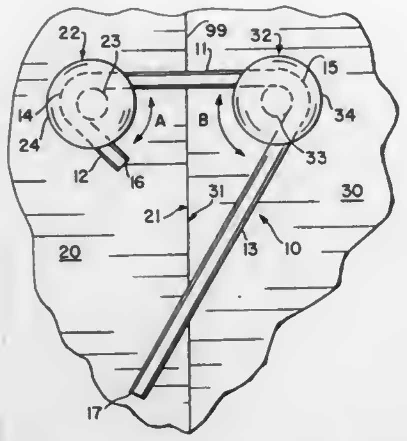
James Carl Malone, 12758 Maricopa Way, Jacksonville, Fla. 32246

Filed Jun. 10, 1996, Ser. No. 664,193

Int. Cl.⁶ E05C *19/18*

U.S. Cl. 292—288 **12 Claims**

1. A security device for double doors which meet at a juncture between adjacent handles with necks and enlarged heads, the device comprising a rigid, generally linear, lateral bracing segment, a rigid, generally linear, depending segment connected to said lateral bracing segment at an interior angle of less than 90 degrees and a rigid, generally linear, depending bracing segment connected to said lateral bracing segment at an interior angle of less than 90 degrees, said depending segment being shorter than said depending bracing segment, said depending bracing segment of sufficient length to extend across said juncture when said lateral bracing segment is positioned on said door handle necks, and where said device has a generally triangular configuration.



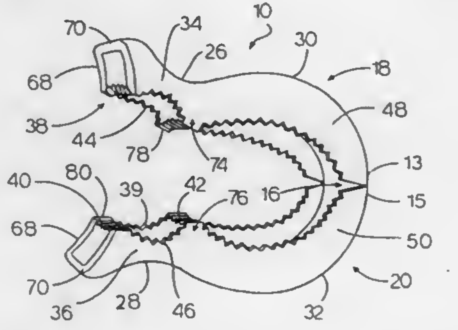
5,709,423
FOOD GRIPPER UTENSIL

Ivan Romero, 6051 Devonshire Dr., Palmdale, Calif. 93536

Filed May 17, 1996, Ser. No. 649,283

Int. Cl.⁶ A47G *21/10;* **A47J** *43/28*

U.S. Cl. 294—25 **21 Claims**



1. A utensil for gripping food, comprising:

a pair of jaws rotatably interconnected so that said pair of jaws may be manually closed on the food, said pair of jaws having pairs of rows of opposing teeth, each pair of said pairs of rows of teeth outwardly curved to form a gap therebetween accommodating a desired portion of the food therein, said pair of jaws having outer surfaces which are entirely and continuously contoured and dimensioned to provide depressions and raised portions conforming to and accommodating a user's digits to provide full contact with entire front portions including tips of the user's digits in order to facilitate manual closure of said pair of jaws.

5,709,424
APPARATUS FOR ELASTICALLY GRIPPING AND HOLDING AN ARTICLE

John Schuler, 126 Old Connecticut Path, Wayland, Mass. 01778

Filed Nov. 13, 1996, Ser. No. 748,060

Int. Cl.⁶ B65D *63/18*

U.S. Cl. 294—148 **7 Claims**

1. An apparatus for elastically gripping and holding an article, comprising:

a flexible elongated handle member lying generally along a longitudinal handle axis having an anterior and a posterior end, the handle defining an interior carrying opening proximate the anterior end, and including a strap coupling area spaced from the carrying opening;

a flexible, elastic strap coupled to the handle member at the strap-coupling area and extending therefrom to a distal end;

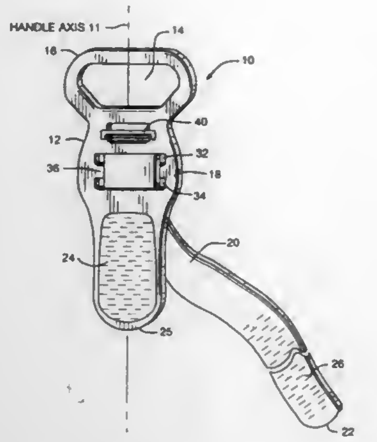
cooperating releasable coupling means partially proximate the distal end of the strap and also partially coupled to the handle member proximate said posterior end, to allow the strap to be releasably fastened to the handle member;

wherein said strap-coupling area is provided between said interior carrying opening and said releasable coupling means coupled to the handle member;

whereby the strap can be stretched tightly around an article, and coupled to the handle member, to grip and hold the article, to allow the article to be carried or hung by the carrying opening in the handle member;

wherein the handle member further includes a gripping portion extending from the strap-coupling area generally along the longitudinal handle axis proxmiate the posterior end, the gripping portion being adapted to bend partially around the article being held, and the gripping portion lying under the strap when the strap is stretched around the article and fastened to the handle; and

wherein the gripping portion carries, on the portion under the strap when the strap is stretched around the article and fastened to the handle, the releasable coupling means portion that is coupled to the hand member, to allow the strap to be fastened to the gripping portion.



5,709,425
CARRIER FOR SKATES AND OTHER ARTICLES

Marcos Cordova, 136 E. 208th St., Bronx, N.Y. 10467

Filed Oct. 7, 1996, Ser. No. 726,629

Int. Cl.⁶ A45F *5/10;* **A47F** *7/08*

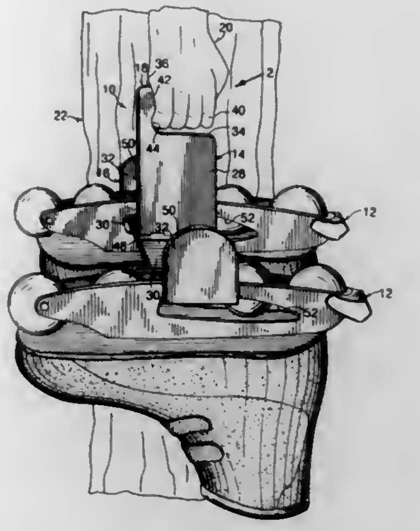
U.S. Cl. 294—162 **11 Claims**

1. A carrier for skates or other articles comprising:

a) an elongate upstanding member;

b) means on a lower end of said elongate upstanding member, for holding a pair of skates or other articles in a side-by-side hang down relationship, said holding means including:
  i) a pair of crossbars, each said crossbar extending oppositely from each other at a right angle on said lower end of said elongate upstanding member;
  ii) a pair of arms, each said arm extending upwardly on a distal end of one said crossbar; and
  iii) a locking hinge between each said crossbar and said arm, so that said arms can fold down against said crossbars when not in use; and

c) means on an upper end of said elongate upstanding member, in a first instance for grasping by a hand of a person, and in a second instance for hanging said carrier for storage.



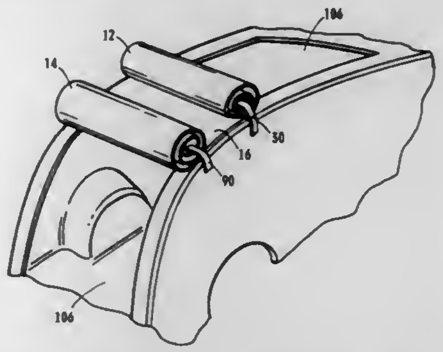
5,709,426
MOTOR VEHICLE BODY

Delbert D. DeRees, Romeo, and Del C. Schroeder, Bloomfield Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 20, 1995, Ser. No. 546,433

Int. Cl.⁶ B62D *29/04;* **B60J** *7/08*

U.S. Cl. 296—185 **7 Claims**



1. An automobile defining a longitudinal axis and a transverse axis, the automobile comprising:

a plastic body having opposed sides establishing a passenger compartment therebetween; and

a convertible automobile top engaged with the body for selectively positioning the top above the passenger compartment, the top being movable between an up configuration, wherein the top is taut throughout a length thereof and extends, between the sides of the body to cover the passenger compartment, and a down configuration, wherein the top is longitudinally furled to expose the passenger compartment from above the automobile, the top including:

a top portion positioned above the passenger compartment, at least one transversely oriented roof bow being sewn to the top portion and supported by the sides of the automobile when the top is in the up configuration; and

a trunk lid portion including a rear edge, the trunk lid portion depending downwardly from the top portion behind the passenger compartment and being engaged with the body for movement between an open configuration, wherein the rear edge of the trunk lid portion is raised and the passenger compartment is exposed from a rear of the automobile, and a

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closed configuration, wherein the rear edge of the trunk lid portion is lowered and the trunk lid portion covers the passenger compartment.

5,709,427

VEHICLE ROOF WITH A ROOF PANEL THAT CAN BE PIVOTED OPEN

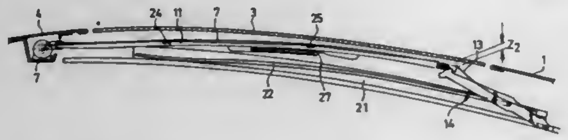
Manfred Färber, Wielenbach; Thomas Wikelski, Schlagenhofen, and Johann Mayer, Petershausen, all of Germany, assignors to Webasto Karosseriesysteme GmbH, Stockdorf, Germany

Filed Jan. 11, 1996, Ser. No. 584,140

Claims priority, application Germany, Jan. 9, 1995, 195 00 367.5

Int. Cl.⁶ B60P *7/53*

U.S. Cl. 296—214 **14 Claims**



1. Vehicle roof with a pivotable roof panel, a window shade located under the roof panel for alternately covering and at least partially uncovering the roof panel by being unwound and wound from a roller, said window shade being connected with at least one rigid element which runs crosswise to a direction of movement of the window shade and which is guided in longitudinally running, lateral guide elements; wherein a lifting mechanism is provided for raising the guide elements when the window shade is moved in a closing direction covering the roof panel and for lowering the guide elements when the window shade is moved in an opening direction uncovering the roof panel.

5,709,428

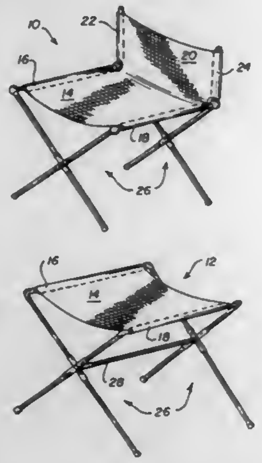
COLLAPSIBLE FOLDING FURNITURE

Joel F. Hugghins, McGregor, Tex., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 20, 1996, Ser. No. 650,511

Int. Cl.⁶ A47C *4/30;* **A47D** *1/02*

U.S. Cl. 297—16.2 **26 Claims**



1. A collapsible support structure comprising:
a support surface extending between at least two side braces;
at least two leg supports for maintaining the support surface in a substantially horizontal position;
a separate socket joint corresponding to each leg support, each socket joint being slidingly engaged with an upper end of a corresponding leg support and engaged with an end of a side brace;
at least one of the sockets having an eyelet attached within the socket; and
a separate elastic cord corresponding to each leg support, each elastic cord connected between a corresponding leg support and a corresponding socket joint eyelet and having a length selected to be in a state of tension when the corresponding leg support is engaged with the corresponding socket joint, as well as to enable the corresponding leg support to be disengaged from the corresponding socket joint and pivoted about the socket joint to the support surface while the cord remains connected.

5,709,429

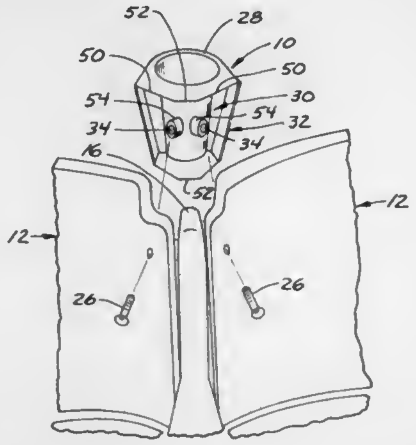
CUPHOLDER ATTACHMENT FOR A SEAT BRACKET

Peter W. A. Bergin, Hopkins, Minn., assignor to MTS Northwest Sound, Inc., Minneapolis, Minn.

Continuation of Ser. No. 311,513, Sep. 23, 1994. This application Apr. 12, 1996, Ser. No. 631,544

Int. Cl.⁶ A47C *7/62*

U.S. Cl. 297—188.04 **10 Claims**



1. A drink container holder, for use with a generally upright seat standard for supporting first and second seat backs in a generally upright position laterally of the standard with fasteners comprising:
an open top receptacle having a side wall and a lower end opposite the open top suitable for supporting a drink container within the receptacle, the open top being generally planar; and
a mounting member attached to the side wall of the receptacle and extending along the sidewall no more than coterminous with the open top and lower end, the mounting member having first and second portions with first and second apertures respectively for receiving and securing first and second fasteners from said first and second seat backs respectively on which the container holder is to be mounted, said first and second apertures being laterally spaced-apart along the sidewall in a direction generally parallel to the plane of the open top, and a narrow edge support flange having a free distal narrow edge portion, said support flange being attached to the side wall of the receptacle and spaced-apart from the portions with the first and second apertures and with said free distal narrow edge portion of the narrow edge support flange spaced outwardly from the receptacle side wall for bracing the receptacle against said first and second seat backs supported on the seat standard on which the container.

5,709,430

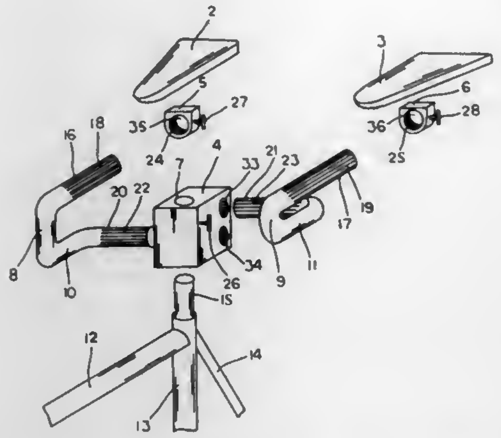
BICYCLE SEAT

Richard James Peters, 78 Davis Blvd. Apt. #9, Tampa, Fla. 33606

Filed Sep. 16, 1994, Ser. No. 307,148

Int. Cl.⁶ B62J *1/08*

U.S. Cl. 297—201 **7 Claims**



1. A bicycle seat for increasing riding comfort and efficiency to the rider, said bicycle seat comprising:
(a) mounting block having upper and lower surfaces, and four sidewalls, said mounting block being adapted to be affixed to a bicycle seat post in a set post through-hole which extends from the upper surface to the lower surface;
(b) a left support platform affixed to a first shaped support arm, said first support arm being affixed to said mounting block in through-hole of the mounting block which extends from one lateral side to the opposite lateral side;
(c) a right support platform affixed to a second shaped support arm, said second support arm being affixed to said mounting block in a through-hole of the mounting block which extends from said one lateral side to said opposite lateral side below the through-hole of the first support arm;
a means of tilting said each of said left and right seat platforms each on a respective axis of said first and second shaped support arms.

5,709,431

SEAT COVER FOR PROTECTING A MOTOR VEHICLE SEAT

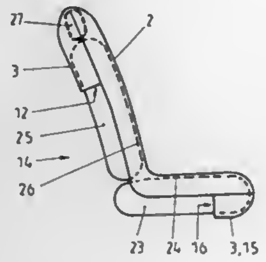
Stephanie Horn, Schwalmstadt, Germany, assignor to Horn & Bauer GmbH & Co. KG, Schwalmstadt, Germany

Filed Aug. 7, 1996, Ser. No. 693,394

Claims priority, application Germany, Sep. 28, 1995, 195 36 0621

Int. Cl.⁶ A47C *31/00*

U.S. Cl. 297—228.1 **10 Claims**



1. For use on a motor vehicle seat having a seat cushion and backrest extending upward from the seat cushion, a seat cover for single use in car workshops and for protecting the motor vehicle seat, the seat cover being made from a double-layered piece of plastic film the seat cover comprising:
a front film having an outside surface, an inside surface, a top edge and longitudinal edges, the front film adapted to extend and protect a top portion of the seat cushion and a portion of the backrest;
a rear film comprising a separate piece from the front film, the rear film having a top edge, longitudinal edges, an inside surface and an outside surface, the rear film top edge connected with the front film top edge by a transverse welding and portions of the longitudinal edges of the front film and the rear film are connected to each other by a longitudinal welding to form a first pocket for the reception of at least a part of the backrest;
wherein the front film consists of coextruded plastic material having a high friction coefficient on the front film inside surface and a comparatively low friction coefficient on the front film outside surface, wherein the front film inside surface is facing the rear film inside surface; and
wherein at least a portion of the rear film inside surface has a comparatively low friction coefficient with respect to the front film outside surface.

5,709,432

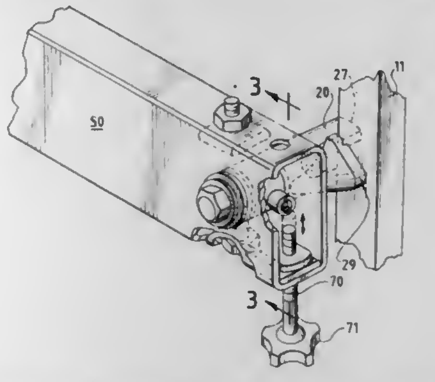
ADJUSTABLE ARMREST APPARATUS

Dennis J. Gryp, East Moline, Ill., assignor to Sears Manufacturing Company, Davenport, Iowa

Filed Mar. 11, 1996, Ser. No. 613,416

Int. Cl.⁶ A47C *7/54*

U.S. Cl. 297—411.32 **10 Claims**



1. An adjustable armrest assembly mounted to a seat having a frame, comprising:
a shaft having two ends mounted to and extending laterally from said seat frame, said shaft including at least one stop member and one end of the said shaft having a radially extending surface and an axially extending surface abutting the seat frame to resist radially directed forces applied to said shaft;
an armrest frame rotatably mounted on said shaft and including stop engaging means for permitting limited rotation of said armrest frame on said shaft and for adjusting the degree of rotation of said armrest frame on said shaft.

5,709,433

APPARATUS FOR CONTINUOUS MINING

David A. Christopher, Idamay, and Larry G. Offutt, Morgantown, both of W. Va., assignors to Arch Mineral Corporation, St. Louis, Mo.

Division of Ser. No. 530,748, Sep. 19, 1995, which is a continuation of Ser. No. 428,952, Apr. 26, 1995, abandoned. This application Nov. 6, 1996, Ser. No. 744,543

Int. Cl.⁶ E21C *35/24*

U.S. Cl. 299—30 **2 Claims**

1. The improvement in apparatus for mining coal from a coal seam and transporting the mined coal away from the coal seam

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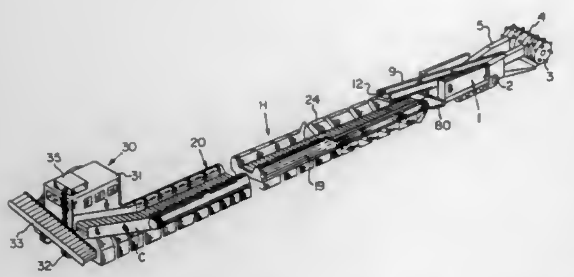


including a continuous miner having a front end and a rear end, cutting means on said front end of said continuous miner for Separating coal from a coal seam, conveyor means on said continuous miner for transporting cut coal from said front end to said rear end of said continuous miner and having an outlet end terminating rearwardly of said rear end of said continuous miner, a multisection articulated tramming conveyor operatively connected to said continuous miner and having an outlet end and an inlet end aligned with said outlet end of said conveyor means on said continuous miner, said tramming conveyor including a chain for receiving cut coal from said conveyor means on said continuous miner to transport the cut coal from said inlet end of said tramming conveyor to said outlet end of said tramming conveyor, and a load-out vehicle operatively connected to said outlet end of said tramming conveyor, said load-out vehicle including a power distribution center including electric power transformers mounted on said load-out vehicle for providing electric power to said continuous miner and to said tramming conveyor, said improvement comprising a blower housing and a blower mounted on said load-out vehicle, and conduit means operatively connecting said blower housing and said blower to said power distribution center for continuously providing cooling air to said electric power transformers during continuous operation of said electric power transformers.

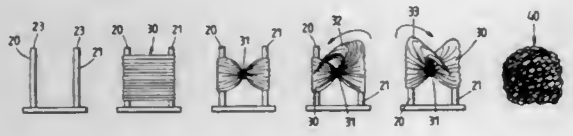
5,709,434
METHOD OF MAKING A BATH SCRUBBER

Ching-Chen Chen, No. 1, Lane 147, Sec. 2, Chung San Rd., Yun Lin, Chang Hua Hsien, Taiwan

Filed Jul. 18, 1996, Ser. No. 683,436

Int. Cl.^{6} B23P *11/02*

U.S. Cl. 300—21 **2 Claims**



1. A method for making a bath scrubber, said method comprising the steps of:

(a) arranging a first bracing member and a second bracing member such that said first bracing member and said second bracing member are parallel to each other and are fixed respectively at a bottom end thereof;
(b) fitting a tubular network body from top ends of said bracing members such that said tubular body embraces said bracing members, and that said tubular body is stretched by said bracing members;
(c) lashing centers of two stretched sides of said tubular body;
(d) stretching further one stretched side of said tubular body by pulling said one stretched side to pass over a top end of said second bracing member towards said first bracing member;
(e) stretching further another stretched side of said tubular body by pulling said another stretched side to pass over a top end of said first bracing member towards said second bracing member such that said another stretched side and said one stretched side are superimposed with each other; and
(f) repeating steps (d) and (e) referred to above until said tubular body is completely disengaged with said first bracing member and said second bracing member so as to form a bath scrubber of a spherical construction.

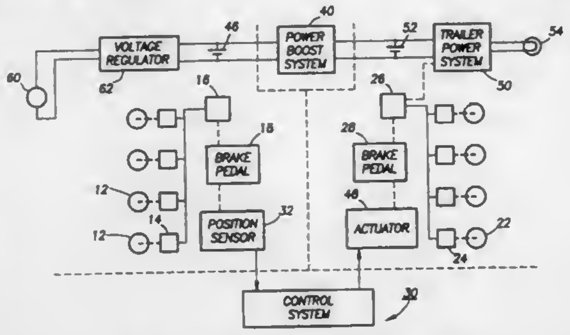
5,709,435
TOWED VEHICLE BRAKE CONTROL SYSTEM

Coleman W. Wood, Pearland, Tex., assignor to Ted Ruppel, Pearland, Tex.

Filed Jun. 7, 1996, Ser. No. 661,585

Int. Cl.^{6} B60T *13/68*

U.S. Cl. 303—7 **27 Claims**



1. A towed vehicle brake control system comprising:

(a) a brake operation sensor cooperating with a braking system of a towing vehicle wherein said sensor does not penetrate the braking system of the towing vehicle, and wherein the output of said sensor is an electrical signal indicative of braking of said towing vehicle;
(b) an electrically operated actuator for operating a braking system of said towed vehicle in response to said electrical signal applied thereto; and
(c) a control circuit which cooperates with said brake operation sensor and said actuator to provide dynamic scaling of said electrical signal to equalize braking of said towing vehicle and said towed vehicle by using said output and a second electrical signal continuously indicative of said braking of said towed vehicle.

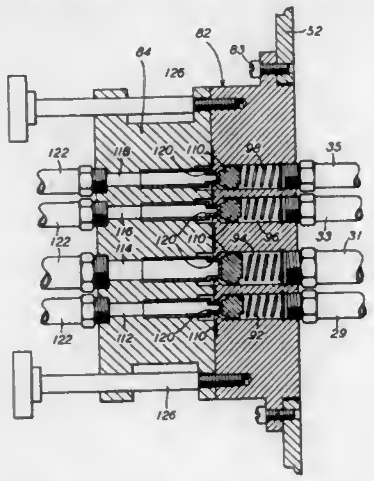
5,709,436
ARRANGEMENT FOR CONNECTING A TEST DEVICE TO A RAILROAD CAR BRAKE CONTROL VALVE DEVICE

Daniel G. Scott, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Dec. 17, 1996, Ser. No. 767,661

Int. Cl.^{6} B60T *11/34;15/22;17/22*

U.S. Cl. 303—86 **6 Claims**



1. For a railroad car having a brake pipe, an auxiliary reservoir, an emergency reservoir, a brake cylinder, and a control valve device, including a pipe bracket portion, to which the foregoing are connected, there is provided a universal access arrangement yia which a pneumatic connector head of a test device may be connected to the control valve device to test the railroad car brakes, said universal access arrangement comprising:

(a) said control valve device having at least one access port and a corresponding passageway interconnected with a respective one of said brake pipe, said auxiliary reservoir, said emergency reservoir, and said brake cylinder device;
(b) pneumatic receptacle means affixed to said railroad car remote from said control valve device for receiving said pneumatic connector head of said test device; and
(c) conduit means between said at least one access port and said pneumatic receptacle means for establishing fluid pressure communication between said corresponding passageway of said control valve device and said test device without interrupting any one of said brake pipe, auxiliary reservoir, emergency reservoir, and brake cylinder connections with said pipe bracket portion of said control valve device.

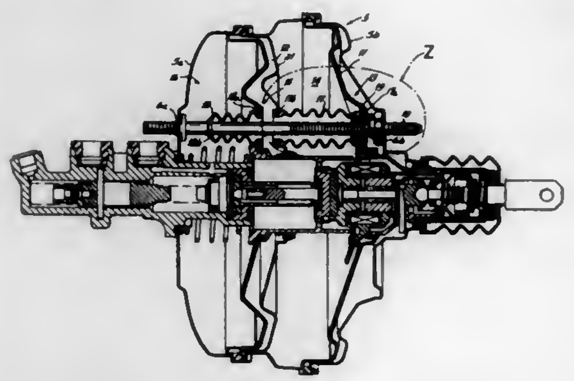
5,709,437
VEHICLE BRAKING SYSTEM

Peter Schlüter, Kammerforst, and Stefan Borsch, Winningen, both of Germany, assignors to Lucas Industries, public limited company, Solihull, Great Britain

Filed Sep. 12, 1996, Ser. No. 712,902

Int. Cl.^{6} B60T *13/66*

U.S. Cl. 303—113.4 **9 Claims**



1. An electronically controllable brake servo unit with
a first pneumatic working chamber (**13**) and
a second pneumatic working chamber (**14**) which are separated from each other by a movable wall (**11**), wherein
a travel sensor (**20**) is provided for the detection of displacements of the movable wall (**11**) relative to a stationary wall (**5*b***) of at least one of the two working chambers (**13**, **14**) which converts a relative movement between a measuring element (**10**) and the travel sensor (**20**) in the direction of the movement of the movable wall (**11**) into a signal used for controlling the brake servo unit, and wherein the movable wall (**11**) is provided with an opening (**19**) through which the measuring element (**10**) projects which is securely connected with the stationary wall (**5*b***), and the travel sensor (**20**) at least partially surrounds the opening (**19**) and the measuring element (**10**) projecting through it, and wherein
the measuring element (**10**) is provided with markings (**24**) which are detectable by the travel sensor (**20**) upon movements of the movable wall (**11**), or
that the measuring element (**10**) carries the travel sensor (**20**) and markings (**24**) are provided in the area of the opening (**19**) which can be detected by the travel sensor (**20**) upon movements of the movable wall (**11**).

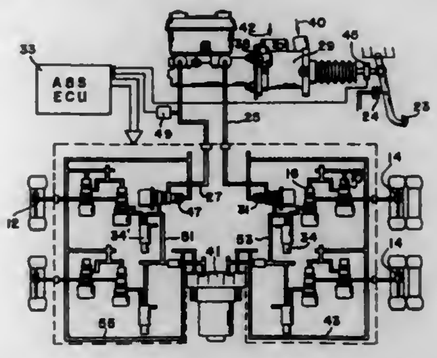
5,709,438
FAILED BOOSTER BACK-UP BRAKING SYSTEM

Larry E. Isakson, Mishawaka, Ind.; John E. Mackiewicz, Niles, Mich.; William Kent Messersmith, Granger; Jeffery E. Devall, Liberty, both of Ind., and Michael E. Gatt, Grosse Lie, Mich., assignors to Robert Bosch Technology Corporation, Farmington Hills, Mich.

Filed Dec. 19, 1996, Ser. No. 769,982

Int. Cl.^{6} B60T *8/32*

U.S. Cl. 303—113.4 **11 Claims**



1. In a vehicle of the type having a brake pedal commanded hydraulic power assisted braking system including a primary source of pressurized hydraulic fluid, a plurality of individual hydraulic wheel brake actuators (**14**) and an intermittently actuated secondary source of pressurized hydraulic fluid (**41**) of a type having a high pressure outlet and a low pressure inlet, a back-up power assisted braking system comprising means (**38, 45, 49**) for sensing an abnormality in the power assisted braking system and for providing an signal indicative of a sensed abnormality, a pressure transducer (**45**) providing an indication of brake pedal commanded braking force, a hydraulic circuit (**43, 53** or **55,51**) interconnecting the secondary source outlet, wheel brake actuators (**14**) and secondary source inlet, a normally open solenoid operated valve (**31, 47**) interposed in the hydraulic circuit between the wheel brake actuators and the secondary source inlet, and control means (**33**) coupled to the pressure transducer and providing an output voltage for enabling the solenoid of the solenoid operated hydraulic valve having a magnitude which varies directly as the indicated operator commanded braking force.

5,709,439
STABILITY CONTROL DEVICE OF VEHICLE PREPARED FOR MANUAL BRAKE UPRISE SUBSEQUENT TO END OF STABILITY CONTROL

Shirou Monzaki, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 16, 1996, Ser. No. 732,986

Claims priority, application Japan, Oct. 25, 1995, 7-300687

Int. Cl.^{6} B60T *8/24;8/58*

U.S. Cl. 303—146 **4 Claims**

1. A stability control device of a vehicle having a vehicle body, and front left, front right, rear left and rear right wheels, comprising:

a means for estimating a liability of the vehicle body to a running instability for producing an instability quantity which generally increases along with increase of the liability;
a brake means for selectively applying a variable braking force to each of said wheels, said brake means including a manually controlled pressure source means incorporating a brake pedal and an accumulator pressure source means;
a manual brake sensing means for detecting a substantial stepping on of said brake pedal by a driver; and
a control means for controlling said brake means so as variably to apply a braking force to a selected one or ones of said wheels for a stability control of suppressing the vehicle body against the running instability based upon accumulator pressure from said accumulator pressure source means, said con-

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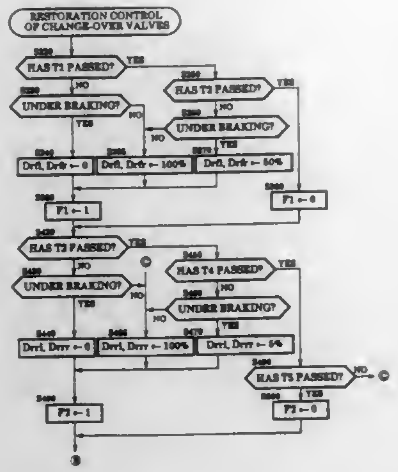


trol means controlling said brake means so that a braking force is applied to the wheels based upon said manually controlled pressure source means when said stability control is not carried out,

wherein, when the substantial stepping on of said brake pedal is detected by said manual brake sensing means when said control means ends said stability control, said control means controls said brake means so that the braking force based upon said manually controlled pressure source means is applied to the wheels under a controlled uprise rate.

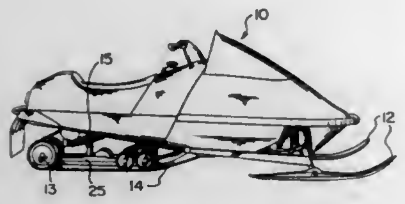
5,709,440
TRACK NOISE SUPPRESSION

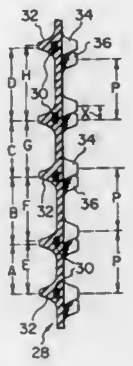
Gaetan Lecours, Valcourt, Canada, assignor to Bombardier Inc., Montreal, Canada

Filed Feb. 1, 1995, Ser. No. 381,761

Int. Cl.^{6} B62D *55/096*

U.S. Cl. 305—178 **5 Claims**





1. A snowmobile track comprising:

an endless flexible belt of reinforced rubber composition said belt having a major outer surface and an opposed coextensive inner surface, said inner surface being formed for engagement by a power transmission means to deliver power from the snowmobile engine to the track, and also being configured for engagement by suspension means;

said outer surface being adapted to run in engagement with a ground surface and propel the snowmobile relative thereto, said outer surface having projecting formations thereon for tractive interaction with the ground surface;

wherein said projecting formations are positioned on said outer surface of said belt in transversely spaced rows that extend longitudinally of said belt, at least one of said rows comprising a series of longitudinally adjacent individual said projecting formations that are spaced in the longitudinal direction at separations that vary irregularly so as to reduce the generation of noise at characteristic frequencies of the track during operation of the snowmobile;

said individual said projecting formations in said at least one of said rows being generally at a uniform spacing except for certain pairs of adjacent said projecting formations at irregular longitudinal locations, which pairs are separated by a multiple of said uniform spacing;

at least two rows of drive lugs formed integrally with the inner surface of said belt, drive lugs of at least one said row having a pitch spacing in the longitudinal direction which is different from said uniform spacing of said projecting formations and the drive lugs of said two rows being offset longitudinally relative to each other, so as to reduce the generation of noise at characteristic frequencies of the track during operation of the snowmobile.

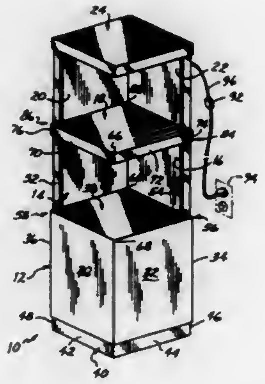
5,709,441
CREMATION URN DISPLAY PEDESTAL

Bart Bartling, Batesville; John R. Enneking, Batesville, and Daniel J. Parker, Connersville, all of Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed May 6, 1996, Ser. No. 643,544

Int. Cl.^{6} A47B *87/00*

U.S. Cl. 312—107 **21 Claims**



1. A decorative cremation urn display pedestal comprising:

a lower base configured into a generally box-like structure and including four generally vertical side walls having abutting adjacent side edges, and a generally horizontal cremation urn-supporting top wall supported atop said side walls;

a pair of shelf-supports walls extending upwardly from said top wall and having abutting adjacent side edges, each wall of said pair of self-supporting walls being generally parallel to a respective base side wall thereunder; and

at least one generally horizontal cremation urn-supporting shelf extending horizontally outward from said pair of shelf-supporting walls, said at least one shelf corresponding in size and shape to said base top wall and being cantilevered horizontally outward from said pair of shelf-supporting walls by having a free unsupported corner positioned above and vertically aligned with a respective corner of said base top wall.

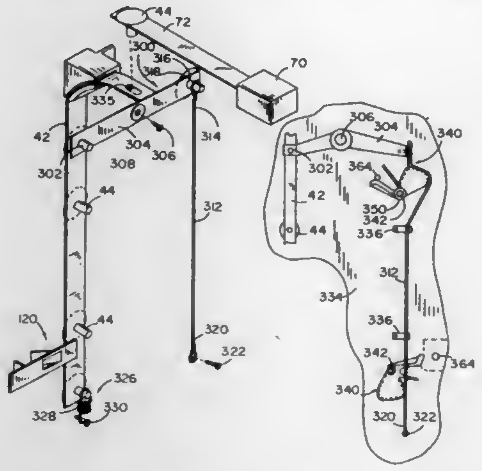
5,709,442
LOCK SYSTEM FOR CASEGOODS

Thomas G. Feldpausch, Hastings; Phillip D. Carino, Grand Rapids; Frederick S. Faiks, Greenville; David M. DeBoer; Samuel J. Ellison, both of Grand Rapids, and Daniel N. Siegrist, Kentwood, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 138,638, Oct. 15, 1993, Pat. No. 5,533,798.
This application Apr. 10, 1996, Ser. No. 628,551

Int. Cl.^{6} E05B *65/46*

U.S. Cl. 312—221 **10 Claims**



1. A lock/interlock mechanism for use with a unit having an interior surface and at least two drawers slideably mounted therein, said mechanism comprising:

an elongated drawer lock member having a plurality of lock elements positioned thereon in vertically spaced relationship;

mounting means on the interior surface of the unit for mounting said drawer lock member for movement between unlocked and locked positions;

an interlock lever pivoted to the interior surface adjacent said mounting means, said lever including an interlock end operatively connected to said lock member so that pivoting of the lever moves said lock member between said positions;

an elongated, flexible member having a ground end fixed to the interior surface and an interlock end connected to said interlock lever;

a plurality of interlock cams pivoted to the interior surface, each cam being rotatable into engagement with the flexible member to pivot said interlock lever; and

a plurality of controls, each control connected to one of the drawers so that opening movement of one of the drawers causes the control to engage and rotate one of the cams to pivot said lever and move said lock member to its locked position to prevent opening of any remaining drawers.

5,709,443
BOTTOM DRAWER SLIDE FOR DRAWERS ETC.

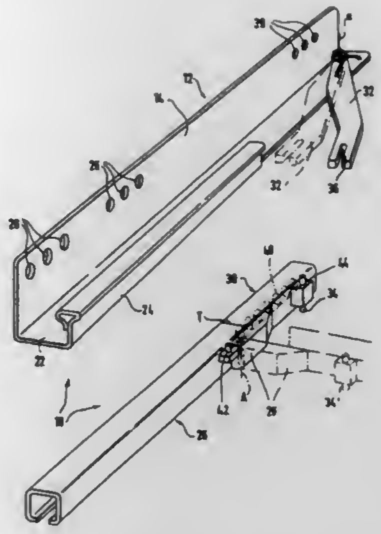
Horst Lautenschläger, Reinheim, Germany, assignor to MEPLA-Werke Lautenschläger GmbH and Co. KG, Germany

Filed Nov. 15, 1996, Ser. No. 749,395

Claims priority, application Germany, Jan. 31, 1996, 196 03 334.9

Int. Cl.^{6} A47B *88/14*

U.S. Cl. 312—314.14 **7 Claims**



1. A bottom drawer slide assembly for retractably mounting drawers such as in a cupboard carcase, comprising;

a guide rail, constructed as a profile rail, fastenable to the carcase wall, an associated running rail engaged by the guide rail from below the associated running rail, said running rail being arrangeable in the vicinity of the base of the drawer or the underside of the side wall of the drawer, and wherein said running rail is configured as a hollow profile rail, having a profile cross-section with an open underside and which defines races in the interior of the running rail for rolling bodies, said rolling bodies being retained in an elongated cage formed from a rollway surface on the guide rail and an internal surface in an associated region of the running rail, thereby allowing for longitudinal movement of the running rail relative to the guide rail,

a hollow profile section, having a profile cross-section substantially similar to the hollow profile cross-section of the running rail, pivotably connected to an inner end of the running rail so as to be pivotably movable about a pivotal axis (A) from a first position in alignment with the running rail and into a second position which extends substantially parallel to a rear wall of the carcase,

cooperating guide means, provided on the guide rail and the hollow profile section, for holding the hollow profile section in the first position in alignment with the running rail during movement of the running rail on the guide rail from an end position associated with a fully opened position of the drawer, and allowing the hollow profile section to increasingly pivot into the second position as the drawer's inner end approaches the rear wall of the carcase, said cooperating guide means comprising:

a pivotal lever connected by one end to the end of the guide rail so as to be pivotable about an axis (a) which extends parallel to the pivotal axis (A) of the hollow profile section, and having an open-mouthed slit-like recess provided in a free end remote from the pivotal axis (a),

a projecting carrier provided on the hollow profile section, for movable association into the recess in the pivotal lever when the running rail is moved in the closing direction of the drawer towards a closed position,

and wherein, in a retracted position of the running rail in which the carrier is situated outside the recess of the pivotal lever, the pivotal lever is held in a pivotal end position in which the open mouth end of recess is aligned with a push-in path of the carrier projecting from the hollow profile section, said push-in path being in alignment with the running rail, the recess in the pivotal lever being offset from its pivotal axis (a) to form a lever arm such that, when the carrier moves into the recess, the carrier swings the pivotal lever such that the hollow profile section pivots into the second position parallel to the rear wall of the carcase.

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5,709,444

DRAWER

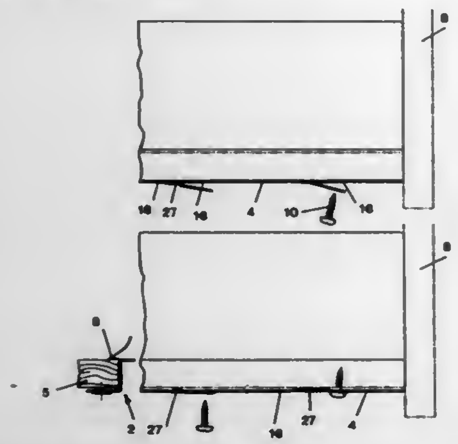
Helmut Fitz, Lustenau, and Edgar Huber, Hard, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jul. 11, 1995, Ser. No. 500,591

Claims priority, application Austria, Jul. 11, 1994, 1362/94

Int. Cl.^{6} A47B *88/14*

U.S. Cl. 312—348.2 **20 Claims**



1. A metal pull-out rail to be connected to a drawer bottom plate and to a drawer side wall having a cover strip to cover a lateral edge of the bottom plate, said pull-out rail comprising:

a lower horizontal flange on which is to be positioned the bottom plate;
a plurality of flaps integral with said flange and punched from the material thereof;
each said flap having a first end integral with said flange in an area of connection thereto;
each said flap having a free second end opposite from said first end, said free second end having therethrough a hole to receive a screw for attachment of said flap to the bottom plate; and
each said flap having, at a location between said first and second ends thereof, an abutting portion operable, upon the screw being fit through said hole and being screwed into the bottom plate, to be moved toward and into abutment with the bottom plate to lift and urge the bottom plate toward the cover strip.

5,709,445

OBLIQUE PROJECTION OPTICAL SYSTEM

Katsuhiro Takamoto, Nagaokakyo, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

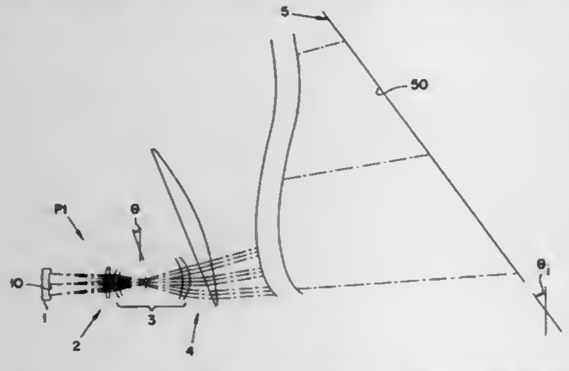
Filed Jul. 3, 1996, Ser. No. 675,481

Claims priority, application Japan, Jul. 6, 1995, 7-170639

Int. Cl.^{6} G03B *21/14*

U.S. Cl. 353—70 **23 Claims**

19. An oblique projection optical system which projects and enlargement of an image of an object surface on a screen inclined relative to said object surface, the optical system comprising:



a first lens unit which is an afocal optical system including a diaphragm and which is eccentric relative to the object surface; and
a second lens unit which is eccentric relative to the first lens unit, disposed on the side closest to the screen, and provided having positive refracting power, wherein an optical axis of the second lens is inclined in the same direction as the inclination of the screen surface, and is moved parallel to a direction approaching an intersection of the object surface and the screen surface;
wherein the oblique projection optical system does not form an image before the screen.

5,709,446

DISPLAY DEVICE FOR USE IN A VEHICLE

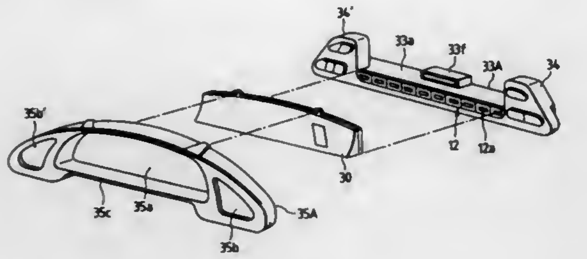
Minoru Kubota, and Keizo Nishitani, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,195

Claims priority, application Japan, Mar. 13, 1995, 7-052585

Int. Cl.^{6} G01D *11/28*

U.S. Cl. 362—30 **11 Claims**



1. A display device for a vehicle, comprising:
a meter board having at least one display meter;
a wiring board disposed on a rear side of said meter board and facing a rearward direction;
display lamps for displaying various operating conditions of said vehicle to a viewer on a front side of said meter board;
a control unit positioned below said meter board, said control unit including a substantially planar centralized control substrate to which electronic means is secured for supplying power to said at least one meter, via said wiring board, and to said display lamps, wherein said display lamps are positioned on a front side of said planar substrate.

5,709,447

LIGHTING DEVICE

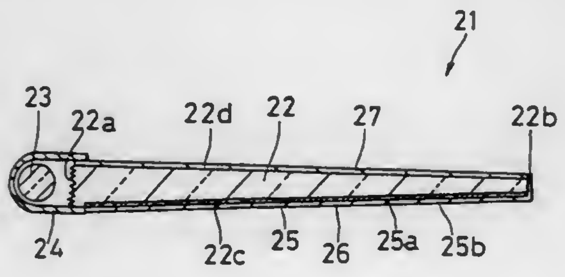
Akira Murakami, and Yoshihiro Shirai, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 30, 1995, Ser. No. 565,674

Claims priority, application Japan, Nov. 30, 1994, 6-297545

Int. Cl.^{6} F21V *8/00*

U.S. Cl. 362—31 **4 Claims**



1. A lighting device comprising:

a nearly flat light-guiding plate having to opposing surfaces that are joined at each edge by a side face;
a linear light source disposed along one side face of the light-guiding plate; and
a reflection plate disposed on one surface of the light-guiding plate so as to cover at least the one surface, the lighting device which guides light having entered from the one side face of the light-guiding plate to the entire light-guiding plate, and emits the light through an opposing surface to the one surface of the light-guiding plate by reflecting by the reflecting plate, wherein
convex protrusions are formed in parallel at minute pitches on the side face of the light-guiding plate disposed to face the light source.

5,709,448

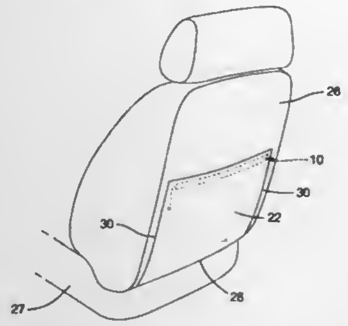
SEAT BACK POCKET LIGHT

Kurt Lynn Jennings, Warren, and Neil Duane Wolfe, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1996, Ser. No. 709,792

Int. Cl.^{6} F21V *7/04*

U.S. Cl. 362—32 **20 Claims**



9. A pocket light assembly comprising a panel substrate and a flap secured to the panel substrate along a plurality of edges and having at least one edge free to define a pocket between the panel and the flap, and a fiber optic panel received in the pocket, attached and extending along the free edge.

5,709,449

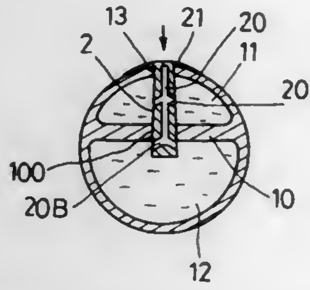
LIGHT-EMITTING ATTACHMENT

Ming-Shish Kuo, No. 170, Section 2, Ming-Tsu Road, Tainan, Taiwan

Filed Apr. 3, 1997, Ser. No. 825,816

Int. Cl.^{6} F21K *2/00*

U.S. Cl. 362—34 **3 Claims**



1. A light-emitting attachment comprising:
a) a hollow transparent body including a wall dividing the interior of the body into a first chamber and a second chamber, a center hole extending through the wall, the first chamber including an upper portion provided with a first hole extending therethrough, and the center and first holes being in alignment;
b) a guide tube extending through and positioned between the center and first holes, the guide tube including a longitudinal passageway, an upper passage extending laterally from the longitudinal passageway, a lower passage extending laterally from the longitudinal passageway, and an end projecting outwardly of the first hole and terminating in a push block on an exterior side of the upper wall portion;
c) a first solution contained within the first chamber, a second solution contained within the second chamber and the solutions being capable of providing illumination when mixed together; and,
d) wherein when the attachment is in an unactivated condition, the guide tube prevents communication between the first and second chambers and upon activation by a user pressing inwardly on the push block, the guide tube is caused to move inwardly into the second chamber, thereby providing communication between the first and second chambers through the lower passage, longitudinal passageway and upper passage, thereby permitting mixing of the solutions when the body is shaken.

5,709,450

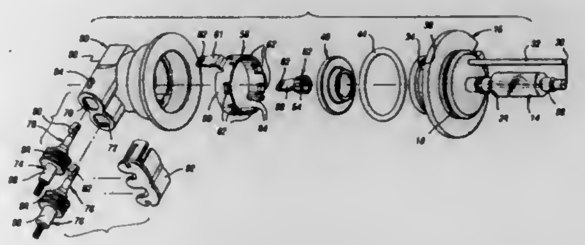
HIGH INTENSITY DISCHARGE AUTOMOTIVE LAMP SOCKET

Michael Eugene Francis, Warren, Ohio; Dany Paul Delaporte, Lake Orion, Mich.; Richard Charles Brennan, III, Canoga Park, and Russell Mistretta Abbott, Riverside, both of Calif., assignors to General Motors Corporation, Detroit, Mich., and Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 27, 1995, Ser. No. 579,485

Int. Cl.^{6} B60Q *1/00*

U.S. Cl. 362—61 **2 Claims**



1. An arrangement of an automotive lamp assembly comprising:
a reflector housing with a central opening;
a discharge light assembly mounted to the reflector housing through the opening of the reflector housing;
a base supporting the discharge light assembly in the opening of the reflector housing, the base having a concentric first conductor connected to the discharge light assembly at one end and a pin first terminal on an opposite end of the first conductor, and the base having a second eccentric conductor connected to the discharge light assembly at one end and to a collar on an opposite end;
a socket sealed with the base, the socket having a first concentric conductor for mating with the base first conductor, the socket first conductor having a collar terminal at a first end toward the base and a respective bide terminal at a second opposite end, the socket also having a second eccentric conductor having a collar terminal at a first end toward the base and a respective blade terminal at a second opposite end;
an annular dielectric high voltage insulation member surrounding the collar terminal of the socket first conductor;
first and second tubular passages respectively extending through the socket intersecting with the respective blade terminals of the first and second socket conductor;
first and second high voltage insulated wire conductors with terminals for mating with the terminals of the socket conductors; and
seal boots sealing the first and second lead wires within the respective first and second tubular passages.

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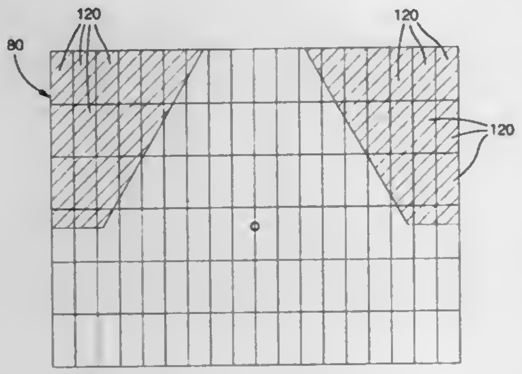
5,709,451
HIGH INTENSITY DESCHARGE BULB PARABOLIC REFLECTOR VEHICLE HEADLAMP

Spencer David Flora, Smithfield, Va., and Tony Eugene Collins, Alexandria, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 345,560, Nov. 25, 1994, abandoned. This application Aug. 29, 1996, Ser. No. 704,959

Int. Cl.^{6} B60Q *1/04*

U.S. Cl. 362—61 **6 Claims**



1. A motor vehicle headlamp unit comprising:
a parabolic reflector having an axis and a focal point and an open end;
a high intensity discharge (HID) bulb mounted with the reflector, the bulb having a main arc located generally at the reflector parabolic focal point, the bulb providing a source of illumination;
a lens generally covering the open end of the reflector for focusing the illumination of the HID bulb, the lens having a vertical and a horizontal axis intersecting with the reflector axis, the reflector having a maximum horizontal dimension W made up of a left width WL and a right width WR and wherein there is a bisected zone 1 being bordered on a bottom by the horizontal axis of the lens and bordered on a top by a top of the lens as long as the top of the lens in a plane perpendicular to the reflector axis is 60 millimeters or less from the horizontal axis and wherein the bisected zone 1 on a right side has an inner border formed by a line extending from a point on the top of the lens a distance RT from the vertical axis going down to a point on the horizontal axis a distance RB taken from the vertical axis and wherein RT equals ¼ WR and RB equals ¾ WR, and in like manner a left side of zone 1 has an inner border formed by a line extending from a point on the top of the lens at a distance LT from the vertical axis going down to a point on the horizontal axis at a distance LB from the vertical axis and wherein LT equals ¼ WL and LB equals ¾ WL and wherein the lens projects a Federal Motor Vehicle Safety Standard 108 hot spot test point one (0.5 d, 1.5 r) and at a Federal Motor Vehicle Safety Standard 108 hot spot test point two (1.5 d, 2 r) approximating at least 90 percent of measured light at test point one and at least 70 percent of measured light at point two from zone 1.

5,709,452
VEHICLE HEADLAMP

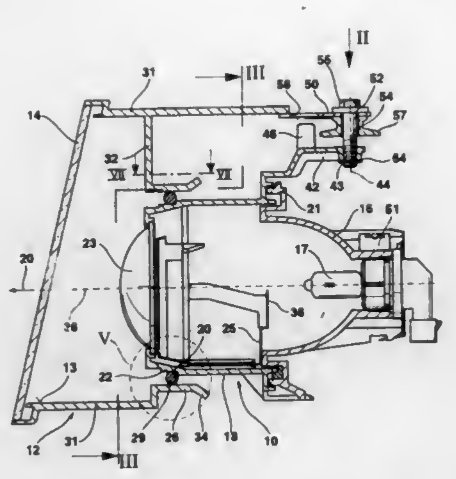
Johannes Bertling, Vaihingen; Hans Daumueller, Bodelshausen; Karl-Otto Dobler, Reutlingen; Juergen Mueller, Albstadt; Lothar Streit, Sonnenbuehl, and Albert Vent, Eschweiler, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 26, 1995, Ser. No. 548,665

Claims priority, application Germany, Oct. 27, 1994, 44 38 329.0

Int. Cl.^{6} B60Q *1/04*

U.S. Cl. 362—66 **8 Claims**



1. A vehicle headlamp, comprising a headlamp insert having a reflector; a receiving fixture mounting said headlamp insert; adjusting means acting on said headlamp insert at a distance from a bearing point of said headlamp insert and pivoting said headlamp insert in order to adjust an alignment of an optical axis of said headlamp insert, said receiving fixture having a portion which surrounds said headlamp insert at least on a part of a periphery of said headlamp insert, said headlamp insert being mounted pivotally in said receiving fixture portion; and means for supporting said headlamp insert and including a single elastically deformable element clamped between said headlamp insert and said receiving fixture portion and mounting said headlamp insert pivotally in said receiving fixture portion; said deformable element being a sole support for the headlamp insert.

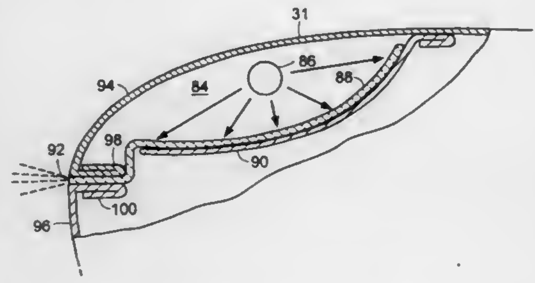
5,709,453
VEHICLE LIGHTING HAVING REMOTE LIGHT SOURCE

Edward D. Krent, 207 Hampton Rd., Sharon, Mass. 02067, and Nicholas B. Paffett, 806 Tucker La., Hingham, Mass. 02043

Filed Aug. 16, 1994, Ser. No. 291,106

Int. Cl.^{6} B60Q *1/00*

U.S. Cl. 362—80 **5 Claims**



1. In a vehicle, an illumination device comprising:
a sheet formed of a light conducting, fluorescent substance containing material, said sheet having a light emitting edge and a light gathering portion disposed in a cavity in the vehicle;
a source of illumination for directing light onto said light gathering portion of said sheet; and
at least one panel on said vehicle disposed adjacent to said light gathering portion of said sheet and said source of illumination to protect said light gathering portion of said sheet and said source of illumination from an external environment, said edge of said sheet being visible externally of said at least one panel on said vehicle.

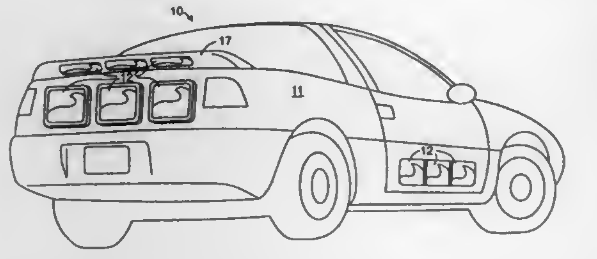
5,709,454
VEHICLE VISUAL DISPLAY DEVICES

Leif E. Hatlestad, II, 484 Stinchcomb Dr. #2, Columbus, Ohio 43202

Filed Apr. 15, 1996, Ser. No. 632,270

Int. Cl.^{6} B60Q *1/00*

U.S. Cl. 362—80 **17 Claims**



1. Visual display means of a vehicle having a body and force means for producing motion change of said vehicle body, said visual display means comprising
A. a vehicle visual display device on said vehicle body and comprising a container, a first liquid fluid in said container, and a second liquid fluid in said container and essentially immiscible with said first fluid;
B. said vehicle visual display device being responsive to said force means to cause a first fluid-second fluid interface, a first fluid-container interface, and a second fluid-container interface, to change in response to said motion change in said vehicle body; and
C. at least one of said first liquid fluid and said second fluid being visible through said container;
D. said first liquid fluid comprising a first dye means and said second liquid fluid comprising a second dye means.

5,709,455
NIGHT-TIME SAFETY SYSTEM

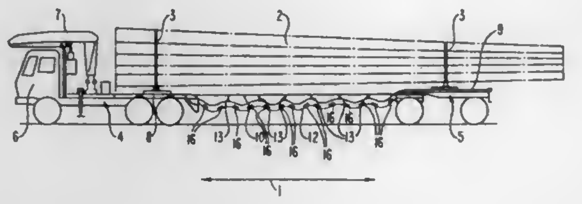
Rolf Dänekas, Waldfeucht, and Willi Panhausen, Gangelt, both of Germany, assignors to Spanset Inter AG, Oetwil am See, Switzerland

Filed Oct. 11, 1996, Ser. No. 730,022

Claims priority, application Germany, Oct. 12, 1995, 295 16 809 U

Int. Cl.^{6} B60Q *1/26*

U.S. Cl. 362—83.3 **16 Claims**



1. A transport vehicle comprising:
(a) a tractor portion;
(b) a trailer portion connected to the tractor portion;
(c) supply lines extending from the tractor portion to the trailer portion;
(d) a protective tubing extending from the tractor portion to the trailer portion and enclosing the supply lines, the protective tubing having an outer casing; and
(e) a night-time safety system carried by the transport vehicle, the night-time safety system comprising a visual signal unit attached to the outer casing.

5,709,456
SUNLIGHT COLLECTING AND TRANSMITTING SYSTEM

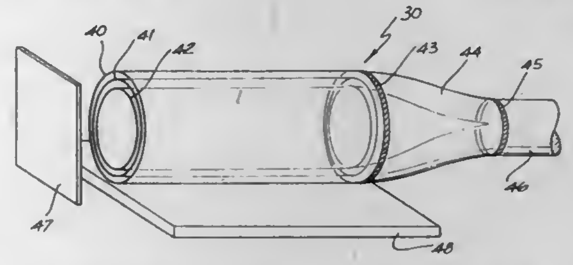
Geoffrey Burton Smith, Epping, and James Bruce Franklin, Sydney, both of Australia, assignors to Skydome Industries Limited, Five Dock, and University of Technology, Sydney, both of Australia

Division of Ser. No. 211,105, May 16, 1994, Pat. No. 5,548,490. This application Aug. 7, 1996, Ser. No. 693,698

Claims priority, application Australia, Sep. 19, 1991, PK8471

Int. Cl.^{6} F21V *8/00*

U.S. Cl. 362—84 **10 Claims**



1. A light system for an interior of a building, comprising:
(i) means for collecting and converting sunlight into concentrated light, said collecting means comprising a cylindrical arrangement of at least two hollow fluorescent tubes, wherein each tube includes at least one dye and a sufficient amount of said at least one dye so that said at least one dye in the collector results in light of a desired colour balance for lighting the building interior,
(ii) means for channelling the concentrated light to a light emitting fitting for the interior of the building, and
(iii) means for optically coupling the sunlight collecting and converting means with the channelling means.

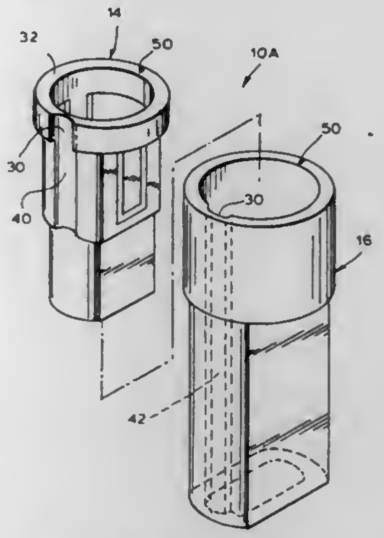
5,709,457
DRAINING LAMP BASE/HUSK ASSEMBLY

Kanichi Hara, Kowloon, Hong Kong, assignor to Minami Internatinal Corp., Yonkers, N.Y.

Filed Jul. 26, 1996, Ser. No. 687,644

Int. Cl.^{6} F21V *33/00*

U.S. Cl. 362—96 **7 Claims**



1. A draining lamp base/husk assembly comprising:
(A) an elongate lamp base member defining an exterior longitudinally extending groove on an outer surface thereof;
(B) an elongate husk member configured and dimensioned to receive coaxially and telescopically therein and to release therefrom a portion of said lamp base member, said husk

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member defining an interior longitudinally extending groove on an inner surface thereof; and

(C) means, integral in part with said lamp base member and in part with said husk member, for enabling a communication of liquid intermediate ends of said assembly when said members are in a coaxial and telescoped disposition, said exterior and interior longitudinally extending grooves being radially aligned and cooperatively defining said enabling means over a common longitudinally extending length of said exterior and interior grooves.

5,709,458

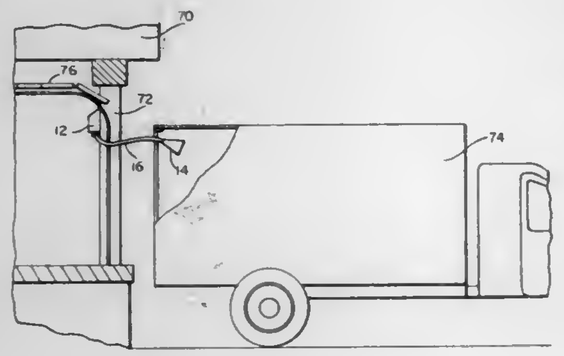
DOCK LIGHT

Donald Metz, c/o N.Y. Dock & Door, Inc. 6311 Fly Rd., Suite A, East Syracuse, N.Y. 13057

Filed Aug. 14, 1996, Ser. No. 696,605

Int. Cl.^{6} F21V *29/00;21/32*

U.S. Cl. 362—96 **6 Claims**



1. A loading dock and light assembly comprising door means on said loading dock for providing communication between a warehouse interior and an interior of a cargo vehicle disposed adjacent said loading dock, a dock light comprising a base member, a hollow flexible self-supporting tube connected at one end thereof to said base member and a lamp assembly connected to an opposite end of said tube, said base member having air flow means for providing a flow of air through said base member and through said tube to said lamp assembly, said base member being mounted in said warehouse adjacent said door means whereby said tube can be manipulated outwardly through said door means to locate said lamp means in a position for illuminating said interior of said cargo vehicle.

5,709,459

SURGICAL LUMINAIRE

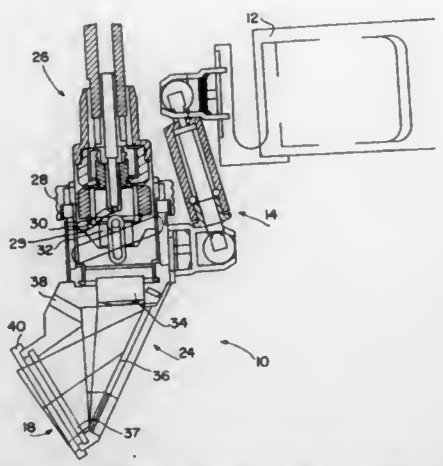
Zafirios Gourgouliatos, Los Angeles; Mark D. Hopler, Valencia, and Kenneth Li, Arcadia, all of Calif., assignors to Cogent Light Technologies, Inc., Santa Clarita, Calif.

Continuation-in-part of Ser. No. 134,262, Oct. 8, 1993, Pat. No. 5,430,620. This application Dec. 1, 1994, Ser. No. 347,709

Int. Cl.^{6} F21L *15/14*

U.S. Cl. 362—105 **18 Claims**

1. A luminaire for use during a medical procedure, said luminaire comprising:
  single fiber optic means for illuminating a surgical field, the single fiber optic means consisting essentially of a single optic fiber for providing a beam of light exiting said single optic fiber having an initial beam energy;
  means positioned between the single optic fiber and said surgical field for adjusting a width of the beam exiting said single optic fiber without substantially decreasing the beam energy; and



  means positioned between the single optic fiber and said surgical field for directing the beam of adjusted width from said single optic fiber onto said surgical field.

5,709,460

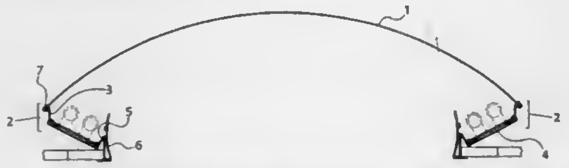
INDIRECT FLUORESCENT LIGHTING FIXTURE

Robert W. Lester, Hillsboro Beach, Fla., assignor to CoveLight Corporation, Boca Raton, Fla.

Filed Dec. 17, 1996, Ser. No. 767,914

Int. Cl.^{6} F21S *1/02*

U.S. Cl. 362—147 **10 Claims**



1. An indirect fluorescent lighting fixture for recessed mounting in an opening of a grid-type ceiling in a room, comprising:
  an elongated dome having an arcuate cross section, two longitudinal edges, two ends, and an inner face an outer face, wherein the inner face is arranged pointing in a downward direction and wherein the inner face is capable of reflecting light from the dome;
  two elongated coves, each cove capable of holding at least one fluorescent light bulb and each mounted along one of the longitudinal edges of said dome, each of said coves having an outer wall, a base and an inner wall, wherein said outer wall is attached to one of said longitudinal edges of the dome, wherein said base extends toward a central area of the dome, and wherein the dome is elevated above the opening in the ceiling;
  such that light from the fluorescent light bulbs mounted in the coves is directed toward the inner face of the dome and reflected off the inner face into the room, and wherein the edges of the dome overlap the opening in the ceiling so that the edges of the dome and the coves are hidden from view and create an appearance that the dome extends endlessly.

5,709,461

ELECTRICAL CONCERTINA-TYPE LAMP

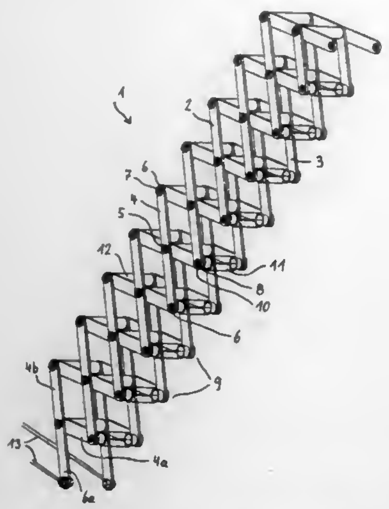
Oliver Michl, and Patrick Frieling, both of Längenau 35, 95100 Selb, Germany

Filed Mar. 27, 1996, Ser. No. 622,303

Claims priority, application Germany, Mar. 30, 1995, 195 11 839.1

Int. Cl.^{6} F21V *21/26*

U.S. Cl. 362—239 **10 Claims**



1. An electrical concertina-type lamp, comprising two identical concertina-type sliding lattices (2,3) which extend parallel to each other and are made of electrically conductive material, said lattices each including a plurality of pivotal (5, 6) joints which are disposed in at least one row extending along the length of the lattices and so as to permit extension and retraction of its length, with the joints of the two lattices being respectively aligned to define a plurality of pairs of opposed joints, with said lattices being connected to respective ones of the poles of a low voltage power source, and at least one of said pairs of opposed joints being provided with tubular bulb terminals (**10**) and interconnected by at least one small tubular incandescent bulb (**11**).

5,709,462

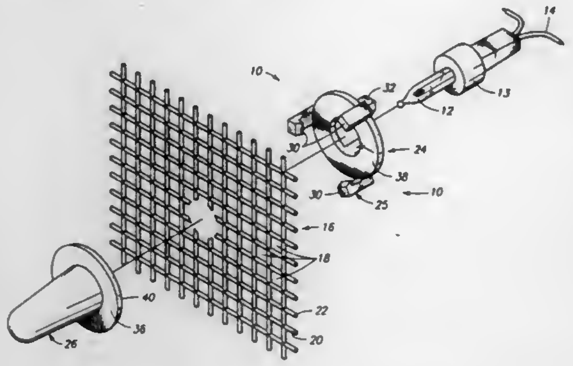
MOUNTING FOR CONVENTIONAL DECORATIVE LIGHT STRINGS

Donald D. Rumpel, HC-1 Box 216, Kellogg, Id. 83837

Filed Jan. 21, 1997, Ser. No. 785,854

Int. Cl.^{6} F21V *33/00*

U.S. Cl. 362—249 **15 Claims**



1. A silhouette display and lighting clip arrangement for mounting conventional decorative string lights having socket mounted light bulbs and electrical wire extending between consecutive light bulb sockets, comprising:
  a flexible open mesh sheet including spaced interstices and including a front and a back side;
  a light clip base member;
  a transparent lens member having a bulb receiving recess therein;
  a fastener configured to releasably secure a decorative light bulb and socket with the light bulb received within the bulb receiving recess; and
  wherein the fastener is shaped to releasably join the light clip base member and transparent lens member on opposed sides of the open mesh sheet through the open mesh of the sheet with the transparent lens member projecting from the front side of the sheet.

5,709,463

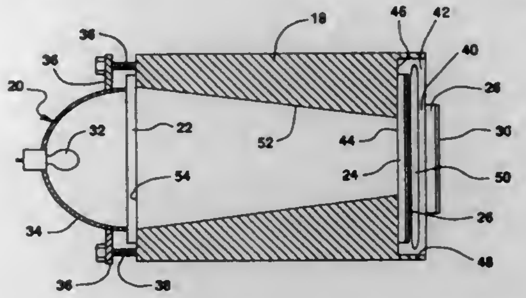
BACKLIGHTING FOR BRIGHT LIQUID CRYSTAL DISPLAY

Dale James Igram, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 13, 1996, Ser. No. 708,100

Int. Cl.^{6} F21V *7/20*

U.S. Cl. 362—268 **7 Claims**



1. An image illumination apparatus for back lighting a display including a liquid crystal cell having an active region comprising:
  a light source spaced from the display and having an area equal to or greater than the area of the active region;
  an elongated duct having a specularly reflecting inner surface for coupling light from the light source to the display, a first aperture of the duct being adjacent the light source and substantially the same size and shape as the light source, a second aperture of the duct being aligned with the cell and having substantially the same size and shape as the active region of the cell;
  the first aperture of the duct being covered by an IR reflecting mirror serving as a thermal barrier;
  a holographic diffuser element over the second aperture for enhancing illumination uniformity;
  the liquid crystal cell spaced from the diffuser element for illumination by light passing through the duct and the diffuser element; and
  an air cooling passage between the liquid crystal cell and the diffuser element.

5,709,464

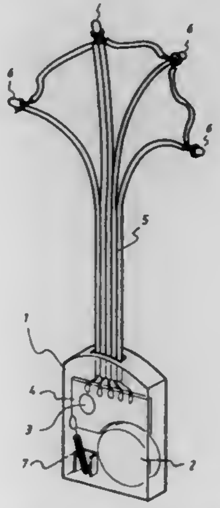
VIBRATING SWITCH CONTROLLED FLASHING LIGHT CIRCUIT STRUCTURE

Shen-Ko Tseng, No. 28, Lane 41, Chyau-Dong St., Shih-Chih Jenn, Taipei Hsien, Taiwan

Filed Sep. 19, 1996, Ser. No. 715,882

Int. Cl.^{6} F21V *33/00;* **F21L** *15/08*

U.S. Cl. 362—276 **1 Claim**



1. A vibrating switch controlled flashing light circuit structure, comprising:

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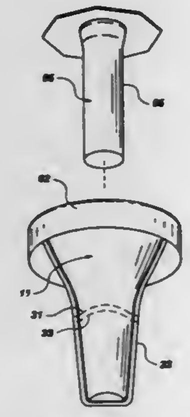
- a sensitive vibrating switch for actuating a plurality of light emitting diodes controlled by an integrated circuit so that said light emitting diodes flash cyclically, at least one of said light emitting diodes being red, and at least two of said light emitting diodes being green, wherein
- a housing accommodates a battery, a substrate, and a vibrating contact controlled switch, said integrated circuit being disposed on said substrate and having a one-shot actuation button and a sequential cyclical flashing circuit, said integrated circuit further having a plurality of outputs connected to a plurality of lead wires via said substrate, said lead wires extending outside of said housing, said light emitting diodes being coupled to the respective ends of said lead wires, such that when said switch is actuated, said green light emitting diodes flash in sequence for several cycles and then, after a brief delay, said red light emitting diode will start flashing.

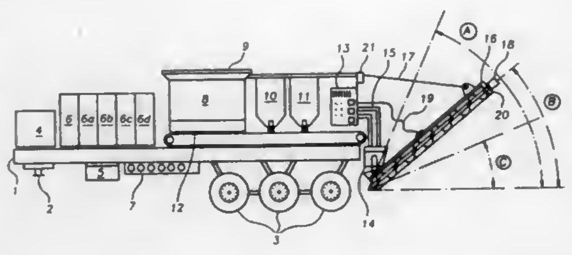
5,709,465
DISPOSABLE SURGICAL LIGHT HANDLE COVER
Thomas S. Lanzone, Macedon, N.Y., assignor to Getinge/Castle, Inc., Rochester, N.Y.
Filed Dec. 7, 1995, Ser. No. 568,634
Int. Cl.^{6} F21L *15/00;15/12;* **B65D** *65/00;65/02*
U.S. Cl. 362—400 **14 Claims**



1. A disposable cover for a handle of a fixture which is normally positioned within a sterile field, said handle including a handle grip portion extending from said fixture, said cover comprising:

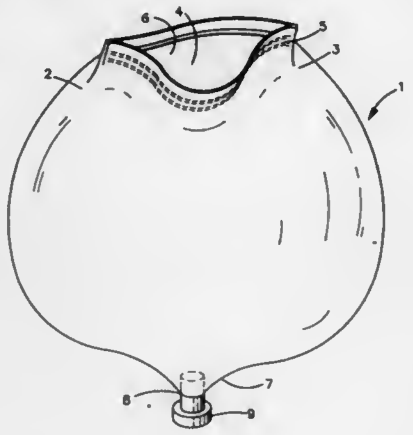
- first and second, approximately congruent panels, each configured to have a relatively wide top portion merging into a relatively narrow cover grip portion, said panels being:
  - arranged in stacked relation,
  - bonded together at their respective perimeters around said cover grip portion,
  - unbonded at said respective perimeters around at least a segment of said top portion;
- said first and second panels being formed from material having sufficient flexibility to permit said first and second panels to be rolled out away from each other at said top portion to form a cuff;
- said cuff opening into a hollow sleeve having a volume sized and shaped to receive said handle grip portion.

5,709,466
MIXER FOR CEMENTITIOUS MATERIALS
Ronald R. Weszely, Hebron, Ind., assignor to Applied Innovations, Inc., Palos Park, Ill.
Filed Feb. 12, 1996, Ser. No. 600,264
Int. Cl.^{6} B28C *7/04*
U.S. Cl. 366—30 **7 Claims**



1. A mobile mixing device for the preparation of cementitious materials to contain and encapsulate hazardous wastes comprising a mobile element having at least three containers, two of said containers being located over a transporting means, and said transporting means being connected to a mixing means, the first of said containers having an aqueous mixture of chemical sealants, a second of said containers having hazardous waste and a third of said containers having cementitious material therein, said first and said second containers being located over said transporting means, wherein when said hazardous waste and said cementitious material are placed on said transporting means and transported to said mixing means, and said aqueous mixture of chemical sealant are added thereto, said mixture of hazardous waste, cementitious material and said chemical sealant are caused to be held within said mixing device for a residence time of between 5 and 45 seconds prior to exit therefrom.

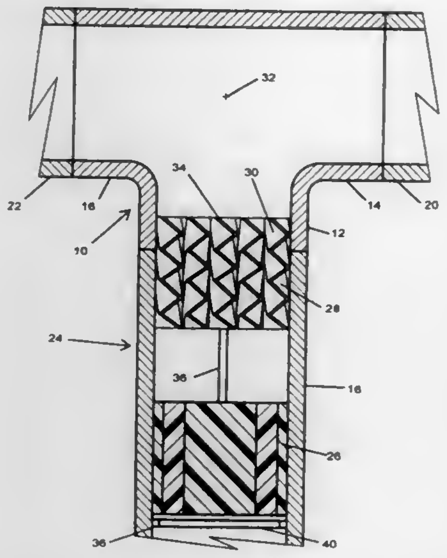
5,709,467
DEVICE AND APPARATUS FOR MIXING ALGINATE
Carol J. Galliano, II, 17845 E. Augusta Dr., Baton Rouge, La. 70810
Filed Jun. 18, 1996, Ser. No. 665,431
Int. Cl.^{6} B65D *33/16;33/36;* **B28C** *3/00*
U.S. Cl. 366—130 **6 Claims**



1. An alginate paste preparation kit comprising:

- a premeasured quantity of alginate powder; and
- a mixing pouch comprising an envelope having flexible wall sections forming a sealable cavity, at least one wall section having a sealable aperture sized to permit the introduction of said alginate powder and liquids into said cavity, at least one wall section containing a sealable spout sized to permit the evacuation of the contents of said cavity.

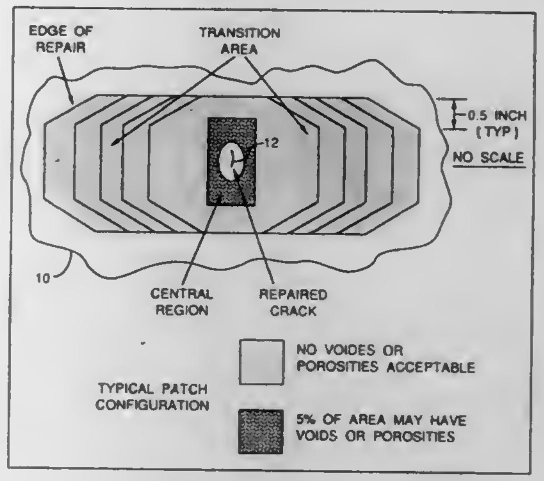
5,709,468
METHOD FOR EQUALIZING STEAM QUALITY IN PIPE NETWORKS
Edward Anderson Woerheide, Houston; James Raymond Stoy, Missouri City, and Mark Timothy Rubel, Houston, all of Tex., assignors to Texaco Group, Inc., White Plains, N.Y.
Continuation of Ser. No. 300,775, Sep. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 982,354, Nov. 27, 1992, abandoned. This application Jun. 19, 1995, Ser. No. 492,151
Int. Cl.^{6} B01F *5/06;* **F17D** *1/06*
U.S. Cl. 366—337 **2 Claims**



1. A method for causing substantial homogenization of the liquid and vapor phases of wet steam entering an impact T-junction having a pipe diameter and defining an inlet leg having a longitudinal axis and two outlet legs defining a longitudinal axis with the longitudinal axes of the inlet leg and the outlet legs intersecting at substantially right angles to define a plane so as to have substantially the same steam quality leaving each outlet leg of the junction as the quality of steam entering the inlet leg, comprising the steps of:

- providing a flow of wet steam having a liquid phase and a vapor phase into the inlet leg of the impact T-junction;
- providing a plate having an orifice therein in the inlet leg of the impact T-junction, said plate being symmetrical about the longitudinal axis of said inlet leg;
- providing static mixer means formed by an array of corrugated lamella plates defining a tortuous flow path through said mixer means;
- mounting said static mixer means in said inlet leg of said impact T-junction downstream of said plate and with the downstream end of said static mixer means between 0.75 and 1.0 pipe diameters from the geometric center of the impact T-junction, the plates of said mixer means extending normal to the plane defined by said intersecting longitudinal axes of said inlet leg and said outlet legs of said impact T-junction and forcing said flow of wet steam to flow through said orifice in said place and said static mixer means just prior to entering said impact T-junction thereby thoroughly mixing the liquid phase and the vapor phase of the flow of wet steam prior to being divided by said impact T-junction; and
- flowing wet steam of substantially the same quality as that flowed into said inlet leg, outwardly from each of said outlet legs.

5,709,469
PROCESS FOR TESTING INTEGRITY OF BONDS BETWEEN EPOXY PATCHES AND AIRCRAFT STRUCTURAL MATERIALS
William F. White; William H. Schueinberg, both of Warner Robins; Roy T. Mullis, Perry, and James D. Armstrong, Warner Robins, all of Ga., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Continuation-in-part of Ser. No. 402,745, Mar. 13, 1995, abandoned. This application Nov. 18, 1996, Ser. No. 748,733
Int. Cl.^{6} G01N *25/72;25/00*
U.S. Cl. 374—5 **17 Claims**


EDGE OF REPAIR
TRANSITION AREA
0.5 INCH (TYP)
NO SCALE
12
10
CENTRAL REGION
REPAIRED CRACK
NO VOIDS OR POROSITIES ACCEPTABLE
TYPICAL PATCH CONFIGURATION
5% OF AREA MAY HAVE VOIDS OR POROSITIES

1. A process for insuring the integrity of a composite patch applied to an aircraft surface, said process comprising the steps of:

- a) training of test personnel on test equipment and on bond integrity test procedures;
- b) preparing and installing said composite patch for mechanical testing purposes;
- c) visually inspecting said composite patch that has been installed on an essentially flat surface to determine visible defects and location of said composite patch within an aircraft structure;
- d) selecting a thermographic calibration standard with previously stored thermograhpic images of defects obtained using a low heat process and a high heat process;
- e) calibrating a thermographic subprocess to get a calibrated thermographic subprocess using said thermographic calibration standard and by optimizing the low heat and high heat processes said calibrating thermographic subprocess including the use of a calibrated thermographic imager;
- f) performing two low heat processes on said installed composite patch;
- g) inspecting said installed composite patch using said calibrated thermographic subprocess and recording an image of said composite patch after said two low heat processes have been performed;
- h) comparing said image of said composite patch obtained using said two low heat processes to an image of defects of said thermographic calibration standard obtained with the low heat process;
- i) allowing said installed composite patch to cool down for a predetermined period of time;
- j) performing two high heat process on said installed composite patch;
- k) inspecting said installed composite patch using said calibrated thermographic subprocess and recording an image of said composite patch after said two high heat processes have been performed;
- l) comparing said image of said composite patch obtained using said two high heat processes to an image of defects of said termographic calibration standard obtained with the high heat process;

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m) recording said images of said composite patch in said calibrated thermographic imager during each inspecting step to obtain recordings;

n) reinspecting said composite patch by repeating the performing the two low heat process steps, the inspecting with said two low heat processes step, the comparing the image using said two low heat processes step, the allowing of the composite patch to cool down step the performing the two high heat processes step, the inspecting with said two high heat processes step, the comparing the image using said two high heat processes step, and the recording step if during said recording in said image of said images said defect is seen therein, said reinspecting including recording the reinspecting images of said composite patch in said imager;

o) determining whether said installed composite patch meets predetermined criteria which will insure the integrity of the composite patch being applied to the aircraft surface by analyzing the reinspected images;

p) identifying said installed composite patch being tested; and

q) archiving said recordings for future reference.

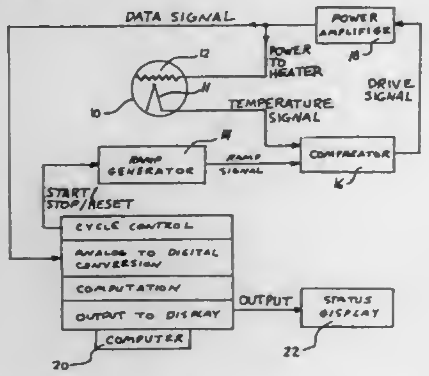
5,709,470
METHOD AND APPARATUS FOR DETECTING ICE BUILDUP

Charles M. Finley, Arcadia, Calif., assignor to CNC Development, Inc., Arcadia, Calif.

Filed Jul. 10, 1995, Ser. No. 499,863

Int. Cl.^{6} G01N *25/04*

U.S. Cl. 374—16 **12 Claims**



1. Apparatus for detecting the presence of ice in a sample, comprising:

means for applying heat energy to the sample at an adjustable level to increase the temperature of the sample,

temperature sensing means for detecting any changes in the temperature of the sample in response to the applied heat energy, the temperature sensing means generating a temperature indicative output,

means responsive to said output of the temperature sensing means for adjusting the level of applied heat energy to maintain a predetermined rate of temperature increase of the sample, and

means for detecting any abrupt change in the level of energy applied to the sample.

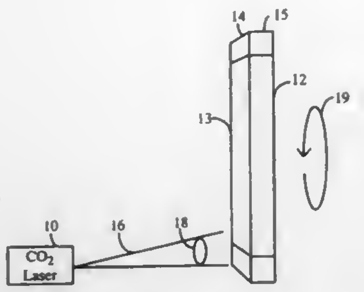
5,709,471
METHOD FOR THERMALLY TESTING WITH A LASER THE EDGE OF A SAPPHIRE WINDOW

Daniel H. Platus, Rancho Palos Verdes, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed Feb. 29, 1996, Ser. No. 608,805

Int. Cl.^{6} G01N *3/60;25/00*

U.S. Cl. 374—57 **3 Claims**



1. A method of testing an optical ceramic having an edge and a polished optical surface with an optical surface periphery, the optical ceramic experiences loading stresses when in use, the method comprising the steps of,

generating an illumination beam to be absorbed by the optical ceramic, and

illuminating the optical surface periphery of the optical surface with said beam to simulate the loading stresses by creating a temperature gradient extending towards the edge to produce thermal stresses in the edge, the thermal stresses cause microcracks in the edge to fracture when the optical ceramic is defective, and the thermal stresses do not damage the polished optical surface when the optical ceramic is not defective.

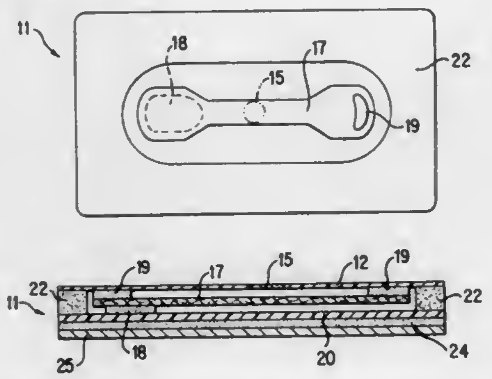
5,709,472
TIME-TEMPERATURE INDICATOR DEVICE AND METHOD OF MANUFACTURE

Thaddeus Prusik, Stroudsburg, Pa.; Raymond M. Arnold, Harrisonville, and Stephen C. Fields, Mendham, both of N.J., assignors to LifeLines Technology, Inc., Morris Plains, N.J.

Filed Oct. 23, 1995, Ser. No. 546,919

Int. Cl.^{6} G01K *3/04;11/06;13/00;1/14*

U.S. Cl. 374—106 **13 Claims**



1. An indicator for signaling the exposure of a product to a temperature above a pre-determined temperature and after a period of time of exposure that is integrated with said temperature comprising in combination:

(a) a surface layer;

(b) a substrate layer below said surface layer adapted to be adhered at its underside to a container;

(c) a longitudinal wicking member that is adhered, substantially only at the extremities of the member to the underside of said surface layer; and

(d) a heat-fusible substance, which melts and flows at a temperature above a pre-determined temperature, applied to at least one of the ends of said wicking member and which, after being exposed to a temperature above said pre-determined temperature, flows along the length of said wicking member;

(d) said surface layer covering said wicking member and heat-fusible substance and, in conjunction with said substrate layer, encapsulating said wicking member and heat-fusible substance, said surface layer being provided with a sight window at an intermediate location over said wicking member and through which the progress of flow on the wicking member of the heat fusible substance is observed.

10. A method of manufacturing a pliable time-temperature indicator label for signaling the exposure of a product to a temperature above a pre-determined temperature and for a period of time that is integrated with said temperature comprising:

(a) providing a surface layer with a viewable portion thereon to observe a condition of exposure;

(b) providing a bottom substrate layer;

(c) adhering a longitudinal wicking member solely at its longitudinal extremities to the underside of said surface layer;

(d) applying a heat-fusible substance, which melts and flows above a pre-determined temperature, to one end of said wicking member, said heat-fusible substance after being exposed to a temperature above said pre-determined temperature, flows on the wicking member; and

(e) conjointly sealing the surface layer at its outer periphery to the outer periphery of the bottom substrate layer.

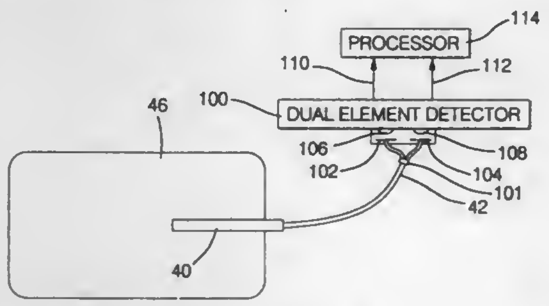
5,709,473
TEMPERATURE SENSOR

Michel Farid Sultan, Troy, and Michael James O'Rourke, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1996, Ser. No. 645,312

Int. Cl.^{6} G01J *5/02*

U.S. Cl. 374—131 **8 Claims**



1. A temperature sensor comprising:

a wave guide with a cylindrical wall;

a material of low emissivity included at the cylindrical wall for generating black body radiation into the wave guide, wherein at least a portion of the generated black body radiation is carried through the wave guide;

a first sensor receiving the generated black body radiation and providing a first output signal indicative of a first magnitude of a first bandwidth of the generated black body radiation; and

a second sensor receiving the generated black body radiation and providing a second output signal indicative of a second magnitude of a second bandwidth of the generated black body radiation, wherein a difference between the first and second output signals is a linearized indication of temperature of at least a portion of the wave guide.

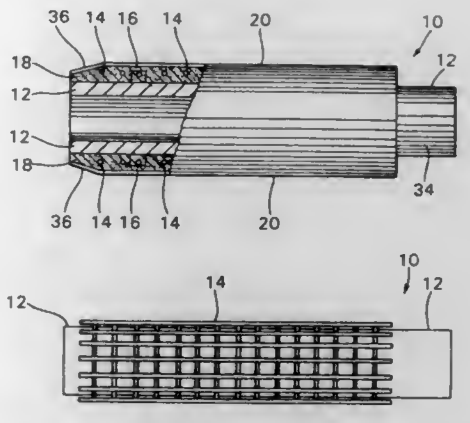
5,709,474
REFRACTORY SHEATH FOR SENSORS

David James Richardson, New Castle, Pa., and Harry G. Clauss, Jr., Delanco, N.J., assignors to L&N Metallurgical Products Co., Elport, Pa.

Filed Nov. 15, 1994, Ser. No. 339,544

Int. Cl.^{6} G01K *1/10;1/12;* **F16L** *9/14*

U.S. Cl. 374—140 **7 Claims**



1. A non-reactive sheath for a sensor to be immersed in a molten material, said sheath comprising:

an inner layer comprised of one of paper and cardboard disposed about at least a portion of said sensor;

a non-reactive resin/particulate layer comprised of at least one material selected from the group consisting of silica, zircon, zirconia, olivine and chromite, the non-reactive layer being disposed about said inner layer such that said inner layer is disposed between said sensor and said non-reactive layer, said non-reactive layer including a screen affixed to said inner layer for structurally supporting said non-reactive layer about said inner layer, said non-reactive layer preventing a reaction between said inner layer and said molten material when said sheath is immersed into said molten material; and

a protective coating layer formed of a material selected from the group consisting of acrylic emulsions, phenolic resins, epoxy resins, phenol formaldehyde, urea formaldehyde, potassium silicate, sodium silicate, and Bispheno-A-Epoxy and disposed about the outer surface of said non-reactive layer, wherein said coating layer prevents fracturing and abrasion of said non-reactive layer and vaporizes upon immersion into said molten material.

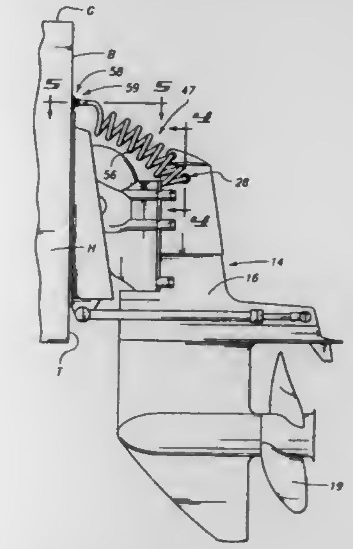
5,709,475
POWERBOAT OUTDRIVE VENT PLUG MOUNTED TEMPERATURE DETECTION DEVICE

Michael G. Stoor, Hayden Lake, Id., assignor to Larry E. Smith, Spirit Lake, Id.

Filed Jul. 11, 1995, Ser. No. 501,247

Int. Cl.^{6} G01K *1/14;7/22;13/00*

U.S. Cl. 374—141 **13 Claims**



10. A powerboat outdrive gear case vent plug hole mountable temperature detection device, comprising:

a sensor base;

connector configured to releasably secure the sensor base to a powerboat outdrive gear case;

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- a temperature sensor capable of producing signals responsive to temperature variations;
- a mount positioning the sensor within the sensor base for thermal communication with an outdrive gear case;
- a sensor wire mounted to the temperature sensor and extending outwardly therefrom for transmitting said signals from the temperature sensor;
- an elongated flexible sheath loosely receiving and encasing a length of the sensor wire, and extending between first and second ends;
- a swivel fitting on the first end of the sheath, loosely receiving the sensor wire and rotatably mounting the sheath to the sensor base;
- a mount adjacent the second end of the sheath configured to secure the second end of the sheath to a powerboat; and
- indicator means connected to the sensor wire for translating said signals from the temperature sensor into a human sensory recognizable form.

5,709,476

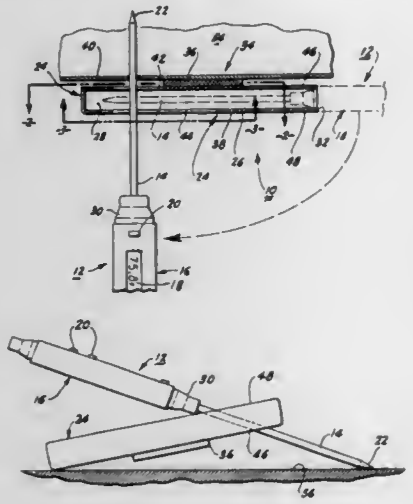
TEMPERATURE MEASURING DEVICE

Frederick L. Wu, Pleasanton, and Robert K. Yuan, Berkeley, both of Calif., assignors to DeltaTrack, Inc., Modesto, Calif.

Filed Jan. 27, 1995, Ser. No. 379,155

Int. Cl.^{6} G01K *1/14;* **B65D** *85/38*

U.S. Cl. 374—208 **6 Claims**



1. A temperature measuring device, comprising:

a. a thermometer, including a relative narrow temperature sensor and a relatively wide temperature indicator for displaying a temperature value, said relatively narrow temperature sensor being linked to said temperature indicator; and

b. a member, said member being sized to at least partially cover said temperature sensor, said temperature sensor being separable from said member, said member including a first slot having a dimension of elongation with a transverse dimension which tapers along said dimension of elongation, and a second slot having a dimension of elongation therethrough, said first and second slots being sized to permit passage of said relatively narrow temperature sensor, said first slot wedging said relatively narrow temperature sensor to permit holding of said relatively narrow temperature sensor to said member in an orientation for support of said member and said relatively narrow temperature sensor on a horizontal surface, with said relatively wide temperature indicator being raised above the horizontal surface for viewing.

5,709,477

DEVICE FOR THE GATHERING AND/OR TRANSPORT OF GARDEN REFUSE OR PRODUCTS OF SIMILAR CHARACTERISTICS

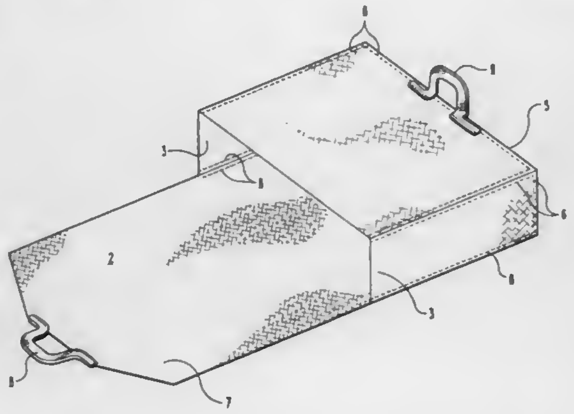
Piero Schinasi, and Madeleine Schinasi, both of Epalinges, Switzerland, assignors to Codefine S.A., Lausanne, Switzerland

Filed Jul. 6, 1995, Ser. No. 498,929

Claims priority, application Switzerland, Jul. 8, 1994, 02191/94

Int. Cl.^{6} B65D *33/06*

U.S. Cl. 383—4 **4 Claims**



1. A device for the gathering and/or transport of garden refuse or of products of similar characteristics, comprising a lower piece, made of a flexible but not extendible material, that lies in substantially a single plane when fully extended on the ground, this piece being intended to slide on the ground, wherein apart from the lower piece, it comprises two lateral pieces, an upper piece, and a base piece, the lateral, upper and base pieces being of material similar to that of the lower piece and being joined to one another by their adjacent edges in such a way as to form a bag; wherein said two lateral pieces and said upper piece are of the same length, and the lower piece is of a length which is greater than twice the lengths of said lateral and upper pieces, wherein the base piece has grips secured in the center portion of both of its transverse sides and a third grip is secured in the center portion of the side of the lower piece that is opposed to the base piece.

5,709,478

DRINKING DEVICE FOR DIVERS

Jiunn-Liang Chen, Floor 7, No. 83, Li-Kung Road, Taiping Hsiang, Taichung County, Taiwan

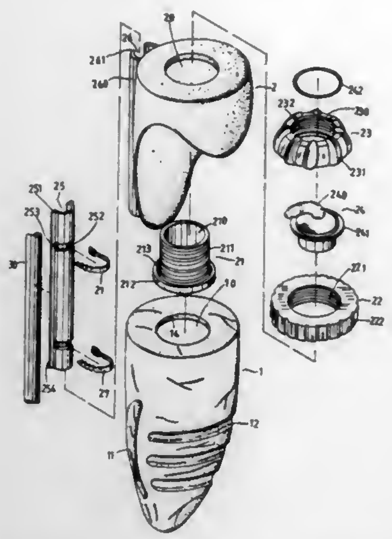
Filed Oct. 31, 1996, Ser. No. 741,937

Int. Cl.^{6} B65D *33/02;33/16*

U.S. Cl. 383—80 **6 Claims**

1. A drinking device for divers, said drinking device comprising:

- a bag for containing water, said bag including an opening,
- a housing provided for receiving and for protecting said bag, said housing including an orifice for aligning with said opening of said bag, and
- means for securing said bag to said housing, said securing means including a cylindrical member having an outer thread and having a bottom portion, said bottom portion of said cylindrical member including an annular rib for engaging with said bag, a nut being engaged with said outer thread of said cylindrical member for securing said bag to said housing, said cylindrical member including a bore communicating with an interior of said bag.



5,709,479

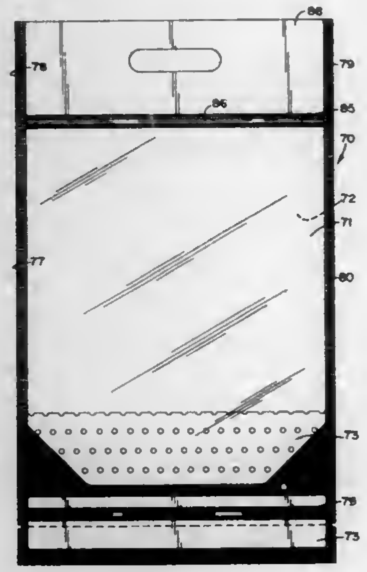
BAG CONSTRUCTION FOR DISTRIBUTING MATERIAL

Gary M. Bell, Crystal, Minn., assignor to Kapak Corp., St. Louis Park, Minn.

Filed Sep. 6, 1996, Ser. No. 709,163

Int. Cl.^{6} B65D *30/10*

U.S. Cl. 383—209 **20 Claims**



1. A bag construction comprising:

- (a) first and second, opposed, panel sections;
  - (i) each of said panel sections having a first end edge, a second end edge and opposite side edge portions extending between said first and second end edges;
  - (ii) said panel sections being secured to one another along at least a portion of said panel section side edge portions, to define a bag construction interior and opposite side edges;
- (b) a base gusset member;
  - (i) said base gusset member being oriented in extension between said first and second panel sections, across an end of said bag construction interior;
  - (ii) said base gusset member including distribution apertures therein;
- (c) a first transverse seal oriented to seal said first and second panel sections to one another; said first transverse seal being positioned to extend transversely across said bag construction at a location between said base gusset member and said first end edges of said first and second panel sections;
- (d) a first transverse openable and reclosable closure arrangement extending between said first and second panel sections; said first transverse openable and reclosable closure arrangement being positioned to selectively seal said first panel section to said second panel section along a closure line oriented between said base gusset member and said second end edges of said first and second panel sections; and
- (e) a transverse openable and reclosable top closure arrangement extending between said first and second panel sections; said top closure arrangement being positioned to selectively seal said first panel section to said second panel section along a closure line oriented between said base Gusset member and first end edges of said first and second panel sections.

5,709,480

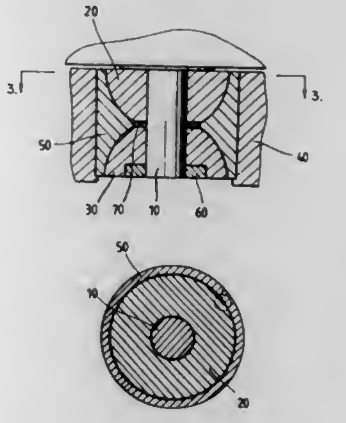
HEMISPHERICAL FLUID BEARING

Min-pyo Hong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Continuation-in-part of Ser. No. 581,229, Dec. 29, 1995, abandoned. This application Dec. 11, 1996, Ser. No. 763,343

Int. Cl.^{6} F16C *32/06*

U.S. Cl. 384—100 **7 Claims**



1. A hemispherical fluid bearing comprising:

- a pair of inner rings, each having a spherical outer lubricating surface, said inner rings being fixed to a shaft in opposition to each other; and
- an outer ring having a lubricating surface corresponding to said lubrication surfaces of said inner rings for supporting the rotation of said inner rings;
- wherein each of said inner rings has a first film coating of titanium formed on the lubricating surface thereof, and a second film coating of a diamond-like-carbon which is formed on said first film coating.

5,709,481

APPARATUS FOR CREATING BACK TENSION IN A PRINTER/PLOTTER SYSTEM

Antonio Hinojosa, and Richard Lewis, both of Sant Cugat del Vallès, Spain, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 29, 1996, Ser. No. 646,762

Int. Cl.^{6} F16C *27/02*

U.S. Cl. 384—219 **8 Claims**

1. An apparatus for aligning media in a printer/plotter system comprising in combination:

- a base;
- a pair of brackets connected to said base and being supported thereby, each of said brackets including:
  - a first opening for forming a first bearing;

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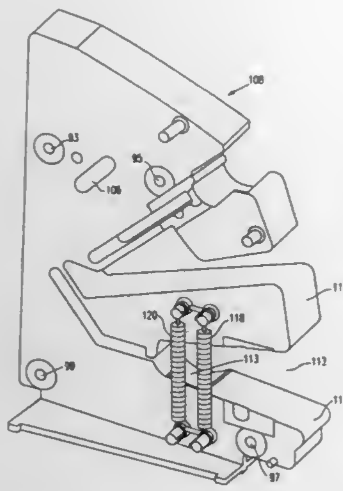
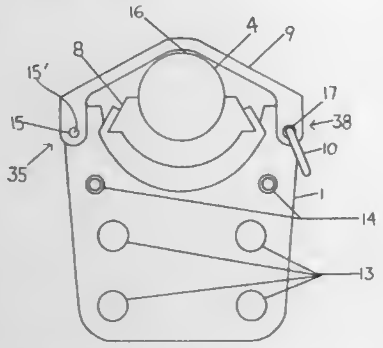


a second opening spaced from said first opening for forming a second bearing;
said second opening being formed between a lower fixed arm having an elongated top surface and a first recess forming part of the second bearing, and an upper pivotal arm having a bottom cam follower surface and a second recess forming another part of the second bearing;
a spring connected to said fixed arm and to said pivotal arm for biasing said arms toward each other;
a first shaft adapted to be received by the first openings of said pair of brackets; and
a second shaft adapted to be received by the second openings of said pair of brackets, said second shaft acting as a cam against the bottom surface of said upper pivotal arm.

5,709,482
INTEGRATED HANGER BEARING

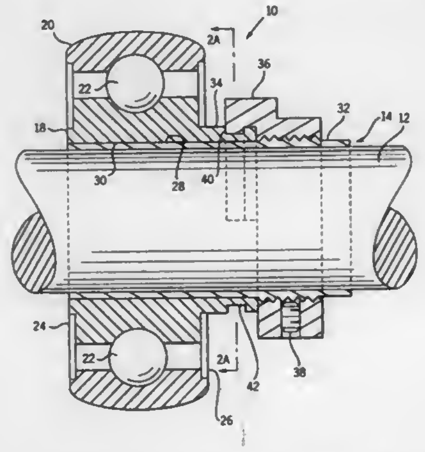
David C. Lutz, 8807 Fox Briar La., Boerne, Tex. 78006-5585
Filed Jan. 27, 1997, Ser. No. 788,996
Int. Cl.⁶ F16C *35/02*
U.S. Cl. 384—434 **14 Claims**



1. A new and improved integrated hanger bearing for rotatably supporting a shaft comprising:
a pair of cooperating plates, each of said plates having a generally planar portion and a recessed portion having an opening;
a semi-cylindrical bearing means adapted to be fit into said recessed portions of said cooperating plates when said cooperating plates are brought into contact with one another;
retaining means for holding said cooperating plates in contact with one another; and
rotational prevention means to hold said semi-cylindrical bearing and said cooperating plates in a fixed relationship with one another when the shaft is rotating in contact with said semi-cylindrical bearing, where said rotational prevention means comprises a pair of angled edges along the length of said semi-cylindrical bearing and further includes cooperating tabs integral with said recessed portions of said cooperating plates; whereby
said semi-cylindrical bearing means is held in said recessed portions of said cooperating plates and said bearing is exposed at said recessed portion openings and said semi-cylindrical bearing rotatably supports a shaft.

5,709,483
BEARING ASSEMBLY UTILIZING IMPROVED CLAMPING ARRANGEMENT

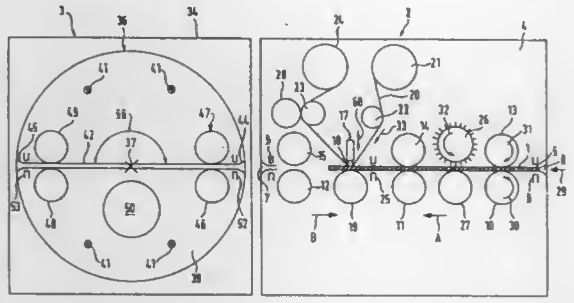
Howard M. Martinie, Simpsonville, S.C., assignor to Reliance Electric Industrial Company, Cleveland, Ohio
Filed Jul. 19, 1996, Ser. No. 683,945
Int. Cl.⁶ F16C *27/04*
U.S. Cl. 384—538 **20 Claims**



1. A bearing assembly for receipt of a shaft therein, said bearing assembly comprising:
a tapered adapter defining a first axial bore for receipt of the shaft therethrough and being configured to permit contraction about said shaft, said tapered adapter further defining a tapered outer surface and including a first extension portion axially extending from a greater diameter end of said tapered outer surface;
a bearing inner ring member defining an inner raceway about an outer surface thereof and further defining a second axial bore having a tapered inner surface for receipt of said tapered adapter therein, said bearing inner ring member including a second extension portion axially extending from a greater diameter portion of said tapered inner surface, said second extension portion defining a circumferential receiving groove;
a bearing outer ring member defining an outer raceway about an inner surface thereof, said bearing outer ring member situated such that said outer raceway is situated in opposition to said inner raceway;
a plurality of bearing elements disposed between said inner raceway and said outer raceway; and
a nut having a first axial portion for receipt around said first extension portion and a second axial portion for receipt around said second extension portion, said second axial portion of said nut defining an arcuate engaging lip having an angular extent no more than approximately semicircular, said engaging lip configured to operatively engage said circumferential receiving groove such that said nut interconnects said tapered adapter and said bearing inner ring member to effect relative axial movement therebetween.

5,709,484
APPARATUS FOR DOUBLE-SIDED PRINTING OF IDENTIFICATION CARDS

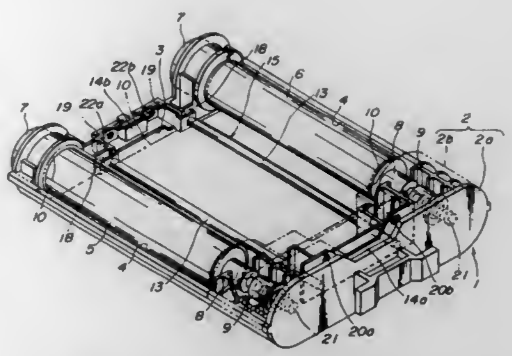
Frank Dorner, Vienna, Austria, assignor to Kunz GmbH, Vienna, Austria
Filed Apr. 24, 1996, Ser. No. 639,093
Claims priority, application Germany, Apr. 24, 1995, 195 14 999.8
Int. Cl.⁶ B41J *3/60;13/12*
U.S. Cl. 400—188 **18 Claims**



1. An apparatus for double-sided printing of an identification card having an encodable chip thereon the apparatus comprising:
a printing unit having: a thermal printhead for printing on one side of a card at a time; a card transport device for moving the card past the thermal printhead in steps; an input sensor for switching on the card transport device when a card is fed to the printing unit; and an output sensor for switching off the card transport device as a card moves away from the printing unit; and
a reversing unit for reversing a card, the reversing unit having: a rotor with a rotation axis extending perpendicular to the direction of card transport; a card transport device fastened to the rotor for drawing a card from the printing unit to the rotor and returning a card from the rotor to the printing unit; and a device for turning the rotor by 180° when a card is fed onto the rotor, the improvement wherein:
the card transport device of the reversing unit is formed on the rotor as a rotating transport device which is rotated in only a single direction to both draw a card onto the rotor and to return a rotated card to the printing unit; and
the card transport device of the printing unit is switchable to allow the forward and return transport of a card wherein, the output sensor switches on the card transport device of the printing unit into the return transport direction when a rotated card printed on a first side is returned from the reversing unit and the input sensor switches back the card transport device to the forward transport direction after a rotated card is fed from the output sensor for printing a second side of a card with the thermal printhead and feeding a card printed on both sides back to the reversing unit.

5,709,485
CARD PRINTER INCLUDING INK RIBBON CARTRIDGE WITH GUIDE SHAFTS

Nobuo Kohno, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 229,590, Apr. 19, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,867
Int. Cl.⁶ B41J *35/28*
U.S. Cl. 400—208 **16 Claims**



1. A printing apparatus for printing an image on a card-type medium comprising:
a printer; and
an ink ribbon cartridge mounted in said printer, said ink ribbon cartridge comprising:
a casing supported in said printer including a first portion, a second portion, and a third portion to connect said first portion and said second portion and having a printer head insertion opening formed therethrough, said first portion and said second portion being offset from a center of said third portion in a first direction normal to said printer head insertion opening;
a supply reel rotatably disposed in said first portion of said casing;
a take-up reel rotatably disposed in said second portion of said casing;
an ink ribbon wound between said supply reel and said take-up reel across said printer head insertion opening, said ink ribbon having an ink surface on a first side, said first side of said ink ribbon being wound around said supply reel and said take-up reel so that said first side of said ink ribbon is positioned on an outside of said supply reel and on an outside of said take-up reel; and
a pair of ink ribbon guide means mounted in said casing between said supply reel and said take-up reel so as to be slightly displaced from a plane in which rotational axes of said supply reel and said take-up reel lie and opposing said ink surface of said ink ribbon;
and said printer comprising:
a printing stage movably mounted on said printer, wherein a card-type medium is mounted on said printing stage so as to oppose said first side of said ink ribbon when said ink ribbon cartridge is accommodated in said printer;
a printing head movably mounted in said printer for movement in a direction normal to said ink ribbon extending between said supply reel and said take-up reel, said ink ribbon of said ink ribbon cartridge being disposed between said printing stage and said printing head, wherein said printing head includes a pair of guide shafts mounted on either side thereof, said pair of guide shafts being substantially aligned with a tip of said printing head, said printing head opposing a second side of said ink ribbon opposite said first side and being operative to move between a first position where said printing head is not in contact with said ink ribbon and a second position where said printing head is in contact with said ink ribbon to apply a tension to said ink ribbon so that, during printing, said printing head pushes said second side of said ink ribbon so that the first side of said ink ribbon is in contact with said card-type medium mounted on said printing stage; and
a pair of connecting plates, wherein one of said pair of connecting plates is disposed on a first side of said printer head insertion opening and another of said pair of connecting plates is disposed on a second side of said printer head insertion opening opposite said first side, and wherein said pair of ink ribbon guide means extend between said pair of connecting plates.

5,709,486
PRINTING DEVICE CONSTRUCTION

Robert Charles Lewis Day, Fulbourn, United Kingdom, assignor to Esselte N.V., Belgium
Filed Jul. 3, 1996, Ser. No. 674,950
Claims priority, application United Kingdom, Jul. 4, 1995, 9513532
Int. Cl.⁶ B41J *35/28*
U.S. Cl. 400—208 **20 Claims**

1. A printing device comprising:

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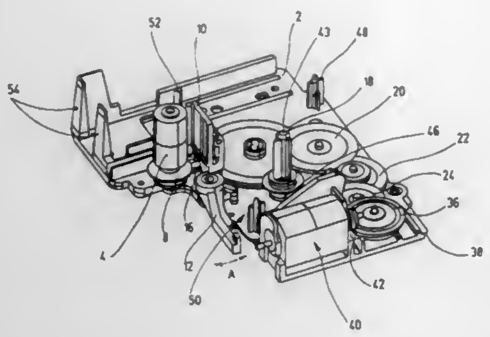


a baseplate having a substantially flat base portion and a plurality of upstanding elements positioned at predetermined locations on the base portion, wherein the base portion and the plurality of upstanding elements are together a single part of unitary construction;

a printer mounted on at least one of said upstanding elements for printing on a printing substrate;

a printing substrate support mounted on at least one of said upstanding elements for supporting a printing substrate; and

a printing substrate advancement mechanism mounted on at least one of said upstanding elements for advancing a printing substrate through the printer.

5,709,487
RIBBON CASSETTE WITH GUIDE MEMBER

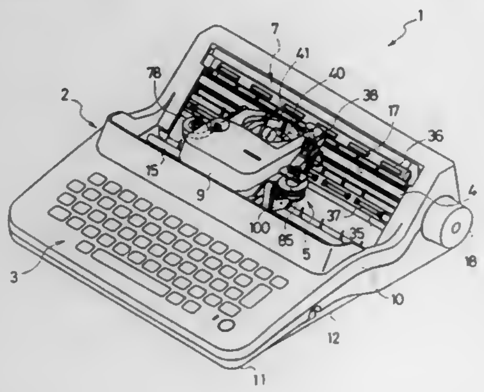
Takashi Yamamoto, Nagoya; Mutsuo Fukuoka, Aichi-ken, and Masaya Funamoto, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Mizuho, Japan

Filed Sep. 27, 1996, Ser. No. 720,002

Claims priority, application Japan, Mar. 12, 1996, 8-084748

Int. Cl.^{6} B41J *11/60*

U.S. Cl. 400—208 20 Claims



1. A ribbon cassette including a ribbon, a cassette main body containing the ribbon, and a pair of ribbon supports supporting linearly a portion of the ribbon drawn out of the cassette main body for printing, the ribbon being selectively used in relation to a tape member, the ribbon cassette comprising:

ribbon guide sections provided on the pair of ribbon supports for guiding the linearly supported portion of the ribbon; and

tape guide sections positioned for guiding a tape member so that a portion of a tape member is linearly arranged outside, with respect to a center of the cassette main body, of the linearly supported portion of the ribbon.

5,709,488
PRINTER

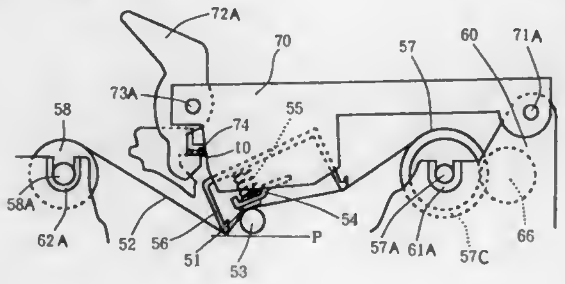
Tatsuji Imai, Ichinomiya; Toshio Sugiura, Anjo, and Takatoshi Takemoto, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 30, 1996, Ser. No. 777,051

Claims priority, application Japan, Jan. 18, 1996, 8-006558

Int. Cl.^{6} B41J *33/52;33/14;35/08*

U.S. Cl. 400—234 22 Claims



1. A printer comprising:

a frame;

a feed spool mounted on the frame, the feed spool having a first end and a second end, and an ink ribbon wound thereon;

a takeup spool mounted on the frame for taking up the ink ribbon, the takeup spool having a first end and a second end respectively aligned with the first end and the second end of the feed spool, wherein the ink ribbon extends from the feed spool to the takeup spool in a ribbon feeding path;

takeup spool driving means coupled to the takeup spool for driving the takeup spool to take up the ink ribbon;

feed tension means disposed at the second end of the feed spool for tensioning the ink ribbon when the ink ribbon is fed from the feed spool to the takeup spool;

recording medium support means for supporting a recording medium during printing disposed between the feed spool and the takeup spool in the ribbon feeding path;

printing means for printing an image on a recording medium disposed in the ribbon feeding path facing and biased toward the recording medium support means; and

ink ribbon guide means disposed adjacent to the printing means for guiding the ink ribbon toward the recording medium support means including tension distributing means disposed between the second end of the feed spool and the second end of the takeup spool for distributing tension uniformly across the ink ribbon during feeding.

5,709,489
KEYBOARD POSITIONING SYSTEM

Frederic C. Ambrose, 142 The Channel, Brewster, Mass. 02631

Continuation of Ser. No. 511,535, Aug. 4, 1995, Pat. No. 5,567,067, which is a continuation of Ser. No. 303,582, Sep. 9, 1994, abandoned, which is a continuation of Ser. No. 60,720, May 10, 1993, abandoned, which is a continuation of Ser. No. 982,879, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 910,667, Jul. 8, 1992, abandoned, which is a continuation of Ser. No. 648,628, Feb. 1, 1991, abandoned. This application Oct. 21, 1996, Ser. No. 734,755

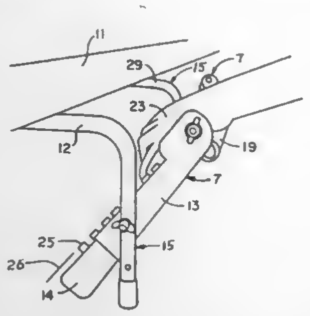
Int. Cl.^{6} B41J *5/08*

U.S. Cl. 400—472 11 Claims

1. A device for mounting a keyboard to a base and for positioning the keyboard in a backward tilted position and for use by an operator having at least one hand, the keyboard having a plurality of keys, a front end, a rear end, and a key plane defined by a plane of the uppermost portion of the keys, the device comprises:

(a) a bracket engageable with a base;

(b) a clamp engaged with said bracket said clamp being engagable with a keyboard such that the keyboard may be orientated in a backward tilted position defined by the rear end of the keyboard being disposed below the front end of the keyboard, to prevent the keyboard from falling off when the keyboard is orientated in said backward tilted position; and



(c) a hand support member adjustably engaged with said clamp and positionable to a position above the key plane of the keyboard when the keyboard is orientated in said backward tilted position and which is adapted to support the hand of the operator.

5,709,490
FOOT BRUSH

Robert J. Dyas, Queensland, Australia, assignor to Innovative Products NZ Limited, New Zealand

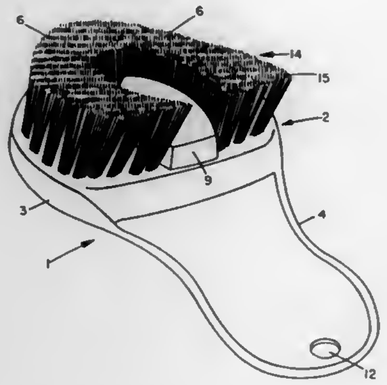
PCT No. PCT/NZ94/00104, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/10970, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 11, 1994, Ser. No. 633,753

Claims priority, application New Zealand, Oct. 21, 1993, 250022

Int. Cl.^{6} A46B *11/00*

U.S. Cl. 401—19 19 Claims



1. A foot brush, comprising:

a body having a front portion and a rear portion;

the front portion having a soap locating region;

a tuft of bristles embedded in and projecting from the front portion in the vicinity of the soap locating region; and

the rear portion of the body comprising means for engagement by one foot of a user, whereby the foot brush is prevented from moving while the user scrubs the other foot over the tuft of bristles and soap in the soap locating region.

5,709,491
PENCIL-LIKE ERASER

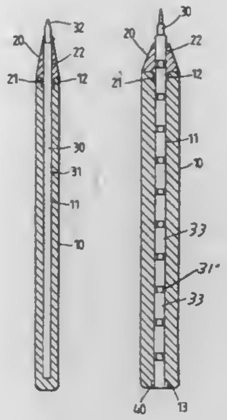
Thomas Yeh, 10F, No. 97, Sec. 2, Nan-Gun Rd., Taipei, Taiwan

Filed Jan. 3, 1996, Ser. No. 580,970

Int. Cl.^{6} B43L *19/00*

U.S. Cl. 401—88 3 Claims

1. A tubular eraser for erasing marks comprising an elongated body of a rubber material and having therein an insertion hole along an axis of said elongated body, said insertion hole having a predetermined length, an ink reservoir of a ball-point pen accomodated in the predetermined length of the insertion hole,



a first end of said insertion hole having a retaining groove, a tapered sleeve of a rigid material having a retaining projection, said retaining projection being engaged within said retaining groove, said tapered sleeve provided therein with an axial hole in alignment with said insertion hole of said elongated body when said tapered sleeve is fastened to said elongated body, wherein a ball point of said ball-point pen extends out of said axial hole of said tapered sleeve.

5,709,492
LIQUID APPLICATOR

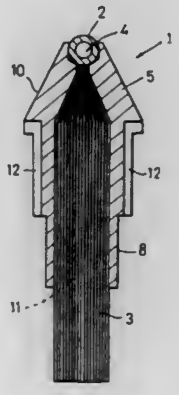
Masahiro Yasunaga, Osaka, and Shigeyasu Inoue, Kashiwara, both of Japan, assignors to Sakura Color Products Corp., Osaka-fu, Japan

Continuation of Ser. No. 321,765, Oct. 12, 1994, abandoned. This application May 20, 1996, Ser. No. 650,219

Claims priority, application Japan, Apr. 27, 1994, 6-113703; Apr. 27, 1994, 6-113704; May 14, 1994, 6-124321

Int. Cl.^{6} B43K *8/20*

U.S. Cl. 401—208 18 Claims



8. A liquid applicator comprising:

an ink pool having a tip;

a supply of liquid ink in the ink pool;

a holder which is secured to the tip of said ink pool and having a roller-storing portion and an ink passage hole; and

a roller having an ink applying surface disposed in said roller-storing portion of said holder,

there being a space between the applying surface of the roller and the roller-storing portion that provides a capillary tube force that prevents ink from flowing through the space to and from the ink pool,

wherein the roller-storing portion is defined by a tapered surface portion, with the tapered surface portion being substantially flat and defining an obtuse angle as viewed in cross section.

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5,709,493
BALLPOINT PEN HAVING A BACKFLOW PREVENTING MECHANISM

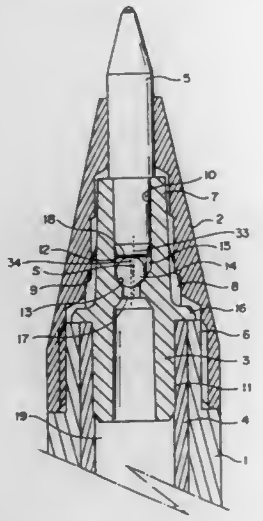
Seiichi Kobayashi, and Kazubiko Furukawa, both of Yokohama, Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 213,942, Mar. 16, 1994, abandoned. This application Mar. 11, 1996, Ser. No. 613,896

Claims priority, application Japan, Mar. 18, 1993, 5-012171; May 24, 1993, 5-031856

Int. Cl.^{6} B43K *7/00;7/10*

U.S. Cl. 401—219 **9 Claims**



1. A ballpoint pen equipped with a backflow preventing mechanism, comprising:

a joint comprising:

- a valve chamber disposed in an approximately middle portion of said joint with respect to the axial direction thereof for holding a ball valve therein with play, said valve chamber further having a ball valve seat in a rear portion thereof;
- a cavity having an entrance disposed in front of said valve chamber; and
- a conduit disposed in said rear portion of said valve chamber and communicating therewith via said ball valve seat, said joint holding a tip in said cavity and holding an ink reservoir communicating with said conduit; and

means which allows said ball valve to fit on said ball valve seat so as to block said conduit when said cavity is oriented upward and which allows said ball valve to be spaced from a wall surface of said valve chamber and be held so as not to block said entrance of said cavity when said cavity is oriented downward, said means constructed such that an axis of path holding said ball valve with play is made eccentric relative to the axis of said entrance wherein a channel is provided on one side of said valve chamber.

5,709,494
BINDER WITH IMPROVED MODULAR BACKSTRIP DESIGN

Anton Deutsch, Alois Groggergasse 22, Gleisdorf, Austria, A-8200

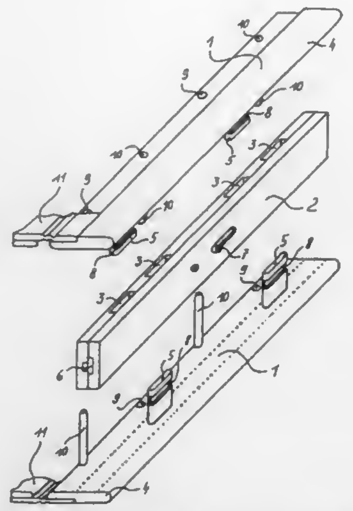
PCT No. PCT/AT94/00151, § 371 Date Jul. 18, 1996, § 102(e) Date Jul. 18, 1996, PCT Pub. No. WO95/11136, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 18, 1994, Ser. No. 632,459

Claims priority, application Austria, Oct. 19, 1993, 2099/93

Int. Cl.^{6} B42F *3/00*

U.S. Cl. 402—60 **3 Claims**



1. A binder having a modular backstrip of improved design for the presentation and storage of objects or information mounted or contained on sheet-like data carriers, in which the back section consists of an additional modular backstrip forming the actual back of the binder, and also of two opposed, strip-like side parts connected with the modular backstrip, and the said modular backstrip is provided with one or more lock slides fitted with a sliding element and matching recesses for the insertion elements projecting from the two strip-like side parts, and the said insertion elements are themselves provided with matching recesses for the engaging elements fitted on the lock slides, and the said side parts also carry robust mounting posts of tubular or solid cross-section as well as insertion holes into which the ends of the mounting posts are introduced, characterized in that the modular backstrip is designed as a separate, loose component that is not permanently attached to any side part.

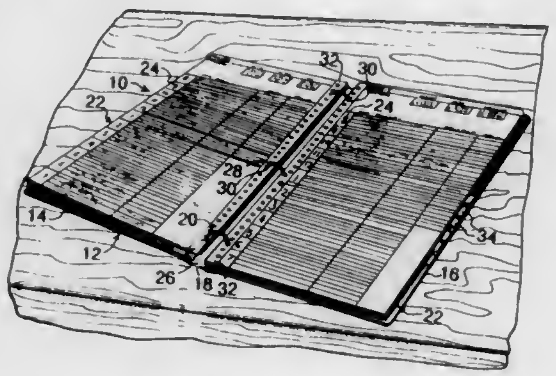
5,709,495
ORGANIZED APPOINTMENT BOOK FOR A HAIRSTYLIST

Pennae Brunner, 1165 Smith Ave., No. 1, Campbell, Calif. 95008

Filed Dec. 2, 1996, Ser. No. 759,060

Int. Cl.^{6} B42F *13/00*

U.S. Cl. 402—73 **1 Claim**



1. An organize appointment book for a hairstylist comprising:

a) a loose-leaf binder having a front cover and back cover hinged to a spine;

b) a page holder mounted to said spine comprising a longitudinal base mechanism connected to an inner surface of said spine and a plurality of openable ring connectors spaced apart and transversely connected to said base mechanism to engage with openings in a margin of each said imprinted page;

c) a plurality of imprinted pages detachably held by said page holder, whereby each said imprinted page bears printed indicia thereon for providing information to the hairstylist using said organize appointment book, said imprinted pages including two types of client booking sheets with one for the hairstylist with an assistant and one for just the hairstylist with both booking sheets including specific provision for standby appointments, an addresses and telephone numbers sheet, an important dates sheet, a reorder reminder sheet, an order form sheet, and a price list sheet, said reorder reminder sheet comprising clocklike hands for indicating the date when a reorder is due with the minute hand indicating when a new appointment book is to be ordered;

d) a plurality of index tab dividers that are each detachably held by said page holder between said imprinted pages, so as to arrange in monthly order said imprinted pages within said loose-leaf binder;

e) a transparent side pocket on an outer surface of said spine and an imprinted name tag of the hairstylist which can be inserted into said transparent side pocket; and

f) a transparent front pocket on an outer surface of said front cover and a graphically imprinted sheet which can be inserted into said transparent front pocket.

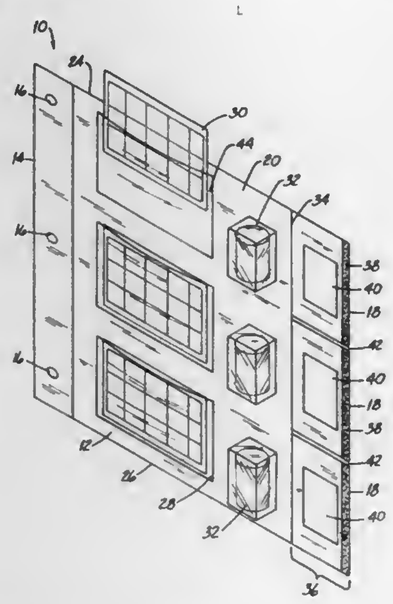
5,709,496
APPARATUS FOR STORING FILM CARTRIDGE AND PROOFS

Richard S. Werner, 326 Cedar Sauk Rd., West Bend, Wis. 53095, and Carey P. Woods, Plum City, Wis., assignors to Richard S. Werner, West Bend, Wis.

Filed Sep. 16, 1996, Ser. No. 714,353

Int. Cl.^{6} B42F *13/00*

U.S. Cl. 402—79 **11 Claims**



1. An apparatus for storing photographic prints and image film, such apparatus comprising a sheet-like article configured to be bound on one edge, having an opposing free edge, first and second surfaces, and opposing first and second free edges perpendicular to the bound edge and wherein;

- a print storage device is attached to the article;
- a film container is attached to the article along a first axis coincident with the print storage device;
- a transverse crease extends along the article;
- a flap, having a hole, extends to and terminates at the transverse crease and is mounted to fold along the transverse crease toward and away from the container; and
- the flap has an adhesive thereon, thereby configuring the apparatus to trap the container when the flap contacts the article.

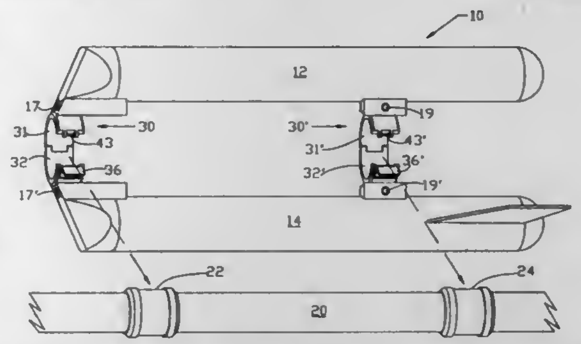
5,709,497
LATCHING DEVICE

David W. Zoch, Cypress, and Jimmy R. Cole, Jr., Houston, both of Tex., assignors to Concord Technologiies Inc., Houston, Tex.

Filed Jun. 18, 1996, Ser. No. 666,650

Int. Cl.^{6} B63G *8/14*

U.S. Cl. 403—24 **5 Claims**



1. A system for rotatably attaching a cluster of utility modules to a seismic streamer cable, each said module of the cluster including a pair of spaced-apart locking cams, at least one set of two corresponding inner races fixedly secured to the streamer cable at a preselected position therealong, the system comprising:

at least one set of two hinged latches arranged to be releasably closed externally around the respective inner races, each hinged latch being characterized by

- i) first and second semi-cylindrical jaws,
- ii) a hinge pin for hingedly joining together one side of the first and second jaws thereby to provide the hinged latches with open and closed configurations,
- iii) a pair of tongues extending from the side of the first jaw diametrically opposite to the hinge pin,
- iv) perforations in said tongues for receiving a catch pin,
- v) a thumb-latch member having sides and a forward portion, the thumb-latch member being pivotally mounted in a thumb-latch compartment on the second jaw diametrically opposite said hinge pin, the thumb-latch member having a groove in the forward portion for lockingly engaging the catch pin when the first and second jaws are closed and the thumb-latch member is pivoted to a locked position within said thumb-latch compartment,
- vi) a keyhole dovetail slot in each one of the first and second jaws for receiving therein the locking cams of respective ones of the cluster of utility modules.

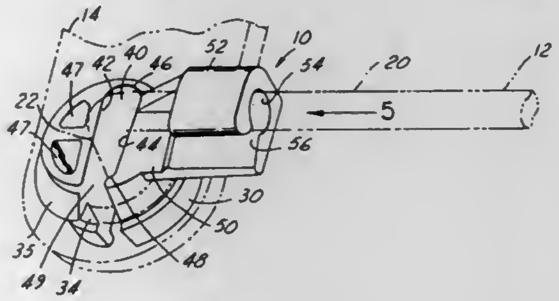
5,709,498
SWIVEL CLIP FOR LINKAGE ROD

Edward J. Sova, Troy; Richard Wong, Fraser; Nicolaas C. Akemann, South Lyon,; Leonard L. Wu, Brighton; Earl L. Watson, Walled Lake, all of Mich., and Andrew J. Palmisano, Hinsdale, Ill., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 16, 1996, Ser. No. 767,459

Int. Cl.^{6} F16B *9/00*

U.S. Cl. 403—196 **9 Claims**



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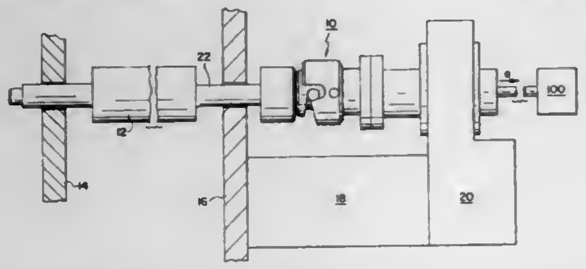
1. A linkage comprising an elongated rod,
a rod actuator to longitudinally reciprocate said rod, and
a clip of flexible, resilient material connecting said rod to said actuator,
said actuator having a circular opening,
said clip having a circular hub rotatably received in said opening,
said rod having a main body portion terminating in a hook end extending perpendicular to said main body portion,
the hub of said clip having a hole receiving said hook end,
said hole being elongated transversely of the main body portion of said rod to enable said rod to be axially rotated to facilitate the insertion of the hook end in said hole during assembly.

5,709,499

SHAFT COUPLING

Herbert Lübke, Stiller Winkel 3, 49536 Lienen, Germany
Filed Oct. 24, 1995, Ser. No. 547,238
Claims priority, application Germany, Nov. 17, 1994, 44 41 019.0
Int. Cl.^{6} F16B *1/00*
U.S. Cl. 403—316 **5 Claims**



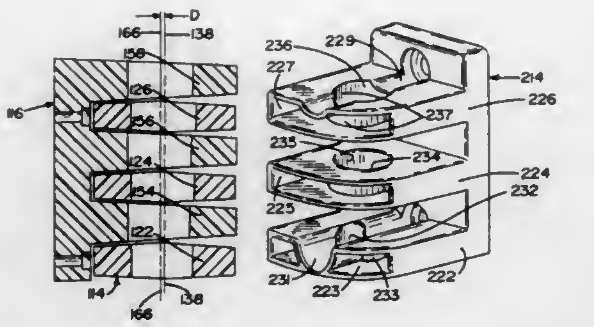
1. A shaft coupling for coupling a journal of a shaft of a print roll to a primary shaft, with coupling parts which engage with one another in interlocking fashion and which are connected to the shafts to be coupled to one another, wherein a stud projects beyond the perimeter of the journal at an end of one shaft and can be pushed into a centering cutout arranged in a sleeve provided at an end of the other shaft and fixed there by means of a bearing surface provided in a slide ring which can be moved over the sleeve, and
wherein two sides of the stud project beyond the journal, wherein arranged in the sleeve (**44**) is a spring-loaded piston (**58**) which is connected to the slide ring (**50**), while the spring-loaded piston (**58**) is connected by means of a piston-connecting rod (**64**) to a piston-cylinder unit, by which means the piston can be moved against a spring force (**66**).

5,709,500

FURNITURE, FURNITURE MANUFACTURING METHOD, AND CONNECTOR ASSEMBLY

Ned W. Mizelle, P.O. Box 5985, High Point, N.C. 27262, and Morton Snitzer, 4836-D Tower Rd., Greensboro, N.C. 27410
Filed Apr. 25, 1995, Ser. No. 428,717
Int. Cl.^{6} B25G *3/02*
U.S. Cl. 403—364 **30 Claims**

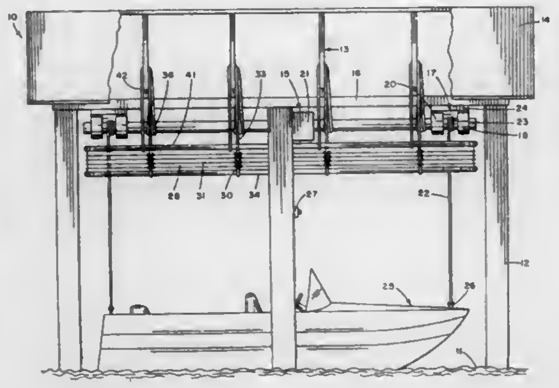
1. A connector assembly for connecting a first part to a second part, said connector assembly comprising,
a first connector block which is rigidly mountable on the first part, a second connector block which is rigidly mountable on the second part, and a tapered pin which connects the first connector block to the second connector block;
said first connector block including a first base plate and having at least two parallel tongues which are rigidly supported on the first base plate in spaced apart relation so that a space is provided between the tongues; each of the tongues having an upper surface, a lower surface, and peripheral surfaces;
said second connector block including a second base plate and having at least one tongue which is rigidly supported on the second base plate, said tongue of the second connector block having an upper surface, a lower surface, and peripheral surfaces;
said tongue of the second connector block being positioned in the space between the tongues of the first connector block, said upper and lower surfaces of the tongue of the second connector block being proximate to upper and lower surfaces of the tongues of the first connector block;
each of the tongues having a pin-receiving opening of truncated conical shape therein, said pin-receiving openings of the first and second connector blocks having axes which are aligned with each other and having transverse dimensions which decrease progressively from one tongue to another;
said tapered pin extending through the pin-receiving openings and engaging the tongues to align and rigidly interconnect the first connector block and the second connector block to that movement of the connector blocks relative to each other is prevented, said tapered pin when driven through the opening bringing the axes of the openings of the first connector block into coincidence with the axes of the openings of the second connector block to align the first connector block and the second connector block, said tapered pin frictionally engaging the tongues with sufficient friction to prevent the tapered pin from moving in its axial direction.



5,709,501

BOAT HOIST COVER ASSEMBLY

Gary M. Elbers, 8626 Port Said St., Orlando, Fla. 32817
Filed Jul. 3, 1996, Ser. No. 675,108
Int. Cl.^{6} B63C *3/06;* **B63B** *17/02*
U.S. Cl. 405—3 **13 Claims**

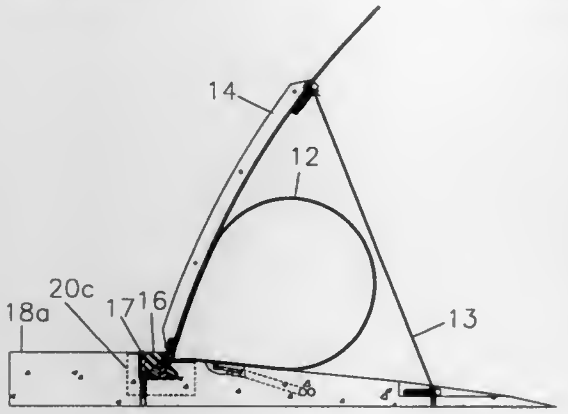


1. A boat hoist and cover assembly comprising:
a boat hoist having a rotatable lift shaft and a plurality of ropes coiled therearound in one direction of rotation and extending therefrom for removably coupling to a boat for lifting a boat coupled thereto by rotation of said hoist lift shaft; and
a boat cover having a plurality of ropes attached thereto, each of said plurality of cords being coiled around said boat hoist lift shaft in a second direction of rotation from said boat hoist ropes to lower said boat cover when lifting said boat and to raise said boat cover when lowering said boat, whereby a boat cover covers a boat whenever the boat is hoisted by said boat hoist.

5,709,502

CONNECTION SYSTEM FOR REINFORCED COMPOSITE STRUCTURES

Henry K. Obermeyer, 303 W. County Rd. 74, Wellington, Colo. 80549
Filed Aug. 23, 1995, Ser. No. 518,620
Int. Cl.^{6} E02B *3/16;7/00;7/20*
U.S. Cl. 405—87 **22 Claims**

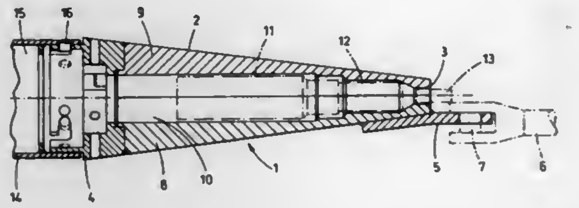


1. An elastomeric inflatable bladder comprising a plurality of reinforced elastomeric sheets layered on top of one another so as to create an inflatable envelope having opposing edges, wherein at least one of said edges is wedge-shaped and wherein said opposing edges define an opening; wherein said at least one wedge-shaped edge includes a plurality of wedges each of which have a triangular cross-section.

5,709,503

METHOD AND APPARATUS FOR RESTORING A PIPE OR TUNNEL

Terence Victor Manlow, Frimley, United Kingdom, assignor to M.J. Clancy & Sons Limited, Harefield, United Kingdom
Filed Dec. 5, 1994, Ser. No. 349,441
Int. Cl.^{6} F16L *1/00;55/18*
U.S. Cl. 405—154 **34 Claims**

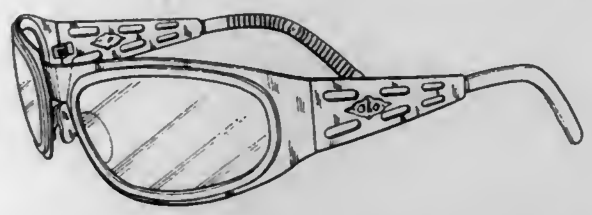


1. A device for reducing deformation of a pipe (as hereinbefore defined), having a non-expandable body portion arranged to move entirely inside an undeformed pipe whereby said body portion has a tapered outer surface which tapers inwardly in a direction of motion in said pipe and which is sized to mechanically contact and act against a deformed portion of pipe and by virtue of movement along said pipe said body portion tapered outer surface urges said deformed portion towards an undeformed configuration, and said device further having means for deploying a lining for said pipe, whereby movement of said device through said pipe simultaneously draws said lining into said pipe.

5,709,504

PIPE REHABILITATION PULLING MANDREL

Mark L. Boyer, Houston, Tex., assignor to Boyer, Inc., Houston, Tex.
Division of Ser. No. 547,472, Oct. 24, 1995, Pat. No. 5,626,442. This application Jan. 8, 1997, Ser. No. 780,250
Int. Cl.^{6} F16L *55/18*
U.S. Cl. 405—154 **4 Claims**

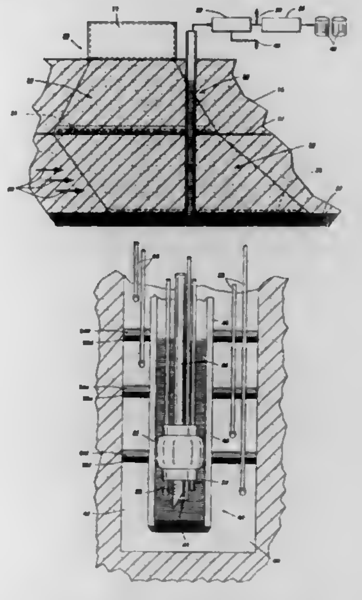


1. A pulling mandrel for use in lining a host pipe comprising
a circular member sized with a diameter to be received inside the host pipe and contact the circumference of a liner for the host pipe;
a plurality of spokes extending from the outer diameter of the circular member and converging to middle of the circular member to a central hub allowing flow therethrough and through the pipe;
the hub having a securing means for a cable; and
said securing means for attaching the cable whereby upon pulling the cable the outer circumference of the pulling mandrel engages the pipe liner.

5,709,505

VERTICAL ISOLATION SYSTEM FOR TWO-PHASE VACUUM EXTRACTION OF SOIL AND GROUNDWATER CONTAMINANTS

Richard A. Williams, Savannah; Ronald E. Hess, Webster; Michael T. Salotti, Ontario; John F. Thomasser, Bowmansville; Scott M. Huber, Canandaigua; Eliott N. Duffney, Rochester, and Alfonso R. Mancini, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 235,571, Apr. 29, 1994, abandooed. This application Jun. 7, 1995, Ser. No. 473,595
Int. Cl.^{6} E21B *43/00*
U.S. Cl. 405—258 **23 Claims**



1. A process for removing contaminants from a contaminated area of the subsurface which comprises:
a) providing a borehole in the contaminated area;

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b) placing in the borehole a perforated riser pipe inside of which is situated a vacuum extraction pipe with an opening situated within the perforated riser pipe, wherein an actuatable flexible membrane packing is situated in a portion of the annular space between the vacuum extraction pipe and the perforated riser pipe;

c) applying a vacuum to the vacuum extraction pipe to draw gases and liquid from the subsurface into the perforated riser pipe below the actuatable flexible membrane packing and from the riser pipe into the vacuum extraction pipe and transport both the gases and the liquid to the surface as a common stream, said drawn gases primarily including those residing in the contaminated area prior to application of said vacuum;

d) forming from the common stream a stream which is primarily liquid and a stream which is primarily gaseous; and

e) removing contaminants from at least one of the liquid stream and the gaseous stream.

13. An apparatus for removing contaminants from a contaminated area of the subsurface which comprises:

a) a perforated riser pipe extending downwardly from the surface;

b) a vacuum extraction pipe situated inside of the riser pipe and having an opening situated within the perforated riser pipe;

c) an actuatable flexible membrane packing situated in a portion of the annular space between the vacuum extraction pipe and the perforated riser pipe;

d) a vacuum-forming apparatus in fluid communication with the vacuum extraction pipe and adapted to form a zone of reduced pressure in the subsurface around the riser pipe below the actuatable flexible membrane packing, whereby gases and liquid can be drawn from the subsurface into the riser pipe below the flexible packing and from the riser pipe into the vacuum extraction pipe and conveyed to the surface as a common stream, said drawn gases primarily including those residing in the contaminated area prior to application of said vacuum;

e) a vapor-liquid separator in fluid communication with the vacuum-forming apparatus and the vacuum extraction pipe, wherein the vapor-liquid separator separates the common stream into separate gas and liquid streams; and

f) a contaminant removal system, said contaminant removal system being situated to remove contaminants from at least one of the liquid stream and the gas stream.

5,709,506
TRANSPORT SYSTEM FOR FABRIC PIECES

A. Gregory Beard, Raleigh, and Judson H. Early, Fuquay-Varina, both of N.C., assignors to Textile/Clothing Technology Corporation, Cary, N.C.

Filed Jun. 7, 1996, Ser. No. 659,880

Int. Cl.^{6} B65G *51/02*

U.S. Cl. 406—1 **23 Claims**

1. A system for transporting a fabric piece from a predetermined departure location to a first predetermined destination, said system comprising a series of fluidly communicating tubes and including:

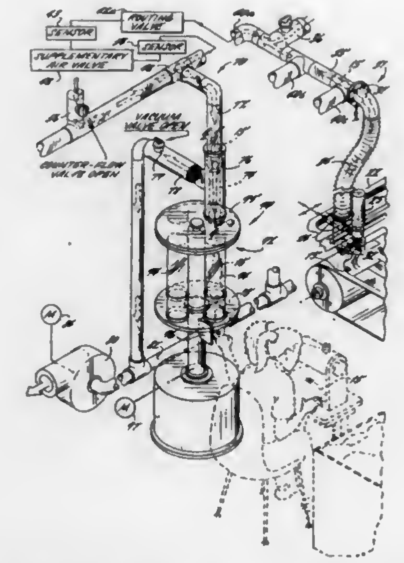
an intake line configured to receive a fabric piece from the predetermined departure location;

a main line having first and second ends and being fluidly connected at said first end with said intake line;

a first branch line having upstream and downstream ends fluidly connected at said upstream end to an intermediate portion of said main line at a first junction, said first branch line including a deposit nozzle leading to the first predetermined destination;

a vacuum source connected with said downstream end of said first branch line for drawing air of sufficient quantity and velocity through said intake line, said main line, and said first branch line to draw a fabric piece into said intake line and said main line;

a counterflow valve positioned on an intermediate portion of said main line between said first junction and said main line



second end, said counterflow valve being configured to take open and closed positions; and

means for actuating said counterflow valve to take its open position prior to a fabric piece passing said first junction such that air is drawn into said main line and subsequently into said first branch line by said vacuum source so as to assist a fabric piece traveling in said main line from said intake line to be shunted into said first branch line from said main line.

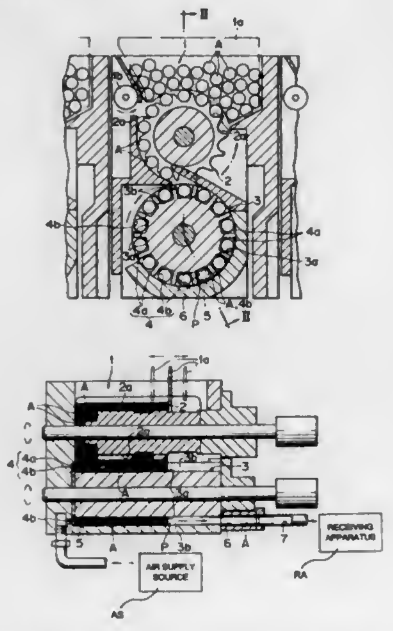
5,709,507
PNEUMATIC BAR CONVEYING APPARATUS

Isao Endo, Chiba-ken, and Kunihiro Konishi, Ibaraki-ken, both of Japan, assignors to Tokyo Automatic Machinery Works, Ltd, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,471

Int. Cl.^{6} B65G *51/02*

U.S. Cl. 406—67 **10 Claims**



1. A pneumatic bar conveying apparatus comprising:

a holding section for holding a plurality of bar-like members;

a discharge drum rotatably mounted beneath said holding section and having a plurality of holding grooves concavely formed in an outer periphery of said discharge drum, into which bar-like members are dispensed from said holding section;

an air injection port for supplying air toward an inside one of said holding grooves that has been rotated to a force-feed position;

intermittent air supply means for carrying a bar-like member from said holding groove to a receiving apparatus via a conveying pipeline by air pressure from said air injection port, and for intermittently supplying compressed air from said air injection port toward said bar-like member in each said holding groove every time said holding groove rotates to said force-feed position, then shutting off said compressed air for a first time interval;

a plurality of tooth-shaped sections protrudingly provided between adjacent ones of said holding grooves, wherein each said tooth-shaped section blocks said compressed air from exiting said air injection port for a second time interval when said tooth-shaped section passes in front of said air injection port as said discharge drum rotates:

wherein said first time interval is longer than said second time interval; and

means for maintaining, in said conveying pipeline, a specific discharge pressure necessary for carrying said bar-like members to said receiving apparatus when the air supply is interrupted by said intermittent air supply means.

5,709,508
CUTTING TOOL ASSEMBLY HAVING AN EXCHANGEABLE ADAPTOR WITH OFFSET THROUGH BORE AXES

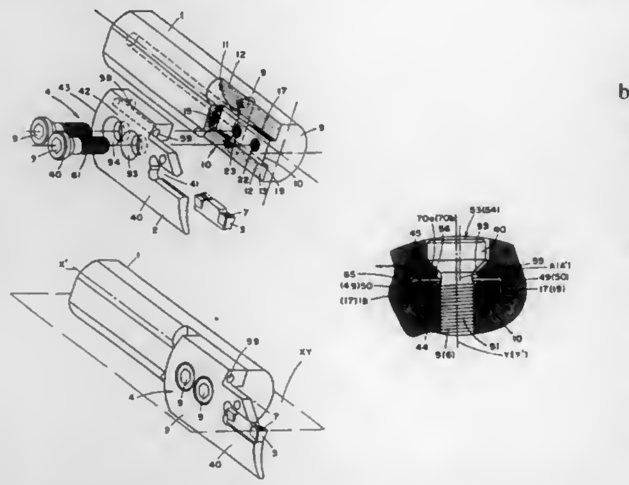
Gideon Barazanl, Kiryat Blalik, and Jacob Friedman, Kfar Vradim, both of Israel, assignors to Iscar, Ltd., Midgal Tefen, Israel

Filed Oct. 20, 1995, Ser. No. 546,463

Claims priority, application Israel, Oct. 23, 1994, 111370

Int. Cl.^{6} B23B *27/04*

U.S. Cl. 407—101 **13 Claims**



1. A cutting tool assembly comprising an elongated tool shank having, at a side adjacent a leading end thereof, a shank holding portion and an exchangeable adaptor having an insert retaining portion for retaining a replaceable cutting insert and an adaptor mounting portion releasably secured to the shank holding portion by at least two clamping screws, the tool assembly having a reference plane passing through a cutting edge of the insert and through an axis of relative rotation of a workpiece with respect to the tool, during operation of the tool;

one of the adaptor mounting and shank holding portions being formed with a recess and the other one being formed with a protrusion mating with the recess and received therein;

said adaptor mounting portion being formed with at least two adaptor through bores and said shank holding portion being formed with at least two threaded bores substantially aligned with the respective adaptor through bores, the threaded and through bores being oriented transversely to said axis of rotation and passing through the recess and the protrusion, the axes of the through bores being slightly offset with respect to the axes of the respective threaded bores and being disposed closer to the insert retaining portion than the axes of the threaded bores, each clamping screw being inserted into the respective adaptor through bore and threaded bore of the shank holding portion and having a screw head portion received within said through bore and a screw threaded portion screwed into said threaded bore; the axes of said threaded bores being located substantially in said reference plane.

5,709,509
CUTTING INSERT

Manfred Wegener, Essen, and Rainer Von Haas, Geesthacht, both of Germany, assignors to Widia GmbH, Essen, Germany

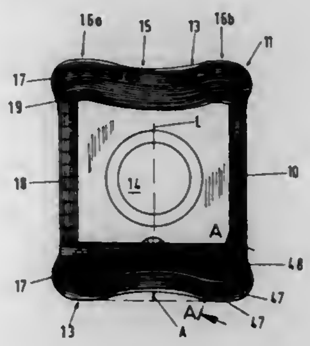
PCT No. PCT/DE93/01109, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/12303, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 18, 1993, Ser. No. 436,329

Claims priority, application Germany, Nov. 21, 1992, 9215855 U

Int. Cl.^{6} B23B *27/22*

U.S. Cl. 407—114 **20 Claims**



1. A cutting insert for material-removing machining, the insert being formed with:

at least one transversely extending cutting edge;

a transversely extending inner groove extending along and generally the full length of the cutting edge and having an outer edge and an inner edge spaced longitudinally from the outer edge and lying between the outer edge and the cutting edge;

an outer transversely extending groove extending along and generally the full length of the cutting edge and baving an outer edge and an inner edge spaced longitudinally from the respective outer edge, the inner groove lying between the outer groove and the cutting edge;

a transversely extending land surface extending immediately adjacent the cutting edge along the cutting edge between the inner groove and the cutting edge; and

a row of transversely spaced outer chip-forming elements lying wholly between the outer-groove outer edge and the inner-groove inner edge.

5,709,510
TOOL HOLDER FOR INSERTS

Gerhard Scheer, Loechgau, Germany, assignor to Komet Praezislonswerkzeuge Robert Breuning GmbH, Besighelm, Germany

PCT No. PCT/EP93/03237, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO94/15742, PCT Pub. Date Jul. 21, 1994

PCT Filed Nov. 19, 1993, Ser. No. 492,030

Claims priority, application Germany, Dec. 30, 1992, 42 44 485.3

Int. Cl.^{6} B23B *29/03*

U.S. Cl. 408—156 **26 Claims**

1. A tool holder for supporting inserts which is mountable to a tool carrier, the tool carrier being configured as a boring bar and

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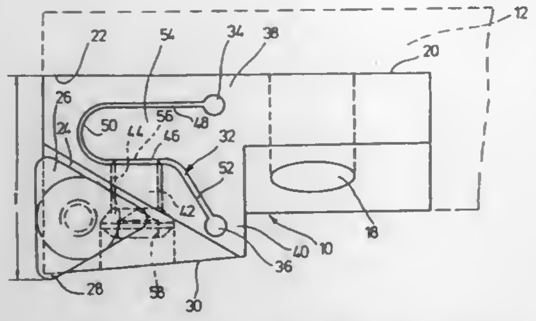
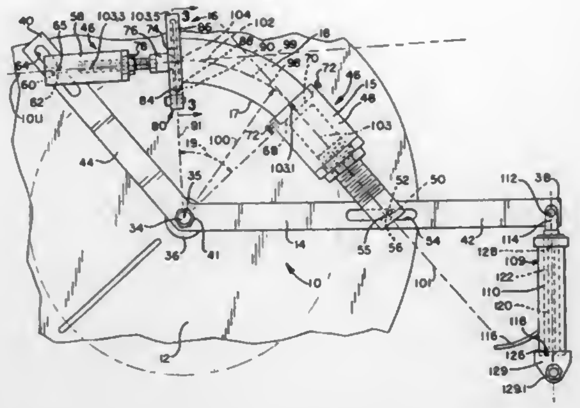


including a clamping face extending substantially parallel to an axis thereof, the tool holder having a contact face which extends forwardly and faces inwardly toward the clamping face and an outer face which extends forwardly and faces outwardly away from the contact face, the tool holder having a holder shank which includes fastening means for fastening the holder shank to the clamping face of the tool carrier, and having a holder head which is formed on a front side of the holder shank and which includes a recess that is open at an outer margin of the holder head for the reception of an insert therein, the insert being aligned essentially perpendicular to the contact face and having an active tool nose on one side thereof which protrudes outwardly from the outer face of the holder head, the tool holder having an adjustment device for adjusting a distance between the clamping face and the active tool nose, the adjustment device including a gap-shaped aperture which, in the free region between the recess, the contact face and the holder shank passes through the holder head parallel or obliquely to the contact face, the gap-shaped aperture having inner and outer aperture ends which are disposed in the material of the holder head and are spaced apart, the inner aperture end being disposed close to the contact face on a contact face side of the holder head to define a first material bridge proximate thereto and the outer aperture end being disposed close to the outer face of the holder head on an outer face side of the holder head to define a second material bridge proximate thereto, the adjustment device further including a control member which contacts the holder head proximate the gap-shaped aperture, the holder head in the region of the first and second material bridges being elastically bendable relative to the holder shank under the influence of the control member essentially perpendicular to the contact face so as to vary the distance between the clamping face and the active tool nose, the gap-shaped aperture including an arc-shaped cross-sectional gap section which has an arc-shape that is open rearwardly at a rear margin thereof toward the holder shank and is limited by the two aperture ends disposed on the rear shank side, said arc-shaped gap section extending on a forward side thereof spaced away from the holder shank into a region of the holder head lying between the recess and the contact face.

5,709,511
CURVED MACHINING JIG

Karim Esmailzadeh, 3905 Viola Rd., NE., Rochester, Minn. 55906

Filed Nov. 15, 1995, Ser. No. 558,810
Int. Cl.^{6} B23C ***3/16***
U.S. Cl. 409—199 **38 Claims**



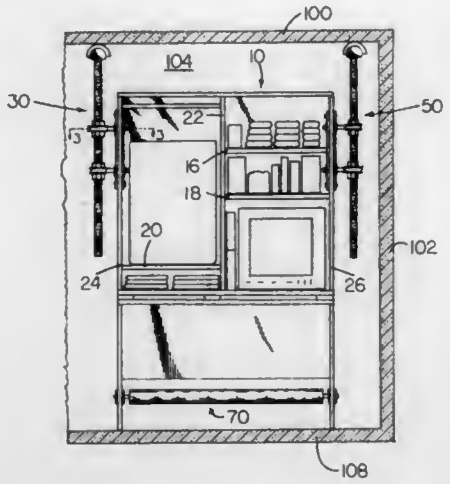
1. A curved machining jig for machining a curved workpiece along an arcuate shaped centerline, the curved machining jig comprising:

(a) a table having a rotatably mounted column extending perpendicular from the table, the column rotating on a first axis perpendicular to the table, the curved workpiece supported above the table;
(b) an arm attached to and extending from the column;
(c) a machining tool supported above the table; and
(d) a means for moving on the table, the means for moving bearing against the arm, a tangential interface member on the arm and connected to an element selected from the group of consisting of the machining tool and the curved workpiece whereby the arm rotates around the column moving the curved workpiece and the machining tool in relation to each other permitting machining of the workpiece.

5,709,512
FRICTIONALLY RESTRAINED VEHICULAR STORAGE UNIT

Christian M. Smith, 33 Tappan St., Apartment 1, Melrose, Mass. 02176

Filed Nov. 27, 1995, Ser. No. 565,301
Int. Cl.^{6} E04G ***25/00***
U.S. Cl. 410—129 **12 Claims**



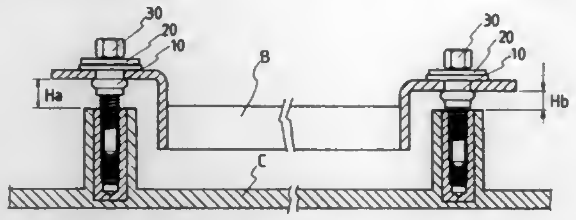
3. A frictionally restrained vehicular storage unit adapted for use in a sleeper compartment of a tractor trailer cab of the type having an interior with a rear wall, first and second side walls, a ceding, a floor, a bed disposed on the floor, a given interior height and a channel between an end of the bed and the cab's first side wall which defines an open pit area, the storage unit comprising:

a) a main storage unit sized to fit within the tractor trailer sleeper compartment, the main storage unit with a storage area contained therein sufficiently large for storing a multiplicity of personal items of a user;
b) at least one frictionally engaging device having an operative engaging portion adapted for frictionally engaging the interior of the sleeper compartment;
c) a means for rigidly attaching the device to the storage unit; and
d) a means for actuating the frictionally engaging device, the actuating means being operably connected to the frictionally engaging device to enable it to exert a frictionally restraining force upon the vehicle's interior when the apparatus is connected to a storage unit, the storage unit is in a vehicle, and the frictionally engaging device is actuated whereby any need for alternative or additional connection to the vehicle's interior is eliminated.

5,709,513
MOUNTING STRUCTURE

Chun-Hsin Tsai, No. 38, Lane 49, Chien Fu Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Jul. 9, 1996, Ser. No. 677,195
Int. Cl.^{6} F16B ***39/00;43/02***
U.S. Cl. 411—107 **1 Claim**

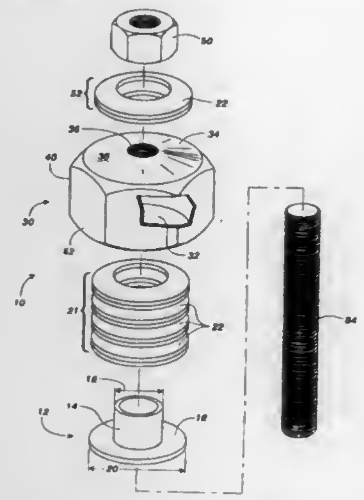


1. An improved mounting structure, comprising a first structure having a hole there through and a second structure having a corresponding, internally threaded bore therein, and means for joining said structure comprising a mounting sleeve slidably received in the hole through said first structure said mounting sleeve being deformable and having a locking hole at a central position, said locking hole being obliquely cut so that an inner ring thereof forms a spiral shape a screw received in said locking hole; said screw being provided with a washer at one end adjacent its head and an elongated tip at an opposite end forming a guide portion, said screw extending through said sleeve and into threaded engagement with the bore in said second structure, so that as said screw is tightened said sleeve will deform to form a buffer between said structures.

5,709,514
LIVELOAD ASSEMBLY

Steven M. Suggs, and Reid M. Meyer, both of Nacogdoches, Tex., assignors to Acadia Elastomers, Inc., Nacogdoches, Tex.

Filed May 30, 1996, Ser. No. 657,457
Int. Cl.^{6} F16B ***39/12;39/24***
U.S. Cl. 411—150 **9 Claims**



1. A liveload assembly for communicating a first load through a flange member of a fluid flow apparatus to sealing material in the fluid flow apparatus while communicating a second load which loads pre-stress studs that secure the flange member, comprising:

a retainer cup having an open cylindrical recess that receives a first set of belleville washers therein and a partially closed end defining a threaded bore therethrough which bore is coaxially aligned for threadedly engaging a stud extending through the sleeve from a flange member of a fluid flow apparatus, an exterior skirt-like wall of the retainer cup defined by a series of planar faces thereon, and an exterior surface of the partially closed end defining a beveled face;
a first set of belleville washers having a first portion received within the recess coaxially with the bore and a second portion subsequently received within the retainer cup by threading the retainer cup on to the stud;
a second set of belleville washers stacked on the exterior surface of the partially closed end of the retainer cup coaxially with the threaded bore; and
a nut for threadingly engaging the stud and compressing the second set of belleville washers between the retainer cup and the nut for communicating a second load to the stud,
whereby the first set of belleville washers, being compressed by threading the retainer cup onto the stud until a lower edge of the retainer cup contacts an upper surface of the flange member, communicates a load against the flange member for loading the sealing material while the nut being engaged onto the threaded stud compresses the second set of belleville washers against the beveled face, said loads for pre-stressing the stud.

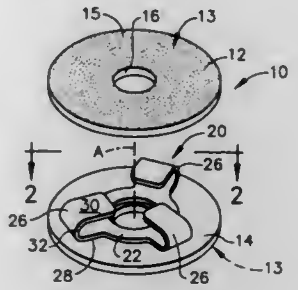
5,709,515

Patent Not Issued For This Number

5,709,516
WASHER FACED SPRING ASSEMBLY

Ivan H. Peterson; James S. Hoelle, both of Hamilton, and Dale E. Hampshire, Mason, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 228,629, Apr. 18, 1994, abandoned.
This application Mar. 22, 1996, Ser. No. 621,051
Int. Cl.^{6} F16B ***43/02***
U.S. Cl. 411—544 **3 Claims**



1. A washer faced spring assembly, comprising:

(a) a first washer having a first hole formed therein;
(b) a second washer having a second hole formed therein, said second washer disposed opposite to said first washer so that said second hole is generally coincident with said first hole; and
(c) spring means disposed between said first washer and said second washer, said spring means including a generally circular base portion, having a central axis and a third hole formed therein which is disposed generally coincident with said first and second holes and a plurality of spring fingers, each of said fingers having a first portion in substantially planar contact wick said first washer, a second portion in substantially planar contact with said second washer and a third portion connecting said first and second portions, wherein said first portion of each one of said plurality of spring fingers is attached to the periphery of said base portion, and said base portion provides substantially planar contact with said first washer and said third portion of each one of said plurality of spring fingers is a curved transition between said first and second portions and said plurality of fingers extend radially out from said central axis and are bent back toward said central axis.

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5,709,517
APPARATUS FOR UNLOADING OF BULK MATERIAL FROM THE CARGO HOLDS OF SHIPS

Horst Steckel, St. Ingbert-Rohrbach, and Jürgen Arend, Saarbrücken, both of Germany, assignors to Krupp Fordertechnik GmbH, Dusseldorf, Germany

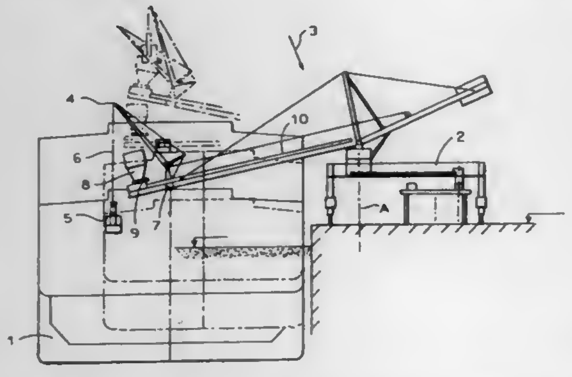
PCT No. PCT/EP96/00878, § 371 Date Oct. 22, 1996, § 102(e) Date Oct. 22, 1996, PCT Pub. No. WO96/27545, PCT Pub. Date Sep. 12, 1996

PCT Filed Mar. 1, 1996, Ser. No. 737,106

Claims priority, application Germany, Mar. 3, 1995, 195 07 375.4

Int. Cl.^{6} B65G *67/60*

U.S. Cl. 414—140.9 **7 Claims**



1. An apparatus for unloading bulk material from a ship adjacent a dock, the apparatus comprising:
- a portal support movable longitudinally on the dock parallel to the ship;
- a boom having an inner end pivoted about a vertical inner axis on the support and an outer end positionable over the ship;
- a boom conveyor extending between the ends of the boom;
- a catch bin on the outer end of the boom above the boom conveyor;
- an outrigger arm pivotal on the outer end of the boom about an outer axis and having an outer end;
- a cable passing over the outrigger-arm outer end;
- a grab suspended from the cable; and
- means including a winch connected to the cable for raising the grab from a position in a hold of the ship to a position above the catch bin, for pivoting the outrigger arm for positioning the grab above the catch bin, and for dumping material form the garb into the catch bin.

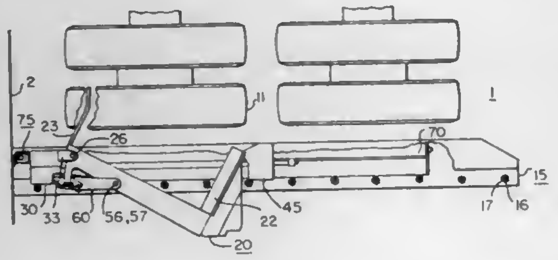
5,709,518
AUTOMATIC WHEEL CHOCK SYSTEM

James C. Alexander, London, and Robert C. Hersey, St. Thomas, both of Canada, assignors to United Dominion Industries, Charlott, N.C.

Filed Nov. 27, 1995, Ser. No. 562,957

Int. Cl.^{6} B65G *67/02*

U.S. Cl. 414—401 **19 Claims**



1. A chocking device for securing a vehicle at a loading dock comprising:
- a guide rail mountable to a driveway, a carriage movable on said guide rail and a drive mechanism to advance said carriage from a stored position to a position proximate to a wheel of said vehicle;
- a chock assembly pivotally mounted on said carriage, said chock assembly movable by said drive mechanism from a retracted position to an engaging position and said chock assembly comprising, an arm having a sensor bar to contact one portion of said wheel and a chock plate movable in response to contact of said sensor bar against said wheel to contact another portion of said wheel and block movement of said vehicle; and,
- a lock assembly mounted on said guide rail for movement thereon; said lock assembly movable by said drive mechanism into contact with said chock plate to restrain said chock plate in said engaging position.

5,709,519
PLASMA PROCESSING APPARATUS

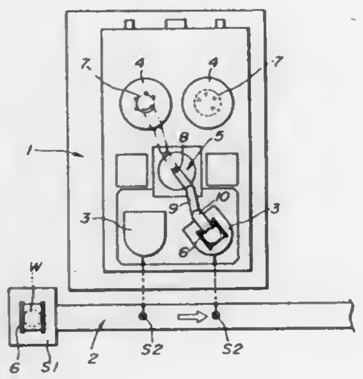
Akira Uehara; Mitsuaki Minato, and Yoshitsugu Kawamura, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jan. 22, 1993, Ser. No. 7,522

Claims priority, application Japan, Jan. 22, 1992, 4-031453

Int. Cl.^{6} B65G *65/00*

U.S. Cl. 414—416 **23 Claims**



1. A plasma processing apparatus comprising:
- a feed line for feeding a cassette which houses a wafer therein;
- a cassette table mechanism disposed near said feed line for receiving the cassette

in operative cooperation with said feed line;
- a reaction chamber means for processing the wafer in plasma; and
- a transfer robot means including an extensible and contractible robot arm for transferring the wafer between said reaction chamber means and said cassette as received by said cassette table mechanism;
- said cassette table mechanism having means for supporting the cassette thereon, and means for angularly moving the cassette between a position substantially perpendicular to said feed line and a position oriented toward said reaction chamber means; and
- said reaction chamber means includes a reaction chamber which is disposed substantially symmetrically across from said cassette on opposite sides of said transfer robot means when said cassette is supported by said cassette table mechanism.

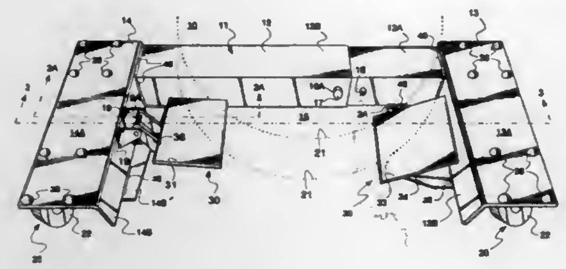
5,709,520
PORTABLE WHEEL DOLLY

Paul J. Pish, 1115 Morse Ave., Schaumburg, Ill. 60193

Filed Jan. 26, 1996, Ser. No. 592,792

Int. Cl.^{6} B66F *3/08*

U.S. Cl. 414—427 **11 Claims**



1. An improved wheel-lift apparatus comprising wheel dolly or caddy means useful to provide mobility, lift and support for aircraft wheel assemblies for facilitating aircraft maneuverability in hanger or storage areas, comprised of generally U-shaped frame support means having a cross member and a pair of parallel spaced extended end frame members defining an opening therebetween within which to laterally receive an aircraft wheel assembly, a pair of lift plate means oppositely-disposed and supported by the extended frame members, respectively, at least one of the lift plate means being pivotably movable to engage the wheel assembly to provide lift thereof, pivotal cam means connected to the movable lift plate means and providing upward and downward pivotal movement thereto, threaded rotatable gear means having an elongated length dimension and engaging the pivotal cam means on a distal free end thereof, said gear means being movable along its length dimension to provide pivotal movement of the cam means, and pivotal trunnion means being pivotally supported by the frame support means and having threaded aperture means through which to receive correspondingly threaded gear means for providing pivotal movement of the gear means during rotational movement along the length dimension thereof for enabling the gear means to follow the pivotal movement of the cam means, and the pivotal trunnion means is comprised of a pair of pivotal mounted trunnion members, a first trunnion member being pivotally connected to the selected frame support member and receiving the gear means therethrough for providing pivotal movement to the gear means with respect to the selected frame support member, and a second trunnion member being pivotally connected to the cam means for providing pivotal movement to the gear means with respect to the cam means.

5,709,521
LIFT ASSIST BICYCLE CARRIER FOR CAR ROOFTOP

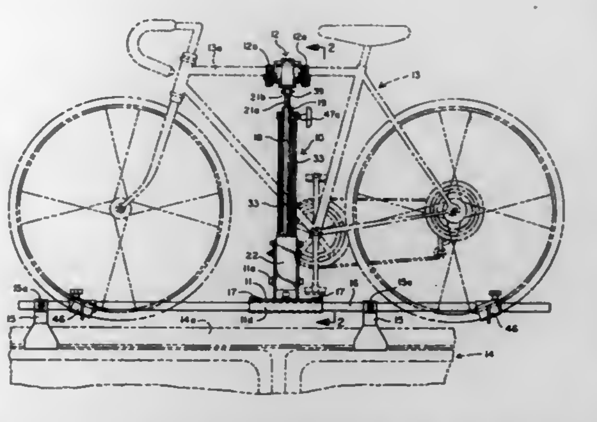
Dennis Glass, 600 N. Capitol St., Salt Lake City, Utah 84103, and Anthony Ferrari, 10 Varborg Ter., San Anselmo, Calif. 94960

Filed May 21, 1996, Ser. No. 651,051

Int. Cl.^{6} B60P *9/00*

U.S. Cl. 414—462 **29 Claims**

27. A carrier for attachment to vehicles, comprising a columnar standard; carrying structure extending from the columnar standard: a base mounting the columnar standard for pivotal movement about a pivot axis between a loading position and a carrying position; means for attaching the base to a vehicle; a power lift device mounted for movement with the columnar standard for exerting power through a substantially longitudinal power stroke in at least one direction; and flexible cable means for transferring power from the power lift device through the flexible cable means to cause movement of the columnar standard and carrying structure from the loading position to the carrying position.



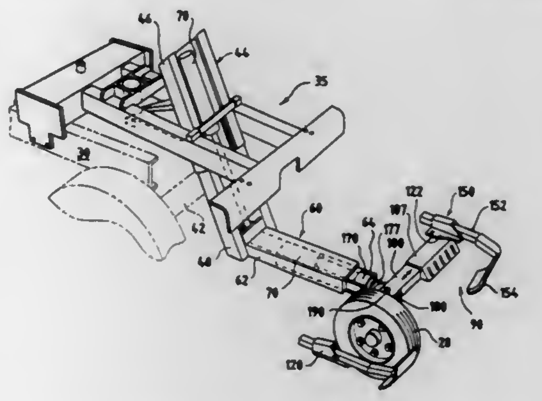
5,709,522
TOW TRUCK WITH DOUBLE PIVOT CROSSBAR

John M. Cullum, Memphis, Tenn., assignor to Vulcan International, Inc., Olive Branch, Miss.

Filed Sep. 28, 1995, Ser. No. 535,528

Int. Cl.^{6} B60P *3/12*

U.S. Cl. 414—563 **18 Claims**



1. A wheel lift apparatus associated with a towing vehicle for use in lifting and towing a towable vehicle, comprising:
- a longitudinal boom extending rearwardly from the towing vehicle;
- a support beam positionable below the towable vehicle and extending transversely to and substantially coplanar with the boom, the support beam having wheel engaging members located at opposite ends of the support beam;
- first and second pivot assemblies rotatively connecting the boom to the support beam, the first pivot assembly permitting the support beam to rotate about a horizontal axis substantially collinear with the boom, and the second pivot assembly being permanently located in substantially the same horizontal plane as the first pivot assembly and permitting the support beam to rotate about a vertical axis; and
- wherein the wheel engaging members can engage the towable vehicle in a towing position and the support beam can be rotated about the horizontal and the vertical axes while the support beam is positioned below the towable vehicle, the vehicle engagement being maintained as the towable vehicle rotates about its longitudinal axis during towing.

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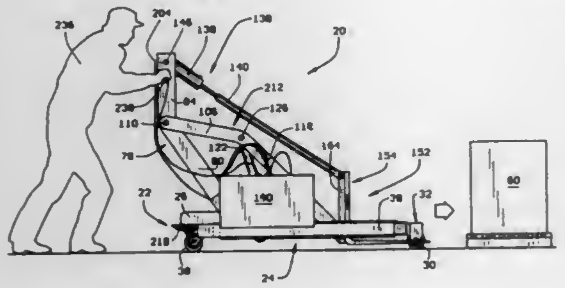
5,709,523
MATERIAL HANDLING LIFT

Emmet P. Ware, 12103 S. Broadway, Peck, Kans. 67120
Filed Jun. 7, 1995, Ser. No. 484,432
Int. Cl.^{6} B66F *9/06*
U.S. Cl. 414—715 **20 Claims**



1. A material handling lift comprising:

a) a frame having first and second parallel spaced longitudinal track rails, said first and second longitudinal track rails defining a frontward portion and a rearward portion, said rearward portions of said first and second longitudinal track rails connected by a lateral support member;

b) a shuttle assembly operably mounted within and between said first and second longitudinal track rails for longitudinal reciprocating movement therein;

c) a mast defined by a first section rigidly attached at one end to said shuttle assembly and extending a rearward angle relative thereto, and a second section extending from another end of said first section perpendicular to said longitudinal track rails;

d) a lift arm defining a first end and a second end, said first end pivotally coupled to said mast at the junction of said first and second sections of said mast, said lift arm having a downward bend located between said first and second ends;

e) a load carrying assembly having an upper bar and a lower bar coupled together at one end by a first endplate and at another end by a second endplate, and a pair of forks slidably mounted on said upper and lower bars for adjustable movement, said lower bar rotatably coupled to said second end of said lift arm;

f) a tilt arm pivotally attached at one end to said upper bar of said load carrying assembly;

g) a first extensible and retractable device secured at one of its ends to another end of said tilt arm, and pivotally coupled at another end to an end of said second section of said mast above said lift arm for angularly adjustably positioning said load carrying assembly with respect to said frame; and

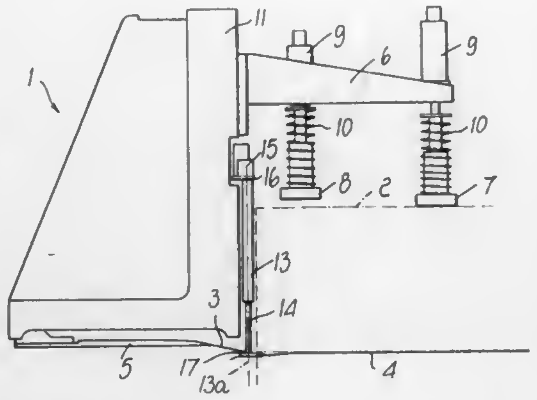
h) a second extensible and retractable device secured at one end to said shuttle assembly and pivotally secured at another end to said lift arm at said bend for raising and lowering said lift arms and thus said load carrying assembly.

5,709,524
DEVICE FOR PICKING UP STACKS OF PRODUCTS FROM A SUPPORT

Alver Tacchi, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D. S.p.A., Bologna, Italy
Filed Jun. 12, 1996, Ser. No. 662,189
Claims priority, application Italy, Jun. 22, 1995, B095A0314
Int. Cl.^{6} B65G *59/02*
U.S. Cl. 414—796.9 **18 Claims**

1. A device for picking up stacks of products from a support, comprising:

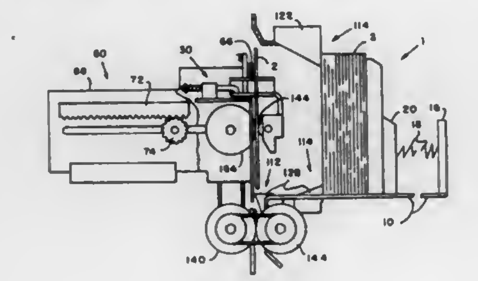
- a head for picking up a stack of products from a flat support, said head being movable along perpendicular axes and including a supporting bracket;
- first presser means being mounted on said bracket of said head, said first presser means being operatable for fixing the stack on said flat support;

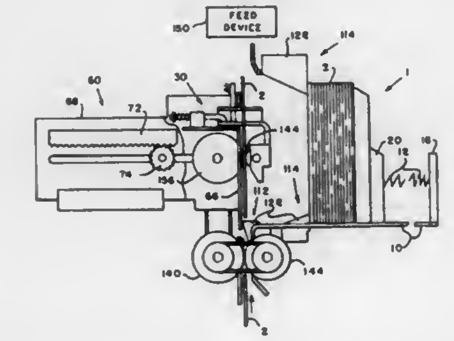


- a flexible lamina mounted at a lower base of said head, said lamina being slidingly movable with a reciprocating motion at the base of said head to enter in an insertion region between said stack and said flat support;
- second presser means having lower ends for acting on said flat support, said second presser means being supported by said head; and
- feet elements rotatably mounted on said second presser means, at said lower ends thereof, said feet elements being rotatable in mutually opposite directions between an inactive position in which they exert pressure on said flat support, and a position for insertion between said stack and said flat support for raising said stack at said insertion region to facilitate insertion of said lamina.

5,709,525
ENVELOPE STACKER

Joseph H. Marzullo, Brookfield; David E. Kayser, Middlebury; Irena Makarchuk, Fairfield; David W. Hubbard, Stamford, and Walter Wolog, Orange, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 2, 1995, Ser. No. 510,209
Int. Cl.^{6} B65H *29/22*
U.S. Cl. 414—798.7 **6 Claims**



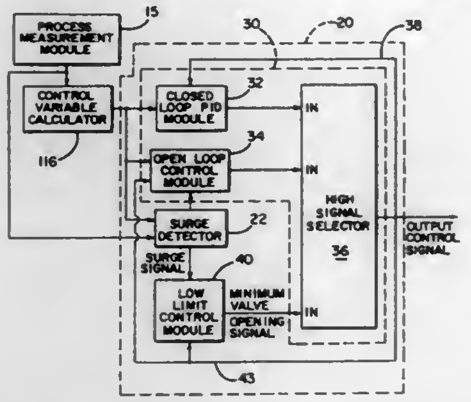


1. An envelope stacker for a vertically oriented stack of envelopes, comprising:

- a horizontal deck for supporting the stack of envelopes, the stack of envelopes having a forwardmost envelope and a rearmost envelope, each envelope of the stack of envelopes having a bottom edge engaging the deck, a flap, a front panel, and a rear panel;
- a rear wall fixably attached at a first end of the deck and extending generally perpendicular to the deck;
- a plate in parallel alignment with the rear wall, the plate being spring mounted to the rear wall, the plate further having a face engaging the front panel of the forwardmost envelope;
- means for receiving an incoming envelope; and
- pushing means for pushing the incoming envelope from a second end of the deck towards the stack of envelopes, the pushing means further applying a continuous force to the flap and the rear panel of the incoming envelope; and wherein the pushing means comprises a pusher, a rack gear fixably mounted to the pusher, a pinion gear oOperatively connected to the rack gear, and driving means for rotating the pinion gear in a first direction whereby the pinion gear travels rearwardly along the rack gear thereby displacing the pusher horizontally towards the first end of the deck, the driving means further rotating the pinion gear in a second direction whereby the pinion gear travels forwardly along the rack gear thereby displacing the pusher horizontally towards the second end of the deck.

5,709,526
SURGE RECURRENCE PREVENTION CONTROL SYSTEM FOR DYNAMIC COMPRESSORS

Larry D. McLeister, Fort Collins, Colo., and Gary W. Bostick, Danton, Tex., assignors to Woodward Governor Company, Loveland, Colo.
Filed Jan. 2, 1996, Ser. No. 582,101
Int. Cl.^{6} F04D *27/02*
U.S. Cl. 415—1 **19 Claims**



11. A control system for preventing recurrence of surge in a dynamic compressor having a variable operating point definable on a compressor map which includes a surge region, a stable operating region, a surge line separating said regions, and a surge control line in the stable operating region displaced from the surge line, the control system comprising:

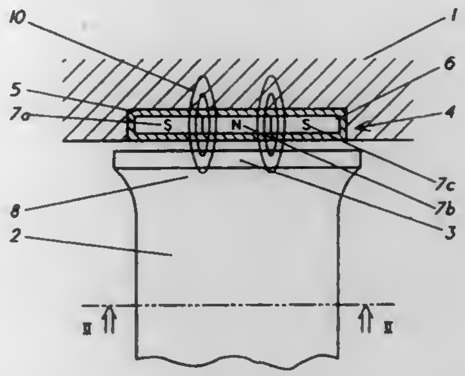
- an anti-surge valve having a valve opening adjustable for bypassing compressor flow,
- a surge detector for detecting onset of a surge event and generating a surge signal,
- a low limit control module having a data input related to the valve opening of the anti-surge valve and a control input operatively coupled to the surge detector for storing a valve position at the onset of the surge event, the low limit control module being responsive to the surge signal to store a new low limit related to the valve opening at the onset of the surge event to prevent recurrence of the surge event,
- a closed loop PID module for exerting control over the anti-surge valve when the compressor operating point reaches the surge control line, and
- a high signal selector coupled to the low limit control module and the PID control module, the high signal selector selecting the module corresponding to the largest valve opening as an output control signal for controlling the valve.

15. A method for preventing recurrence of surge in a dynamic compressor having a variable operating point definable on a compressor map which include a surge region and a stable operation region separated by a surge line, the method comprising the steps of:

- providing an anti-surge valve having a valve opening adjustable for bypassing compressor flow,
- continuously monitoring the operating point of the compressor and temporarily opening the valve from a low limit minimum opening toward fully open to restrain the operating point from the surge region,
- detecting onset of a surge event,
- detecting the valve opening at the onset of the surge event, and
- increasing the low limit valve opening according to the valve opening position at the onset of the detected surge event.

5,709,527
VIBRATION DAMPING FOR TURBINE BLADES

Peter Ernst, Niederglatt, and Jakob Rhyner, Zürich, both of Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland
Filed Nov. 16, 1995, Ser. No. 558,858
Claims priority, application Germany, Feb. 17, 1995, 195 05 389.3
Int. Cl.^{6} F01D *17/00*
U.S. Cl. 415—10 **8 Claims**



1. A device for damping blade vibrations of an axial-flow turbomachine having a plurality of blades mounted on a rotor, wherein ends of the plurality of blades form seals at a flow-limiting wall of a turbine casing, the device comprising:

- a ring of permanently magnetic material attached to the flow-limiting wall of the turbine casing opposite the ends of the plurality of blades, which ring includes at least one sectional ring having a magnetic polarization, and
- a cover plate mounted on each of the ends of the plurality of blades, the cover plate being made of a material which is a good electrical conductor.

5,709,528
TURBOMOLECULAR VACUUM PUMPS WITH LOW SUSCEPTIBLITY TO PARTICULATE BUILDUP

Marsbed Hablanian, Wellesley, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Dec. 19, 1996, Ser. No. 770,632
Int. Cl.^{6} F01D *1/36;* F03B *5/00*
U.S. Cl. 415—90 **25 Claims**

12. An integral high vacuum pump comprising:

- an outer pump housing having an axis;
- an axial turbomolecular compressor disposed in said housing;
- a molecular drag compressor disposed in said housing, said turbomolecular compressor and said molecular drag compres-

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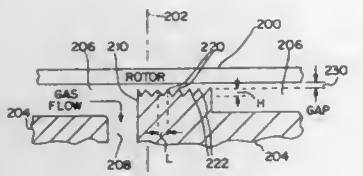
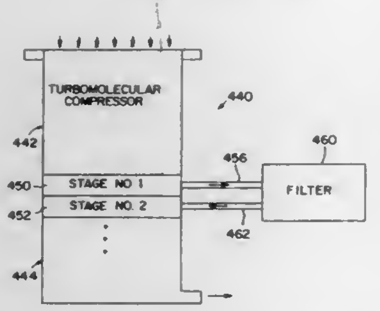




sor each having a rotating portion coupled to a single motor drive shaft aligned along said axis, said molecular drag compressor having first and second stages, each having an inlet and an outlet; and

a particulate filter coupled in a conduit between the outlet of said first stage and the inlet of said second stage.

14. An integral high vacuum pump comprising:

an outer pump housing having an axis;

an axial turbomolecular compressor disposed in said housing;

a molecular drag compressor disposed in said housing, said turbomolecular compressor and said molecular drag compressor comprising vacuum pumping stages, each said vacuum pumping stage baving a rotating portion coupled to a single motor drive shaft aligned along said axis, said molecular drag compressor including at least one molecular drag stage comprising:

a stator disposed around said rotating portion, said rotating portion being a rotor disk, said stator defining a tangential flow channel, an inlet to said tangential flow channel and

an outlet from said tangential flow channel; and

a stationary baffle disposed in said tangential flow channel adjacent to said outlet, said baffle and said rotor disk having a gap between them, a surface of said baffle facing said rotor disk having surface irregularities including peaks for defining said gap and valleys between said peaks for accumulation of particles.

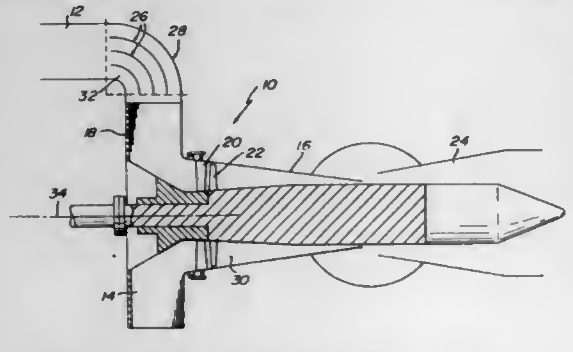
5,709,529
OPTIMIZATION OF TURBOMACHINERY HARMONICS

David J. Parzych, Orlando, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1995, Ser. No. 557,641

Int. Cl.^{6} F01D *25/04*

U.S. Cl. 415—119 **29 Claims**



1. A turbomachine assembly comprising:

a number B of circumferentially spaced rotor blades;

a number V of circumferentially spaced inlet guide vanes axially adjacent to said rotor blades;

an annular chamber surrounding said rotor blades and said inlet guide vanes and having an intake for receiving air and an exhaust for discharging air, said rotor blades and inlet guide vanes generating spinning mode tones when said turbomachine assembly is in operation;

said vane number V being selected relative to said blade number B to create a propagation path of spinning mode tones in a path such that substantially all of at least selected harmonics of the spinning mode tones are oriented substantially axial to said annular chamber intake and exhaust;

a sound absorptive material having a face disposed within said propagation path of said spinning mode tones and said face being positioned perpendicular to the propagation path of said spinning mode tones to absorb the tones impinging thereon;

a tuned duct having a radial bend forming a partial circle with an arc of ϕ radians, said tuned duct being connected to at least one end of said annular chamber; and,

a plurality of turning vanes within said radial bend of said tuned duct each concentrically spaced a distance D from an adjacent turning vane;

there being a relationship between said distance D and said arc ϕ effective to substantially cancel a plurality of harmonics of the spinning mode tones.

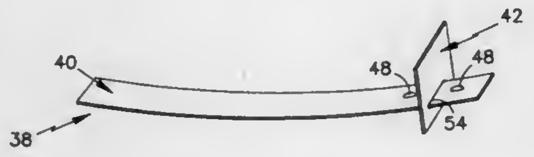
5,709,530
GAS TURBINE VANE SEAL

Thomas R. Cahill, Tequesta, and George A. Gergely, Port Saint Lucie, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 4, 1996, Ser. No. 707,569

Int. Cl.^{6} F01D *5/00*

U.S. Cl. 415—170.1 **4 Claims**



1. A seal for sealing between adjacent stator vane segments in a gas turbine engine, comprising:

an axial element, having a length and a width, and a pair of protrusions; and

a radial element, having a length, a width, and a slot for receiving said axial element;

wherein said axial element is slidably received within said slot of said radial element; and

wherein said protrusions limit the travel of said axial and radial elements relative to one another.

5,709,531
CENTRIFUGAL COMPRESSOR AND VANED DIFFUSER

Hideo Nishida; Hiromi Kobayashi; Haruo Miura; Hiroto Yoshikai, and Sadashi Tanaka, all of Ibaraki-ken, Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 232,668, Apr. 25, 1994, Pat. No. 5,516,267.

This application Feb. 13, 1996, Ser. No. 600,633

Claims priority, application Japan, Apr. 28, 1993, 5-102798

Int. Cl.^{6} F04D *29/46*

U.S. Cl. 415—208.2 **6 Claims**

1. A centrifugal compressor comprising:

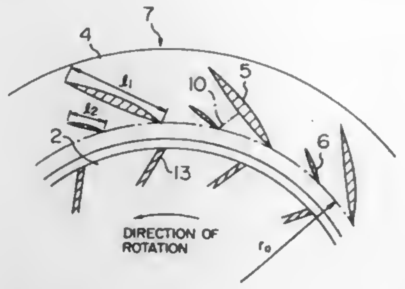
a centrifugal impeller; and

a vaned diffuser arranged downstream of said impeller and including a pair of diffuser plates and a plurality of guide vanes arranged between said pair of diffuser plates in a circular cascade manner, said guide vanes extending from one diffuser plate to the other diffuser plate over their entire lengths;

wherein said guide vanes of said vaned diffuser have two kinds of long and short guide vanes of which leading edges are positioned on a circle;

wherein at least one short guide vane is arranged between the adjacent long guide vanes, and

wherein the total number of said guide vanes is more than the number of blades of said impeller.



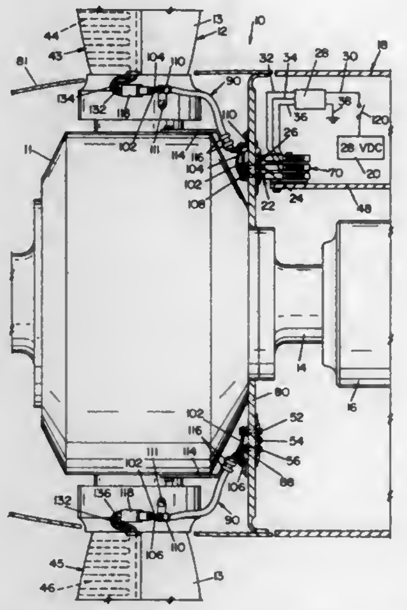
5,709,532
PROPELLER ICE PROTECTION SYSTEM AND METHOD PROVIDING REDUCED SLIDING CONTACT MAINTENANCE

Michael J. Giamati, Akron, and Jeffrey J. Siesel, Cuyahoga Falls, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Dec. 29, 1994, Ser. No. 366,202

Int. Cl.^{6} F04D *29/18*

U.S. Cl. 416—39 **20 Claims**



1. An ice protection system for an aircraft propeller that rotates relative to an airframe, comprising:

a DC power source mounted to the airframe that generates a DC potential;

a first sliding contact comprising a first slip ring mounted to the propeller and at least one first electrical brush mounted to the airframe that rides on said first slip ring;

a second sliding contact comprising a second slip ring mounted to the propeller and at least one second electrical brush mounted to the airframe that rides on said second slip ring;

a controller electrically connected to said DC power source and said first and second sliding contacts, said controller being configured to periodically apply said DC potential with a polarity across said first and second sliding contacts and to periodically reverse said polarity across said first and second sliding contacts; and,

a plurality of first resistance heaters attached to the propeller and electrically connected to said first and second sliding contacts by conductors that apply said DC potential across every resistance heater electrically connected to said first and second sliding contacts.

5,709,533
PROCESS AND A DEVICE FOR REGULATING THE FLOW RATE OF AN AIR CURRENT

Dominique Dias, Voisins-Le-Bretonneux, France, assignor to Valeo Thermique Habitacle, Saint Denis, France

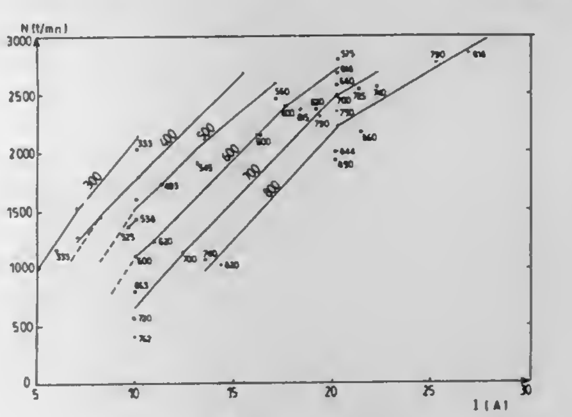
Continuation of Ser. No. 230,166, Apr. 19, 1994, abandoned.

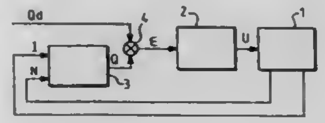
This application Dec. 27, 1996, Ser. No. 775,000

Claims priority, application France, Apr. 23, 1993, 93 04848

Int. Cl.^{6} F04B *49/00*

U.S. Cl. 417—18 **6 Claims**





1. A process for regulating flow rate of an air current by using a blower including an electric motor and a turbine driven by the motor, comprising:

experimentally establishing a law Q=f(I, N) connecting a flow rate Q to current I consumed by the motor and rotational speed N of the motor by subjecting the turbine to a variable dynamic pressure to measure corresponding values of I, N and Q, wherein said law is experimentally established such that for a limited variation range of I, N and Q in a normal operating range of rotational speeds N for varying currents I, variation curves of N correspond to different values of Q as a function of I and are represented by segments of mutually parallel straight lines;

selecting a desired flow rate Q_d;

determining a current I_1 consumed by the motor and the moter's rotational speed N_1;

determining a flow rate Q_1 based on said law, said current I_1 and said rotational speed N_1;

comparing Q_1 to Q_d to produce an error signal; and

modifying power supplied to said motor based on said error signal.

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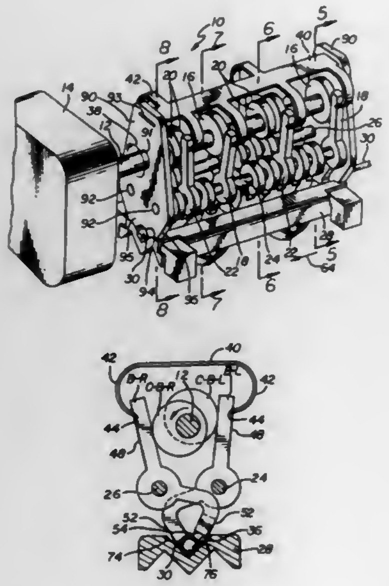
5,709,534
IV FLUID DELIVERY SYSTEM

Stephen H. O'Leary, Encinitas, Calif., assignor to IVAC Corporation, San Diego, Calif.

Continuation of Ser. No. 287,854, Aug. 8, 1994, Pat. No. 5,513,957. This application Mar. 11, 1996, Ser. No. 613,853

Int. Cl.^{6} F04B *43/12*

U.S. Cl. 417—53 **25 Claims**



1. A method for delivering fluid through a resilient, deformable tube in a pump having a pressure pad for supporting said tube, a motor for generating a rotating motion to a cam shaft, a plurality of pinching fingers operatively engaged with said cam shaft, a plurality of pumping fingers operatively engaged with said cam shaft, said method comprising the steps of:

placing said tube between said pressure pad and said pinching and said pumping fingers;

occluding a first portion of said tube under the force of a first of said pinching fingers against said pressure pad;

applying force from a first direction on a second portion of said tube by a first of said pumping fingers against said pressure pad so as to pump fluid through said tube, said second portion being downstream of said first portion and substantially longer than said first portion;

occluding a third portion of said tube under the force of a second of said pinching fingers against said pressure pad, said third portion being located downstream of said second portion;

applying force from a first direction on a fourth portion of said tube by a second of said pumping fingers against said pressure pad so as to pump fluid through said tube, said fourth portion being downstream of said third portion and substantially longer than said third portion;

releasing said occluding force on said first portion of tube;

releasing said force from said first direction on said second portion;

applying force from a second direction by a third of said pumping fingers on said second portion of said tube to restore its cross-sectional area;

occluding said first portion of said tube under the force of a first of said pinching fingers against said pressure pad;

releasing said force from said first direction on said fourth section of tube;

applying force from a second direction by a fourth of said pumping fingers on said fourth position of said tube to restore its cross-section;

releasing said occluding force on said third portion of said tube;

applying force from said second direction on said second portion so as to pump fluid through said tube;

occluding said third portion of said tube under the force of said second pinching finger; and

applying force from said second direction on said fourth portion so as to pump fluid through said tube.

5,709,535
MULTI-CYLINDER RECIPROCATING COMPRESSOR HAVING IMPROVED DISCHARGE VALVE STOPPER ASSEMBLY

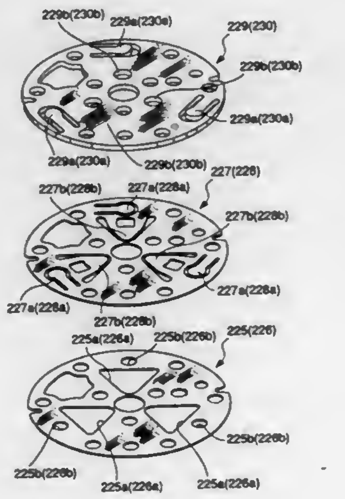
Katsutoshi Enomoto; Hisao Ichikawa; Kiyoshi Yoshii, and Katsuhiko Aral, all of Kounan-machi, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Apr. 17, 1996, Ser. No. 633,421

Claims priority, application Japan, Apr. 18, 1995, 7-116463; Sep. 5, 1995, 7-251759

Int. Cl.^{6} F04B *27/08*

U.S. Cl. 417—269 **16 Claims**



1. A reciprocating compressor comprising:

a cylinder block having a plurality of compression chambers formed therein, said compression chambers being formed on opposite ends of respective pistons slidably received within respective cylinder bores;

a cylinder head secured to said cylinder block and having a high-pressure chamber formed therein;

an input port for introducing fluid into said plurality of compression chambers;

a first member arranged between said cylinder block and said cylinder head and having a plurality of discharge ports formed therethrough for communicating said plurality of compression chambers to said high-pressure chamber;

a second member having a plurality of discharge valves formed therewith for opening and closing said plurality of discharge ports, respectively; and

a third member having a plurality of stoppers formed therewith, each of said plurality of stoppers setting a limit to resilient deformation of a corresponding one of said plurality of discharge valves.

5,709,536
HYDRO MECHANICAL PACKINGLESS PUMP AND LIQUID SPRAY SYSTEM

Wesley E. Renfro, Rosenberg; Marty H. Hopkins, Richmond; Michael T. Sample, Taylor Lake Village, and James N. Skarzynski, Rosenberg, all of Tex., assignors to Titan Tool, Inc., Oakland, N.J.

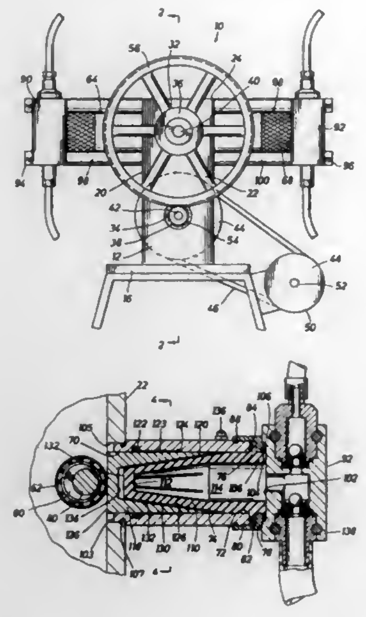
Filed Jan. 30, 1995, Ser. No. 379,917

Int. Cl.^{6} F04B *9/08*

U.S. Cl. 417—383 **21 Claims**

1. A pump mechanism, comprising:

(a) pump housing means defining a housing chamber;



(b) a generally tubular deformable pump element being composed of a resilient material having a resilient memory being located within said housing chamber and defining a closed pumping end, an internal variable volume pumping chamber and inlet and discharge opening means for said internal variable volume pumping chamber, said deformable pump element having a normal non-deformed state where said variable volume chamber has a maximum volume and a deformed state where said variable volume pumping chamber has a volume less than said maximum volume;

(c) a pusher element being linearly movable within said housing chamber and having a pusher chamber receiving said closed pumping end of said deformable pump element,

(d) means imparting periodic pushing force to said pusher element for forcible linear collapsing movement of said resilient deformable pump element, said collapsing movement reducing the volume of said pumping chamber for discharging fluid therefrom, in absence of said periodic pushing movement said resilient deformable pump element being expanded to said non-compressed state thereof by said resilient memory; and

(e) pump valve means controlling inlet of fluid to said variable volume pumping chamber and controlling discharge of pumped fluid from said variable volume pumping chamber.

5,709,537
EVACUATING APPARATUS

Teruo Maruyama, Hirakata; Akira Takara, Higashiosaka; Yoshikazu Abe, Neyagawa, and Yoshihiro Ikemoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 114,309, Sep. 2, 1993, Pat. No. 5,564,907. This application Jun. 6, 1995, Ser. No. 466,981

Claims priority, application Japan, Sep. 3, 1992, 4-235551

Int. Cl.^{6} F04B *35/04*

U.S. Cl. 417—410.4 **15 Claims**

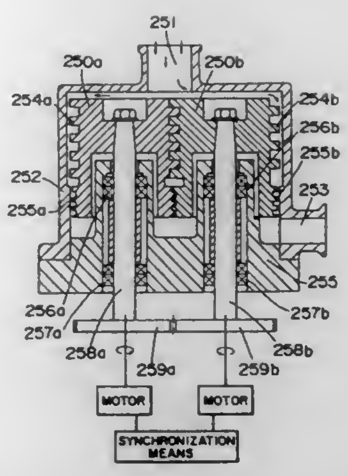
1. An evacuating apparatus comprising:

a housing having a fluid suction opening and at least one fluid exhaust opening;

a first pump section mounted in said housing and having a suction side and an exhaust side;

a second pump section, having a suction side and an exhaust side and being mounted in said housing on the exhaust side of said first pump section, for exhausting a smaller amount of fluid than said first pump section;

wherein said first and second pump sections comprise a plurality of rotors accommodated in said housing;



wherein bearings are mounted in said housing and rotatably support said rotors;

wherein said first pump section comprises a positive displacement pump which positively displaces fluid by utilizing a volume change of a space defined by said rotors and said housing;

wherein said second pump section comprises a positive displacement pump which positively displaces fluid by utilizing a volume change of a space defined by said rotors and said housing;

wherein a plurality of motors are operably coupled to said rotors, respectively, and said motors are electronically controlled for synchronizing rotation of said rotors.

5,709,538

Patent Not Issued For This Number

5,709,539
PRESSING PLATE FOR LINEARIZED PULSES FROM A PERISTALTIL PUMP

Michael Ron Hammer, Sassafras; Christopher John Park, Mulgrave; Brian Lawrence Allen, Berwick, and Thomas Robert Turney, Olinda, all of Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 378,028, Jan. 24, 1995. This application May 21, 1996, Ser. No. 646,807

Claims priority, application Australia, Jan. 24, 1994, PM 3494; Apr. 19, 1994, PM 5162

Int. Cl.^{6} F04B *43/12*

U.S. Cl. 417—477.3 **11 Claims**

1. A peristaltic pump comprising a rotatable drum including compressing elements around its periphery, a flexible tube extending between two spaced supports and a movable presser plate for holding the tube against the periphery of the drum between the two spaced supports such that on rotation of the drum the compressing elements squeeze the tube against the presser plate for moving fluid through the tube, said presser plate having a pinch region having a surface of curvature R_o wherein said tube is squeezed to a condition of closure and an expansion region of said plate having a variable curvature R such that $R=(KR_o)A$ where A is the angular rotation of said drum within said expansion region thereby producing a linear expansion of said flexible tube and the arcuate length of said expansion region being greater than that of said pinch region, wherein at least one of the tube supports is movable

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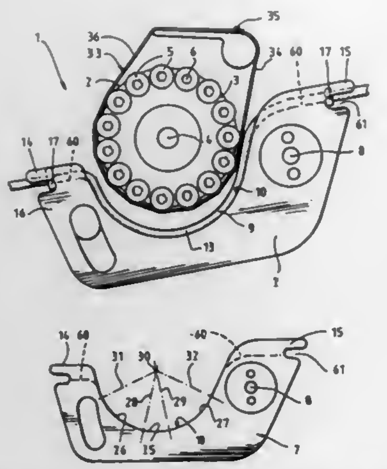


relative to the drum to establish an operative and an inoperative position for the tube, the operative position being when the tube is positioned for pumping.

5,709,540
ROTARY PUMP WITH SINGLE ELASTIC VANE

Leonardo Cadeddu, Crema, Italy, assignor to Robert Bosch Sistemi Frenanti Spa, Crema, Italy

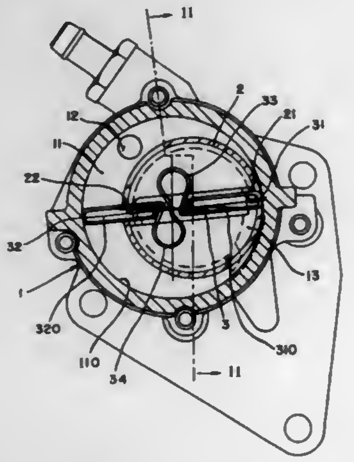
PCT No. PCT/EP96/01031, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO96/33339, PCT Pub. Date Oct. 24, 1996

PCT Filed Mar. 11, 1996, Ser. No. 624,600

Claims priority, application Italy, Apr. 19, 1995, TO95A0310

Int. Cl.^{6} F04C *2/344*

U.S. Cl. 418—156 **6 Claims**



1. A rotary pump comprising a stator pierced with a housing delimited by a cylindrical sidewall, a hollow cylindrical rotor tangentially located inside said housing, said rotor being driven in rotation about an axis which is off-centered relative to said housing, and said rotor having first and second diametrally oriented guide slots, and a vane passing diametrally through said guide slots and rotationally interdependent with said rotor, said vane having first and second opposite edges bearing against said sidewall of said housing, said first and second opposite edges being separated by a distance subjected to variations as said rotor rotates, said vane having at least one undulation of a thin sheet of material which offers elastic resistance to bending for absorbing such variations, said first and second opposite edges of the vane each consisting of folds in said thin sheet, said folds on said first edge extending into said first guide slot and said folds on said second edge extending into said second guide slot, said folds delimits an empty space capable of constituting a labyrinth barrier for a differential pressure developed across said vane.

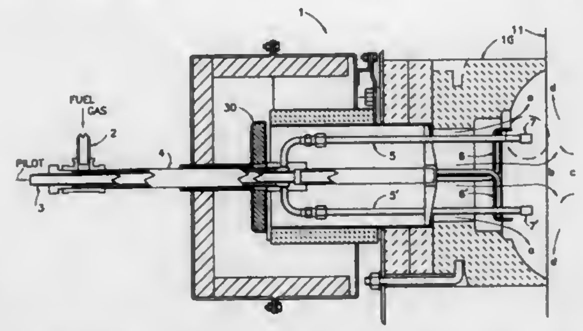
5,709,541
METHOD AND APPARATUS FOR REDUCING NO_X EMISSIONS IN A GAS BURNER

Wayne C. Gensler, Point Pleasant, and John van Eerden, Churchville, both of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Jun. 26, 1995, Ser. No. 494,377

Int. Cl.^{6} F23C *9/00*

U.S. Cl. 431—10 **11 Claims**



1. The low NO_x gaseous fuel burner to be used in a furnace comprising:

a burner supply means arranged substantially axially for supplying primary fuel and primary air to said furnace, secondary fuel supply means having a combustion end extending and directed substantially axially into said furnace, a secondary air supply means arranged to direct a supply of secondary air into said furnace adjacent said secondary fuel supply means, said combustion end of said secondary fuel supply means being directed for projecting said secondary fuel substantially axially into said furnace for combustion with said secondary air, said combustion thereby producing spent gases,

a recirculating means positioned relative to said combustion end of said secondary fuel supply means to effect mixing of said secondary air with said secondary fuel and with said spent gases inside said furnace to produce diluted air, said diluted air being recirculated and combusted with said primary air and fuel to reduce NO_x content in the resulting combustion gases.

5,709,542
DEVICE AND METHOD FOR THE COMBUSTION OF OXIDIZABLE CONSTITUENTS IN A CARRIER GAS WHICH IS TO BE CLEANED

Gert Rentzel, Gründau, and Joachim Saggel, Osnabrück, both of Germany, assignors to Grace GmbH, Norderstedt, Germany

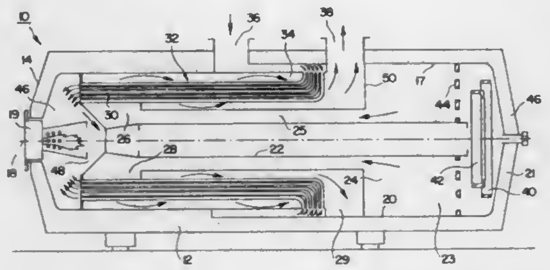
PCT No. PCT/EP94/00539, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/20792, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 25, 1994, Ser. No. 522,228

Claims priority, application Germany, Mar. 2, 1993, 43 06 417.5

Int. Cl.^{6} F23D *11/44*

U.S. Cl. 431—242 **14 Claims**



1. Device for the combustion of oxidizable constituents in a carrier gas to be cleaned, said device comprising gas inlet means, burner means having an attached flame tube in communication with a main combustion chamber having bottom and side walls, combustion chamber outlet means, heat exchanger means, and gas outlet means, wherein said main combustion chamber comprises deflecting means for distributing the gas leaving said flame tube in the direction of said combustion chamber outlet means over the entire cross section of said main combustion chamber.

5,709,543
VERTICAL HEAT TREATMENT APPARATUS

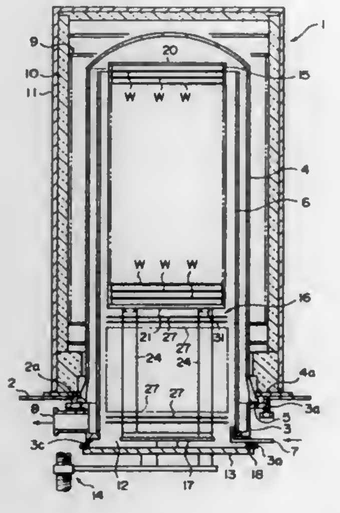
Tomohisa Shimazu, Sagamihara, Japan, assignor to Tokyo Electron Limited, Tokyo-To, Japan

Filed Sep. 4, 1996, Ser. No. 706,530

Claims priority, application Japan, Sep. 6, 1995, 7-254676

Int. Cl.^{6} F27D *3/12*

U.S. Cl. 432—241 **18 Claims**



1. A vertical heat treatment apparatus for heat treating objects to-be-process in a heat uniform heating region in a heat treatment furnace, comprising:

a cap for opening and closing a furnace opening of a heat processing furnace;

a heat insulation structure mounted on the cap; and

a substrate holder for supporting a plurality of substrates to-be-processed on the heat insulation structure at a vertical interval, wherein the heat insulation structure comprises a plurality of upright support rods for supporting the substrate holder and a plurality of thin heat insulation plates having insertion holes through which the support rods are inserted, and where each of said thin heat insulating plates are separated by spacers at a vertical interval.

5,709,544
DUAL SEAL FOR A VACUUM HEAT TREATING FURNACE

Brian J. Wurtz, Levittown, Pa., assignor to Abar Ipsen Industries, Inc., Bensalem, Pa.

Filed Apr. 16, 1996, Ser. No. 639,033

Int. Cl.^{6} F27D *1/18*

U.S. Cl. 432—242 **25 Claims**

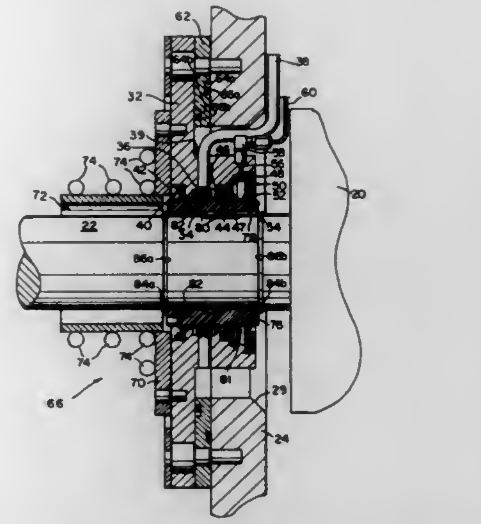
1. A vacuum heat treating furnace comprising:

a pressure vessel having a wall that defines a chamber;

a fan disposed inside said chamber for circulating a cooling gas therein;

motive means disposed externally to said pressure vessel for driving said fan;

a driveshaft interconnecting said fan and said motive means through an opening in the wall of said pressure vessel; and



a dual seal for providing a vacuum-tight seal and a gas-tight seal around said drive shaft, said dual seal comprising:

i) an inflatable seal surrounding said drive shaft for providing a vacuum-tight seal around said drive shaft when inflated, said inflatable seal comprising a ring-shaped, expandable tube, means communicating with the interior of said tube for inflating said tube, and means communicating with the interior of said tube for deflating said tube when inflated; and

ii) a lip seal surrounding said drive shaft adjacent to said inflatable seal for providing a gas-tight seal around said drive shaft.

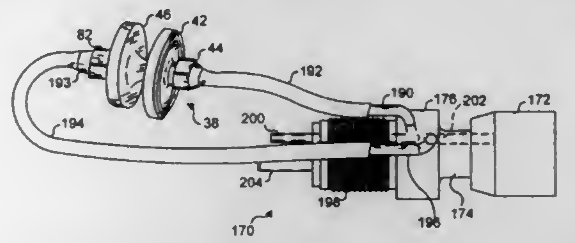
5,709,545
METHOD AND APPARATUS FOR PROTECTING AGAINST CROSS CONTAMINATION OF PATIENTS CAUSED BY ORAL REFLUX IN DENTAL INSTRUMENT WATER AND AIR LINES

Simon E. Johnston; Anna M. Johnston, both of Kirkland, Wash., and Jeffrey F. Williams, Mason, Mich., assignors to SciTech Dental, Inc., Seattle, Wash.

Filed Nov. 1, 1995, Ser. No. 551,343

Int. Cl.^{6} A61G *17/02*

U.S. Cl. 433—80 **17 Claims**



1. Apparatus for preventing a contaminated fluid from entering a patient's mouth through a dental instrument, said dental instrument having a fluid passage through which fluid is injected into the patient's mouth, said apparatus comprising:

(a) a housing having an inlet port and an outlet port, said housing being adapted for coupling in fluid communication with the dental instrument so that the apparatus is easily replaceable;

(b) means for bacteriological sterilization of a fluid flowing through the housing, said means including a microporous membrane having a porosity selected to block a predefined size of particulate matter, including bacteria, without substantially restricting fluid flow through the membrane, said membrane being disposed within the housing between the inlet port and the outlet port and sealed within the housing so that

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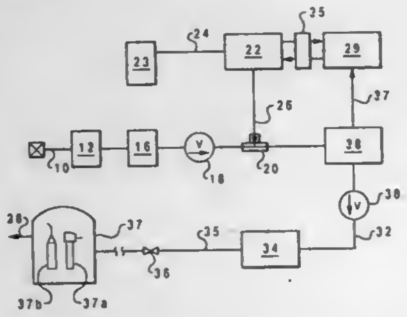
the fluid flowing through the inlet port passes through the membrane before flowing out the outlet port; and

(c) a one-way valve disposed within the housing between the inlet port and the outlet port, said one-way valve permitting any fluid entering through the inlet port to flow through the membrane and out the outlet port, but blocking fluid flow in an opposite direction, said one-way valve and said membrane cooperating to prevent the contaminated fluid from entering the patient's mouth through the dental instrument and to prevent the dental instrument from becoming contaminated by an oral reflux from inside the patient's mouth.

5,709,546
WATER SANITIZING SYSTEM AND PROCESS

Mark B. Waggoner, 7515 White Castle La., Plano, Tex. 75025
Filed Nov. 27, 1996, Ser. No. 755,573
Int. Cl.^{6} A61C *1/10*
U.S. Cl. 433—82 **48 Claims**



1. In a system for incorporating a bactericide into an aqueous medium for supply to a water distribution unit, the combination comprising:

(a) a reservoir adapted to contain a liquid bactericidal agent;

(b) a variable rate pump having an inlet line extending from said reservoir to the inlet of said pump;

(c) an outlet line extending from the outlet of said pump and providing a bactericide supply line;

(d) a water supply line adapted to be connected to a source of water under pressure at a water inlet and providing a water supply flow path through said system to an outlet of said water supply line adapted to be connected to a utilization unit;

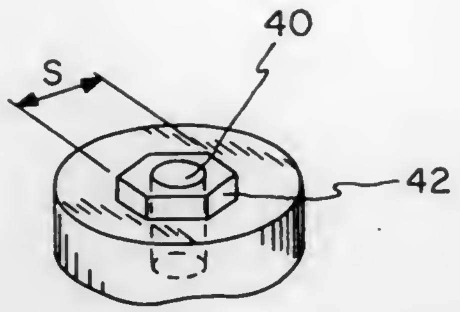
(e) a mixing junction for said water supply line and said bactericide supply line to provide for mixing of a bactericide into said water supply line;

(f) a flow-sensing unit responsive to fluid flow in said water supply line to generate an output parameter representative of the flow rate in said water line; and

(g) a flow control system for controlling the pumping rate of said pump in response to said measured parameter.

5,709,547
DENTAL IMPLANT FOR ANCHORAGE IN CORTICAL BONE

Richard J. Lazzara, and Keith D. Beaty, both of West Palm Beach, Fla., assignors to Implant Innovations, Inc., Palm Beach Gardens, Fla.
Continuation of Ser. No. 239,122, May 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 845,138, Mar. 3, 1992, Pat. No. 5,364,268. This application Feb. 15, 1996, Ser. No. 601,840
Int. Cl.^{6} A61C *8/00*
U.S. Cl. 433—174 **33 Claims**



1. A dental implant designed and intended for installation in a posterior jawbone region that is normally the site of a molar-type tooth and is cancellous internally and cortical externally characterized by lingual and buccal cortical plates bounding a relatively large body of cancellous bone occupying a major portion of the labial-to-buccal thickness of said jawbone in said region, comprising:

an implant body having a gingival end with bone-engaging means on the exterior of said gingival end for fixing said implant in bone, said implant body having a width W at least as large as about 5.0 mm along substantially the entire length of the implant body for effecting bone-to-implant fixation between said implant and at least a portion of each of said plates simultaneously when said implant is installed in said site with said gingival end in the gingival region of said jawbone and with said implant body extending into said cancellous bone, said implant body having a threaded external side surface along substantially the entire length thereof to ensure threaded engagement with said cortical plates, said implant body having a length dimension L that is less than about 13 mm so as to stop short of the inferior alveolar mandibular canal if said site is in the posterior mandible and short of the superior sinus cavity if said site is in the posterior maxillary bone.

5,709,548
DENTAL CROWN LINER COMPOSITION AND METHODS OF PREPARING PROVISIONAL APPLICATIONS

Joel D. Oxman, Minneapolis, and Scott E. Anderson, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 445,147, May 19, 1995, abandoned, which is a division of Ser. No. 263,551, Jun. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 137,584, Oct. 15, 1993, Pat. No. 5,403,183, which is a continuation of Ser. No. 484,695, Feb. 23, 1990, abandoned. This application Feb. 18, 1997, Ser. No. 801,288
Int. Cl.^{6} C08G *63/08;* **A61C** *5/08*
U.S. Cl. 433—218 **28 Claims**

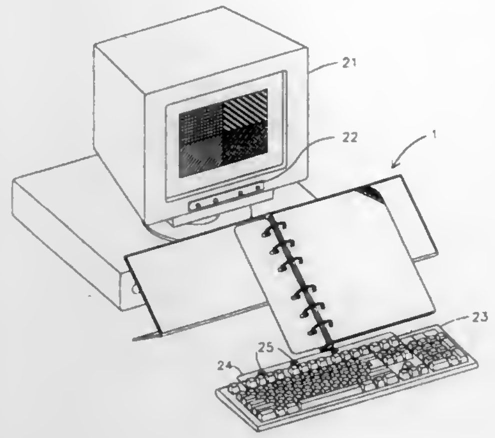
1. A dental crown having a dental crown liner made from a molding composition comprising a thermoplastic material, the uncured molding composition being solid at 38° C. and having a melting or softening point that comfortably can be withstood by oral tissues.

5,709,549
INSTRUCTIONAL APPARATUS FOR COMPUTERS

Vance Jonson, and Susan J. Landise, both of 5 Brook St., Suite 1A, Darien, Conn. 06820
Filed Sep. 19, 1995, Ser. No. 530,865
Int. Cl.^{6} G09B *19/00*
U.S. Cl. 434—118 **17 Claims**

16. A computer instruction apparatus for instructing an operator, said apparatus comprising:

(a) a computer having a microprocessor, a monitor having a monitor screen and a human operation interface, said monitor placed on a surface such said monitor screen is visible to said operator;



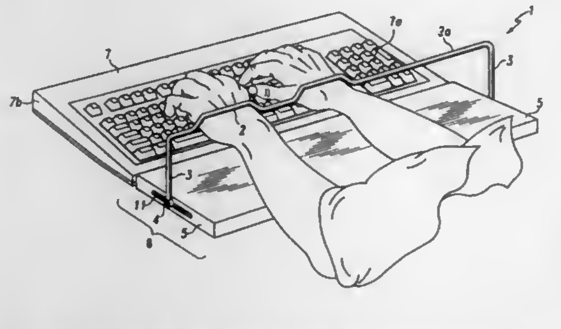
(b) an instructional loose-leaf binder adapted to be configured to stand at an angle on said surface so as to be simultaneously visible to said operator with said monitor screen, said binder comprising:

(i) a spine member adapted to be attached to pages;

(ii) a binder cover having front and rear portions, and moveable between a closed position to an open position, said binder cover attached to said spine member, and said front and rear portions each having a flex line so as to define respective upper and lower portions of said front and rear portions and so as to allow said lower portions of said front and rear portions to be moveable between a position relatively near said spine member to a position relatively further from said spine member, so as to allow slid binder to be configured to stand at an angle on said surface, wherein said binder contains pages of at least two sizes, a smaller size and a larger size, and wherein said apparatus comprises a page hanger attached to said monitor, said pages of said smaller size adapted to be attached to said spine member and said page hanger.

5,709,550
KEYBOARD TRAINING APPARATUS

Debra E. Devine, 9485 Bay Vista West Dr., Indianapolis, Ind. 46250, assignor to Debra E. Devine, Indianapolis, Ind.
Filed Aug. 28, 1996, Ser. No. 704,023
Int. Cl.^{6} G09B *13/04*
U.S. Cl. 434—227 **20 Claims**



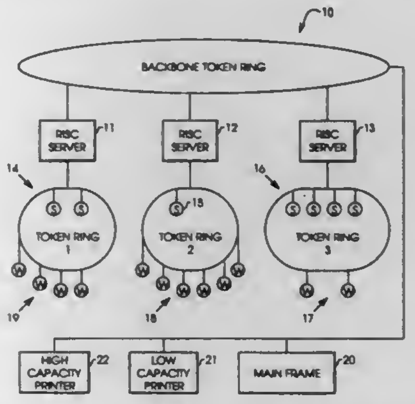
1. An apparatus for use with a keyboard comprising

(a) a support and

(b) a stabilizing bar comprising a body having an axis extending longitudinally and ending in left and right arms, said arms comprising attachment means for attaching said bar to said support, said support being adapted to receive said attachment means such that, when said apparatus is positioned in front of and parallel to said keyboard, an operator's hands will be positioned between said support and said stabilizing bar when the fingers of said operator are positioned over said keyboard.

5,709,551
MULTIPLE TEST ITEM SCORING METHOD

Jay V. Clark, West Liberty; William L. Bramlett, Jr., Swisher, and Judith Moyer, Iowa City, all of Iowa, assignors to National Computer Systems, Inc., Eden Prairie, Minn.
Continuation of Ser. No. 290,014, Aug. 12, 1994, Pat. No. 5,558,521, which is a division of Ser. No. 14,176, Feb. 5, 1993, Pat. No. 5,437,554. This application Nov. 20, 1995, Ser. No. 559,833
Int. Cl.^{6} G09B *7/00*
U.S. Cl. 434—322 **5 Claims**



1. A method for increasing the speed at which answers to test items are processed by efficiently organizing, grouping, and displaying the answers to the questions such that a test resolver can selectively view multiple answers from a grouping related to the resolver's expertise, the method comprising the steps of:

a) electronically receiving a plurality of answers for test questions, the answers each comprising an electronic representation of at least a portion of a test answer sheet;

b) electronically dividing the test questions by resolution expertise and for electronically organizing into separate groupings answers to questions related to resolution expertise; and

c) electronically presenting to a test resolver a particular one of the groupings such that the test resolver can selectively view and score the answers to the test questions related to the resolver's resolution expertise.

5,709,552
MUSIC EDUCATION AID

Ulyesse J. LeGrange, 101 Westcott, No. 1602, Houston, Tex. 77007
Filed Dec. 27, 1995, Ser. No. 579,331
Int. Cl.^{6} G09B *25/00;15/02*
U.S. Cl. 434—404 **16 Claims**

16. An apparatus for music education and training comprising:

a base member having musical key segments formed thereon assigned to each of several musical keys, each of said musical key segments being arranged on said base member according to the circle of fifths relationship, each of said musical key segments further having an indicator area having indicators thereon, defining for the assigned musical key:

a key indicator designating that musical key;

a key signature for that key in written music;

a second member movably mounted with respect to said base member and having formed thereon an alignment indicator for selective alignment with each of said key indicators of said musical key segments;

said second member further having formed therein a viewing window of similar size to one of said musical key segments to permit viewing of the indicator area for one of said musical key segments when said alignment indicator is aligned with said key indicator for that key;

said second member having segments for various keys formed thereon like in number to the number of musical key segments on said base member; and

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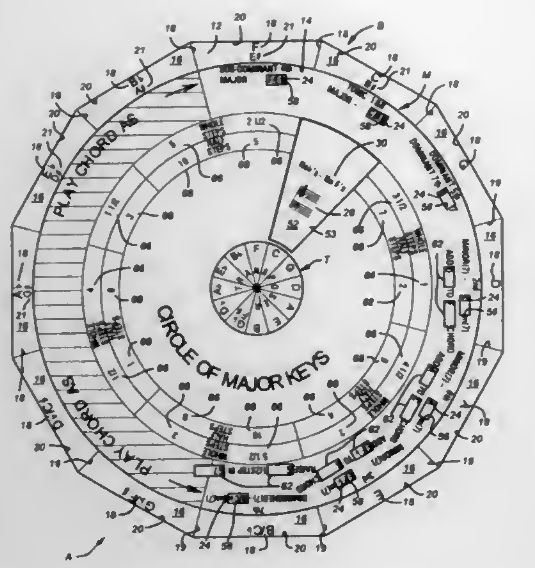
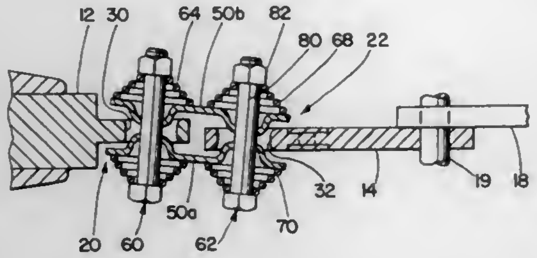


said second member having indicators formed on said key segments thereof indicating the number of steps between each such key and the key aligned with said viewing window.

5,709,553
FLEXIBLE CONNECTOR FOR HIGH-CURRENT CONDUCTORS

John C. Opfer, Chicago, and Buddy B. McGlone, Lombard, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Sep. 13, 1996, Ser. No. 713,940
Int. Cl.^{6} H01R *35/04*
U.S. Cl. 439—6 **7 Claims**

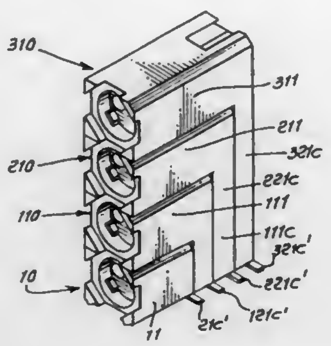


1. An arrangement for providing a flexible connection between two conductors comprising: each of the conductors including an elongated slot, and flexible connection means cooperating with each of the conductors for providing a flexible connection between the conductors, said flexible connection means including first and second means for respectively providing a flexible connection to each of the conductors via the elongated slot therein, each of said first and second means including means for providing a generally spherical joint and third means for providing compressive contact force at each of said generally spherical joints, each of said generally spherical joints being defined by two portions of generally spherical surfaces having outer spherical surfaces that face each other with the conductor and elongated slot being located therebetween.

5,709,554
ANGLED CIRCUIT CONNECTOR STRUCTURE

John M. Savage, Jr., 538-B Via De La Valle, Solana Beach, Calif. 92075

Filed Feb. 12, 1996, Ser. No. 606,012
Int. Cl.^{6} H01R *9/09*
U.S. Cl. 439—56 **7 Claims**



1. For use in an assembly including a circuit element having a base and terminal means projecting rearwardly from the base, a connector comprising the combination:

a) a body defining a forwardly and horizontally extending structure for telescopically interfitting the base of the element for retention thereto, with said terminal means extending rearwardly,
b) the body having associated terminal structure movably electrically connectible with rearward extent of said terminal means, said terminal structure extending downwardly for electrical connection to circuitry associated with a circuit board,
c) there being interconnect means located on said body to connect to an associated connector, whereby the connectors are then stacked vertically,
d) and including said associated connector which has a stand-off mount projecting downwardly rearwardly of the first mentioned connector,
e) said interconnect means including tongue and groove elements on the connector and associated connector, and extending forwardly and horizontally, said connector and associated connector having relatively horizontally and forwardly slidable interfit when connected by said interconnect means, and wherein said associated connector has L-shape to extend above said connector and also downwardly rearwardly of said connector,
f) said body including a portion extending downwardly adjacent said terminal structure which extends downwardly, there being tab means on said terminal structure which extends downwardly to retainingly engage said body portion extending downwardly.

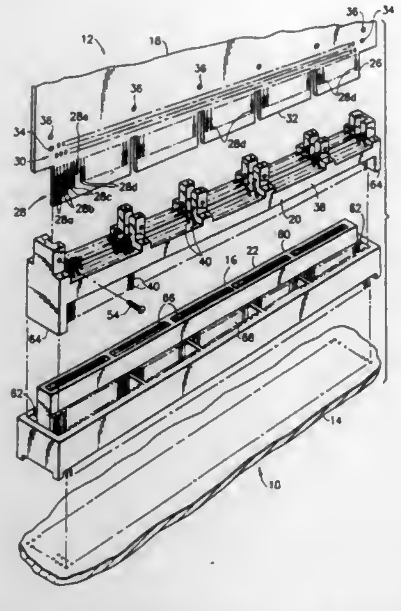
5,709,555
HIGH DENSITY CARD EDGE CONNECTION SYSTEM WITH OUTRIGGER AND SEQUENTIALLY CONNECTED CONTACTS

Rocco J. Noschese, Wilton, Conn., assignor to Framatome Connectors USA Inc., Fairfield, Conn.

Filed Jun. 22, 1995, Ser. No. 493,842
Int. Cl.^{6} H01R *9/09*
U.S. Cl. 439—79 **11 Claims**

1. A method of mechanically and electrically connecting a first electronic component to a second electronic component by inserting a portion of the second component into a receptacle of the first component, the method comprising steps of:

connecting a first ground contact of the second component with a first ground contact of the first component as the second component is inserted into the receptacle to a first depth of insertion;



connecting a second precharge contact of the second component with a second precharge contact of the first component as the second component is inserted into the receptacle to a second depth of insertion;

connecting a third power contact of the second component with a third power contact of the first component as the second component is inserted into the receptacle to a third depth of insertion;

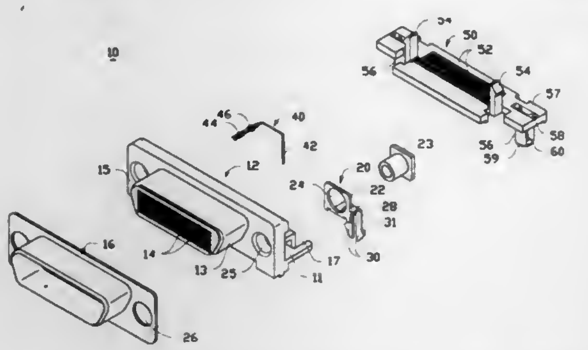
connecting fourth signal contacts of the second component with fourth signal contacts of the first component as the second component is inserted into the receptacle to a fourth depth of insertion; and

connecting a fifth insertion confirmation contact of the second component with a fifth insertion confirmation contact of the first component as the second component is inserted into the receptacle to a fifth depth of insertion.

5,709,556
CONNECTOR WITH AUXILIARY ALIGNMENT PLATE

Haw-Chan Tan, Diamond Bar, Calif., and Kun-Tsan Wu, Tu-Chen City, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Nov. 24, 1995, Ser. No. 564,377
Int. Cl.^{6} H01R *9/09*
U.S. Cl. 439—79 **5 Claims**



1. An electrical connector for mounting to a PC board, comprising:

an insulative housing defining a plurality of passageways for receiving a corresponding number of contacts therein;

each of said contacts including a retention section, a mating section and a tail section which extends downward toward said PC board;

at least a boardlock including retention leg means disposed at one end of the housing; and

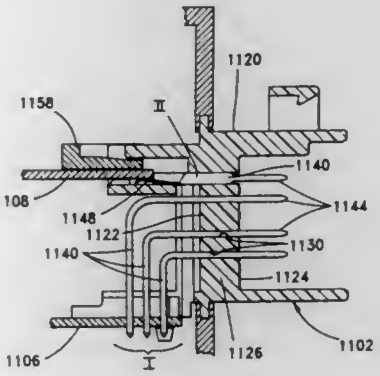
an auxiliary alignment device including a plate having a plurality of holes extending therethrough in a vertical direction for allowing the corresponding tail sections of the contacts to extend therethrough, and at least a post extending downward from one end of said plate for receiving said leg means of the boardlock; wherein

said plate includes at least a latch extending upward whereby the latch and the post extend in two opposite directions, and the auxiliary alignment device is attached to the bousing from the bottom in the vertical direction; and wherein said post includes a groove vertically extending downward from a top surface of the plate and terminating adjacent to a bottom end of the post, and wherein the leg means of the boardlock is received within said groove.

5,709,557
ELECTRICAL CONNECTOR FOR DUAL PRINTED CIRCUIT BOARDS

Galen M. Martin, Jamestown; Larry G. Novotny, Clemmons, and Donald K. Hughes, Kernersville, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 354,197, Dec. 12, 1994, abandoned. This application Jan. 17, 1997, Ser. No. 785,728
Int. Cl.^{6} H01R *9/09*
U.S. Cl. 439—79 **5 Claims**



1. An input/output electrical connector header for use with multiple printed circuit boards, comprising:

a plurality of terminal pins in multiple rows;

an insulative housing having a common housing wall comprising a common internal wall forming at least a portion of a mating interface for engaging a mating electrical connector receptacle, the common internal wall comprising an integrally molded portion of the insulative housing with openings extending through the common internal wall, terminal pins in all of the multiple rows extending through the openings in the common internal wall;

board contact tails, for connection to a first printed circuit board, on the terminal pins in a first row, the pins in the first row extending in a first direction on the rear of the insulative housing for connection to the first printed circuit board; and

a second printed circuit board connection at the rear of the terminal pins in a second terminal row, terminal pins in the second row extending in a second direction, on the rear of the insulative housing, different from the first direction for connection to a second printed circuit board, the second printed circuit board connection being separable from the insulative housing, wherein a slot is formed on the rearward face of the header, a contact section of each pin in the second terminal row extending into the slot, the slot providing clearance for insertion of the second printed circuit board therein.

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5,709,558
ELECTRONICS ENCLOSURE

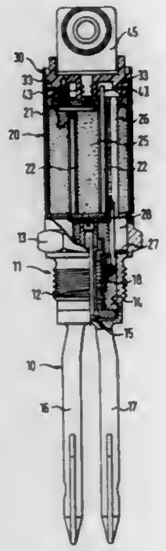
Volker Dreyer, Lörrach, and Thomas Werner, Maulburg, both of Germany, assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

Filed Sep. 26, 1996, Ser. No. 721,114

Claims priority, application European Pat. Off., Sep. 28, 1995, 95 115 323.8

Int. Cl.^{6} H01R *13/652*

U.S. Cl. 439—95 **8 Claims**



1. An electronics enclosure comprising: a metal shroud, an open end closed off by a plug of insulating material fitted in said metal shroud, in which contact members having connecting parts extending from said plug outwardly are provided for connecting an electronics assembly accommodated in said electronics enclosure to outer connecting leads, one of said contact members being a grounding contact member, wherein said plug includes a peripheral groove and said grounding contact member includes a ring connected to some of said connecting parts on which radially protruding spring claws of elastic material are provided, said ring being located level with said peripheral groove in said plug such that said spring claws protrude into said peripheral groove, and the length of said spring claws being dimensioned so that their ends protrude past a cross-section, corresponding to the cross-section of the opening of said metal shroud, to such an extent that said spring claws on insertion of said plug are flexed in said metal shroud and come into spring contact with the inside surface of said metal shroud.

5,709,559
CONNECTOR BLOCK FOR INJECTORS OF AN INTERNAL COMBUSTION ENGINE

Mitsubiro Fujitani, and Hisashi Konoya, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

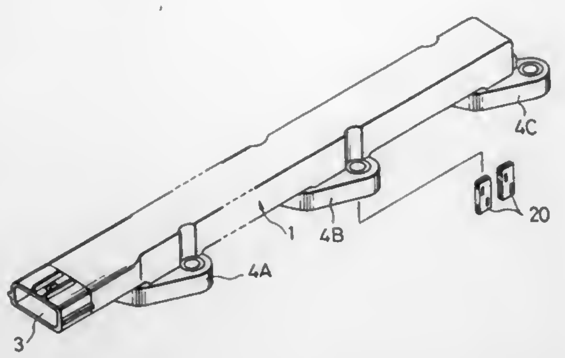
Filed Nov. 14, 1994, Ser. No. 338,854

Claims priority, application Japan, Nov. 17, 1993, 5-312550

Int. Cl.^{6} H01R *13/44*

U.S. Cl. 439—130 **7 Claims**

1. A connector block for injectors of an internal combustion engine, comprising:
- a bar-like body having a core member extending along at least a majority of the length of the bar-like body, said core member molded and embedded in a resin, said core member includes slots accommodating bus bars each having a band-like shape, said bus bars being arranged parallel to one another;
- a wire harness connecting portion formed at one end of said bar-like body, said bus bars having tip ends exposed in said connecting portion; and injector connecting portions for connecting said bus bars through junction terminals located at said injector connecting portions to injectors of an internal combustion engine, said injector connecting portions being formed at a plurality of positions on said bar-like body.



5,709,560
CONNECTOR HAVING A PIVOTABLE CONNECTION-ASSISTANCE MEMBER

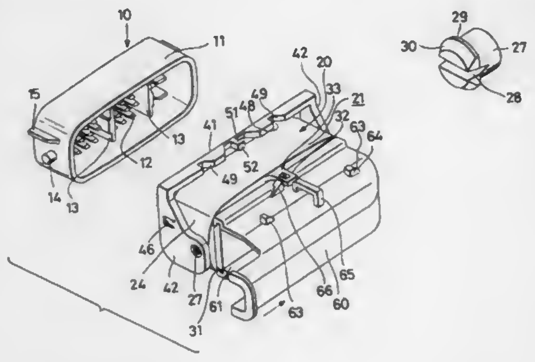
Masahide Hio, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Dec. 4, 1995, Ser. No. 567,125

Claims priority, application Japan, Dec. 14, 1994, 6-333357; Dec. 28, 1994, 6-338389; Dec. 28, 1994, 6-338390; Dec. 28, 1994, 6-338393

Int. Cl.^{6} H01R *13/62*

U.S. Cl. 439—157 **16 Claims**



1. A connector comprising:
- a first connector housing in which a plurality of terminals are mounted;
- a second connector housing in which a plurality of terminals are mounted, said second connector housing being fittable with said first connector housing;
- a support shaft formed on and projected from said first connector housing; and
- a fitting assistance member for removably connecting said first and second connector housings, said fitting assistance member having a support shaft insertion hole to be pivotally engaged with said support shaft;

wherein said support shaft includes:
- a split groove in a distal end portion so that said distal end portion is elastically deformable to be reduced in diameter, and
- a retaining larger-diameter portion formed as part of said distal end portion of said support shaft which is inserted into said support shaft insertion hole, a diameter of said retaining larger-diameter portion being larger than an inner diameter of said support shaft insertion hole.

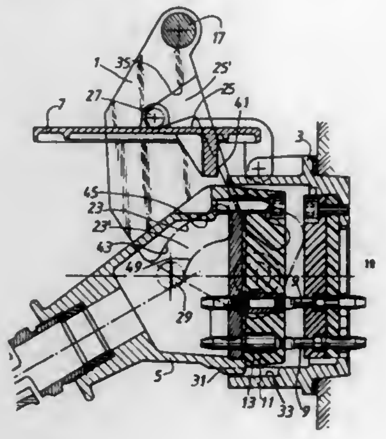
5,709,561
ELECTRICAL CONNECTOR WITH IMPROVED ACUTATION HANDLE

Yves Cadoret, Le Mans, and Jean-Francois Galipaud, Coulaines, both of France, assignors to Carrier Kheops Bac S.A., Lemans, France

Filed Aug. 22, 1996, Ser. No. 701,685

Int. Cl.^{6} H01R *13/62*

U.S. Cl. 439—157 **11 Claims**



1. An electrical connector comprising:
- a base for receiving a complementary plug member, said base having a housing and a central axis, said plug member having two lateral catches, an out-of-service position and a connection position;
- a cover for said base, said cover having two lateral catches, an open position and a closed position;
- an actuation handle mounted articulated on a flexible axial joint on the housing of said base crosswise to said central axis, said handle comprising:
- a first pair of grooves in said handle for manipulation of said two lateral catches on said cover, said first pair of grooves having a first cam-effect profile for receiving, guiding, and entraining said lateral catches of said cover during actuation of said handle, said first cam-effect profile having near the end of each of said first pair of grooves, a first hard point of entrainment of said catches over which locking is obtained in said closed position applying pressure on the cover upon recall of said flexible axial joint, and;
- a second pair of grooves in said handle for manipulation of said two lateral catches on said plug member, said second pair of grooves having a second cam-effect profile for receiving, guiding, and entraining said lateral catches of said plug member during actuation of said handle, said second cam-effect profile having near the end of each of said second pair of grooves, a second hard point of entrainment of said catches over which locking is obtained in said connection position applying pressure on the plug member upon recall of the flexible axial joint.

5,709,562
ZERO INSERTION FORCE CONNECTOR WITH WIPING ACTION

Fritz Josef Alois Kourimsky, Bensheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

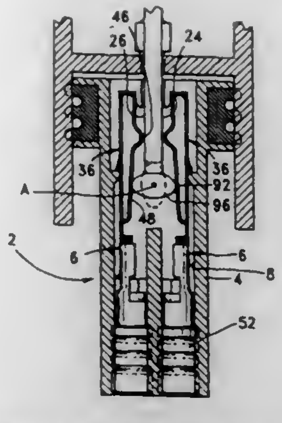
Filed Apr. 3, 1996, Ser. No. 626,881

Claims priority, application United Kingdom, Apr. 28, 1995, 9508690

Int. Cl.^{6} H01R *11/22*

U.S. Cl. 439—267 **9 Claims**

1. An electrical connector comprising an insulative housing and a plurality of terminals mounted therein, the connector comprising a means for biasing contact surfaces of the terminals away from their mated position to a pre-mated position to enable zero insertion force (ZIF) coupling to a complementary connector, wherein the means for biasing the contact surfaces comprises a camming section rotatably mounted to the housing, the camming section having a retracted camming surface close to a pivot axis of the camming section, and a longitudinal camming surface distant from the pivot axis, the connector providing access to an end of the complementary connector for abutment of the end against the camming section; the camming section rotatable from a pre-mated position where the terminal contact surfaces are biased apart to a mated position where the terminals contact the complementary connector, wherein during pivoting of the camming section from the pre-mated to the mated position the longitudinal camming surface abuts the complementary connector end thereby biasing the connectors apart from each other to provide a wiping action between the terminals and complementary connector.



5,709,563
WATERPROOFING CONNECTOR

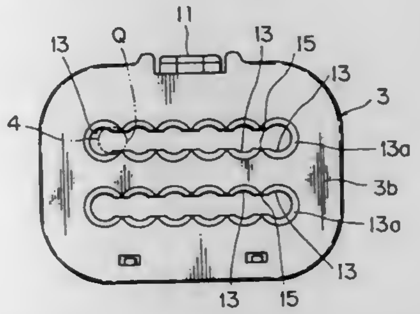
Hitoshi Saito, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 7, 1996, Ser. No. 726,938

Claims priority, application Japan, Oct. 9, 1995, 7-261310

Int. Cl.^{6} H01R *13/52*

U.S. Cl. 439—275 **3 Claims**



1. A waterproofing connector including a connector housing having a plurality of terminal accommodating chambers, a sealing member mounted in said connector housing extending across ends of said terminal accommodating chambers to seal terminals installed in said terminal accommodating chambers, and a sealing cover applied to said connector housing and containing a plurality of aligned through holes separated by partition walls having interconnections between said through holes so that adjacent boles communicate with one another, said interconnections being formed by notches in said partition walls and having a width narrower than the diameter of said through holes.

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5,709,564
WIRING CIRCUIT FOR AN ELECTRICAL CONNECTION BOX, METHOD AND APPARATUS FOR FORMING THE WIRING CIRCUIT

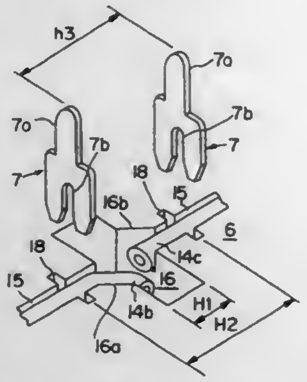
Takayuki Yamada; Hiroshi Rokutani; Nori Inoue; Yuuji Saka; Takahiro Onizuka, and Yoshito Oka, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Aug. 14, 1995, Ser. No. 515,116

Claims priority, application Japan, Aug. 24, 1994, 6-199486; Dec. 13, 1994, 6-309280

Int. Cl.^{6} H01R *4/24*

U.S. Cl. 439—392 **13 Claims**



1. A wiring circuit for an electrical connection box (15;5), comprising: an insulating plate (6), first and second wire portions (4) disposed in a wiring pattern on said insulating plate (6) and having respective first and second end portions, first and second connecting terminals being mounted to said insulating plate (6) and being connected with the respective first and second wire portions (4), the wire portions (4) being made by cutting a wire arranged in the wiring pattern in at least one position, such that at least the first end portion (14*b*) formed by the cut is bent with respect to the extension direction of the wire in one step about an axis substantially orthogonal to the insulating plate such that said first end portion is substantially parallel to said insulating plate (6).

5,709,565
PRESS-CONNECTING TERMINAL

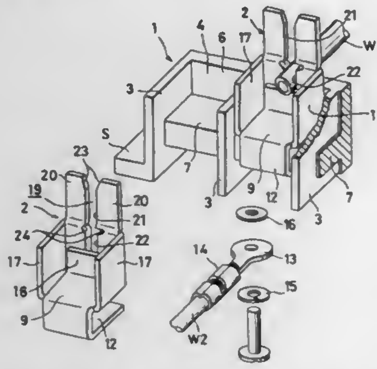
Masaki Okamoto, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Mar. 13, 1996, Ser. No. 614,643

Claims priority, application Japan, Mar. 17, 1995, 7-086435

Int. Cl.^{6} H01R *4/24*

U.S. Cl. 439—395 **2 Claims**



1. A press-connecting terminal for electrically connecting wires, produced from metal sheet surfaces of which are beforehand subjected to a plating treatment; said terminal comprising a press-connecting groove, and when a sheathed wire is press-fitted into said press-connecting groove, edges of said groove cut a sheath of said wire, and are brought into contact with a conductor in said wire; said press-connecting groove comprising:

- a sharp edge portion extending a predetermined length from an inlet of said groove, said sharp edge portion having opposed, exposed edges formed by blanking, which are capable of cutting the sheath of said sheathed wire; and
- a contact conductive portion extending inwardly from said sharp edge portion to contact with a conductor of the sheathed wire, the contact conductive portion being formed by blanking during working in such a manner that a gap between opposed edges thereof is smaller than a gap between the opposed edges of said sharp edge portion, and then the opposed edge portions of said contact conductive portion are folded outwardly to respectively form opposed folded edge portions capable of contacting the conductor of said wire.

5,709,566
PRESS-CONTACT CONNECTOR ASSEMBLY

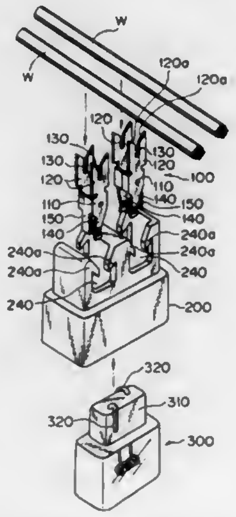
Yoshitsugu Tsuji; Takuya Inoue, and Nori Inoue, all of Mie-ken, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 433,759, May 4, 1995, which is a division of Ser. No. 172,235, Dec. 23, 1993, Pat. No. 5,433,625. This application Jul. 3, 1996, Ser. No. 674,969

Claims priority, application Japan, Dec. 26, 1992, 4-93177 U; Dec. 26, 1992, 4-93178 U; Dec. 26, 1992, 4-93179 U; Dec. 26, 1992, 4-93180 U; Jan. 6, 1993, 5-2647 U; Jan. 6, 1993, 5-17011

Int. Cl.^{6} H01R *4/24*

U.S. Cl. 439—397 **1 Claim**



1. A press-contact connector assembly for a socket joint of a lighting fixture, comprising:

- a press-contact electrode including a box-shaped body, a press-contact blade on one end of said box-shaped body, said press-contact blade having two opposed press-contact portions which extend away from said box-shaped body and form an axial slot therebetween for receiving a cable, each of said press-contact portions having an upper end which tapers inwardly toward said axial slot at an inclined angle, and a power supply terminal on the other end of said box-shaped body; and
- a casing including a hood for receiving a lighting fixture electrode, a cylindrical portion for holding said press-contact electrode so that said power supply terminal contacts with said lighting fixture electrode in said hood, and a guide portion for defining a guide path to introduce the cable into said axial slot of said press-contact blade, said guide portion comprising a notch at an upper portion of said cylindrical portion and which forms an inlet into which the cable is introduced, and slant portions formed on opposite sides of the inlet of said notch, each of said slant portions being directly adjacent to the upper end of a corresponding one of said press-contact portions and having an inclined angle which corresponds to the inclined angle of the upper end of the corresponding one of said press-contact portions of said press-contact blade, said slant portions serving to guide the cable into said axial slot, and said slant portions protruding inwardly and each having at least a part which extends below the upper end of the corresponding one of said press-contact portions and being shaped so as to retain the cable within said axial slot and preventing the cable from slipping out of said notch after passing therethrough.

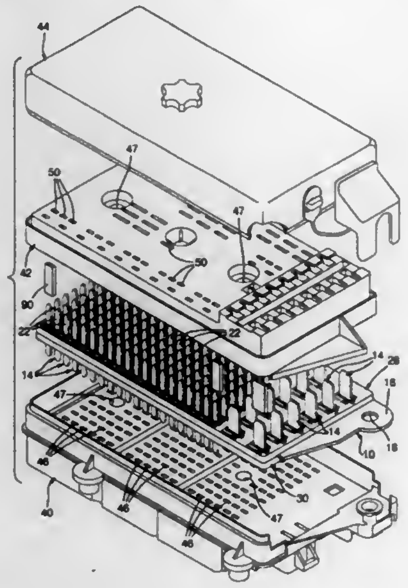
5,709,567
PRESS FIT STAMPED BUSS

Joseph Howard Gladd, Cortland, Ohio, and Frederick Edward Mlakar, Hermitage, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1996, Ser. No. 690,406

Int. Cl.^{6} H01R *4/26*

U.S. Cl. 439—444 **13 Claims**



1. An assembly for conveying electricity comprising:

- a stamped electrical buss plate having a slot formed therein, and an electrical terminal having a body portion and an upwardly extending prong portion, and raised features extending from the body portion comprising corrugated ribs,
- said terminal being inserted in said stamped electrical buss plate slot so that said raised features engage the edges of said buss plate defining said slot.

5,709,568
CONNECTION DEVICE FOR USE WITH MEMORY CARD CONNECTOR APPARATUS

Hua-Tsong Pan, and May Chen, both of Taipei, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei, Taiwan

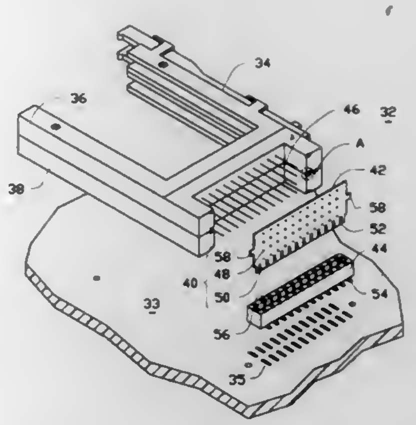
Filed Jul. 18, 1995, Ser. No. 503,706

Int. Cl.^{6} H01R *23/68*

U.S. Cl. 439—541.5 **8 Claims**

1. A memory card connector assembly mounted on a mother board, comprising:

- a memory card connector apparatus comprising stacked memory card connectors, each having a plurality of contact tails extending backward on its rear side; and
- a connection device vertically positioned on the rear side of the memory card connector apparatus and comprising a daughter board and a card edge connector, said daughter board electrically connected with some of the contact tails of the memory card connector apparatus and further having circuit pads on a bottom edge region thereof, wherein said card edge connector has a plurality of contacts mechanically and electrically mounted on the mother board and further has a slot facing upward for receiving said bottom edge region of the daughter board, so that some signals may be transmitted between the mother board and the memory card connector apparatus via said connection device.



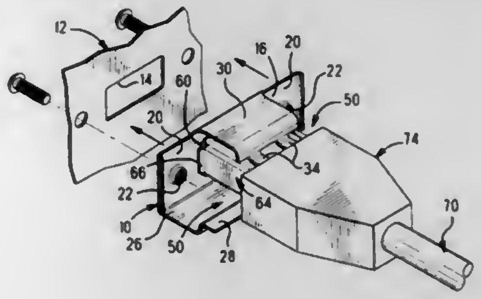
5,709,569
PANEL MOUNT BRACKET FOR ELECTRICAL CONNECTOR

Jonathan Earl Buck, Santa Clara, and Brian Patrick Costello, Redwood City, both of Calif., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 31, 1996, Ser. No. 742,008

Int. Cl.^{6} H01R *13/648*

U.S. Cl. 439—607 **5 Claims**



1. A bracket for securing a shielded electrical connector to a panel at an input/output port of an electronic apparatus, comprising:

- an integral member having a panel mount body through which extends a cutout for aligning with the input/output port and having flanges on either side of said cutout with fastener-receiving apertures therethrough for aligning with mounting apertures of said panel; and
- said integral member further having at least a first connector support section extending rearwardly from said panel mounting body along a portion of which is disposed said connector and to a portion of which a shield of said connector is electrically connected,
- whereby a shielded connector is affixable to said bracket substantially without modification thereto.

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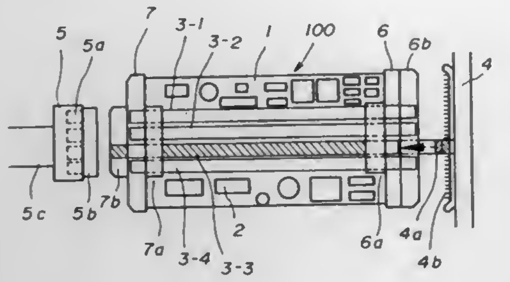
5,709,570
CABLE CONNECTING STRUCTURE

Katsumoto Takayama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 21, 1995, Ser. No. 561,428
Claims priority, application Japan, Nov. 29, 1994, 6-294291
Int. Cl.⁶ H01R *13/64*
U.S. Cl. 439—681 **9 Claims**

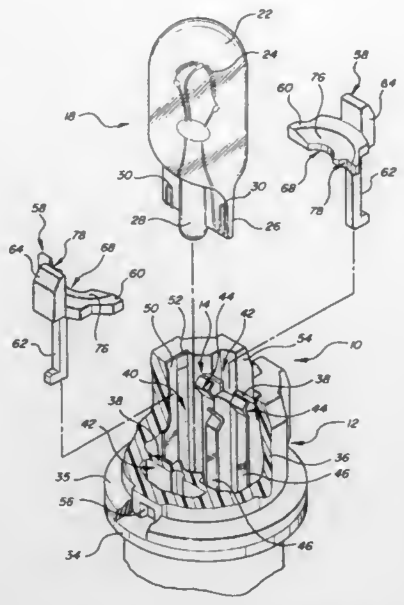


1. A cable connecting structure comprising:
a cable connector connected to a cable;
a panel selectively provided with at least one projection depending on a connecting position of said cable connector; and
a substrate assembly having first and second ends and having a plurality of movable sliders extending between the first and second ends, each of said sliders having third and fourth ends,
the third end of at least one of the sliders making contact with the projection of said panel and the fourth end thereof projecting from the first end of said substrate assembly when the second end of said substrate assembly connects to back panel,
said cable connector including:
at least one recess which receives and accommodates the fourth end of said at least one slider when said cable connector connects to the first end of said substrate assembly; and
a plurality of slide pieces which are movable between a neutral position and a projecting position, the position of said slide pieces depending on said at least one of the sliders projecting from the first end of said substrate assembly when the second end of said substrate assembly connects to said panel.

5,709,571
WEDGE-BASE LAMP SOCKET WITH TERMINAL COVER

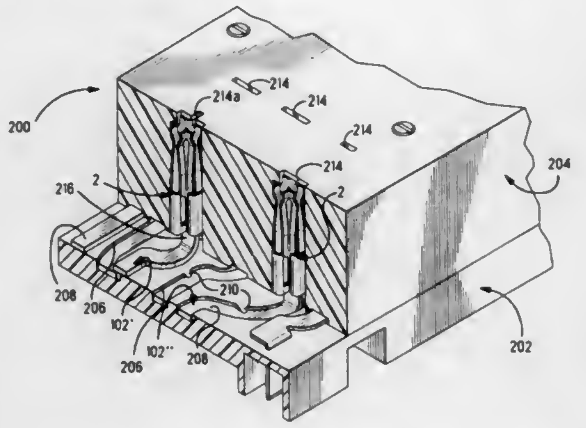
Curt M. Briski, Westland, and Mark S. Grant, Livonia, both of Mich., assignors to Yazaki Corporation, Tokyo, Japan
Filed Feb. 20, 1996, Ser. No. 603,394
Int. Cl.⁶ H01R *17/00*
U.S. Cl. 439—699.2 **12 Claims**

1. A socket for receiving and providing electrical power to a wedge-base lamp, the socket comprising:
a body having a lamp receptacle for receiving the lamp, the lamp receptacle having an insertion end;
electrical terminals disposed within the lamp receptacle and retained by the body for making electrical contact with the lamp, the terminals having ends adjacent the insertion end; and
terminal guard means separate from the body and the terminals for insertion into the lamp receptacle to a position between the insertion end and the terminal ends, whereby the guard means guides the lamp into proper contact with the terminals during insertion of the lamp into the lamp receptacle.



5,709,572
ELECTRICAL DISTRIBUTION BOX AND A METHOD OF MAKING

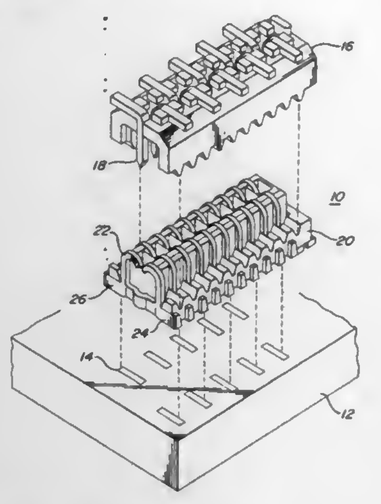
Gheorghe Hotea, Griesheim; Martin Listing, Dreieich, and Marianne Eva Modler, Erzhausen, all of Germany, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Dec. 26, 1995, Ser. No. 578,114
Claims priority, application United Kingdom, Jan. 24, 1995, 9501350
Int. Cl.⁶ H01R *11/09*
U.S. Cl. 439—723 **7 Claims**



1. An electrical distribution box comprising a box having a first outer portion and a second utter portion joined together and included therein are multiple stamped and formed circuit grids characterized in that at least one of the stamped and formed circuit grids are positively positioned and retained in the first outer portion separate from the second outer portion and at least one of the stamped and formed circuit grids are positively retained in the second outer portion separate from the first outer portion.

5,709,573
CONNECTOR FOR HIGH DENSITY ELECTRONIC ASSEMBLIES

Robert G. McClure, Lancaster, Pa., assignor to Berg Technology, Inc., Reno, Nev.
Continuation of Ser. No. 326,319, Oct. 20, 1994, Pat. No. 5,501,009. This application Mar. 15, 1996, Ser. No. 616,087
Int. Cl.⁶ H01R *13/115*
U.S. Cl. 439—857 **7 Claims**

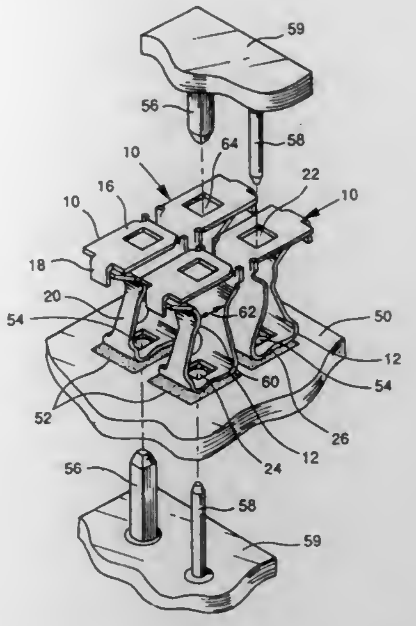


1. An electrical connector, comprising:
a housing;
a plurality of terminals secured in said housing, each of said terminals having:
a first and second base portion lying substantially in a common plane, said first base portion having a first contact beam cantilevered therefrom and lying substantially in said plane, said first contact beam having a first distal end, said second base portion having a second contact beam cantilevered therefrom and lying substantially in said plane, said second contact beam having a second distal end, wherein a gap is formed between said first and second distal ends, said first and second contact beams for receiving an electrical lead inserted in said gap such that the electrical lead contacts at least one of said distal ends for establishing electrical connection between the lead and a printed substrate; and
gap adjustment means for adjusting the size of said gap, said gap adjustment means integrally joining said first and second base portions and extending out of said plane.

5,709,574
SURFACE-MOUNTABLE SOCKET CONNECTOR

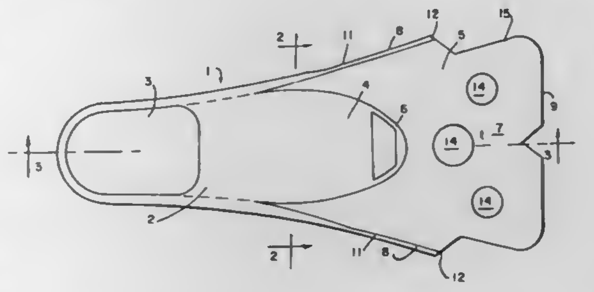
Giuseppe Bianca, Escondido, and Robert M. Bogursky, Encinitas, both of Calif., assignors to Autosplice Systems Inc., San Diego, Calif.
Filed Aug. 30, 1996, Ser. No. 705,667
Int. Cl.⁶ H01R *11/22*
U.S. Cl. 439—858 **7 Claims**

1. In combination;
a substrate having an electrical part, and
a socket connector surface mounted and soldered on the substrate and electrically connected to the electrical part, said socket connector comprising:
(a) a generally U-shaped member having spaced generally parallel legs and a bight portion,
(b) each of said legs having a hole for receiving a projecting member,
(c) one of said legs forming a first base portion for vertical mounting and soldering of the socket connector on the substrate,
(d) the bight portion forming a second base portion for horizontal mounting and soldering of the socket connector on the substrate, said socket connector being surface mounted and soldered on the substrate at its one leg or at its bight portion.
(e) a spring contact member mounted to one of the legs and positioned opposite the bight portion for contacting a projecting member when inserted into one of the holes.



5,709,575
PRACTICE SWIM FIN WITH PERFORATIONS

Irving Betrock, 14001 E. Palomino Dr., Fort Lauderdale, Fla. 33330
Filed Feb. 25, 1997, Ser. No. 805,765
Int. Cl.⁶ A63B *31/08*
U.S. Cl. 441—64 **3 Claims**



1. A practice fin for swimming comprising:
a foot section having a heel portion and a toe portion and means for retaining a user's foot to the fin;
a blade section attached to the foot section at the toe portion and extending outward therefrom a distance of from about two inches to about five inches, the blade section having opposed side edges, a free end, opposed broad faces, a distal blade area, and a plurality of apertures extending between the broad faces in the distal blade area outward of the toe portion, the apertures substantially reducing the hydrodynamic resistance of the distal blade area and increasing the flexibility of the distal blade area and in which the blade section is provided with marginal stiffening ridges along the opposed side edges, the ridges extending from the toe portion to a point before the aperatures.

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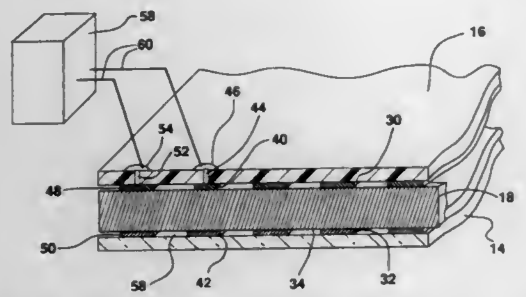
5,709,576
LCD CONNECTOR ALIGNMENT WITH PRINTED WIRING BOARD

Raymond Lippmann, Ann Arbor; Michael John Schnars, Clarkston; James Edward Nelson, North Branch; Mark James Miller, Grand Blanc; Gerard Arnold Streelman, and Victor David Kruppa, both of Flint, all of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 1, 1996, Ser. No. 617,706

Int. Cl.^{6} H01J *9/42*

U.S. Cl. 445—3 **15 Claims**



9. In the assembling of a liquid crystal display (LCD) having a plurality of spaced terminal pads to a printed wiring board (PWB) having corresponding terminal pads with an elastomeric connector having parallel conductive paths extending between LCD pads and PWB pads, a method of determining alignment of the terminal pads with the conductive paths comprising the steps of:
- forming sense pads on the LCD and the PWB, the sense pads being configured to define a predetermined relationship with the conductive paths when properly assembled;
- assembling the LCD, the elastomeric connector and the PWB in a stack with the LCD terminal pads approximately aligned with corresponding PWB pads; and
- testing for circuit continuity between the sense pads on the LCD and the PWB to determine terminal pad and connector alignment, whereby a closed circuit between corresponding sense pads is an indication of whether corresponding terminal pads are properly interconnected.

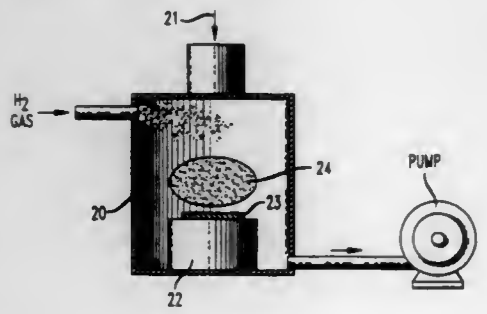
5,709,577
METHOD OF MAKING FIELD EMISSION DEVICES EMPLOYING ULTRA-FINE DIAMOND PARTICLE EMITTERS

Sungho Jin, Millington; Gregory Peter Kochanski, Dunellen, and Wei Zhu, North Plainfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 361,616

Int. Cl.^{6} H01J *1/30*

U.S. Cl. 445—24 **12 Claims**



1. A method for making an electron field emission device comprising the steps of:
- providing a substrate;
- adhering to said substrate diamond particles having maximum dimensions in the range of 5–10,000 nm;
- exposing said diamond particles to a gas mixture containing activated hydrogen at a temperature in excess of 300° C.; and

disposing an electrode adjacent said diamond particles.

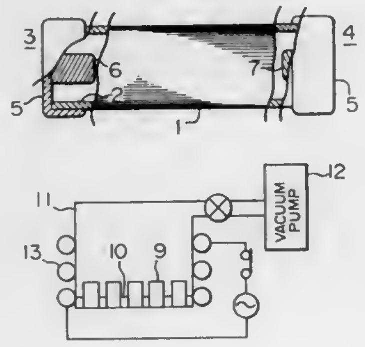
5,709,578
PROCESS OF MAKING COLD CATHODE FLUORESCENT TUBE

Masao Hatsutori, Daito, and Masaharu Nishida, Kadoma, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan Division of Ser. No. 266,113, Jun. 27, 1994, which is a continuation of Ser. No. 881,794, May 12, 1992, abandoned. This application Nov. 19, 1996, Ser. No. 752,284

Claims priority, application Japan, May 16, 1991, 3-111615

Int. Cl.^{6} H01J *9/00*

U.S. Cl. 445—26 **45 Claims**



1. A method of making a cold cathode fluorescent discharge tube having a cathode and an anode, said anode comprising a mercury discharge structure for discharging mercury within said discharge tube, said mercury discharge structure comprising a mercury alloy obtained by combining a metal sintered body with mercury, said method comprising:
- (a) forming said metal sintered body by sintering powder of one kind or a plurality of kinds of metals combinable with said mercury into a desired shape which is predetermined according to a state of use of said anode, which results in a determination of a shape of said anode;
- (b) combining said mercury with said metal sintered body which is sintered into said desired shape so as to provide said mercury alloy;
- said mercury alloy being formed to have said desired shape of said metal sintered body when said metal sintered body and said mercury are combined with each other; and
- (c) sealing said mercury alloy thus formed within said discharge tube for use as said mercury discharge structure.

5,709,579
ELECTROSTATIC CHARGER AND PROCESS THEREFOR

Hang-ku Ji, Kyonggi-do, and Young-man Kim, Seoul, both of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyonggi-do, Rep. of Korea

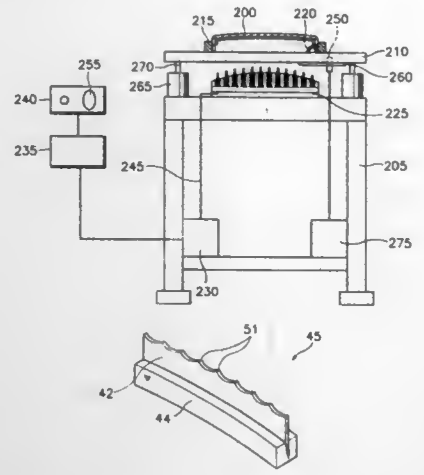
Filed Dec. 11, 1995, Ser. No. 570,483

Claims priority, application Rep. of Korea, Dec. 14, 1994, 94-34218

Int. Cl.^{6} H01J *9/227*

U.S. Cl. 445—52 **8 Claims**

1. An electrostatic charging apparatus for electrostatically charging an inside surface of a screen panel of a color cathode ray tube in preparation for receipt of powdery phosphor by electrical attraction to the screen panel, comprising a corona charger for electrostatically charging said inside surface, a stand frame for supporting said corona charger, a mounting means for supporting said screen panel with a display effective part of said inside surface being wholly exposed to and displaced from said corona charger, and a power supply for supplying a high voltage to said corona charger, said corona charger comprising a convex surface with a plurality of uniformly distributed charging electrodes.



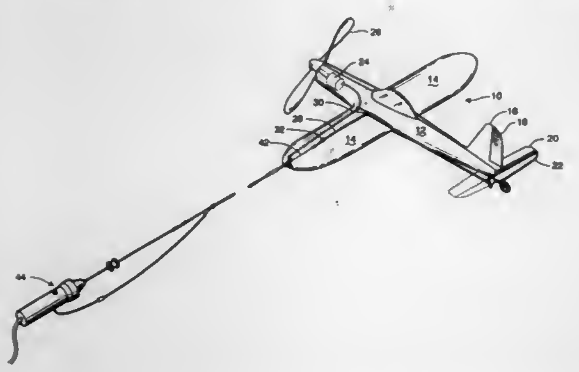
5,709,580
CONTROL AND POWER MECHANISM FOR MODEL AIRCRAFT

Victor Stanzel, 1102 Lyons Ave., Schulenberg, Tex. 78956

Filed May 28, 1996, Ser. No. 654,300

Int. Cl.^{6} A63H *27/04*

U.S. Cl. 446—31 **18 Claims**



1. In a self-propelled model aircraft of the type including a fuselage, a wing and at least one movable control surface wherein attitude control of the aircraft is accomplished by means of movement of said control surface on the raft, the improvement which comprises:
- a control device on said aircraft adapted for controlling movement of said control surface;
- a torsion member adapted to twist proportionally along its longitudinal axis in response to an imposed torsional loading, said torsion member having one end nonrotatably attached to one of said fuselage and said wing of said aircraft and the other end adapted to be nonrotatably attached to means for transmitting torsional loading to said torsion member; and
- tubular shaft means disposed in surrounding relationship to a portion of said torsion member and in proximity to said aircraft, said tubular shaft means being nonrotatably attached at its end nearest said aircraft to said control device and being nonrotatably attached at its other end to said torsion member,
- whereby torsion forces transmitted to said torsion member will cause proportional twisting along the longitudinal axis of said torsion member and rotation of said tubular shaft and said control device, for controlling movement of said control surface.

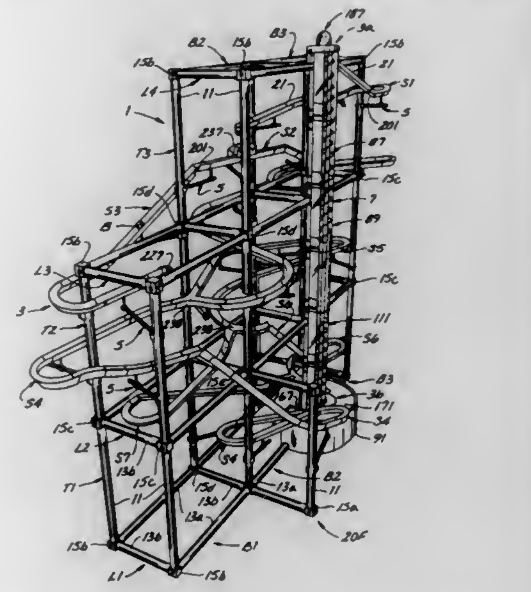
5,709,581
KINETIC TOY

James N. Rothbarth, St. Louis, Mo., and Alex Kinming Lee, Hong Kong, Hong Kong, assignors to Chaos, L.L.C., St. Louis, Mo.

Filed Sep. 24, 1996, Ser. No. 719,951

Int. Cl.^{6} A63H *29/08*

U.S. Cl. 446—171 **16 Claims**



1. A kinetic toy of the rolling-ball type constructed of a plurality of individual parts comprising:
- a frame comprising a plurality of frame members and connectors interconnecting ends of the frame members, said frame members and connectors being constructed for quick assembly thereof, said frame being adapted to stand upright on a generally horizontal supporting surface;
- a trackway for the ball supported by the frame for travel of the ball by rolling down the trackway from an elevated position at an upper level with respect to the frame to a terminal position at a lower level with respect to the frame, said trackway comprising a plurality of individual track members assembled end-to-end and constructed for quick assembly end-to-end;
- means supported by selected frame members for supporting the trackway for the travel of the ball, said means being constructed for quick assembly with said selected frame members, and said track members being constructed for quick assembly of selected track members with said trackway supporting means; and
- an elevator assembled with said frame having components constructed for quick assembly with selected members of the frame, said elevator having a lower end positioned at said terminal position for receiving the ball after its descent down the trackway and an upper end at said elevated position for raising the ball to said elevated position for ensuing travel of the ball down said trackway;
- and means for driving said elevator.

5,709,582
INFANT STIMULUS TOY APPARATUS

Teresa Hohol O'Donnell, 12 Morningside Dr., Billerica, Mass. 01821-1448

Filed Jun. 17, 1996, Ser. No. 666,656

Int. Cl.^{6} A63H *33/00*

U.S. Cl. 446—227 **17 Claims**

1. A toy apparatus, comprising:
- a back housing portion,
- a structure connector assembly connected to said back housing portion,

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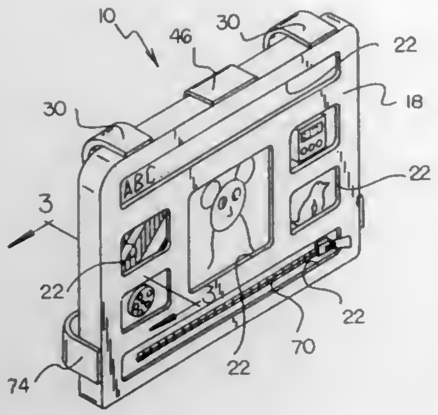
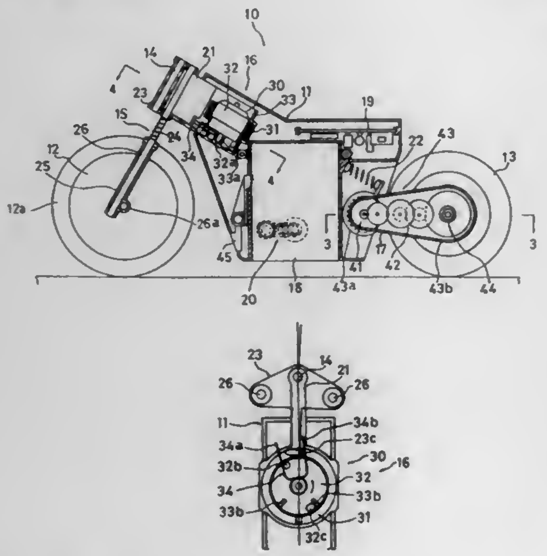


- a plurality of item retainers connected to said back housing portion,
- a plurality of items retained in said item retainers, and
- a front housing portion which includes a housing connector for connecting said front housing portion to said back housing portion, wherein said front housing portion includes a plurality of windows which are placed in registration with said items when said front housing portion and said back housing portion are closed with respect to each other, and
- a housing lock assembly, connected between said back housing portion and said front housing portion, for keeping said back housing portion and said front housing portion closed with respect to each other.

5,709,583
STEERING SYSTEM FOR RADIO-CONTROLLED WHEELED VEHICLE TOY

Shohei Suto, Tokyo, Japan, and Jonathan Adam Jaffe, Voorhees, N.J., assignors to Tyco Industries, Inc., Mount Laurel, N.J.

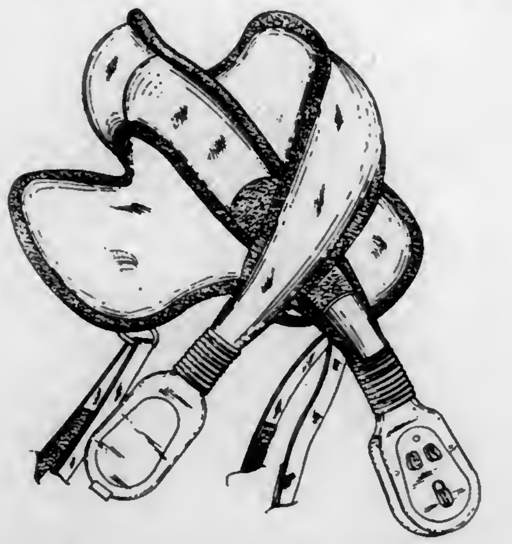
Filed Jun. 7, 1995, Ser. No. 484,867
Claims priority, application Japan, Jul. 27, 1994, 6-193787
Int. Cl.^{6} A63H *17/21*
U.S. Cl. 446—440 **16 Claims**



1. A radio-controlled wheeled vehicle toy comprising:
- a generally longitudinal vehicle body frame;
- a caster axle mounted on a front end of the vehicle body frame and tilted backward from vertical;
- a front fork rotatable on the caster axle and rotatably supporting a front vehicle wheel, said front fork having a centered position, allowing the vehicle to travel straight;
- a rear-wheel drive drivingly coupled with a rear vehicle wheel;
- a radio-control receiver and an electric power source both mounted to the vehicle body frame; and
- a steering system mounted in a front-end portion of the vehicle body frame and having:
  - a steering mechanism which produces a force to rotate the front fork based on a control signal issued from the receiver; and
  - a resilient mechanism which resiliently applies the steering mechanism force as a control torque to the front fork, forcing the front fork from its centered position to turn the vehicle.

5,709,584
PARTIALLY WRAPPED CONFETTI

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837
Continuation-in-part of Ser. No. 273,115, Jul. 11, 1994, Pat. No. 5,531,628, and a continuation-in-part of Ser. No. 557,293, Nov. 14, 1995, Pat. No. 5,624,295. This application Jun. 25, 1996, Ser. No. 668,302
Int. Cl.^{6} A63H *37/00*
U.S. Cl. 446—475 **20 Claims**



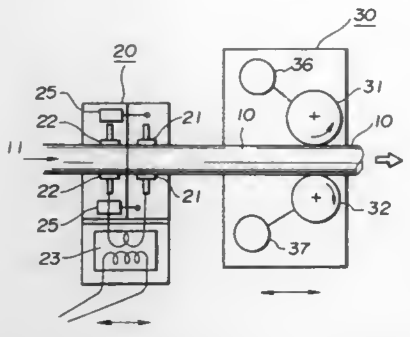
1. A partially wrapped stack of confetti comprising:
- (a) a large plurality of pieces of confetti, each of said pieces of confetti having a length;
- (b) said large plurality of pieces of confetti being arranged in a stack with said lengths parallel to each other;
- (c) a wrapper extending partially about said stack; and
- (d) some of said pieces of confetti being composed of tissue paper and some of said pieces of confetti being composed of plastic film.

5,709,585
METHOD AND APPARATUS FOR REMOVING BURRS FROM JOINED BILLETS IN A CONTINUOUS ROLLING PROCESS

Giichi Matsuo; Nobuyoshi Hamura; Susumu Okawa; Hidenori Anai; Akira Sakai; Soichi Aoyama; Koji Okushima; Yuki Sugawara; Bunnosuke Ushioda, and Yuji Watanabe, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Aug. 26, 1996, Ser. No. 703,396
Claims priority, application Japan, Aug. 31, 1995, 7-223146; Aug. 31, 1995, 7-223401; Sep. 21, 1995, 7-243313; Oct. 31, 1995, 7-282916; Oct. 31, 1995, 7-282917
Int. Cl.^{6} B24B *49/00;51/00*
U.S. Cl. 451—5 **18 Claims**

1. A method for removing burrs in a continuous rolling process, comprising the steps of:



- joining a rear end of a preceding moving billet with a front end of a succeeding moving billet using a flash butt welding method while both billets are moving in a travelling direction, to thereby form a welded part at a joined portion where the preceding and succeeding billets are joined; and
- grinding a burr on the welded part of the joined portion using a plurality of grinders while the billets are moving in said travelling direction and while rotating the grinders and moving the grinders synchronously with the travelling speed of the billets.

5,709,586
HONED MANDREL

Gary J. Maier, Webster, and William G. Herbert, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

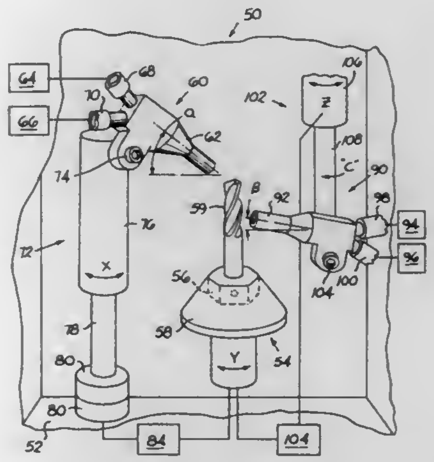
Filed May 8, 1995, Ser. No. 436,755
Int. Cl.^{6} B24B *1/00;7/19;7/30*
U.S. Cl. 451—28 **7 Claims**

1. A method for fabricating an electroform having a roughened surface, comprising:
- roughening a surface of a mandrel having a chromium deposit thereon by sandblasting the surface of the mandrel creating protuberances and pits thereon;
- plating the surface of the mandrel with a layer of material having a thickness ranging from about 10 microns to about 70 microns forming an initial roughened surface electroform to facilitate distribution of toner particles between developing and an imaging surface; and
- separating said roughened surface electroform from said roughened mandrel surface.

5,709,587
METHOD AND APPARATUS FOR HONING AN ELONGATE ROTARY TOOL

William R. Shaffer, Greensburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Mar. 25, 1996, Ser. No. 620,820
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—38 **21 Claims**

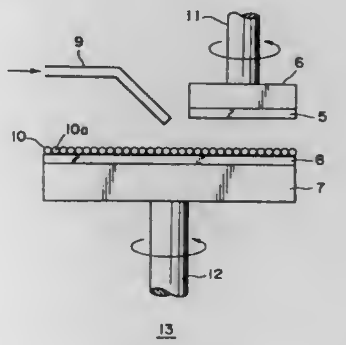


1. A method of treating at least one elongate rotary tool that has at least one nose portion that presents at least one sharp cutting edge and an elongate portion that presents at least one other sharp cutting edge, the method comprising the steps of:
- emitting under pressure from a nozzle assembly an abrasive fluid stream comprising at least one abrasive entrained in at least one liquid; and
- impinging the abrasive fluid stream against the sharp cutting edges of the elongate rotary tool for a preselected time so as to transform the sharp cutting edges into relatively uniformly honed edges.

5,709,588
POLISHING SLURRY AND POLISHING PROCESS USING THE SAME

Masakazu Muroyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1996, Ser. No. 709,824
Claims priority, application Japan, Sep. 20, 1995, 7-241929
Int. Cl.^{6} B24B *1/00;7/19;7/30*
U.S. Cl. 451—41 **8 Claims**



1. A polishing slurry used for a process of polishing a workpiece by bringing said workpiece in sliding-contact with a polishing plate supplied with said slurry, said slurry comprising polishing particles treated with a surface finishing agent having at least a carboxyl group containing material, an amino group containing material, and a sulfonic acid group containing material.

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5,709,589

HARDWOOD FLOOR FINISHING PROCESS

Charles Daniel Boone, 1046 Plainfield Ave., Orange Park, Fla. 32073

Filed Mar. 29, 1996, Ser. No. 623,885
Int. Cl.^{6} B24B *1/00*

U.S. Cl. 451—54 **11 Claims**

1. In a process for finishing hardwood flooring including sanding, scraping, and screening the flooring with abrasive materials down to about 100 mesh in size followed by the application of a water-based sealer to produce a pre-finished flooring having places of roughness and raised grain; the improvement which comprises:

(a) hand rubbing the pre-finished flooring with 120–150 grit sandpaper at all places of roughness and raised grain and removing all debris produced in this step;
(b) simultaneously buffing and sanding the flooring of step (a) with a rotating substantially circular buffing pad having adhered to a planar buffing face thereof a general diametric strip being about 10–25% of the diameter of the pad and removing all debris produced in this step;
(c) buffing the flooring of step (b) with a buffing pad unmodified with sandpaper, and vacuuming the buffed flooring to remove substantially all debris and dust produced in this step;
(d) applying to the buffed flooring of step (c) a coat of a water-based finish and allowing it to dry;
(e) hand rubbing the dried flooring of step (d) with 150–180 grit sandpaper at all places of roughness and raised grain;
(f) applying to the flooring of step (e) a rotating buffing pad having adhered to the buffing face thereof a diametric strip of non-loading sandpaper of 150–180 grit the width of the strip being about 10–25% of the diameter of the pad; and
(g) repeat steps (c) and (d) to the flooring of step (f).

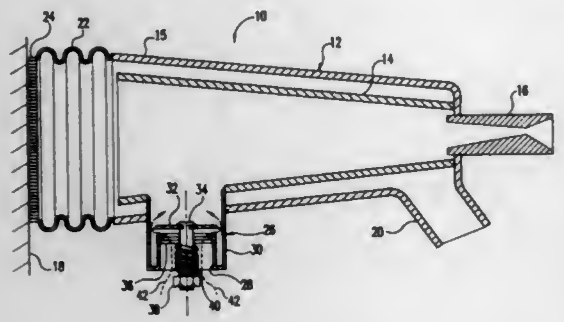
5,709,590

PRESSURE-BALANCED VACUUM BLAST HEAD

William S. McPhee, Arlington, and Anh Nguyen, Herndon, both of Va., assignors to LTC Americas Inc., Sterling, Va.

Filed Oct. 13, 1995, Ser. No. 543,143
Int. Cl.^{6} B24C *5/04*

U.S. Cl. 451—87 **8 Claims**



1. A blast head for a vacuum-blasting machine, comprising:

a body having an interior and an open end;
means for sending abrasive particles under pressure through said body toward said open end;
means for maintaining the interior of said body under a vacuum; and
means for limiting the vacuum in said body, said limiting means comprising means for conducting ambient air into said body,
wherein said conducting means comprises a valve having an inlet and an outlet, said valve being openable by a first difference in pressure from said inlet to said outlet.

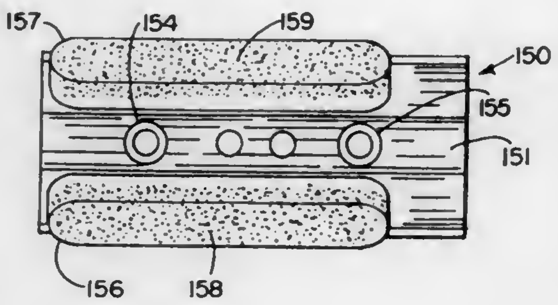
5,709,591

UNITARY MOLDED HONING TOOL

R. Brown Warner, Westlake, and Joseph P. Gaser, Euclid, both of Ohio, assignors to Jason, Inc., Cleveland, Ohio

Division of Ser. No. 90,770, Jul. 13, 1993. This application Jul. 7, 1995, Ser. No. 499,678
Int. Cl.^{6} B24B *33/02*

U.S. Cl. 451—180 **17 Claims**



1. A honing tool comprising a molded block of plastic material, said block being formed with a rectangular base and a somewhat smaller projecting portion forming a generally rectangular working face, said base including means to secure said block to a honing machine head for rotation and axial reciprocation, and abrasive material embedded in said block homogeneously.

5,709,592

Patent Not Issued For This Number

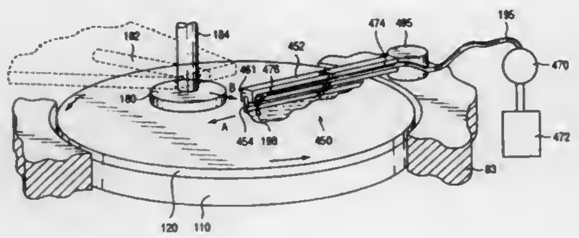
5,709,593

APPARATUS AND METHOD FOR DISTRIBUTION OF SLURRY IN A CHEMICAL MECHANICAL POLISHING SYSTEM

William L. Guthrie, Saratoga; Semyon Spektor, San Francisco; Ivan A. Ocanada, Modesto, and Norm Shendon, San Carlos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Oct. 27, 1995, Ser. No. 549,481
Int. Cl.^{6} B24B *5/00*

U.S. Cl. 451—287 **10 Claims**



1. A chemical mechanical polishing apparatus, comprising:

a rotating polishing pad;
a dispenser for providing a slurry to a surface of said polishing pad; and
a flexible member disposed above said surface of said polishing pad and positioned so that, as said slurry passes beneath said flexible member, a bottom edge of said flexible member contacts said slurry and distributes it as a substantially uniform film across said surface of said polishing pad.

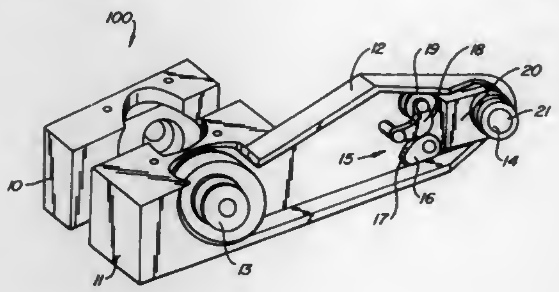
5,709,594

PORTABLE MOTOR OR ENGINE-DRIVEN CUTTING-OFF MACHINE

Hans-Jürgen Körner, Lüneburg, and Wolfgang Jaensch, Tremsbüttel, both of Germany, assignors to Dolmar GmbH, Hamburg, Germany

Continuation of Ser. No. 510,982, Aug. 3, 1995, abandoned. This application Dec. 6, 1996, Ser. No. 761,683
Claims priority, application Germany, Aug. 4, 1994, 9412558 U
Int. Cl.^{6} B24B *47/02*

U.S. Cl. 451—344 **10 Claims**



1. A portable cutting machine comprising:

first and second, spaced, power transmission shafts drivingly coupled to each other, the first shaft adapted for coupling to a motor;
a cutting tool coupled to the second transmission shaft such that rotation of the first shaft by the motor rotates the second shaft and the cutting tool therewith;
an integral, single-piece housing having a base portion and an arm extending therefrom, the first shaft being coupled to the base portion and the second shaft being coupled to the arm; and
wherein the second shaft defines a central bore, the machine further comprising a pin extending into the bore and non-rotatably coupled to the second shaft and the cutting tool for rotating the cutting tool with the first shaft.

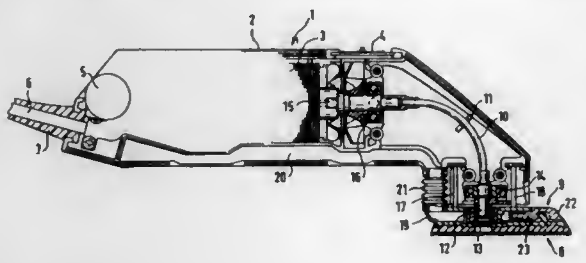
5,709,595

POWER TOOL FOR SURFACE TREATMENT

Joao Bergner, Leonberg, and Steffen Wuensch, Holzgerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 191,002, Feb. 3, 1994, Pat. No. 5,626,510. This application Dec. 20, 1996, Ser. No. 771,803
Claims priority, application Germany, Apr. 2, 1993, 43 03 044.0
Int. Cl.^{6} B24B *23/00*

U.S. Cl. 451—356 **6 Claims**



1. A power tool for surface treatment comprising:

(a) a housing;
(b) a motor mounted in the housing;
(c) a tool holder mounted by the housing for oscillating motion;
(d) drive means in the housing connecting said motor with said tool holder for imparting powered oscillating motion to the latter;
(e) a control button mounted by said tool holder for sliding movement between first and second positions, said control button having a latch formation thereon;
(f) biasing means carried by the tool holder and engaged with said control button for urging the same outwardly of the tool holder and toward said first position;
(g) at least one fixed formation on said tool holder in spaced relationship with said control button; and
(h) a polygonally shaped grinding disc plate having connecting means on one face thereof for detachable engagement with cooperating connecting means formed on one face of a grinding sheet, said disc plate having a first formation and at least one second formation on a face thereof opposite said one face, said first formation and said at least one second formation being configured for detachable interengagement with said latch formation and said at least one fixed formation, respectively, whereupon manual movement of said control button from said first position toward said second position serves to disengage said latch formation from said first formation to permit detachment of the grinding disc plate from the tool holder.

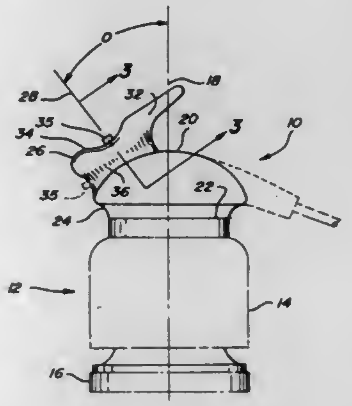
5,709,596

ERGONOMICALLY PROFILED HAND GRIP FOR A HAND-HELD TOOL HAVING A PIVOTABLE POMMEL

David Charles Alexander, and Robert Bruce Rummer, both of Auburn, Ala., assignors to Ryobi North America, Easley, S.C.

Filed Jan. 22, 1996, Ser. No. 589,410
Int. Cl.^{6} B24B *23/04*

U.S. Cl. 451—357 **20 Claims**



1. An ergonomically profiled hand grip for a hand-held device comprising:

a top surface provided at one end of the hand-held device contoured to mate with the palm of a user's hand, said top surface having a base, a periphery, and an axis normal to said base;
a fingertip recess provided about the periphery of the base intermediate said top surface and the hand-held device; and
a pommel attached to said top surface, said pommel having a centerline angularly disposed relative to said axis of said base, said pommel sized to be received with comfort between the thumb and index finger of a user of the hand-held device, wherein said centerline is angular disposed relative to said axis at an angle between 15° and 60°.

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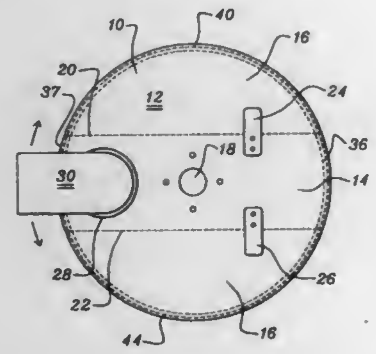
5,709,597

PIVOTAL VACUUM SHIELD FOR AN ABRADING DEVICE

Andreas I. Sarantitis, 327 Lilac La., Carlstdt, N.J. 07072
Filed Nov. 21, 1995, Ser. No. 561,427
Int. Cl.^{6} B24B *55/06*
U.S. Cl. 451—456 **11 Claims**



1. A system for the removal of particles resultant of the operation of an abrading device upon a non-uniform surface, the system comprising:

(a) a general planar top housing mountable between a motor of said abrading device and an abrading element thereof, said housing comprising at least an upper, a middle and a lower surface, said middle surface including a first opening therein, through which a power shaft providing mechanical communication between said motor and said abrading element can pass, each of said upper and lower surfaces secured, on a separate downwardly biased pivot axis to respectively opposite sides of said middle surface, for independent angular movement relative to a transverse axis defined by said power shaft, said middle surface also including a second opening for connection to a vacuum hose coupling;

(b) first and second continuous flexible skirts depending from an entire length of each opposite non-hinged edge of said middle segment;

(c) a third continuous skirt depending from an entire length of a non-hinged edge of said upper surface; and

(d) a fourth continuous flexible skirt depending from an entire length of a non-hinged edge of said lower surface, a combination of all of said flexible skirts mechanically and pneumatically surrounding said abrading element of the abrading device,

whereby irregularities of a work surface to be abraded will be substantially conformed to by said skirts and by a pivotally downwardly biased relationship of said respective upper and lower surfaces to said middle surface of said top housing.

5,709,598

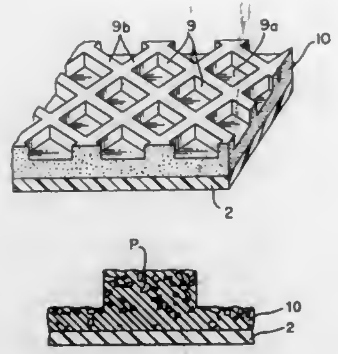
ABRASIVE TAPE AND METHOD OF PRODUCING THE SAME

Toshikazu Nishio; Hiroyuki Amemiya; Yasuo Nakai; Taiji Ishii, and Masahisa Yamaguchi, all of Tokyo-To, Japan, assignors to DAI Nippon Printing Co., Ltd., Japan
PCT No. PCT/JP93/00743, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/27787, PCT Pub. Date Dec. 8, 1994
PCT Filed Jun. 2, 1993, Ser. No. 379,459
Int. Cl.^{6} B24D *11/00*
U.S. Cl. 451—530 **6 Claims**

1. An abrasive tape comprising:

a film substrate; and

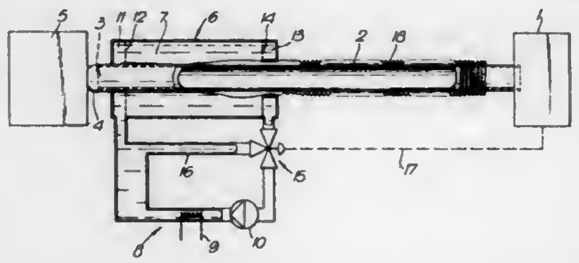
a polishing layer laminated on one surface of said film substrate and having an outer surface provided with a plurality of recessed parts, said polishing layer comprising a binder of a crosslinked resin and particles of an abrasive material dispersed in the binder in such a manner that said particles have a density that increases continuously and gradually in a direction away from said film substrate.



5,709,599

METHOD FOR MAKING HEAT-SHRINKABLE TUBULAR FILM MATERIAL

Knud Erik Christensen, Copenhagen, Denmark, assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Continuation of Ser. No. 971,698, Nov. 4, 1992, abandoned, which is a continuation of Ser. No. 805,242, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 527,686, May 17, 1990, abandoned, which is a continuation of Ser. No. 403,242, Sep. 1, 1989, abandoned, which is a continuation of Ser. No. 94,182, Sep. 8, 1987, abandoned. This application Sep. 16, 1996, Ser. No. 714,631
Claims priority, application United Kingdom, Sep. 17, 1986, 8622332
Int. Cl.^{6} A22C *11/00;13/00*
U.S. Cl. 452—34 **1 Claim**

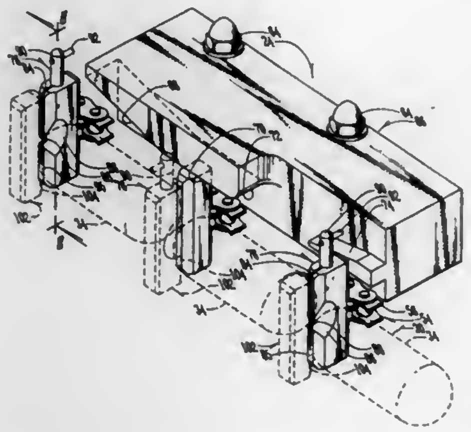


1. A method of making a package of tubular film material useful for stuffing with a meat emulsion, comprising the steps of forming a heat-shrinkable tubular film material, and partially shrinking the tubular film material, uniformly and not locally at one part of said tubular film material, onto a tubular stuffing horn, the external diameter of said horn comprising a mandrel, to alter the tubular film material's calibre while controlling the shrink conditions of the tubular film material, thereby achieving a desired modified calibre that is the same calibre throughout the tubular film material, wherein the tubular film material is manufactured without partial recovery of its shrink potential, wherein the partial shrinking occurs as the tubular film material is being advanced from a shirred stick over the mandrel, and wherein the partially shrunk tubular film material is straight and in contact with an outlet portion of said mandrel to thereby prevent air from entering into the package through the area between the inside of the casing and the external surface of the stuffing horn.

5,709,600

METHOD AND MEANS FOR LINKING AND THEN SEPARATING ENCASED SAUSAGE

Liansuo Xie, Ankeny, Iowa; Theo R. Bruinsma, Alphen aan de Rijn, Netherlands, and David L. McClung, Des Moines, Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa
Filed Mar. 27, 1996, Ser. No. 623,339
Int. Cl.^{6} A22C *11/00*
U.S. Cl. 452—49 **20 Claims**



1. A machine for linking and separating encased sausages, comprising,

a frame,

a meat extrusion assembly on said frame for extruding meat emulsion into an elongated casing tube to create a sausage rope, and means for rotating said sausage rope,

a linking and link cutting assembly on said frame located downstream from said meat extrusion assembly, and comprising a pair of continuous elongated carrier chains rotatably mounted on said frame so that a portion of each carrier chain can move horizontally longitudinally in spaced parallel relationship to a like portion of the other carrier chain,

means on said frame for rotating said carrier chains in a horizontal plane,

linking elements on said carrier chains to form spaced links with twists therebetween on said rope,

block elements mounted on said carrier chains which are equally spaced so that block elements on each carrier chain will register with each other along the portions of the carrier chains that move longitudinally and parallel to each other to abut each other at said twists in said rope, and

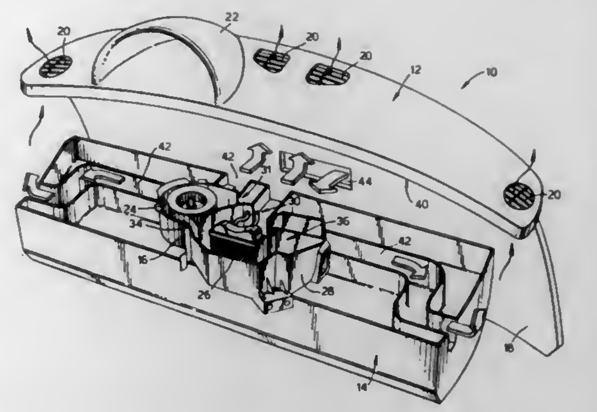
a link cutter on said frame and being movable with at least one block element of one pair of registering block elements, said link cutter including a cam-operated cutting blade vertically movable with respect to said horizontal plane, and a cam element on said frame for engaging said cutting blade to cut said sausage rope at one of said twists between said registered block elements while said registered block elements are being moved by said carrier chains.

5,709,601

DASHBOARD ASSEMBLY

Thomas Heck, Mainz, Germany, assignor to Delphi Automotive Systems Deutschland GmbH, Wuppertal, Germany
Filed Jun. 16, 1996, Ser. No. 664,723
Int. Cl.^{6} B60H *1/26*
U.S. Cl. 454—121 **7 Claims**

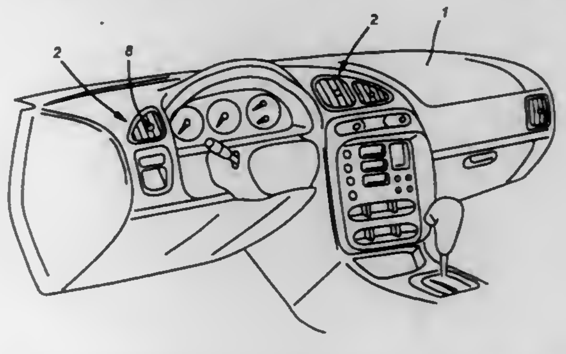
1. A dashboard assembly comprising a first housing portion for positioning adjacent a windscreen of a motor vehicle; a second housing portion secured to the first portion; and an air blower system mounted between the first and second portions, the air blower system having a blower inlet and a blower outlet; one or more air outlets formed in the first portion; one or more open-sided channels integrally formed in the first portion or the second portion for directing air from the blower outlet to the air outlet or outlets, the open side of the channel or channels being closed on securing the first portion to the second portion; and an air inlet duct for directing air to the blower inlet.



5,709,602

CONSTRUCTION OF AIR CONDITIONING LOUVER

Mitsuhiro Onodera, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Shizuoka-ken, Japan
Continuation of Ser. No. 365,496, Dec. 28, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 695,973
Claims priority, application Japan, Jan. 17, 1994, 6-002998
Int. Cl.^{6} B60H *1/34;* **F24F** *13/14*
U.S. Cl. 454—155 **1 Claim**



1. An air conditioner louver having a body in which the air inflow side and the air blowout side communicate with one another, comprising:

a plurality of rotatable fins for regulating air blowout flow direction,

a plurality of rotatable shafts in said louvered body, each of said fins being disposed on one of said rotating shafts in said louvered body, wherein said body is a cylindrical section having upstream and downstream ends and upper and lower portions, said upper portion, on its upstream end, overhanging the lower portion on its upstream end, said shafts being progressively vertically offset from one another;

wherein each of said fins include two end portions, each of said end portions having a flat blade shape, said end portions of each fin intersecting at a position near the rotating shaft and said end portions of each fin being disposed at an angle to one another, the distance measured from the free end of one end portion of each fin to the free end of the other end portion of each fin is less than the combined lengths of said end portions of each fin;

each of said fins tapering in thickness as it extends outwardly away from the shaft to its end portion, all of said fins being disposed in said body between said upper and lower portions and each of said fins being oriented similarly to each of the other fins; and

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each of said fins having an operation angle, which is the angle formed by one end portion of said fin and the air inflow direction, each of said fins having a blowout angle which is the angle between the air inflow direction and the other end portion of said fin, said fins being shaped so that said fins may be rotated to a position wherein their operation angle is smaller than their blowout angle, one of said end portions of each fin being parallel to an end portion of the other fin, said end portions have upper and lower surfaces, the angle between the lower surface of an upstream end portion of one fin and the upper surface of the upstream end portion of the adjacent fin is less than the angle between the upper surfaces of the end portions of each fin.

5,709,603

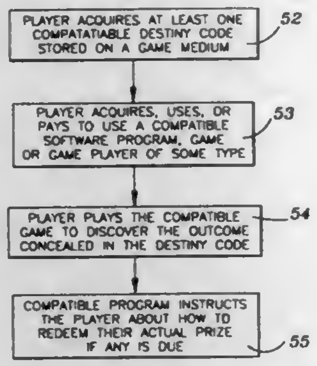
PERSONAL COMPUTER LOTTERY GAME

Perry Kaye, 12696 Northwest 11th Ct., Sunrise, Fla. 33323

Continuation-in-part of Ser. No. 418,011, Apr. 6, 1995, Pat. No. 5,569,082. This application Oct. 25, 1996, Ser. No. 738,317

Int. Cl.^{6} A63F *1/00;* A63B *71/00*

U.S. Cl. 463—17 **17 Claims**


PLAYER ACQUIRES AT LEAST ONE COMPATATIABLE DESTINY CODE STORED ON A GAME MEDIUM
52
PLAYER ACQUIRES, USES, OR PAYS TO USE A COMPATIBLE SOFTWARE PROGRAM, GAME OR GAME PLAYER OF SOME TYPE
53
PLAYER PLAYS THE COMPATIBLE GAME TO DISCOVER THE OUTCOME CONCEALED IN THE DESTINY CODE
54
COMPATIBLE PROGRAM INSTRUCTS THE PLAYER ABOUT HOW TO REDEEM THEIR ACTUAL PRIZE IF ANY IS DUE
55

1. A method for playing a lottery type game comprising the steps of:

acquiring by a player a gaming piece, the gaming piece including a code which includes data indicating whether the player wins or loses the lottery type game and an amusement game, the data being unrecognizable to the player, such that the player does not know whether the player will win or lose the games prior to play of the amusement game;

reading the code by a processor;

the processor generating the amusement game on a display for play by the player;

the processor controlling whether the player will win or lose the amusement game based upon the code; and

providing on the display an indication to the player of the amusement game win or game loss based upon the code.

5,709,604

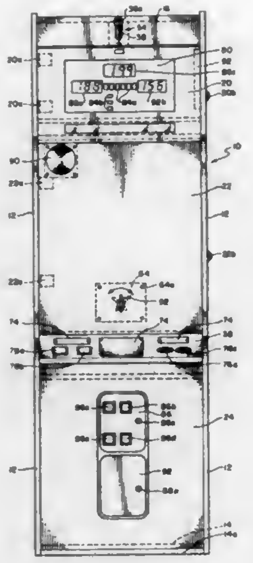
RING-SWING SKILL GAME

David K. Coats, 220 E. Flamingo, Las Vegas, Nev. 89109, and Marvin Richey, 745 Yacht Harbor, Las Vegas, Nev. 89128

Filed Jan. 16, 1996, Ser. No. 585,495

Int. Cl.^{6} A63B *67/06;67/10*

U.S. Cl. 463—23 **19 Claims**



1. In a ring-swing skill game for one or more players comprising an upright game console having a front game play side, a rotatable target hook projecting from the front game play side of said console, a boom projecting forwardly from the upper portion of the front game play side of said console, an elongated flexible member suspended from the outer free end of said boom, and a ring affixed to the lower free end of said flexible member for swinging movement toward said game console by one or more players during game play to attain hooking engagement of said ring with said target hook, the improvement comprising:

a) an electrically powered programmable computer board including electronic game scoring circuitry located within said console and electrically interconnected to said ring through said boom and said flexible member and said hook for detecting and recording ring contacts with, and ring catches by, said hook as scoring events during ring-swing game play;

b) electronic game score display means located on the front game play side of said console and interconnected to said computer board for indicating numeric score values to said one or more players during game play; and

c) means electrically interconnected to said computer board for rotating said hook from a pre-game position with the hook opening of said hook in a fixed vertical downward orientation to a first skill level position during game play with said hook opening in a fixed vertical upward ring catch orientation.

5,709,605

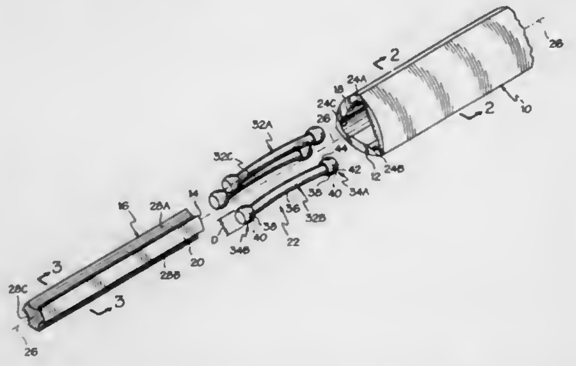
SHAFT COUPLING

Richard Kremer Riefe; James Richard Salois, both of Saginaw, and Donald Henry Masbue, Midland, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1996, Ser. No. 773,245

Int. Cl.^{6} F16D *3/52*

U.S. Cl. 464—83 **2 Claims**



1. A shaft coupling between a first shaft having an inside wall and a second shaft telescopically overlapping an end of said first shaft and having an outside wall facing said inside wall of said first shaft comprising:

a plurality of concave inside linear grooves in said inside wall of said first shaft parallel to a longitudinal centerline of said shaft coupling arrayed evenly around said longitudinal centerline of said shaft coupling,

a plurality of concave outside linear grooves in said outside wall of said second shaft parallel to said longitudinal centerline of said shaft coupling arrayed evenly around said longitudinal centerline of said shaft coupling,

said outside linear grooves facing said inside linear grooves and cooperating therewith in defining a plurality of linear cylindrical passages between said first shaft and said second shaft parallel to said longitudinal centerline of said shaft coupling arrayed evenly around said longitudinal centerline of said shaft coupling,

a pair of barrel-shaped lugs in each of said linear cylindrical passages each made of an elastomeric material having a low coefficient of sliding friction and having a convex surface of revolution about a centerline of said barrel-shaped lug defining an outside surface thereof bearing tangentially against corresponding ones of said inside linear grooves and said outside linear grooves and operative to couple together said first shaft and said second shaft for unitary rotation about said longitudinal centerline of said shaft coupling and for relative linear translation in the direction of said longitudinal centerline of said shaft coupling, and

a integral beam spring integral with and between each pair of said barrel-shaped lugs, said beam spring being made of said elastomeric material and resiliently tipping each of said barrel-shaped lugs endwise to eliminate dimensional clearance between each of said barrel-shaped lugs and corresponding ones of said inside linear grooves and said outside linear grooves.

5,709,606

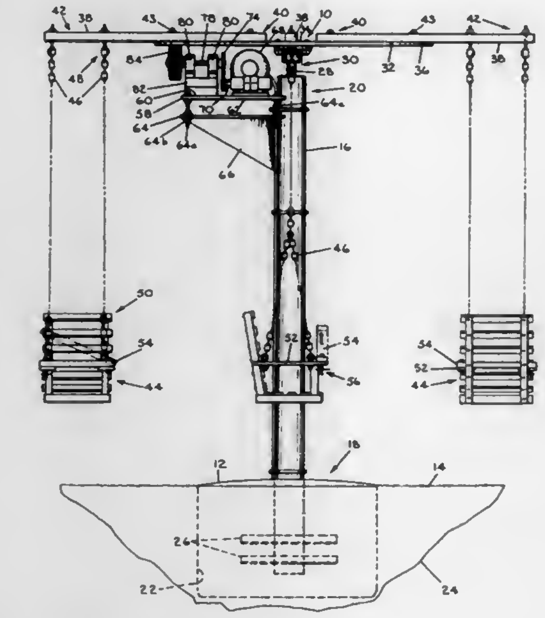
ROTATABLE SWING SET

Richard Eugene Ehrman, 141 McLafferty Rd., Fenelton, Pa. 16034

Filed Mar. 20, 1996, Ser. No. 619,964

Int. Cl.^{6} A63G *1/10*

U.S. Cl. 472—29 **2 Claims**



1. A rotatable swing set, comprising:

a main support post;

a shaft disposed within and concentric to the support post and having an upper end projecting above the main support post;

a circular plate mounted to the upper end of the shaft for selective rotation about the shaft;

a support plate secured to the main support post beneath the circular plate;

a drive motor mounted on the support plate and having a rotatable shaft;

a drive wheel mounted on the rotatable shaft and which frictionally engages and turns against the circular plate when the drive motor is actuated thereby causing the circular plate to rotate;

the support plate capable of selective adjustment upwardly toward the circular plate or downwardly away from the circular plate in order to vary the frictional resistance of the wheel against the plate;

a plurality of arms mounted to and projecting radially outward from the circular plate and which rotate concomitant with the rotation of the circular plate;

a plurality of swings attached to the arms with at least one swing attached to each respective arm; and

on/off control means spaced from the main support post for selectively actuating the drive motor.

5,709,607

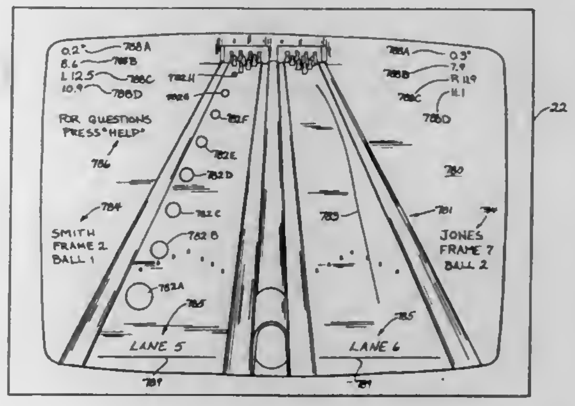
AUTOMATIC BOWLING CENTER SYSTEM

David L. Mowers, Muskegon, Mich.; David J. Mueller, Naperville, Ill.; Gerald Apffel Pierce, Redwood City, and David C. Wyland, San Jose, both of Calif., assignors to Brunswick Bowling & Billiards Corp., Muskegon, Mich.

Continuation of Ser. No. 177,610, Jan. 5, 1994, Pat. No. 5,446,894, which is a continuation of Ser. No. 962,492, Nov. 23, 1993, Pat. No. 5,450,318, which is a continuation of Ser. No. 724,793, Jul. 2, 1991, Pat. No. 5,255,185, which is a division of Ser. No. 182,977, Apr. 18, 1988, Pat. No. 5,101,354. This application May 24, 1995, Ser. No. 449,498

Int. Cl.^{6} A63D *5/04*

U.S. Cl. 473—58 **9 Claims**



1. A trajectory display system operable to display discrete positions of an object moving in a continuous path comprising:

a control unit including a processor in communication with a display device, an operator input device and a memory means for storing data, said data including a program to operate said processor;

means for generating discrete trajectory data representing a path of movement of an object;

means coupled to said generating means for transmitting said trajectory data to said control unit for storage in said memory means; and

means coupled to said memory means and responsive to a user request at said operator input device for generating a display signal in accordance with said stored discrete trajectory data to convey information relating to the path of movement of the object for display on said display device.

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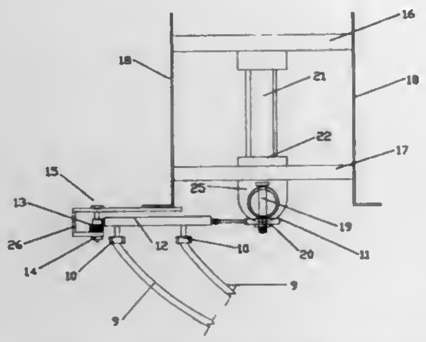
5,709,608
AIR-OPERATED RUDDER ASSEMBLY FOR A BOWLING PIN SETTER

George David Koury, Show Low, Ariz., assignor to George D. Koury, Show Low, Ariz.

Filed Oct. 21, 1996, Ser. No. 734,199
Int. Cl.⁶ A63D *5/02*

U.S. Cl. 473—99 **1 Claim**

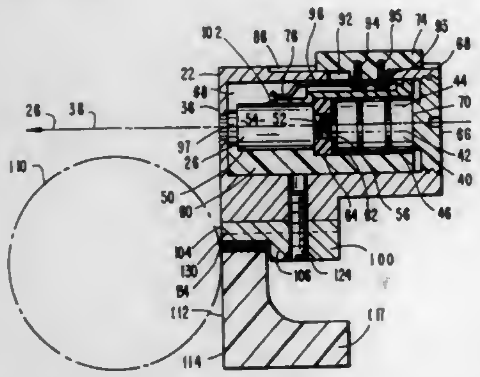


1. In combination with an automatic pinsetter of the type having an oscillating rudder, an air-operated rudder assembly comprising a substrate having a motor assembly which operates a cam, said cam contacting an air switch to activate said assembly, air lines connecting said air switch to an air cylinder which has a mounting means at one end and a means for mounting another end to said rudder whereby said assembly produces oscillating lateral energy to the rudder arm with a more than one second delay to facilitate bowling pin removal and bowling ball access in the elevator area.

5,709,609
TRAINING APPARATUS FOR GOLFERS

William P. Carney, 4 High Ridge La., Oyster Bay, N.Y. 11771
Continuation-in-part of Ser. No. 543,442, Oct. 16, 1995, Pat. No. 5,611,739. This application Dec. 14, 1995, Ser. No. 572,867
Int. Cl.⁶ A63B *69/36*

U.S. Cl. 473—220 **22 Claims**



1. A self-contained laser device removably affixed on selected golf apparatus, said laser device comprising:

a laser housing having a bore in which a laser module is mounted such that said laser module emits a laser beam through an opening in said bore coincident with the axis of said bore;

means within said bore for activating said laser module;

a support member having an upper and a lower portion;

said lower portion including means for removably affixing and aligning said support member on said selected golf apparatus; and

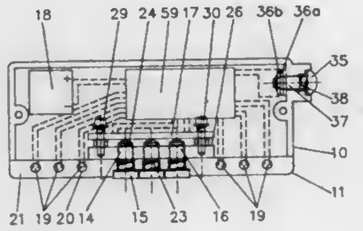
said upper portion including means for removably affixing and aligning said laser housing on said support member such that when said laser device is removably affixed to said selected golf apparatus said laser beam is emitted in a predetermined optimum direction with respect to said select golf apparatus.

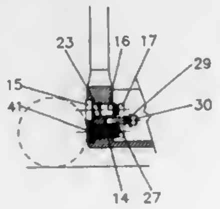
5,709,610
GOLF CLUB/BALL IMPACT DETECTION SYSTEM

Zivota Ognjanovic, 35920 42nd St. E., Palmdale, Calif. 93552

Filed Nov. 29, 1996, Ser. No. 758,550
Int. Cl.⁶ A63B *69/36*

U.S. Cl. 473—223 **9 Claims**





1. A golf club/ball impact detection system contained within a conventional golf club head for golf practice and playing comprising:

a plurality of push button members located on a golf club face, each having a head portion and a shaft portion, said head portion fitted with a partially relaxed coiled spring arranged to urge said push button member head portion slightly above said club face surface area, and said shaft portion, provided with a tightly adhering safety ring to prevent said push button member escape after depression release, said shaft portion having a proximal end tip, that, upon said push button member depression will impact on an adjustable electrical conducting board;

a plurality of apertures, arranged as coaxial counterbores, first sized to slidingly receive said push button member head portion and then narrowed to slidingly receive said push button member shaft portion; said push button member head portion downward motion limited by a ledge defined by the first coaxial counterbore,

a partially relaxed coiled spring acting in cooperation with said push button member shaft portion distal end urging said push button member head portion slightly above said club surface;

an adjustable electrical conducting board spaced from a golf club head top wall by screw means, at a distance slightly below said push button member's shaft portion end tip, said electrical conducting board sandwiched between screw associated coiled springs to allow conducting board flexibility and screw associated energy absorbing spacers that act to absorb excess golf club/ball impact force;

electrical conducting means arranged so that said push button member depression by a golf club/ball impact results in said shaft portion end tip impingement on said conducting board to complete an electrical circuit thereby illuminating associated light emitting diodes (LEDs) to signal golf club/ball impact position to a golfer; and

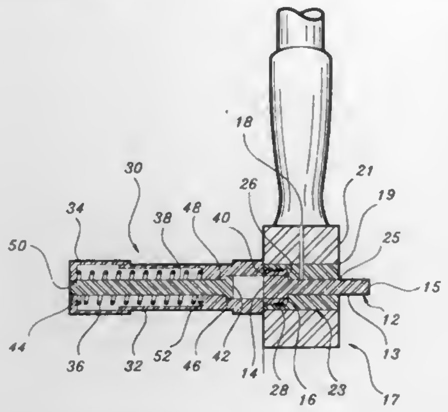
a plurality of said LEDs located within a plurality of circular openings in a golf club face front wall top ridge, facing and visible to a practicing and playing golfer.

5,709,611
GOLF CLUB ALIGNMENT DEVICE

Dominic T. Intag, 4811 S. Lindbergh Blvd., St. Louis, Mo. 63126

Filed Mar. 10, 1997, Ser. No. 813,447
Int. Cl.⁶ A63B *69/36*

U.S. Cl. 473—236 **7 Claims**



1. A retractable golf club alignment device for properly aligning a golf club head, said golf club head having a club face with a sweet spot and a hole through said club face and through said golf club head, with a golf ball comprising:

an extension pin of substantially cylindrical shape having a first end, a second end, and a shaft, said first end having a golf ball contacting portion and said second end having a pin head of moderately larger diameter than said shaft and connected via said shaft to said first end, said pin head forming a shoulder where it is connected with said shaft; and

a pin bearing of substantially tubular shape adapted to be frictionally inserted within said hole of said golf club head, said pin bearing having a bearing hole of slightly larger diameter than said shaft of said extension pin, said bearing hole having a counterbored portion adapted to be opposite said club face and of larger diameter than said pin head which forms a seat; and

said shaft of said extension pin floatingly held within said bearing hole whereby said golf ball contacting portion and a substantial portion of said shaft of said extension pin are protrudable from said club face and said extension pin is capable of substantially retracting when contacted with said golf ball thereby allowing said extension pin to be used as an aid when optimally aligning said golf club head and said golf ball; and

said shoulder of said pin head optimally limiting the protrusion of said first end of said extension pin from said club face by contacting said seat when said first end of said extension pin is inserted into said bearing hole opposite said club face; and

a pin extender unit having an extender unit housing, a pin extender cap, an extender spring, and a pusher rod;

said pusher rod having a first end and a second end connected via a substantially cylindrical member, said second end having a pusher head of moderately larger diameter than said substantially cylindrical member; and

said extender unit housing being of substantially tubular form and having a first end, a second end, an inside, and an outside, said inside of greater diameter than said substantially cylindrical member of said pusher rod;

said inside of said first end of said extender unit housing having a counterbored portion with sufficient depth and sufficient diameter that a portion of said extender spring may fit within said inside of said first end, and said inside of said second end having a counterbored portion with a diameter at least as large as said pusher head of said second end of said pusher rod and with a depth such that said counterbored portion of said first end is not contacted with said counterbored portion of said second end; and

said pin extender cap being of substantially cylindrical cup shape and having an interior, an exterior, an open end and a substantially closed end, said interior portion of said open end having a diameter at least as large as said outside of said extender unit housing of substantially tubular form; and

said extender spring inserted into said inside of said first end of said extender unit housing and said interior of said open end of said pin extender cap inserted over said extender spring and said first end of said extender unit housing;

said first end of said pusher rod inserted into said inside and through said counterbored portion of said second end of said extender unit housing through said extender spring and rigidly attached to the interior portion of said substantially closed end of said pin extender cap, thereby comprising said extender spring and causing said pusher head of said second end of said pusher rod to fully retract within said counterbored portion of said second end of said extender unit housing; and

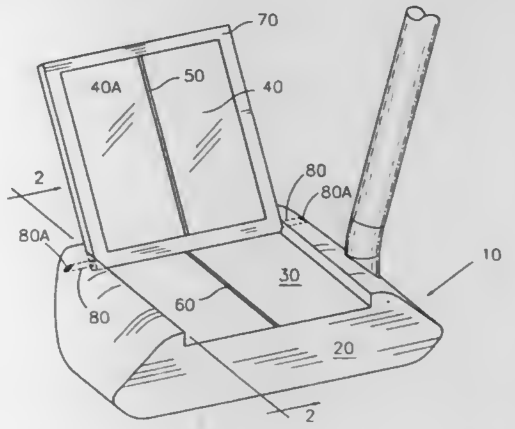
said second end of said extender unit housing rigidly attached to said counterbored portion of said pin bearing and substantially centered and aligned with said bearing hole whereby said pin extender cap may be pushed to force said pusher head of said pusher rod to contact said pin head of said extension pin and thereby cause said contacting portion of said extension pin to extend from said club face.

5,709,612
GOLF PUTTING DEVICE

Raymond Anthony Salado, 1703 W. Ave. K-12, Lancaster, Calif. 93534

Filed Nov. 13, 1996, Ser. No. 748,098
Int. Cl.⁶ A63B *69/36*

U.S. Cl. 473—240 **5 Claims**



1. A golf putting device for use in aiming a putt of a golf ball over a putting surface toward a target, the device comprising:

a putting head providing a planar striking surface, the striking surface being oriented generally in the vertical when the device is held in readiness for striking the golf ball, and a planar top surface, the top surface being oriented generally in the horizontal when the device is held in readiness for striking the golf ball;

a planar mirror rotatably supported on the planar top surface and rotatable to an angle so that the golf ball and the target are visible in the mirror from above the device and further rotatable to a horizontal position, wherein a mirror surface of the mirror lies in contact with the top surface of the putting head;

a first linear indicia on the mirror surface of the mirror;

a second linear indicia on the top surface;

the first and second linear indicia being positioned so that with the mirror rotated to the angle for viewing the target, the first and second linear indicia are colinearly aligned in the mirror and are alignable with the golf ball and, further, with the target when the device is correctly aimed for striking the golf ball toward the target.

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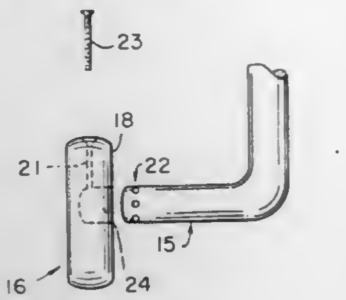
5,709,613
ADJUSTABLE BACK-SHAFT GOLF PUTTER

Dennis R. Sheraw, 1244 Queen Cross Street, St. Croix, Virgin Islands (U.S.), 00820

Filed Jun. 12, 1996, Ser. No. 662,878

Int. Cl.^{6} A63B *53/06*

U.S. Cl. 473—248 **23 Claims**



1. An adjustable golf putter comprising:
an elongated linear shaft;
a putter head having a top surface, a from surface defining a substantially planar surface for contacting a golf ball, a rear surface opposed to said front surface, a recess in said rear surface and a threaded bore for accommodating a threaded screw extending downward through said putter head from said top surface into said recess; and
a substantially L-shaped bosel having a first end for attachment to said shaft along a substantially vertical axis and a second end for attachment to said rear surface of said putter head along a substantially horizontal axis, said second end of said hosel comprising a plurality of holes about its circumference for receiving said threaded screw; and
weight means removably mounted on said rear surface of said putter head for adjusting the weight and balance of said golf putter:
whereby said hosel can be rotated about said substantially horizontal axis within said recess in said putter head to set said attached shaft at a desired angle from vertical and said screw can be threaded into said threaded bore and inserted into one of said holes in said hosel to set said hosel within said recess and said attached shaft at said desired angle from vertical.

5,709,614
GOLF CLUB HEAD AND METHOD OF MANUFACTURING THE SAME

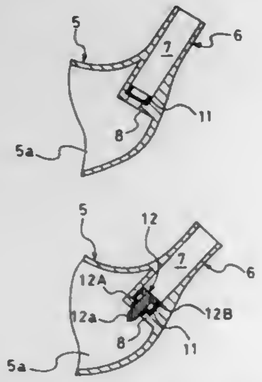
Toshihiro Horiba, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1996, Ser. No. 708,410

Claims priority, application Japan, Sep. 7, 1995, 7-230145

Int. Cl.^{6} A63B *53/02*

U.S. Cl. 473—305 **14 Claims**



1. In a golf club head having a metal club head body formed of at least two separate metal members that have been secured together by welding and having a hollow interior and a through hole therein in a heel side portion of the body that communicates with said hollow interior and into which is to be fixed a golf club shaft, the improvement comprising a separate plug member located in a lower end portion of the shaft-fixing hole that closes off the hole from the hollow interior of the club head body.

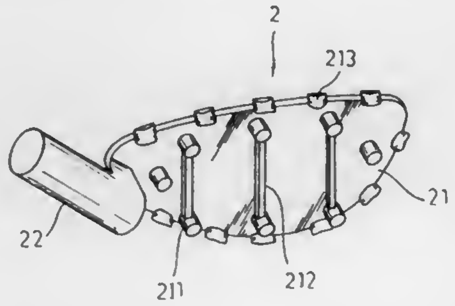
5,709,615
GOLF CLUB HEAD WITH A HITTING FACE PLATE AND A CLUB NECK WHICH ARE INTEGRALLY FORMED WITH EACH OTHER AND FORMING METHOD THEREFOR

Long-Cherng Liang, No. 26, Lane 82, Chung-Cheng Rd., Ta-Liao Hsiang, Kaohsiung Hsien, Taiwan

Filed Jan. 29, 1997, Ser. No. 790,525

Int. Cl.^{6} A63B *53/04;* **B22D** *19/00*

U.S. Cl. 473—324 **6 Claims**



3. A golf club head comprising:
a hitting face plate made of copper and having a rear face integrally formed with a plurality of insert posts projecting rearward therefrom, each of said posts having an inner end integrally formed with said hitting face plate, and an enlarged outer end;
a club neck integrally formed with said hitting face plate; and
a club head body molded over said hitting face plate and said club neck and being made of a metal which has a melting point lower than that of copper, said posts being embedded in said club head body.

5,709,616
GROOVE CONFIGURATION FOR A PUTTER TYPE GOLF CLUB HEAD

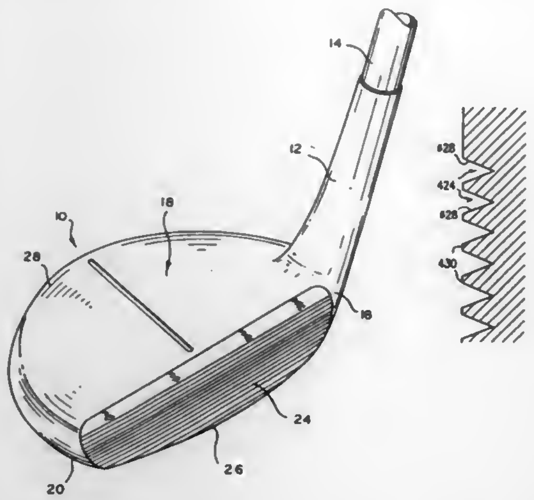
Guerin D. Rife, 1310 S. Pennsylvania Ave., Winter Park, Fla. 32789

Filed May 31, 1996, Ser. No. 655,827

Int. Cl.^{6} A63B *53/04*

U.S. Cl. 473—330 **18 Claims**

1. A putter type golf club head, including a club head body with a heel, toe, a planar ball striking face, upper surface and bottom surface, wherein the improvement comprises:
a series of grooves formed in said planar ball striking face, said grooves having a common size and configuration defining outermost ball gripping edges which form a ball striking surface on said planar ball striking face;
each of said grooves extending in a heel to toe direction; each of said grooves being positioned immediately adjacent another corresponding groove; said outermost ball gripping edges of a groove being common to immediately adjacent grooves on either side thereof; and said outermost ball gripping edges each having a width less than the width of a groove at the ball striking surface said grooves being further defined by a pair of groove wall surfaces being symmetrical to each other; said wall surfaces being identical in size and shape.



5,709,617
WOOD TYPE GOLF CLUB HEAD

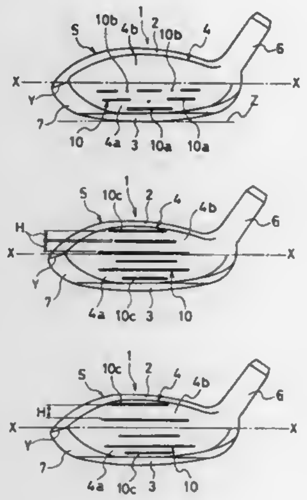
Toshinori Nishimura, and Masahiko Miyamoto, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1996, Ser. No. 686,033

Claims priority, application Japan, Jul. 27, 1995, 7-192043; Aug. 10, 1995, 7-204778

Int. Cl.^{6} A63B *53/04*

U.S. Cl. 473—330 **21 Claims**



1. In a wood type golf club head having a club head body, said body having a toe side, a heel side, a crown on an upper side, a sole on a lower side and a face with a loft angle on a front side thereof, said face having a convex shape with a predetermined radius of curvature in a vertical direction with a plurality of grooves disposed in rows on said face and extending from the toe side to the heel side of said body, the improvement comprising rows of grooves disposed essentially only on a lower side portion of said face while an upper side portion of said face is essentially smooth, said lower side portion lying below and said upper side portion lying above a center line X—X on the face of the club head body that is in a plane coincident with the center of gravity of the club head body and parallel to a horizontal plane Z—Z coincident with the sole of the club head body.

5,709,618
GOLF BALL

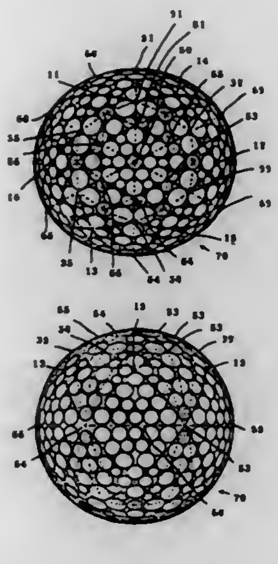
In Hong Hwang, Seoul, Rep. of Korea, assignor to Ilya Co. Ltd., Seoul, Rep. of Korea

Filed Feb. 27, 1997, Ser. No. 807,174

Claims priority, application Rep. of Korea, Apr. 12, 1996, 96-10980

Int. Cl.^{6} A63B *37/14*

U.S. Cl. 473—382 **11 Claims**



1. A golf ball having a spherical surface with a plurality of dimples, the dimples being arranged by dividing the spherical surface of the golf ball by great circles to form an octahedron, making the center of a spherical triangle in the said octahedron as a pole, dividing again the said sphere's surface by great circles to form a new octahedron at the position turning on the said pole as a center in an angle of 60 degrees, dividing again the said sphere's surface by great circles made by extending the lines connecting the adjacent midpoints of the sides of spherical triangle with a pole to one another, and dividing again the said sphere's surface by great circles made by extending the lines connecting the adjacent midpoints of the sides of spherical triangle at the position turning on the said pole as a center in an angle of 60 degrees to one another, and arranging dimples in the spherical polygons formed in dividing the said sphere's surface by great circles made by extending the lines connecting the midpoints of apices on spherical triangle with a pole as a center and the apices of spherical triangle at the position turning in an angle of 60 degrees to the pole.

5,709,619
BATTING PRACTICE DEVICE

Robert C. D'Emidio, 17 Tingley Rd., Morristown, N.J. 07960

Filed Sep. 20, 1996, Ser. No. 717,507

Int. Cl.^{6} A63B *69/40*

U.S. Cl. 473—424 **8 Claims**

1. A batting practice device comprising:
a handle body having a longitudinal axis; said body further having first and second ends and an axial bore extending therethrough;
a length of rope extending through said bore and having portion thereof extending outwardly from said body first and second ends;
a ball attached to said rope at one end thereof and the other end of said rope being spaced from said first end of said body; and manually operative means within said bore at said first end of said body for securely clasping said rope within said body to prevent movement of said rope through said bore, and for

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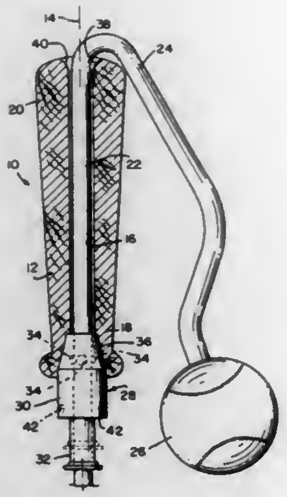
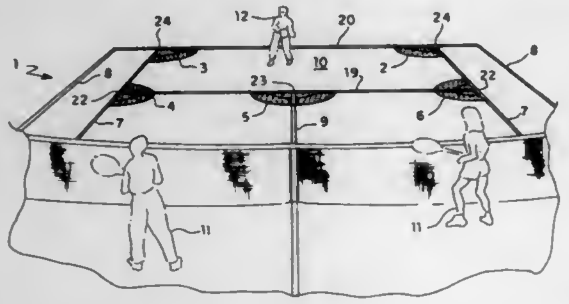


manually unclasping said rope to permit movement of said rope through said bore.

5,709,620
SPORT COURT TRAINING TARGET ASSEMBLY

Christine K. Reinprecht, 1616 Stonington Cir., North Wales, Pa. 19454
Filed Mar. 19, 1997, Ser. No. 820,043
Int. Cl.^{6} A63B *69/38*
U.S. Cl. 473—459 **19 Claims**



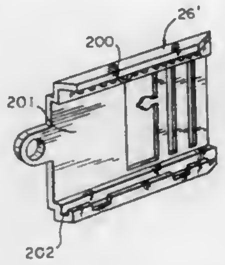
1. A sport court training target assembly for assisting in the instruction of a sport having a court or like playing surface, comprising:

a first targeting panel constructed of a sheet material, said first panel having an upper surface, a lower surface and at least two edges, one of said at least two edges being linear, and there being target indicia on said first panel upper surface, said first panel being disposed for positioning with said lower surface on a sport court at a "T"-type intersection of two lines on the sport court; and

a second targeting panel constructed of said sheet material, said second panel having an upper surface, a lower surface and at least three edges, including a first edge and a second edge which are linear and meet to form a substantially right angle, and there being target indicia on said second panel upper surface, said second panel being disposed for positioning with said lower surface on a sport court at a right angle intersection of two lines on the sport court.

5,709,621
FLAG FOOTBALL DEVICE

Porter C. Wilson, 5630 N. Via Latigo, Tucson, Ariz. 85704
Division of Ser. No. 285,453, Aug. 3, 1994, Pat. No. 5,456,462.
This application Jul. 12, 1995, Ser. No. 501,760
Int. Cl.^{6} A44B *21/00*
U.S. Cl. 473—502 **5 Claims**



1. A belt assembly, useful for attaching at least one flag to a player in a flag tag game, the belt assembly comprising:

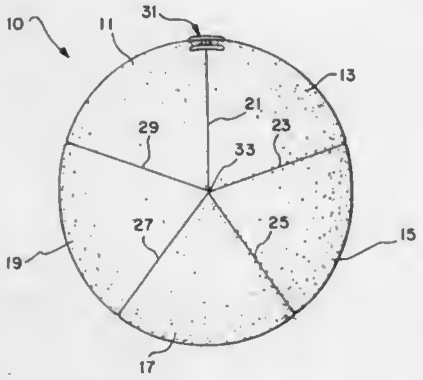
a belt having first and second ends;

a slide member having means thereon for securing the first end of the belt thereto and means for retaining lengths of the belt wrapped therearound to provide relatively large adjustments in belt length, the slide having a selected width, a first edge and a second edge with the first edge having a row of teeth therealong, and

a buckle attached to a second end of the belt, the buckle having a first edge and a second edge wherein the first edge has a row of teeth proximate thereto projecting toward the second edge and the second edge has a groove opening toward the row of teeth, the distance between the row of teeth and the bottom of the groove being substantially equal to the width of the slide wherein, when the second edge of the slide is inserted into the groove, the teeth of the slide mesh with the teeth of the buckle at a location selected by the user whereby relatively small length adjustments are made by engaging the teeth of the belt with the teeth of the slide at different locations.

5,709,622
FOOTBALL WITH ODD NUMBER OF PANELS

H. Jay Spiegel, Mount Vernon, Va., assignor to Premium Products, Inc., Mount Vernon, Va.
Filed Nov. 27, 1996, Ser. No. 753,681
Int. Cl.^{6} A63B *41/08*
U.S. Cl. 473—599 **20 Claims**



1. An oblate spheroidal football, comprising:

a) a body including an odd number of substantially identical panels connected together;

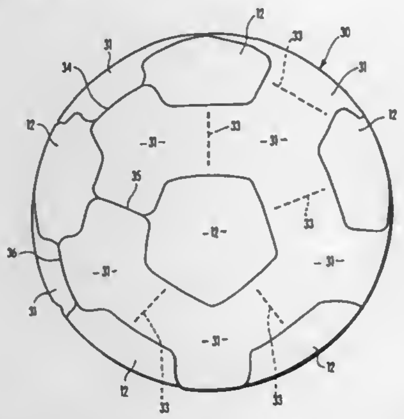
b) at least one seam interconnecting two adjacent panels and carrying laces;

c) one of said panels having an external surface diametrically opposite said laces, said external surface being devoid of a seam;

d) said football having dimensions of length, long circumference and short circumference of an American football proportional to those commonly used in official games played by American high schools, colleges and professional teams.

5,709,623
BALL CASING, IN PARTICULAR A SOCCER BALL CASING

Michael Schwaner, Bubenhofenstrasse, Germany, assignor to Uhlsport GmbH, Balingen, Germany
Filed Sep. 24, 1996, Ser. No. 718,935
Claims priority, application Germany, Nov. 7, 1995, 195 41 395.4
Int. Cl.^{6} A63B *41/00*
U.S. Cl. 473—604 **6 Claims**

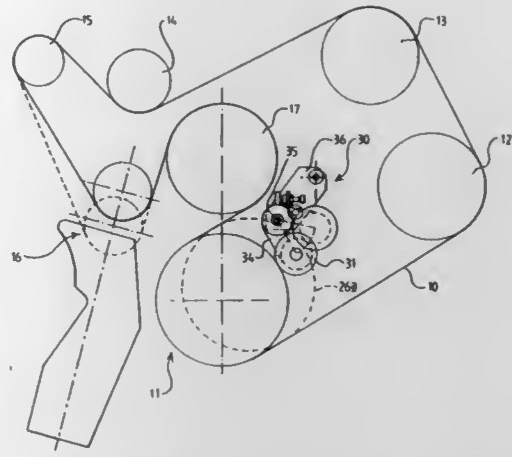


1. A ball casing, for soccer balls, composed of flat cutouts stitched together at their edges, the surface of the ball casing evincing a pattern of a group of equilateral polygonal surfaces (**12**) defining pentagonal surfaces having five edges and a group of equilateral hexagonal surfaces (**11**) with the same edge-length as that of the polygonal surfaces (**12**), each polygonal surface (**12**) being surrounded by five hexagonal surfaces (**11**), characterized in that,

a) a plurality of equilateral hexagonal surfaces (**11**) that are cohesive when in planar geometric development compose a flat, integral cutout, preferably a stamped cutout, and in that the individual polygonal parts (**12**) are stitched by all said five edges to the associated edge of the common, flat cutout(s) containing the hexagonal surface(s) (**11**).

5,709,624
VARIABLE EFFECTIVE DIAMETER PULLEY

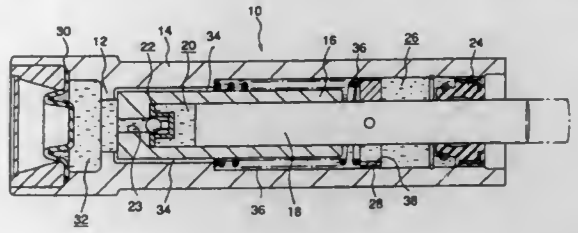
Steven Donowski, Halesowen, England, assignor to GKN Technology Limited, West Midlands, England
PCT No. PCT/GB94/01131, § 371 Date Feb. 5, 1996, § 102(e) Date Feb. 5, 1996, PCT Pub. No. WO94/29616, PCT Pub. Date Dec. 22, 1994
PCT Filed May 24, 1994, Ser. No. 553,577
Claims priority, application United Kingdom, Jun. 3, 1993, 9311499
Int. Cl.^{6} F16H *55/52*
U.S. Cl. 474—8 **19 Claims**



1. A drive arrangement including an endless flexible drive element; a first pulley with which the flexible drive element cooperates, said first pulley comprising a pair of sheave members rotatable about an axis and supported for movement relative to one another in the direction along said axis, the sheave members having generally frusto-conical driving surfaces facing one another to define a generally V-section annular groove therebetween; at least one further pulley with which the flexible drive element cooperates; a drive ring disposed between the sheave members and having an external circumferential surface engaged by the flexible drive element and further having respective side surfaces engaging said facing generally frusto-conical driving surfaces of the sheave members, the drive ring having an axis of rotation and being constrained between the sheave members and being able to assume an eccentric position relative thereto with said axis of rotation of the drive ring offset from said axis of the sheave members when permitted by the dimensions of the V-section annular groove defined between the sheave members in accordance with the relative axial position of the sheave members; and wherein there is provided stabilising means engaging the drive ring so as to maintain the axis of rotation of the drive ring at least substantially parallel to the axis of rotation of the sheave members.

5,709,625
HYDRAULIC TENSIONER

Katsuya Nakakubo, and Sumio Watanabe, both of Saitama-ken, Japan, assignors to Tsubakimoto Chain Co., Osaka-fu, Japan
Filed Apr. 26, 1996, Ser. No. 641,080
Claims priority, application Japan, Apr. 28, 1995, 7-127368
Int. Cl.^{6} F16H *7/08*
U.S. Cl. 474—110 **4 Claims**



1. A hydraulic tensioner including a cylindrical housing having an open end, a piston rod projecting axially from said open end of said housing, a seal providing a tight seal between said housing and said piston rod to seal an oil within said housing, a rod guide secured to said piston rod and slidable axially along an inside wall of said housing, and a spring disposed in a compressed condition between said housing and said rod guide to exert an axial force tending to advance said piston rod outward from said housing, characterized in that said spring is a coil spring and said rod guide has a surface held in abutment with an end convolution of said spring, said end convolution having a given radial thickness, and a radially elongated oil passage formed through said surface, said oil passage being in registry with said end convolution and extending radially beyond said given radial thickness so as to not be closed by said spring convolution.

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5,709,626

METHOD OF TRANSMITTING MOTION AND DEVICE FOR EFFECTING THE SAME

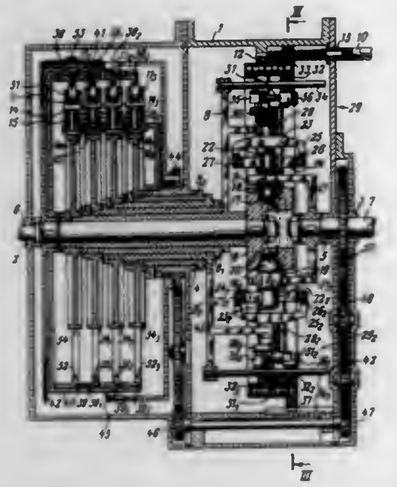
Boris Borisovich Lopatik, kv.237, korp.1126, Zelenograd, Moscow, 103460, Russian Federation

Filed Feb. 8, 1996, Ser. No. 598,358

Claims priority, application Russian Federation, Aug. 11, 1995, 95113627

Int. Cl.^{6} F16H *15/48*

U.S. Cl. 475—14 **13 Claims**



1. A device for performing a method for transmitting motion, comprising:
- a housing, said housing having coaxially rotating
- said supporting member having a stopping means capable of motion in a direction perpendicular to the direction of linear speed of said supporting member,
- at least one intermediate member in operative engagement with said driving, driven and supporting members,
- a cylindrical grooved cam connected with one of said members and a body of revolution forming with another one of said members a first rotational kinematic pair the axis of which is perpendicular to the axis of rotation of said driving member,
- a groove of said cylindrical grooved cam having peripheral surfaces each being essentially a face circular wavy surface in contact with said body of revolution,
- an axis of said cylindrical grooved cam is coaxial with the axis of rotation of said driving member,
- wherein operative engagement of said intermediate member with said driven member formed by said members being essentially a translational kinematic pair, the direction of a relative motion of said members thereof is parallel to the axis of rotation of said driven member,
- a means for regulating the ratio of a rotational speed of said driving member to the rotational speed of said driven member, said means for regulating together with said housing form a second rotational kinematic pair,
- said intermediate member having a link and a fork through which said link is installed in said supporting member for rotation relatively to two mutually supporting members for rotation relatively to two mutually perpendicular axes, one of said axes is perpendicular to the axis of rotation of said supporting member and coincident with the axis of rotation of said fork in said supporting member, other of said axes coincident with the longitudinal axis of symmetry of a slot made in said link,
- a slide block of said link presenting a body of revolution, said body of revolution forms together with said intermediate member a third rotational kinematic pair the axis of which is perpendicular to the axis of rotation of said supporting member,
- a means for rotating said fork, said fork rotating means being in operative engagement with said regulating means and said supporting member,
- said stopping means of said supporting member is in inoperative engagement with said driving and driven member.

5,709,627

DIFFERENTIAL UNIT WITH MEANS FOR MIXING AIR INTO THE HYDRAULIC ACTUATOR

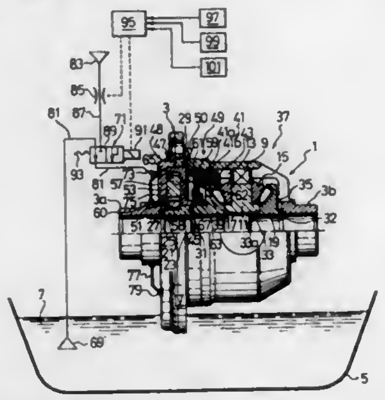
Masao Teraoka, Tochigi, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Tochigi-Ken, Japan

Filed Mar. 27, 1996, Ser. No. 623,325

Claims priority, application Japan, Mar. 28, 1995, 7-070083

Int. Cl.^{6} F16H *48/30;* **F01M** *11/18*

U.S. Cl. 475—86 **5 Claims**



1. A differential unit comprising:
- a differential case to be rotated by drive force of an engine;
- a differential mechanism for distributing rotations of said differential case to a pair of output shares;
- a frictional clutch for limiting the differential of said differential mechanism;
- a hydraulic actuator for clutching said frictional clutch;
- an oil pump which receives differential torque of said differential mechanism so as to be driven to operate said hydraulic actuator;
- a control valve for introducing air to an oil suction portion of said oil pump; and
- a controller for opening or closing said control valve to correspond to a condition under which a vehicle is driven.

5,709,628

HYDROSTATIC TRANSMISSION FOR CONSTRUCTION MACHINE

Gerd Pidde, Lindener Strasse 149a, D-44879 Bochum, and Detlef Tolksdorf, Hertzeler Strasse 29, D-45141 Essen, both of Germany

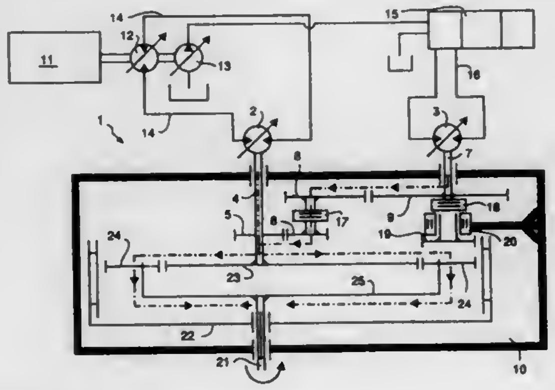
PCT No. PCT/EP95/00470, § 371 Date Mar. 18, 1996, § 102(e) Date Mar. 18, 1996, PCT Pub. No. WO95/22704, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 9, 1995, Ser. No. 619,659

Claims priority, application Germany, Feb. 16, 1994, 44 04 829.7

Int. Cl.^{6} F16H *47/02*

U.S. Cl. 475—75 **12 Claims**



1. A hydrostatic transmission comprising:
- at least one pump;

- first and second motors connected to and driven by the pump and having respective first and second motor shafts;
- a planetary-gear drive having
  - a sun gear connected permanently to the first motor shaft,
  - planet gears in mesh with the sun gear,
  - a planet carrier carrying the planet gears and forming an output, and
  - a ring gear meshing with the planet gears;
- first gearing and a first clutch connected between the motor shafts;
- a brake connected to the ring gear and actuatable to arrest same;
- a second clutch connected between the second motor shaft and the ring gear; and
- control means connected to the pump, clutches, and brake for
  - in a first range closing the first clutch, opening the second clutch, and actuating the brake for driving the sun gear with both shafts with the ring gear stopped, and
  - in a second range opening the first clutch, closing the second clutch, and releasing the brake for driving the sun gear with the one shaft and the ring gear with the other shaft.

5,709,629

METHOD AND APPARATUS FOR CONTROLLING AUTOMATIC TRANSMISSION OF A MOTOR VEHICLE

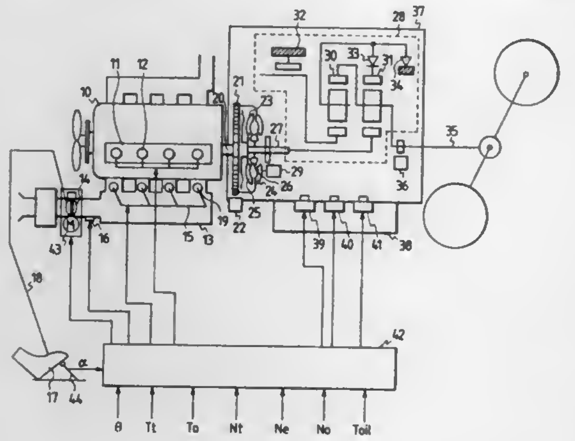
Toshimichi Minowa, Mito; Yoshiyuki Yoshida, Hitachi; Ken-Ichirou Kurata, Hitachinaka, and Tatsuya Ochi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 11, 1996, Ser. No. 630,246

Claims priority, application Japan, Apr. 10, 1995, 7-083633

Int. Cl.^{6} F16H *5/66;* **B60K** *41/18*

U.S. Cl. 477—120 **19 Claims**



1. Apparatus for controlling automatic transmission of a motor vehicle having an engine and an automatic transmission including a clutch for changing gear ratio, comprising:
- detecting means for detecting output shaft revolutions of said automatic transmission;
- means for calculating a rate of revolution change from the detected revolutions; and
- means for controlling an output shaft torque of said automatic transmission by using the calculated rate of revolution change.

5,709,630

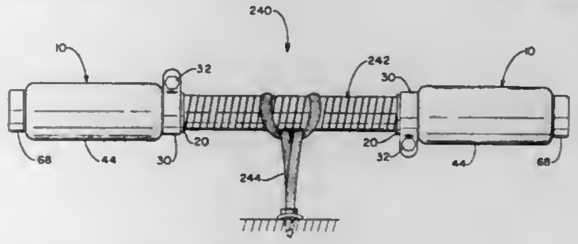
ADJUSTABLE ROTATING RESISTANCE EXERCISER DISPOSED ON A FLEXIBLE MEMBER

Thomas E. Froelich, Sr., 2332 12th St., Cuyahoga Falls, Ohio 44223, and Jeffrey T. Bertka, Cuyahoga Falls, Ohio, assignors to Thomas E. Froelich, Sr., Cuyahoga Falls, Ohio

Division of Ser. No. 589,559, Jan. 22, 1996, Pat. No. 5,634,871, which is a continuation-in-part of Ser. No. 249,958, May 27, 1994, Pat. No. 5,487,709. This application Feb. 19, 1997, Ser. No. 801,018

Int. Cl.^{6} A63B *23/14*

U.S. Cl. 482—46 **8 Claims**



1. An arm exerciser, comprising:
- a flexible member having first and second ends; and
- a rotating resistance exerciser telescopically disposed on each of the first and second ends, each of said rotating resistance exercisers having an inner collar slidingly received by said flexible member, a tubular grip handle disposed over said means for generating resistance and said inner collar, wherein said tubular grip handle rotates around said inner collar and means for adjusting said means for generating resistance, and wherein said means for adjusting is rotatably mounted to said inner collar.

5,709,631

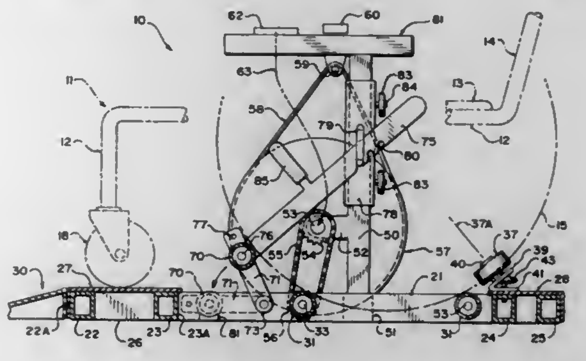
STATIONARY EXERCISE SUPPORT FOR A WHEELCHAIR

Jonathan Kleinsasser, Ste. Agathe, Canada, assignor to Crystal Spring Colony Farms Ltd., Ste. Agathe, Canada

Filed Feb. 2, 1996, Ser. No. 597,547

Int. Cl.^{6} A63B *23/02*

U.S. Cl. 482—51 **13 Claims**



1. A stationary exercise support apparatus for receiving and supporting a wheelchair and occupant for allowing the occupant of the wheelchair to exercise by propelling the wheelchair while remaining in stationary position, the wheelchair comprising a wheelchair frame, a seat mounted on the wheelchair frame, a pair of larger parallel rear wheels rotatable about a horizontal axis and a pair of smaller front castor wheels, the apparatus comprising:
- a first and a second roller, the first and second rollers each being rotatable about a respective longitudinal, horizontal axis;
- a main frame mounting the first and second rollers with the respective axes thereof in parallel spaced relation so as to receive and support the rear wheels of the wheelchair in a cradled position on the first and second rollers with the horizontal axis of rotation of the rear wheels substantially

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parallel to the axes of the first and second rollers for rotation of the rear wheels on the first and second rollers;

a guide surface on the main frame over which the rear wheels can roll to enter the cradled position;

a third roller parallel to and spaced from each of the first and second rollers and arranged to be movable relative to the first and second rollers and relative to the main frame, in a direction transverse to the axes of the first and second rollers and transverse to the horizontal axis of the rear wheels so as to change a distance of the third roller from the horizontal axis of the rear wheels, from a raised position in which the third roller cooperates with the first and second rollers to cradle the rear wheels to a lowered position in which the third roller is spaced from the rear wheels while the rear wheels are cradled by the first and second rollers allowing the rear wheels to move from the cradled position on the first and second rollers onto the guide surface;

and a resistance device for resisting rotation of at least one of the rollers so as to provide a resistance to rotation of the rear wheels against a motive force provided by the occupant.

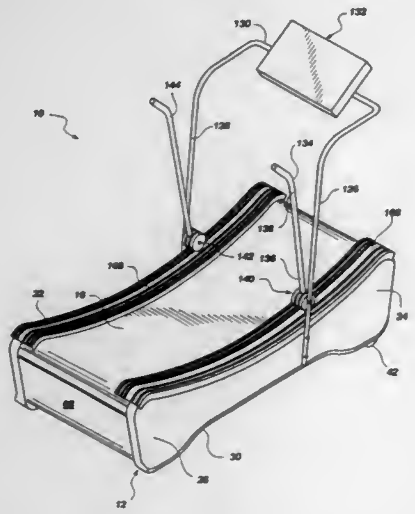
5,709,632
CURVED DECK TREADMILL

Jeff D. Socwell, Logan, Utah, assignor to Precor Incorporated, Bothell, Wash.

Filed Sep. 27, 1996, Ser. No. 721,724

Int. Cl.^{6} A63B *22/02*

U.S. Cl. 482—54 **19 Claims**



1. An exercise treadmill, comprising:

a support frame having a first end and a second opposing end, wherein said first end being disposed substantially parallel in dimensional relation to said second end;

a deck having an intermediate portion comprising a substantially arcuate longitudinal configuration, said intermediate portion engageably disposed between said first and second ends of said support frame at a position substantially lower in dimensional relation to said first and second ends;

a roller assembly rotatably disposed in operable relation to said support frame;

a belt rotatably engaging said roller assembly and further disposed in structural relation to said deck, whereby said belt provides a substantially arcuate, selectively moveable surface; and

at least one belt securing assembly providing means for retaining said belt substantially flush with said deck.

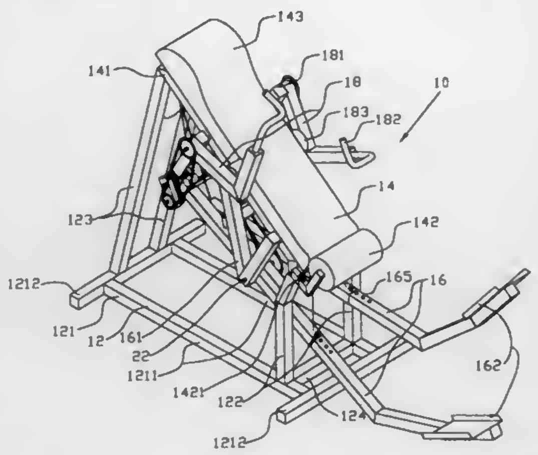
5,709,633
RECIPROCATING EXERCISE MACHINE

Steven D. Sokol, 414 Beckham Dr., San Jose, Calif. 95123

Filed Jan. 28, 1997, Ser. No. 827,933

Int. Cl.^{6} A63B *69/06;21/00*

U.S. Cl. 482—62 **10 Claims**



1. A full body reciprocating aerobic exercise machine comprising:

a base,

a means to stabilize a torso of a user,

two leg levers,

two arm levers,

at least one pulley means and at least one cable means,

a drive mechanism, and

an adjustable resistance mechanism; wherein

said leg levers and said arm levers are synchronized through said drive mechanism so that a left leg lever must move with a right arm lever, and a right leg lever must move with a left arm lever, said drive mechanism further requiring that all four leg and arm levers move simultaneously, and

said pulley means is affixed to an underside of a support frame, said pulley means receives a cable means that is affixed to both leg levers, thereby reducing stress on said drive mechanism, said pulley means and said cable means provide a direct, physical synchronization means between said two opposing leg levers, and

said leg levers and said arm levers are in communication with said adjustable resistance mechanism, said resistance mechanism can be set to provide a level of resistance desired by the user; wherein

said drive mechanism comprises two lower body drive gears mounted on a said lower axle and are driven by said leg levers, a first lower drive chain is driven by a first of said lower body drive gears, and a second lower drive chain is driven by a second of said lower body drive gears, said lower body drive gears are driven by said leg levers,

said lower drive chains are in communication with corresponding upper body drive gears, each lower drive chain is in communication with an upper body drive gear on an opposite side of said machine,

said first lower drive chain is mounted on a first connecting gear that is affixed to a first upper axle, said first upper axle turns a first upper body arm drive gear, a first upper drive chain is mounted between said first connecting gear and a first arm gear affixed at a pivot point of a first of said arm levers,

reverser gears are mounted on said first upper axle and a second upper axle, teeth of said reverser gears are meshed so that said first upper axle must rotate in a first direction an amount equal to the rotation of said second upper axle in an opposite direction, said leg levers are connected to said upper axles via said lower drive chains such that said leg levers are synchronized with said arm levers,

said second lower drive chain is mounted on a second connecting gear that is affixed to said second upper axle, said second upper axle turns a second arm drive gear, a second upper drive

chain is mounted between said second connecting gear and a second arm gear affixed at a pivot point of a second of said arm levers.

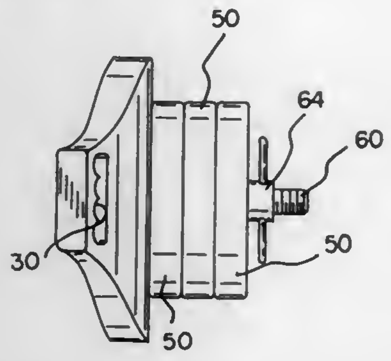
5,709,634
DUMBBELL ADAPTED TO BE HELD BEHIND USER'S HEAD WHILE PERFORMING SIT-UPS

Randy V. Pointer, P.O. Box 872724, Wasilla, Ak. 99687

Filed Jan. 31, 1994, Ser. No. 188,697

Int. Cl.^{6} A63B *21/065;21/075*

U.S. Cl. 482—105 **7 Claims**



1. A new and improved abdominal exercise apparatus for use by humans to improve and add resistance in abdominal muscle group exercises comprising:

a frame having a first end portion, a central portion, and a second end portion wherein said first end portion comprises a hand griping means, said central portion has a larger dimension at a center and tapers toward the end portions thereafter, said central portion having one or more internal cavities capable of being filled with a variable quantity of substantially fluidic weights, and said second end portion comprises a hand gripping means being substantially a mirror image of said first end portion, and furthermore said frame has a top portion and a bottom portion wherein the top portion is adapted to engage the head of a human user and both the top portion and the bottom portion have a substantially fixed concavity directed toward the head, and

a cushioning means disposed adjacent to the frame top portion and adapted to engage the head of a human user, said cushioning means comprising one or more polymeric pads being generally of slight thickness and furthermore being adhesively affixed to said frame top portion, said cushioning means being cohesively affixed to said frame top portion using coacting fasteners wherein said coacting fasteners have hook-like projections on one part engaging a corresponding pile section on another part thereby rendering said cushioning means replaceable.

5,709,635
EXERCISE HAND WEIGHTS WITH SELF-DEFENSE SPRAY CONTAINER

Steven W. Denison, Spokane, Wash., assignor to Hyak Corporation, Mercer Island, Wash.

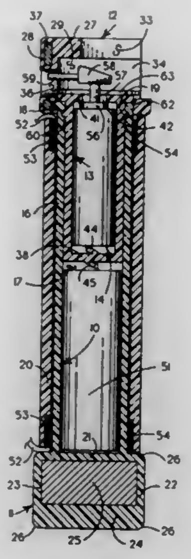
Continuation-In-part of Ser. No. 261,190, Jun. 13, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 541,116

Int. Cl.^{6} A63B *21/072*

U.S. Cl. 482—108 **7 Claims**

5. A hand weight for exercisers having a pressurized defense spray container, comprising in combination:

an elongate cylindrical body having first and second ends, with a medial channel extending therethrough to create orifices in the said ends, the first end of said body defining first external fastening means and second internal fastening means adjacent the first end;



a cylindrical fixed end cap diametrically larger than the body and structurally carried by the second end of the body, said fixed end cap being axially aligned with the body, covering the medial channel at the second end of the body, and carrying a weight;

a cylindrical removable end cap diametrically larger than the body and defining a medial chamber with an orifice in the inner end of the cap to receive the end portion of the first end of the body, said removable end cap having first internal fastening means to cooperate with the first external fastening means of the body to releasably fasten the removable end cap on the body and defining a thumb slot extending from the periphery to communicate with the medial cavity and a nozzle slot, diametrically opposed to the thumb slot, extending through the cylindrical wall of the cap;

a cylindrical sleeve having a body slidably carried in the first end of the body channel, said sleeve having:

fastening means to cooperate with the internal fastening means of the weight body for releasable fastening of the sleeve in the body channel,

a bottom covering a first inner end of the sleeve and defining biasing means to bias objects away from both sides of the bottom,

an inwardly extending rim at a second outer end of the sleeve to maintain a defense spray container in the sleeve channel, and

an orifice defined in the sleeve body for insertion of a self-defense spray container in the sleeve channel;

a self-defense spray container carried in the sleeve chamber, with operative mechanism extending outwardly from the sleeve and into the cavity defined by the removable end cap;

a flexible resilient cover carried by the body between the end caps; and

an elastomeric fastening strap extending over the body from fastenable engagement with the weight body immediately inwardly adjacent each end cap.

5,709,636
PORTABLE EXERCISE DEVICE

Anthony J. Vallone, 1747 Beechwood Ave. NE. #9, North Canton, Ohio 44720, and John F. Vallone, Sr., 63 Crestmont Rd., Binghamton, N.Y. 13905

Filed May 24, 1995, Ser. No. 421,741

Int. Cl.^{6} A63B *21/04*

U.S. Cl. 482—129 **9 Claims**

1. A portable therapeutic exercise device, comprising:

first pulley assembly means, comprising:

a single roller with a grooved periphery, two plates spaced apart to receive said single roller therebetween, a spacer

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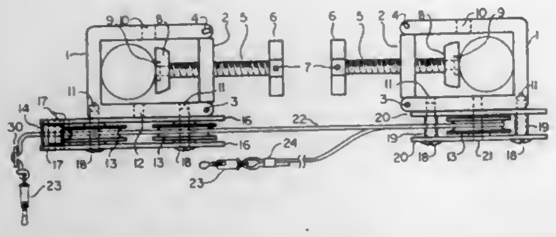


located to maintain said two plates in a predetermined position at least sufficient to permit said single roller to be supported rotatably;

second pulley assembly means, comprising:
  two rollers each with a grooved periphery, two plates spaced apart to receive said two rollers in a rotatable condition therebetween;

flexible cord assembly means, comprising:
  a flexible cord or cable of a predetermined length and having two ends, clip means attached at each of said two ends for connecting each of said two ends to preselected band grips, harnesses and anchors, and means on said flexible cord near one end of said two ends to adjust the length of said flexible cord;

means located along the length of said flexible cord to permit said flexible cord to move readily in one direction, while limiting movement in the opposite direction;

means for detachably affixing each of said first and said second pulley assembly means in a predetermined location during use; and

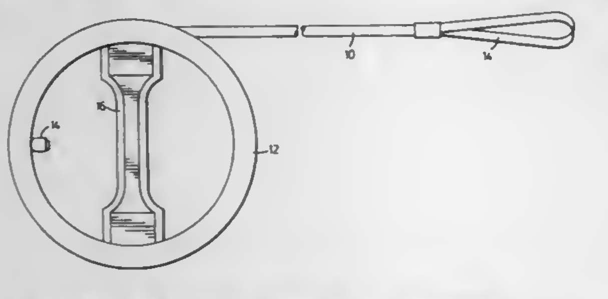
said means for detachably affixing said first and said second pulley assembly means includes two 'O' clamp assembly means, each having at least one straight side to which said pulley assembly means can be attached, and threaded means with a handle on one end and a pressure plate on the opposite end for threading against an object for affixing said pulley assembly means.

5,709,637
ROTATOR CUFF STRENGTH TRAINING DEVICE

Gordon Gow, 310 Georgian Drive, Barrie, Ontario, Canada, L4M 4Y8, and Edward Martin, R.R. 2, Shanty Bay, Ontario, Canada, L0L 2L0

Filed Nov. 6, 1996, Ser. No. 744,645
Int. Cl.^{6} A63B *21/02*

U.S. Cl. 482—129 **4 Claims**



1. A rotator cuff strength training device, comprising:

a length of extensible elastic strand having a first end and a second end;

a spool member of cylindrical symmetry, having an outer circular channel for receiving a length of said elastic strand wrapped therearound;

means for fixing said first end of the strand to a position along said channel of the spool member;

a handle fixed to and extending across said spool member diametrically between opposed positions against said circular channel; and

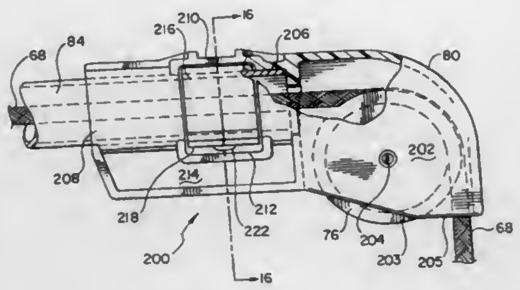
means for fixing said second end of the strand to an inertial resistance, such that with said first and second ends of the elastic strands respectively secured to said channel and to said inertial resistance, a user may by gripping said handle move said spool against continuous resistance.

5,709,638
WRIST JOINT WITH ROTATION FOR AN EXERCISE DEVICE

Ross A. Mackert, St. Louis Park, and John E. Titus, Prior Lake, both of Minn., assignors to Fitness Master, Inc., Waconia, Minn.

Filed Nov. 17, 1995, Ser. No. 560,383
Int. Cl.^{6} A63B *21/02*

U.S. Cl. 482—130 **4 Claims**



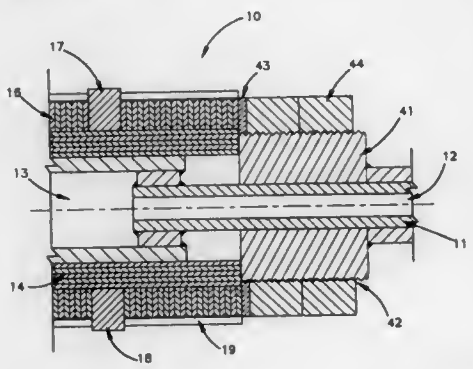
1. A wrist joint member adapted for use between a handle and an arm, the wrist joint member operably and rotatably adapted to couple to the arm and including a sleeve and a pulley housing for receiving a pulley, said sleeve having an open end and a cup end adapted for receiving an end of the arm and an opening located between the open end and the cup end for receiving a stop collar adapted for fixed connection to the arm.

5,709,639
INSULATING ROLL COVER

Charles M. Hart, Streetsboro; James D. Rogers, Mantua; Harry L. King, Hudson, and John J. Bartholomew, Mentor, all of Ohio, assignors to Global Consulting, Inc., New Castle, Pa.

Division of Ser. No. 986,212, Dec. 7, 1992, Pat. No. 5,378,219, which is a division of Ser. No. 719,252, Jun. 27, 1991, Pat. No. 5,205,398, which is a continuation-in-part of Ser. No. 559,736, Jul. 27, 1990, abandoned. This application Dec. 22, 1994, Ser. No. 361,502
Int. Cl.^{6} B23P *15/00*

U.S. Cl. 492—48 **11 Claims**



1. A highly compressed at least substantially ceramic fiber composition consisting essentially of compressed ceramic fiber impregnated with colloidal rigidizer, said fibers being compressed in an amount within the range of from about 60 percent to about 80 percent, basis dry fiber, to a fiber density within the range of from about 20 to about 50 pounds per cubic foot.

5,709,640
DEVICE FOR FOLDING A SHEET SUCCESSIVELY IN TWO DIRECTIONS AT RIGHT ANGLES RELATIVE TO ONE ANOTHER

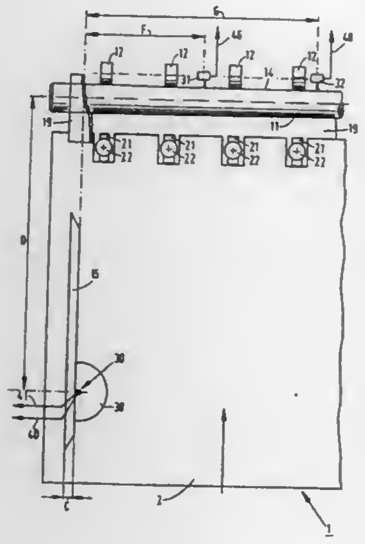
Andreas P.H.M. Timmermans, Venlo; Albert Theodor Deckers, Maasbree; Martinus W.H. Van Knippenberg, Helden, and Rudolf J.H.R. Deckers, Eindhoven, all of Netherlands, assignors to Oce'-Nederland, B.V., Venlo, Netherlands

Filed Feb. 15, 1995, Ser. No. 389,187

Claims priority, application Netherlands, Mar. 11, 1994, 9400381

Int. Cl.^{6} B65H *45/04*

U.S. Cl. 493—23 **12 Claims**



1. An apparatus for forming folds in a sheet having a first dimension between generally parallel first edges when the sheet is unfolded and a second dimension between generally parallel second edges which are perpendicular to the first edges, the sheet, in a first folded state with at least two folds generally parallel to the first edges, exhibiting a reduced first dimension between the first edges, the apparatus comprising:

feed means for feeding the sheet along a longitudinally extending feed path;

guide means for maintaining an edge of the sheet in general alignment with a side margin of the feed path while moving longitudinally along the feed path;

a first detector for detecting the presence of an unfolded sheet moving longitudinally along the feed path, the first detector being displaced transversely from the side margin of the feed path by a first distance which is greater than the reduced first dimension of the sheet;

a folding station receiving a sheet fed by the feed means and including means for folding the sheet along at least one fold line which extends transversely to the feed path; and

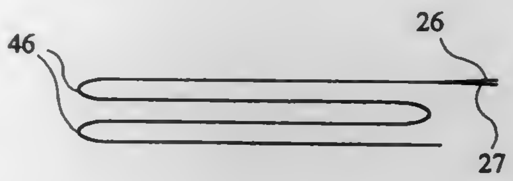
control means for operating the folding station to thereby execute (1) a first programmed folding sequence which, in response to a signal from the first detector, forms at least two folds generally parallel to the first edges on an unfolded sheet received with the first edges thereof oriented transversely to the feed path, to thereby effect the first folded state of the sheet and (2) a second programmed folding sequence which forms at least one fold generally parallel to the second edges on a folded sheet received with the second edges thereof oriented transversely to the feed path when no signal is received from the first detector.

5,709,641
THERMOPLASTIC BAG STRUCTURE

Edward A. Vaquero, Fairport, N.Y., assignor to Tenneco Packaging Inc., Evanston, Ill.

Filed Mar. 26, 1996, Ser. No. 624,817
Int. Cl.^{6} B31B *27/00*

U.S. Cl. 493—243 **1 Claim**



1. A method for making and folding a web of interconnected thermoplastic bags, the method comprising the steps of:

a. supplying a flattened tube of thermoplastic film traveling along a longitudinal direction parallel to an axis of said tube, said flattened tube having opposing top and bottom sides;

b. cutting respective top and bottom sides of said flattened thermoplastic film tube into two halves by separately cutting the top and bottom sides along associated substantially non-superposed cutting paths such that each of said halves includes a top layer, a bottom layer, a straight-folded longitudinal edge joining said top and bottom layers, said top and bottom layers of each of said halves including respective mouth edges opposing said straight-folded longitudinal edge, wherein at least one of the mouth edges is skewed-cut such that respective non-overlapping portions of said mouth edges of said top and bottom layers are formed when the top and bottom sides of the flattened tube are collapsed on one another;

c. forming transverse bag heat seals at bag-width distances apart in said flattened thermoplastic film tube to form said web of interconnected thermoplastic bags; and

d. folding said plurality of interconnected bags along a respective fold line parallel to said longitudinal direction a predetermined number of times such that said respective non-overlapping portions of said mouth edges remain at least partially exposed.

5,709,642
CUSHIONING CONVERSION MACHINE AND METHOD

Richard O. Ratzel, Westlake, and James A. Simmons, Painesville Township, both of Ohio, assignors to Ranpak Corp., Concord Township, Ohio

Continuation-in-part of Ser. No. 386,355, Feb. 8, 1995, which is a continuation-in-part of Ser. No. 337,929, Nov. 10, 1994, Pat. No. 5,607,383, which is a continuation-in-part of Ser. No. 326,782, Oct. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 279,150, Jul. 22, 1994, Pat. No. 5,593,376. This application Jun. 7, 1995, Ser. No. 487,179
Int. Cl.^{6} B31D *5/00*

U.S. Cl. 493—475 **25 Claims**

I. A stitching assembly adapted for use in a cushioning conversion machine which converts stock material into a cushioning product said stitching assembly comprising;

a frame, first and second shafts, a mounting assembly which mounts the first and second shafts to the frame in such a manner that the first shaft is movable transversely towards and away from the second shaft so as to define a minimum set distance between the first and second shafts, and first and second rotating toothed-wheel gear members carried on the first and second shafts, respectively;

the mounting assembly positioning the first and second gear members in a meshed condition for coining stock material passing therebetween and resiliently urging the first shaft and

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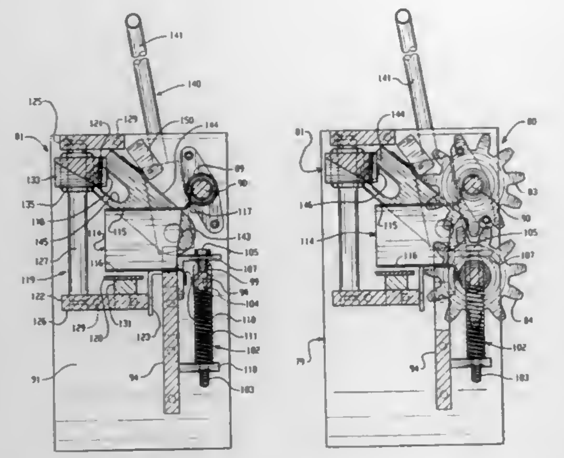
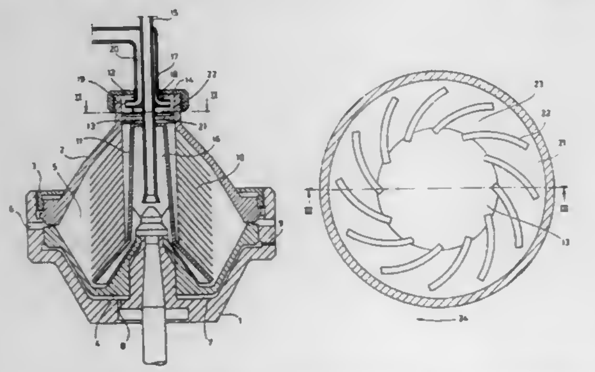


the first gear member carried thereon towards the second shaft and the second gear member so as to apply a pinch force to the stock material;
the mounting assembly including a first tie member movably connected to said first shaft and extending transversely with respect to the first shaft and having one end supported in a fixed transverse position relative to the frame; a first adjustable stop on the first tie member which is selectively adjustable towards and away from the first shaft, and a first spring member interposed between the first shaft and the first adjustable stop about said first tie member having a first end connected to said first shaft and a second end connected to said first adjustable shaft for resiliently biasing the first shaft towards the second shaft so that said pinch force is adjustable without changing said set minimum distance between the first and second shafts.

5,709,643
CENTRIFUGAL SEPARATOR FOR ENTRAINING A SEPARATED LIQUID WITH MINIMAL AIR MIXTURE

Leonard Borgström, Tyresö ; Hans Moberg, Stockholm; Claes-Göran Carlsson, Tullinge; Torgny Lagerstedt, Stockholm; Olle Nåbo, Tullinge; Claes Inge, Saltsjö-Duvnäs, and Peter Franzén, Tullinge, all of Sweden, assignors to Alfa Laval Separation AB, Tumba, Sweden
PCT No. PCT/SE94/00467, § 371 Date Mar. 22, 1996, § 102(e) Date Mar. 22, 1996, PCT Pub. No. WO94/27727, PCT Pub. Date Dec. 8, 1994
PCT Filed May 19, 1994, Ser. No. 556,914
Claims priority, application Sweden, May 21, 1993, 9301742
Int. Cl.^{6} B04B *1/08;11/08*
U.S. Cl. 494—56 **22 Claims**

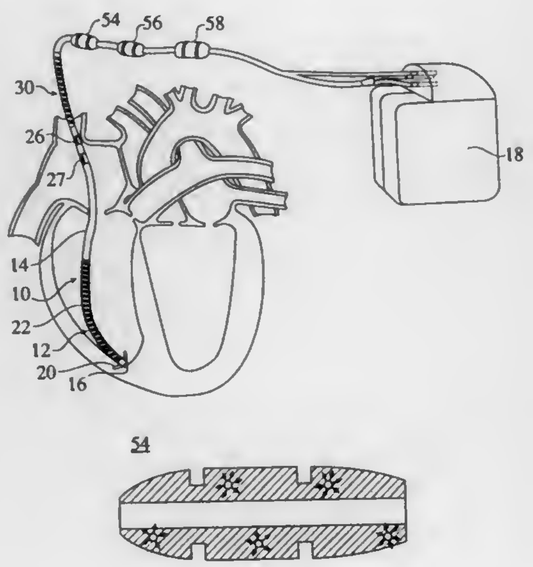


1. A centrifugal separator comprising a rotor, which is rotatable around a rotational axis and inside itself forms
- an inlet chamber for a liquid to be centrifugally treated,
- an separation chamber, which is connected to the inlet chamber, and
- an outlet chamber, which via a passage communicates with the separation chamber for the reception of a liquid separated during operation in the separation chamber, the outlet chamber being so formed inside the rotor that a liquid present therein during operation forms a rotating liquid body with a radially inwardly directed free liquid surface, and which outlet chamber is provided with an outlet radially outside the free liquid surface,

at least two wall elements extending radially and axially being arranged in the outlet chamber fixedly connected to the rotor and arranged to form a channel between the wall elements to entrain during operation the separated liquid into the rotation of the rotor and at the same time admit a flow of the separated liquid radially outwardly in the outlet chamber,
characterized in
that each one of the wall elements at least has a portion, which extends radially between the radial level at which the free liquid surface is located and a radial level radially outside the outlet, each said portion of the wall elements having a directional component in the circumferential direction, which seen radially outwardly is directed forwardly in the rotational direction of said rotor.

5,709,644
IMPLANTABLE SUTURE SLEEVE MODIFIED TO REDUCE TISSUE INGROWTH

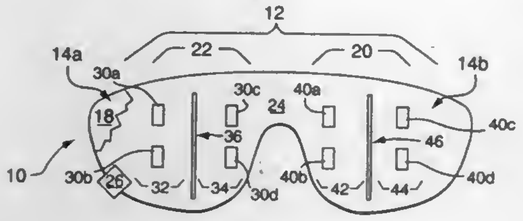
M. Elizabeth Bush, Fremont, Calif., assignor to Pacesetter, Inc., Sunnyvale, Calif.
Filed Jun. 14, 1996, Ser. No. 663,832
Int. Cl.^{6} A61N *5/00*
U.S. Cl. 600—3 **14 Claims**



1. An implantable suture sleeve comprising:
- an elastomeric body for protecting a lead body from a ligature, said elastomeric body forming a lumen for receiving said lead body and having means for receiving said ligature; and
- a radioactive material within said body that emits radiation that can reduce the proliferation of cells.

5,709,645
INDEPENDENT FIELD PHOTIC STIMULATOR

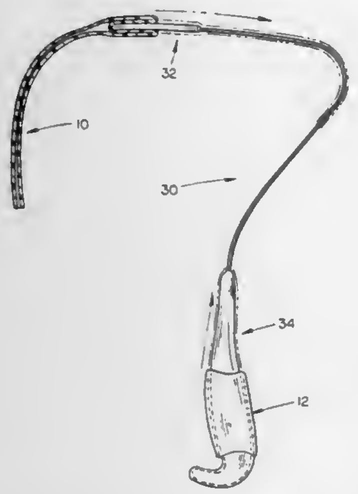
David Siever, Edmonton, Canada, assignor to Comptronic Devices Limited, Edmonton, Canada
Filed Jan. 30, 1996, Ser. No. 593,871
Int. Cl.^{6} A61N *5/06*
U.S. Cl. 600—27 **19 Claims**



1. An apparatus for stimulating the central nervous system and the brain waves of a human subject having left and right eyes and left and right visual fields within each eye comprising:
- light means providing pulsating light signals separately to (a) the right visual fields of the right and left eyes of the subject and (b) the left visual field of the right and left eyes of the subject; and
- a control module for varying frequency and intensity of the light means.

5,709,646
SURGICAL RETRACTOR COVERS

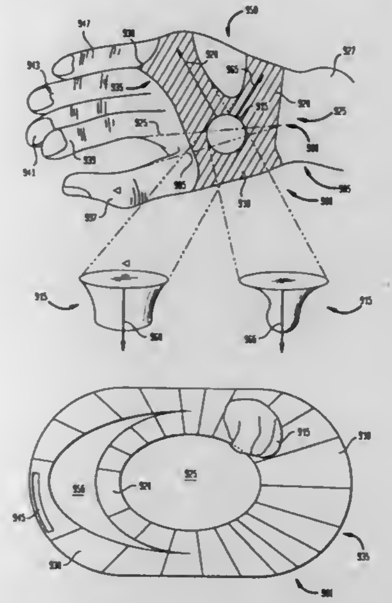
Nancy Erin Lange, 108 N. Walnut St., Maquoketa, Iowa 52060
Continuation-in-part of Ser. No. 311,650, Sep. 23, 1994, abandoned. This application May 15, 1996, Ser. No. 647,782
Int. Cl.^{6} A61B *17/02*
U.S. Cl. 600—203 **6 Claims**



1. An apparatus for padding at least one end of a medical instrument comprising:
- a sterile generally tubular sheath dimensioned to envelope one end of the medical instrument; wherein, the tubular sheath has an open end, a closed end, an initial interior surface which becomes the ultimate exterior surface and an initial exterior surface which becomes the ultimate interior surface when the sheath is operatively deployed on said medical instrument; and
- an adhesive coating formed on the initial exterior surface; wherein, the adhesive coated surface surrounding the open end of the tubular sheath are joined together to form a sterile interior chamber in the sheath defined by the initial interior surface.

5,709,647
ACUPRESSURE DEVICE

Jack Richard Ferber, New York, N.Y., assignor to FerberDent InterNational Inc., New York, N.Y.
Filed Aug. 1, 1995, Ser. No. 509,969
Int. Cl.^{6} A61H *7/00;39/04*
U.S. Cl. 601—134 **10 Claims**



1. An acupressure device for stimulating a nerve on a hand having first, second and fifth metacarpals, an outermost carpal, a wrist, a palm, a palm heel, a fleshy crotch, a backhand, and a pinkie, comprising:
- an elastic band dimensioned to be worn on the hand, said elastic band comprising:
- a first band portion dimensioned to wrap from the first metacarpal around a heel of a palm to the outermost carpal and around a lower portion of a backhand near the wrist back to the first metacarpal,
- a second band portion dimensioned to wrap from the first metacarpal around the palm to the base of the pinkie and around the backhand back to the first metacarpal,
- wherein said first and second band portions are integral at a portion of the fleshy crotch of the backhand between the first and second metacarpals and wherein said two band portions are separated from each other by a gap at the fifth metacarpal, and
- a pressure nodule attached to said elastic band at said integral portion of said two band portions and positioned over the fleshy crotch of the backhand,
- wherein dimensions of said elastic band produce a tension that forces said pressure nodule downward on said fleshy crotch of said hand, wherein dimensions of said first band portion produce a tension that pulls said pressure nodule towards a part of said first band portion near the outermost carpal and wherein dimensions of said second band portion develop a tension that pulls said pressure nodule towards a part of said second band portion near the base of the pinkie.

5,709,648
RESILIENT BACK SUPPORT DEVICE

Joseph Walter Webb, 248 Huckleberry Trail, Woodside, Calif. 94062, assignor to Joseph Walter Webb, Woodside, Calif.
Filed Sep. 18, 1996, Ser. No. 710,522
Int. Cl.^{6} A61F *5/00*
U.S. Cl. 602—19 **5 Claims**

1. A light weight, back strain relief harness for transferring stress from the back of a bending person to the upper legs and buttocks comprising: a harness having a back portion of a predetermined

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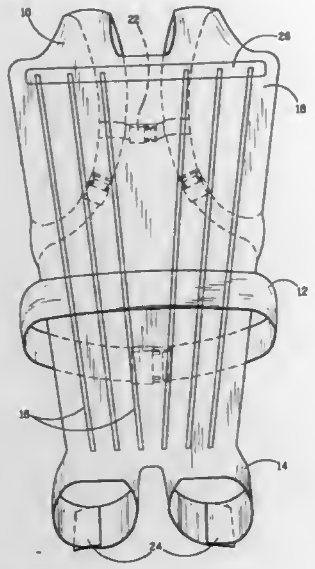


length and a predetermined width, said back portion having a shoulder end and a buttocks end, and adapted to substantially extend across the shoulders and the buttocks and down to just below the buttocks of the person; two adjustable loops to accommodate a user's upper legs connected to the buttocks end of said back portion; an adjustable belt to accommodate a user's waist connected to a mid-point on said back portion; two adjustable loops to accommodate a user's shoulder connected to said shoulders end of said back portion; and wherein said back portion further includes a plurality of resilient, normally straight rods approximately the same length as said predetermined length of said back portion, and spaced across said predetermined width of said back portion,

whereby said resilient rods in combination with said back portion of said harness flex to transfer stress normally associated with back muscles to the upper legs and buttocks muscles when a person wearing said harness bends over, and assists the restraightening of the person as said flexed resilient rods restore to their normally straight form.

5,709,649
NECK CURVATURE ALIGNMENT DEVICE

Ralph M. Chitwood, Kalispell, Mont., assignor to Glacier Cross, Inc., Kalispell, Mont.

Continuation-in-part of Ser. No. 516,007, Aug. 16, 1995, which is a continuation-in-part of Ser. No. 327,021, Oct. 21, 1994, Pat. No. 5,569,175, which is a continuation-in-part of Ser. No. 120,602, Sep. 13, 1993, Pat. No. 5,441,479. This application Jan. 4, 1996, Ser. No. 582,676

Int. Cl.^{6} A61H *1/02*

U.S. Cl. 602—32 **19 Claims**

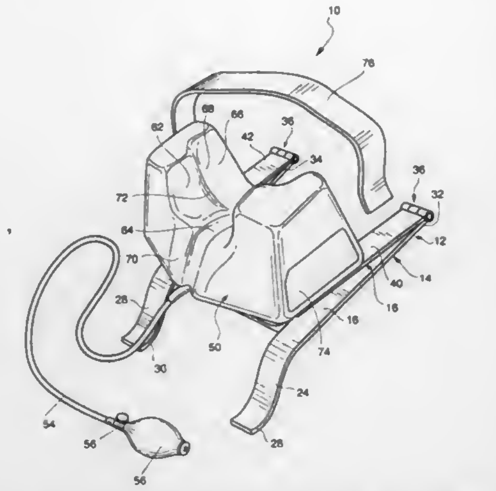
1. A neck curvature alignment device for use by a person and comprising:

a framework including a base portion which is supported on a generally planar surface and which has an upper surface and a pivot portion which has an outer surface and which is pivotally connected at one end by a pivot connection to said base portion;

a moving mechanism situated between said base portion and said pivot portion for moving said pivot portion away from said base portion;

means for actuating said moving mechanism;

a head and neck receiving device having an outer end and an inner end, a neck receiving portion and a head receiving portion between said neck receiving portion and said outer end and being mounted on said outer surface of said pivot portion, said neck receiving portion having a top and a U-shaped surface extending dowardly for receiving a persons neck and said head receiving portion also having a top, a



U-shaped surface extending dowardly for receiving the back of a persons head, a ridge separating said head receiving portion from said neck receiving portion and support structure in the form of an adjacent contoured lift surface for engaging and bearing against the occipital bone of a patient's head with an arcuate force, said pivot connection being located outwardly of said outer end and of said head receiving portion, whereby operation of said moving mechanism will cause said pivot portion to move away from said base portion to cause said head and neck receiving portion to act in an arcuate direction upwardly toward a patients forehead and against the patient's neck and head; and,

the radius of the arcuate force from said pivot connection to the area where said support structure acts against the person's head being between three inches and ten inches.

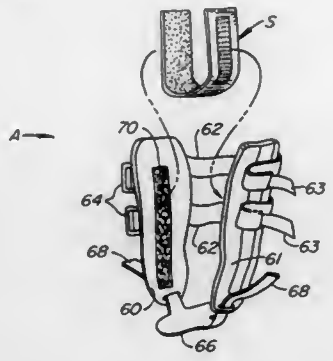
5,709,650
ORTHOPEDIC DEVICE UTILIZING HYPOALLERGENIC NON-INFLAMMATORY ADHESIVE

John P. Colman, 14566 El Puente Way, Saratoga, Calif. 95070

Filed Jun. 6, 1996, Ser. No. 659,193

Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—52 **8 Claims**



1. In an orthopedic appliance for reinforcing a patient's skeletal anatomy, the appliance comprising at least a pair of rigid shells, each rigid shell having an inside and an outside, the inside of each rigid shell adapted to receive a patient's skin overlying the skeletal anatomy to be reinforced, the improvement for adhering the rigid shells to the skin of the patient comprising:

a strip of flexible tape having a first side for fitting to the skin of a patient and a second side outward exposed for fitting to the inside of the rigid shells;

a hypoallergenic non-inflammatory adhesive coated on one side of the strip of flexible tape for fitting to the skin;

means for removable attachment to the inside of the rigid shells on the second side of the strip of flexible tape for outward exposure to the rigid shells; and,

complimentary means for removable attachment fitted to the inside of the rigid shells for attachment of the rigid shells to the strip of flexible tape to transfer loading from the skin of the patient to the rigid shells for orthopedically reinforcing the skeletal anatomy of the patient.

5,709,651
ADHESIVE DRESSING

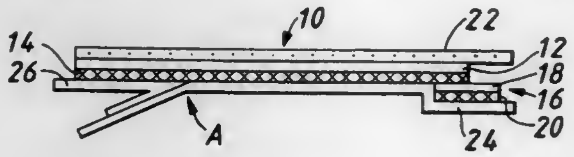
William John Ward, Hull, United Kingdom, assignor to Smith & Nephew PLC, London, United Kingdom

Continuation of Ser. No. 464,714, Jul. 24, 1995, abandoned. This application Apr. 2, 1997, Ser. No. 831,959

Claims priority, application United Kingdom, Dec. 24, 1992, 9226909

Int. Cl.^{6} A61F *13/02*

U.S. Cl. 602—57 **13 Claims**



1. An adhesive dressing comprising a conformable backing layer having a pressure sensitive adhesive layer over a first surface thereof, a removable protector which covers the adhesive layer and extends beyond the backing layer at a contiguous edge on the backing and adhesive layers and a conformable support layer which is releasably attached to a second surface of the backing layer and said conformable support layer having an extending portion which extends beyond the backing layer at said edge, a component attached to said adhesive layer along at least a part of said edge, said component comprising a conformable layer having a skin contacting layer of adhesive on one surface thereof, said component extending outwardly to underlie said extending portion of the conformable support layer and said component being attached to said adhesive layer such that said component remains in place on the adhesive dressing when the dressing is applied to the user.

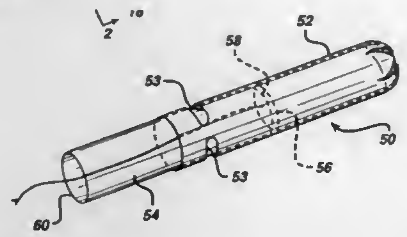
5,709,652
TAMPON APPLICATOR TUBE HAVING APERTURED FINGER GRIP

Andrew J. Hagerty, Plainsboro, N.J., assignor to McNeil-PPC, Inc., Skillman, N.J.

Filed Jun. 28, 1995, Ser. No. 496,103

Int. Cl.^{6} A61F *13/20;* **A61M** *31/00*

U.S. Cl. 604—15 **39 Claims**



1. An insertion device for rectal or vaginal delivery of an article comprising a tubular element capable of substantially containing an insertable element, the tubular element having an outer surface, an insertion end and a gripper end, the gripper end having a plurality of means for enhancing a user's grip, each of said means comprising a finger accepting aperture in the outer surface, the apertures having leading and trailing edges corresponding to the insertion and gripper ends of the tubular element, respectively, the apertures being dimensioned to accept a portion of a user's finger and at least the leading and trailing edges of the apertures providing relatively abrupt, finger-accepting edges to frictionally resist movement of a user's finger in response to longitudinal forces on the insertion device.

5,709,653
PHOTODYNAMIC THERAPY BALLOON CATHETER WITH MICROPOROUS MEMBRANE

James E. Leone, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Jul. 25, 1996, Ser. No. 690,330

Int. Cl.^{6} A61N *1/30*

U.S. Cl. 604—20 **44 Claims**

1. A photodynamic therapy balloon catheter for activating treatment fluid at a location within a living body, the catheter comprising:

an elongated tubular assembly having a proximal portion which remains outside of the living body when in use, the assembly also having a distal portion which is inserted into the living body when in use;

an optical fiber extending along the length of said assembly, said optical fiber having a generally distal light energy emanating section;

said elongated tubular assembly having a light-passing inner tubular member cylindrically surrounding said optical fiber and extending longitudinally along the length of the light energy emanating section of said optical fiber;

a light-passing inflatable porous balloon member having a plurality of holes to permit treatment fluid to pass through said balloon member and positioned at said distal portion of the assembly, said balloon member being in fluid-passing communication with said proximal portion of the assembly, said balloon member cylindrically surrounding said inner tubular member and extending longitudinally with respect to said inner tubular member;

a light source communicating with said optical fiber to deliver light energy to said light energy emanating section; and

a light-passing microporous membrane member having a plurality of micropores to permit treatment fluid to pass through said inner porous membrane and positioned over the outer surface of said inflatable porous balloon member; and

at least one of said inner tubular member, said porous balloon member, and said microporous membrane member includes light-reflective material which upon light emanating through the light energy emanating section, reflects said light energy and activates photodynamic treatment fluid at a location within a living body.

5,709,654
APPARATUS FOR COOLING LIVING TISSUE

Ronald M. Klatz, and Robert M. Goldman, both of Chicago, Ill., assignors to Life Resuscitation Technologies, Inc., Chicago, Ill.

Continuation of Ser. No. 383,240, Feb. 3, 1995, Pat. No. 5,584,804, which is a continuation-in-part of Ser. No. 69,916, Jun. 1, 1993, Pat. No. 5,395,314, which is a continuation-in-part of Ser. No. 886,041, May 19, 1992, Pat. No. 5,234,405, which is a division of Ser. No. 595,387, Oct. 10, 1990, Pat. No. 5,149,321. This application Jun. 7, 1995, Ser. No. 480,256

Int. Cl.^{6} A61M *21/00*

U.S. Cl. 604—24 **42 Claims**

1. An apparatus for cooling living tissue in a mammalian body, comprising at least one reservoir containing an intravenously biocompatible solution within said at least one reservoir and said at least one reservoir having a solution outlet and an oxygen inlet separate from said solution outlet for delivery of oxygen to said at least one reservoir; a chiller in heat exchange communication with said at least one reservoir; a fluid flow system in communication with said solution outlet, and means in communication with said

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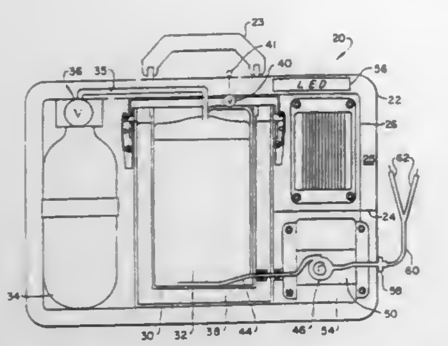


fluid flow system for delivering said intravenously biocompatible solution to tissues and/or organs in said mammalian body.

5,709,655

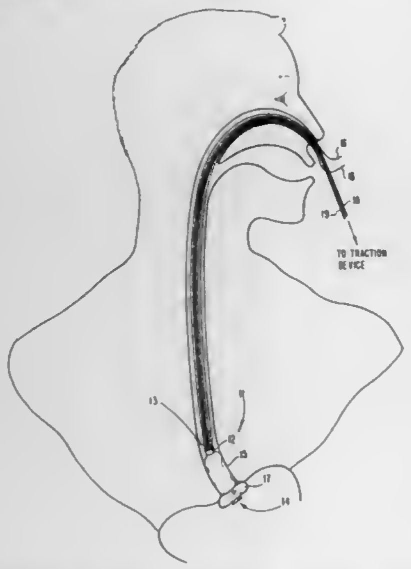
Patent Not Issued For This Number

5,709,656

Patent Not Issued For This Number

5,709,657
METHODS FOR PLACEMENT OF BALLOON TAMPONADE DEVICES

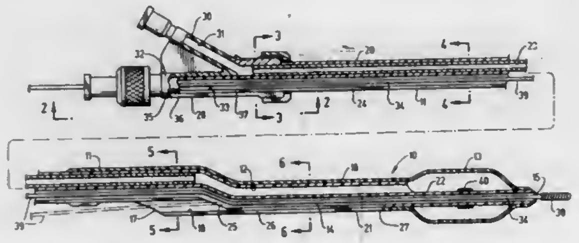
David S. Zimmon, Port Washington, N.Y., assignor to Zimmon Science Corporation, Port Washington, N.Y.
Division of Ser. No. 781,224, Dec. 30, 1991, Pat. No. 5,308,326, which is a continuation-in-part of Ser. No. 372,875, Jun. 28, 1989, abandoned. This application Aug. 4, 1993, Ser. No. 101,910
Int. Cl.^{6} A61M *29/00*
U.S. Cl. 604—96 **36 Claims**



1. An improved method of treating a digestive tract bleeding site, said method comprising the steps of providing a balloon tamponade device which has a tube having proximal and distal open ends, and a bridle attached to said tube, passing said balloon tamponade down the esophagus, positioning the tube across the bleeding site said bridle being adapted to extend up the esophagus to allow said device to be secured in place while having said proximal open end of said tube positioned within the digestive tract, inflating the balloon tamponade device, whereby normal feeding and swallowing functions are permitted through said tube while the balloon tamponade is inflated.

5,709,658
RAPID EXCHANGE TYPE OVER-THE-WIRE CATHETER

Motasim M. Sirhan; Robert F. Kotmel, both of Sunnyvale, and Susan M. Feltovich, Santa Clara, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Continuation of Ser. No. 432,213, May 1, 1995, abandoned, which is a continuation of Ser. No. 88,842, Jul. 8, 1993, Pat. No. 5,413,559. This application Feb. 16, 1996, Ser. No. 602,681
Int. Cl.^{6} A61M *29/00*
U.S. Cl. 604—102 **5 Claims**

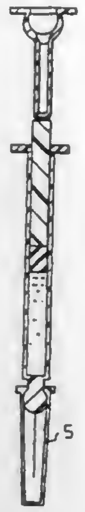


1. An intravascular catheter comprising:
a) an elongated catheter shaft having proximal and distal ends, a guidewire port in the distal end, a first inner lumen extending from the proximal end to the port in the distal end of the catheter shaft, a second inner lumen extending from the proximal end to a location spaced proximally from the distal end of the catheter shaft, a longitudinally extending slit in a wall portion of a proximal section of the catheter shaft which is in communication with the first inner lumen and which extends to the proximal end of the catheter shaft; and
b) a multi-arm adapter secured to the proximal end of the catheter shaft having a first arm with an inner lumen which is in communication with first inner lumen extending within the proximal end of the catheter shaft and which has a slit therein which is continuous with the slit provided in a proximal section of the catheter shaft to which the adapter is secured, a second arm with a second inner lumen which is in fluid communication with the second inner lumen of the catheter shaft, an insert disposed within the adapter having a tubular section disposed within the inner lumen of the first arm and provided with a slit therein coextensive at least in part with the slit in the first arm and defining in part the second inner lumen of the second arm.

5,709,659
NON-REUSABLE INJECTION DEVICE

Percy Bennwik, Saltsjö-Boo, and Bo Eklund, Vällingby, both of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden
PCT No. PCT/SE95/00406, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO95/28191, PCT Pub. Date Oct. 26, 1995
PCT Filed Apr. 13, 1995, Ser. No. 722,207
Claims priority, application Sweden, Apr. 14, 1994, 9401273
Int. Cl.^{6} A61M *5/00*
U.S. Cl. 604—110 **8 Claims**

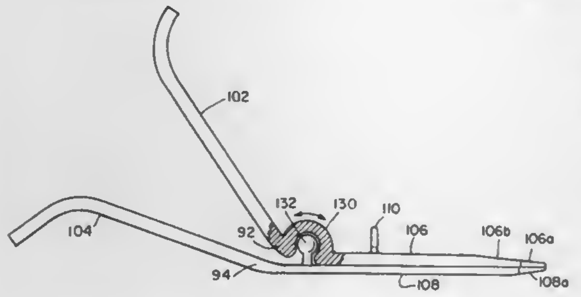
1. A drug containing non-reusable injection syringe with a hollow plunger rod (**20***a*, **20***b*) connected to a plunger (**10**) movable in the barrel (**1**) for injecting the drug through the needle (**3**), said syringe having a cover (**20***b*) attachable to the needle holder (**4**) to protect the needle after injection, wherein said plunger rod is provided with a rupture line (**7**) for permanently detaching its hollow rear part (**20***b*) characterized in that said hollow detached



rear part of the plunger rod (**20***b*) is dimensioned so that when it is engaged with the needle holder (**4**) to perform a radial motion, the interior wall of its cavity (**13**, **14**, **15**) will meet the needle as close as possible to its attachment point (**11**) in order to break the needle, which is received by said cavity (**13**, **14**, **15**) of said plunger rod, which thereafter, by means of a fitting device (**8**), is attached to a corresponding part (**9**) of the needle holder to form a cover for the inoperative contaminated needle.

5,709,660
NEEDLE EXTRACTOR

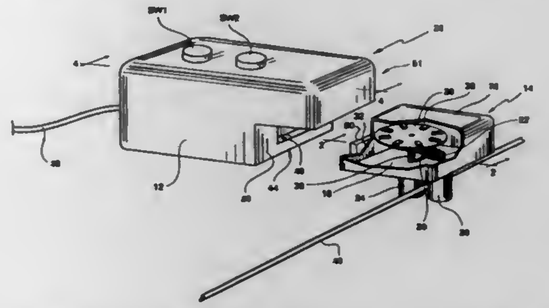
Patricia A. Doyle, 63 Short St., and Joseph Grisanzio, 122 Ashley La., both of Middleboro, Mass. 02346
Continuation-in-part of Ser. No. 297,105, Aug. 29, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 637,094
Int. Cl.^{6} A61M *5/00*
U.S. Cl. 604—116 **20 Claims**



1. An extractor for removing a right angle needle inserted below a skin surface, wherein the needle has a needle portion and an integrally formed shank portion at an angle to the needle portion, the extractor comprising:
a top member comprising a top handle and a top blade, the top blade having a top slot and an elongate longitudinal channel aligned with the top slot longitudinally of the top blade for supporting the shank portion while the slot engages the needle portion;
a bottom member comprising a bottom handle and a substantially planar bottom blade having a bottom slot alignable with the top slot;
wherein the top and bottom members are coupled at a pivot and when pivoted the top slot aligns with the bottom slot for receiving the needle portion.

5,709,661
ELECTRONIC CATHETER DISPLACEMENT SENSOR

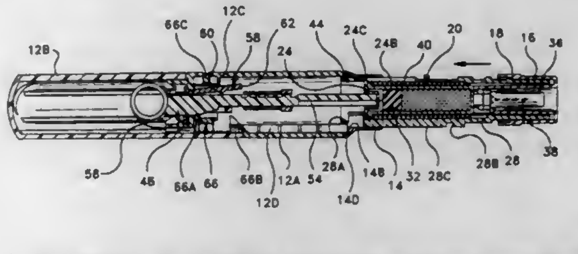
Franciscus Cornelis Van Egmond, Heenvliet, and Charles Theodoor Lancee, Waarder, both of Netherlands, assignors to Endo Sonics Europe B.V., Eijswijk, Netherlands
PCT No. PCT/NL92/00072, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO93/20876, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 14, 1992, Ser. No. 325,196
Int. Cl.^{6} A61M *5/00*
U.S. Cl. 604—117 **7 Claims**



1. An electronic catheter displacement sensor comprising a displacement sensing roller and an idler roller between which a catheter can be advanced or retracted, means for sensing the rotation of the displacement sensing roller, means for determining the direction in which the displacement sensing roller is rotated, means coupled to said rotation sensing and direction sensing means for generating an output signal for transmission to a visual display device for displaying the distance the catheter has been advanced or retracted, a disposable sensor unit mounting said displacement sensing roller and said idler roller, a shaft mounted in said sensor unit, said displacement sensing roller being mounted on said shaft and coupling means mounted to said shaft for coupling said shaft to a rotatable element in said electronic catheter displacement sensor, said sensor unit comprising a sealed box, said coupling means comprising a disk having a plurality of magnets spaced equidistantly adjacent the periphery of the disk mounted on said shaft within said box, with said displacement sensing roller being mounted on said shaft and a stub shaft rotorably journaled in a wall of said box for mounting said idler roller in said box, a housing for said catheter displacement sensor, said means for sensing rotation of said displacement sensing roller and for sensing the direction of rotation of said displacement sensing roller comprising an optical incremental encoder, and said means for generating an output signal comprising processing circuitry including an up/down counter mounted in said housing.

5,709,662
CARTRIDGE FOR AN INJECTION DEVICE

Eric Olive, Lyons, France, and Bernard Sams, London, United Kingdom, assignors to Becton Dickinson France, S.A., Claix, France
Filed Aug. 23, 1996, Ser. No. 701,963
Int. Cl.^{6} A61M *5/20*
U.S. Cl. 604—135 **15 Claims**



1. An assembly for providing automatic injections, comprising:
a drive assembly including a housing and a drive rod slidably mounted within said housing;

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- a sleeve positionable within said housing;
- a syringe assembly slidably mounted within said sleeve, said syringe assembly including a cartridge and a piston slidably mounted within said cartridge, said drive rod being operatively associated with said syringe assembly when said sleeve is positioned within said housing;
- a spring for urging said drive rod towards said syringe assembly;
- one of said sleeve and said housing including a stop member and the other of said sleeve and said housing including an engagement member engageable with said stop member, said stop member and engagement member being arranged such that said engagement member engages said stop member when said sleeve is inserted along a longitudinal axis into said housing, thereby preventing withdrawal of said sleeve from said housing along said longitudinal axis, said engagement member being disengageable from said stop member upon rotation of said sleeve about said longitudinal axis to permit the sleeve to be removed from the housing.

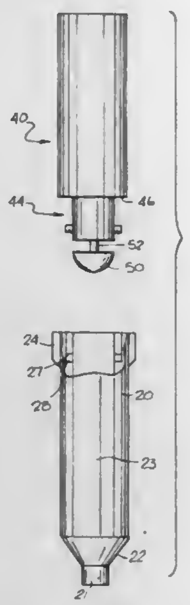
5,709,663
SYRINGE INFUSION DEVICE

William E. Younkes, 4900 Preserve Pkwy. North, Greenwood Village, Colo. 80121

Filed Feb. 6, 1996, Ser. No. 595,881

Int. Cl.^{6} A61M *37/00*

U.S. Cl. 604—154 **19 Claims**



1. An infusion device comprising:

- an elongated syringe barrel with a proximal end and a distal end with a bore therebetween,
- a syringe plunger that may slide through at least a portion of the bore, sealingly engaged with the barrel to drive fluid out the distal end upon sliding the plunger toward the distal end;
- a pump operatively engaged with the plunger to slide the plunger through the bore;
- a pump housing containing the pump, the pump housing including a mating portion and a non-mating portion, the mating portion extending from the non-mating portion; and
- the mating portion of the pump housing including means for rotatably and releasably attaching to the syringe barrel with the bore.

5,709,664
TROCAR VALVE ASSEMBLY

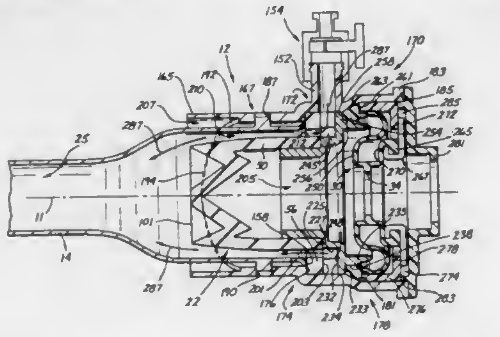
Frans Vandenbroek, and Vincent C. Tangherlini, both of Rancho Santa Margarita, Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 245,916, May 19, 1994, Pat. No. 5,496,280, which is a continuation-in-part of Ser. No. 907,706, Jul. 2, 1992, abandoned. This application Mar. 1, 1996, Ser. No. 609,720

Claims priority, application WIPO, May 18, 1993, PCT/US93/04709

Int. Cl.^{6} A61M *39/22*

U.S. Cl. 604—167 **14 Claims**



1. A trocar having a working channel extending along an axis between a distal end and proximal end, the trocar comprising:

- a cannula having a tubular configuration and a wall which defines the working channel at the distal end of the trocar;
- a housing disposed in fixed relationship to the cannula and defining the working channel at the proximal end of the trocar;
- a valve disposed in the working channel and separating the channel into regions proximal of the valve and regions distal of the valve;
- elastomeric means included in the valve and forming a first seal which is openably closable across the working channel;
- a wall included in the valve and extending radially outwardly of the elastomeric means;
- portions of the housing engaging the valve wall and forming with the valve wall a second seal which is disposed generally outwardly of the first seal;
- means for defining a passage extending from regions exterior of the trocar, through the regions proximal of the valve, and into the regions distal of the valve;
- a housing inlet included in the passage defining means, the housing inlet defining a first section of the passage which extends through the housing to provide fluid communication between the regions exterior of the trocar and the regions proximal of the valve; and
- valve means disposed across the housing inlet for openably closing the first section of the passage to thereby control the administration of a fluid from the regions exterior of the trocar, through the passage and into the working channel of the cannula.

5,709,665
APPARATUS AND METHOD FOR HOLDING MEDICAL CONDUITS

Egidia M. Vergano, Los Altos, Calif., and Ronald D. Russo, Barrington, R.I., assignors to Dale Medical Products, Inc., Plainville, Mass.

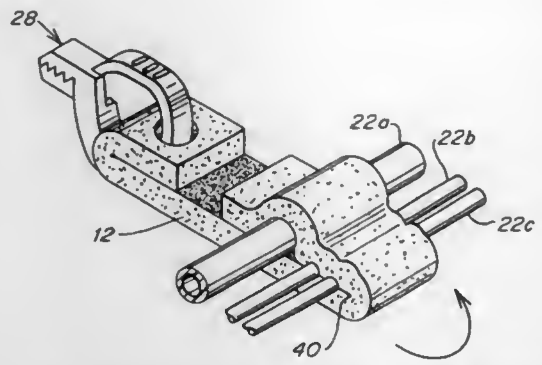
Filed Jun. 5, 1996, Ser. No. 658,363

Int. Cl.^{6} A61M *5/32*

U.S. Cl. 604—174 **20 Claims**

1. A device for holding at least one conduit comprising:

- an elongated flexible strip of material having a first surface, a second surface, and first and second ends, the strip including:
  - a proximal portion extending from the first end;
  - a distal portion extending from the second end; and



  - a central portion between the proximal and distal portions;
  - an attachment mechanism secured to the proximal portion for attaching the device to a sheet material;
  - a repositionable adhesive layer on the first surface extending over at least one of the central and distal portions; and
  - a second, non-adhesive surface on the second surface, opposite the repositionable adhesive layer;
- wherein the second end of the strip is doubled over toward the first end so as to form an enclosed end including a user determined bend location, and wherein the distal portion of the strip lies substantially over the central portion such that the second end of the strip remains readily accessible for repositioning of the distal portion, with the adhesive layer substantially surrounding the at least one conduit to secure the conduit in position between the doubled over strip.

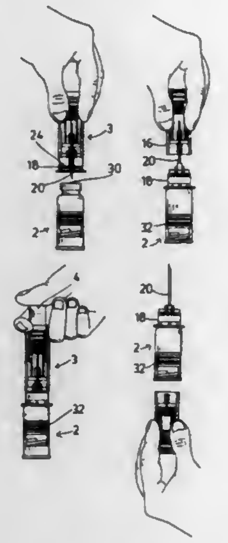
5,709,666
SYRINGE

David L. Reynolds, 305 Knowlton Road, P.O. Box 600, (Knowlton) Lac Brome, Quebec, Canada, J0E 1V0

Continuation-in-part of Ser. No. 791,399, Nov. 14, 1991, Pat. No. 5,364,369. This application Nov. 14, 1994, Ser. No. 338,843

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—191 **5 Claims**



1. A prefilled syringe system for two component pharmaceuticals, the system having in combination initially separate first and second sub-assemblies, of which the first sub-assembly comprises an open-bottomed pharmaceutical vial containing a first component of a pharmaceutical and having a filling neck, a first annular cap, a penetrable closure retained in said neck by said first annular cap, the vial having an open bottom end, a first piston hermetically closing said open bottom end and having a downwardly facing coupling configuration within the vial, and the second sub-assembly comprises a shell vial containing a second component of a pharmaceutical in the form of a fluid, a second piston closing an open end of the shell vial, a tubular guide member concentric with the shell vial such that the shell vial is movable from an initial position relative to the tubular guide member to telescope the vial and the tubular member together, the tubular guide member having a coupling at one end configured for subsequent coupling to the coupling configuration of said first piston to form a syringe plunger, a second cap releasably connected to said tubular member, which cap is internally dimensioned to receive said first cap as a press fit, and double-ended cannula means located concentrically within said second cap and projectable by pressing said first cap into second cap to penetrate both said penetrable closure and said second piston to place said bottomless vial and said shell vial in fluid communication through said cannula means whereby fluid from the shell vial is transferred to the bottomless vial upon telescoping said shell vial relative to said tubular guide member.

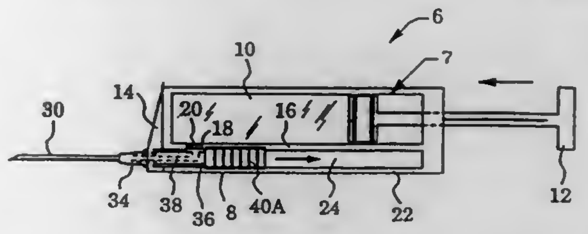
5,709,667
HYPODERMIC NEEDLE PROTECTION SYSTEM

Brian D. Carilli, 2150 Columbia St., Palo Alto, Calif. 94306

Filed May 17, 1995, Ser. No. 443,120

Int. Cl.^{6} A61M *5/32*

U.S. Cl. 604—198 **13 Claims**



1. A hypodermic needle assembly for use with an injection device having a fluid chamber having an outer wall and a drive means carried by said fluid chamber for creating negative pressures to cause uptake of a fluid into said fluid chamber and for creating positive pressures to cause ejection of a fluid from said fluid chamber, said needle assembly comprising:

- a sheath carried by to an outer wall of a fluid chamber having a front end and a passageway extending inwardly from said front end of said sheath;
- a needle carriage positioned in said sheath and having a hypodermic needle mounted thereto, said needle carriage being movable along said passageway between a forward position with said hypodermic needle projecting from said front end of said sheath and a retracted position with said hypodermic needle positioned inside of said sheath;
- said sheath having a plurality of first locking members and said needle carriage having at least one second locking member cooperable with said first locking members for selectively retaining said needle carriage in each of said forward position and said retracted position when said second locking member and one of said first locking members are engaged and for moving said needle carriage relative to said sheath when said second locking member and said first locking members are disengaged, at least one of said first locking members being positioned to engage said second locking member and retain said needle carriage in a stand-by position between said forward position and said retracted position.

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5,709,668
AUTOMATIC MEDICAMENT INJECTOR EMPLOYING NON-CORING NEEDLE

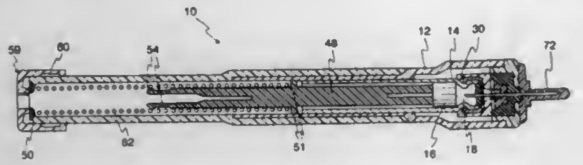
Jonathan L. Wacks, Forest Hills, N.Y., assignor to Senetek PLC, Maryland Heights, Mo.

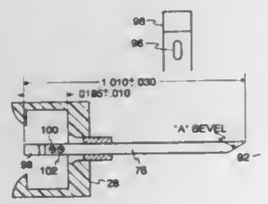
Continuation-in-part of Ser. No. 956,952, Oct. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 740,843, Aug. 6, 1991, Pat. No. 5,360,410, which is a continuation-in-part of Ser. No. 641,752, Jan. 16, 1991, Pat. No. 5,354,287.

This application Jun. 6, 1995, Ser. No. 465,790

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—232 **16 Claims**





1. A fluid injector comprising:

(A) a tubular cartridge having an upper end and a lower end, said cartridge having an interior bore which widens at said lower end of said cartridge to form a needle housing assembly residence chamber for receiving a needle housing assembly;

(B) a puncturable end cap sealing said lower end of said cartridge;

(C) an ampule slidably disposed within the upper end of said cartridge bore, said ampule having an upper end and a lower end and being suitable for storing a fluid charge to be expelled therefrom;

(D) a piston slidably seated within said upper end of said ampule;

(E) a puncturable ampule end stopper rigidly attached to and sealing said lower end of said ampule;

(F) a needle housing assembly slidably disposed within said upper end of said cartridge below said ampule, said needle housing assembly comprising:

a generally cup-shaped housing having a housing bottom and flexible upstanding housing wall sections attached to the periphery of said housing bottom, said housing walls, extending toward said lower end of said ampule and said housing wall sections having upper edges for engaging with said lower end of said ampule,

a hollow injection needle extending through and rigidly engaged by said housing bottom and having an internal section, and an external section, said internal section of said hollow injection needle extending from said housing bottom, upwardly within said housing walls, toward said puncturable ampule end stopper, and said external section of said hollow injection needle extending from said housing bottom downwardly toward said puncturable end cap of said cartridge without protruding from said puncturable end cap,

the upper edges of said housing wall sections being engageable with said lower end of said ampule as said ampule slides downwardly within said cartridge bore, whereby actuation moves said ampule downwardly within said cartridge bore in said upper end of said cartridge toward said lower end of said cartridge thus engaging said upper edges of said housing wall sections and moving said needle housing assembly from said upper end of said cartridge into said needle housing assembly residence chamber at said lower end of said cartridge causing said external section of said hollow injection needle to protrude through said puncturable end cap and allowing said flexible housing wall sections to expand outwardly in said needle housing assembly residence chamber, the further downward movement of said ampule causing the internal section of said hollow injection needle to pass through said puncturable ampule end stopper thereby allowing fluid to be injected outwardly through said hollow injection needle; and

(G) an actuator for engaging said tubular cartridge and for propelling said ampule toward said puncturable end cap and for propelling said piston within said ampule toward said ampule end stopper to inject a fluid.

5,709,669
BLOOD DRAWING DEVICE

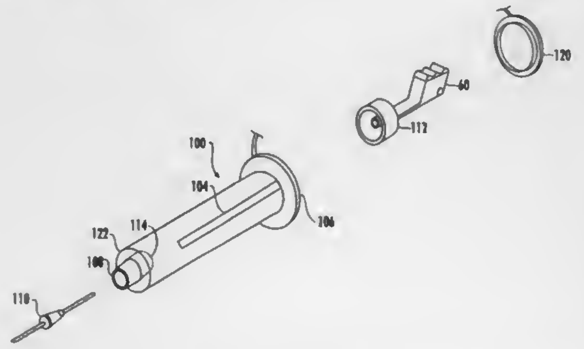
Michael L. Haining, 6731 Ashmore, Houston, Tex. 77069

Continuation of Ser. No. 219,440, Mar. 29, 1994, abandoned.

This application Dec. 18, 1995, Ser. No. 573,723

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—232 **8 Claims**



1. A blood collection device comprising

a hollow cylindrical barrel having an insertion end and a distal end, said barrel including

(1) a longitudinal slot partially extending between said ends, and

(2) internal locking notches in the internal surface of said barrel and near either end of said barrel;

a carrier slidably mounted within said barrel adapted to receive a double cannula, said carrier having an axial length substantially shorter than said barrel; and

a rigid sliding member extending through said slot and fixedly attached to said carrier by an outwardly biased flexible member, said flexible member having a locking ridge on at least one side that is releasably locked into either of said locking notches by said biased member.

5,709,670
SURGICAL FLUID AND TISSUE LOSS MONITOR

Thierry G. Vancaillie, San Antonio, Tex.; Robert K. Mitchiner, Longmont, and David W. Newton, Boulder, both of Colo., assignors to Aquintel, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 484,877, Jun. 7, 1995, Pat. No. 5,522,805, which is a continuation-in-part of Ser. No. 237,350, May 3, 1994, Pat. No. 5,492,537. This application May 13, 1996, Ser. No. 645,349

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—246 **9 Claims**

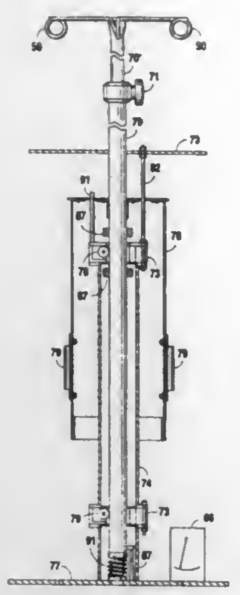
1. A surgical fluid and blood loss monitor, comprising at least one weight-sensitive fluid source support for simultaneously suspending and weighing a fluid source and producing a signal indicative of fluid source weight;

at least one weight-sensitive waste fluid collector support for simultaneously suspending and weighing a waste fluid collector and producing a signal indicative of waste fluid collector weight;

hemoglobin concentration estimation means, comprising

an optical comparator that has a light source,

adjustable diffuser means proximate said light source and intercepting at least a portion of light from said light source to produce variably scattered light emanating from said adjustable diffuser means,



at least two comparator fluid chambers positioned to intercept at least a portion of said variably scattered light to produce output light emanating from each of said comparator fluid chambers,

a detector comprising a pluralitv of light receptors, at least a portion of output light emanating from each of said comparator fluid chambers impinging on a light receptor corresponding to each of said comparator fluid chambers, and each said corresponding light receptor producing a signal substantially proportional to a parameter of said intercepted portion of output light impinging on said receptor, and

comparing means for comparing each said light receptor signal to at least one other said light receptor signal to produce a comparator signal,

said hemoglobin concentration estimation means for estimating hemoglobin concentration in waste fluid and for producing a signal indicative of estimated hemoglobin concentration in waste fluid;

computing means coupled to said fluid source weight signal, to said waste fluid collector weight signal, and to said hemoglobin concentration signal for calculating an estimated fluid source flow rate, an estimated waste fluid flow rate, an estimated blood loss flow rate, a corrected waste fluid flow rate equal to said estimated waste fluid flow rate minus said estimated blood loss flow rate, and an estimated fluid absorption rate equal to said estimated fluid source flow rate minus said corrected waste fluid flow rate, and for producing first and second display signals indicative of said estimated fluid absorption rate and said estimated blood loss flow rate respectively; and

display means coupled to said computing means for transducing for human observation said fluid absorption rate display signal and said blood loss flow rate display signal.

5,709,671
TROCAR HAVING AN IMPROVED TIP CONFIGURATION

Randy R. Stephens, Fairfield; Steven G. Yapp, Loveland; Salvatore Privitera, West Chester; Richard F. Schwemberger, and Darrel Powell, both of Cincinnati, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

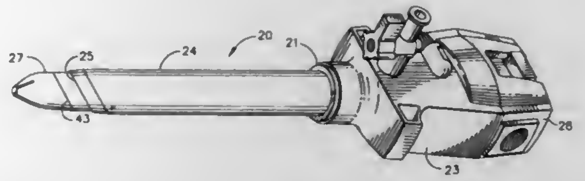
Filed Oct. 16, 1995, Ser. No. 543,455

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—264 **13 Claims**

1. A trocar for piercing a body wall, said trocar comprising:

a) an obturator having a piercing tip with first and second planar surfaces generally parallel to each other, said surfaces converging to a cutting edge surface at a first end of said surfaces, and said surfaces defining a base at an opposite end of said surfaces, said base having a base width; and



b) a safety shield encasing said piercing tip, said safety shield retractable from an extended position wherein said shield encloses said cutting edge surface of said piercing tip to a retracted position wherein said cutting edge is exposed through said shield, said shield having a wall defining a shield diameter;

wherein said base width is substantially less than said shield wall diameter.

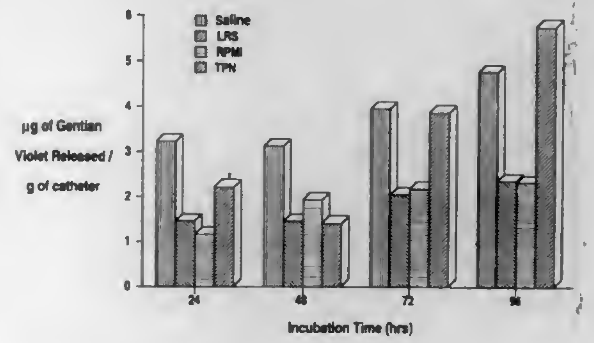
5,709,672
SILASTIC AND POLYMER-BASED CATHETERS WITH IMPROVED ANTIMICROBIAL/ANTIFUNGAL PROPERTIES

Hana Illner, Lubbock, Tex., assignor to Texas Tech University Health Sciences Center, Lubbock, Tex.

Filed Nov. 1, 1995, Ser. No. 551,544

Int. Cl.^{6} A61M *25/00*

U.S. Cl. 604—265 **10 Claims**



1. A medical device comprising silicone having a surface that includes an antimicrobially and antifungally effective amount of gentian violet of about 0.01% to about 0.05% by weight.

5,709,673
FLUSHABLE OSTOMY POUCH

Denis E. Keyes, Rocky Hill, N.J., assignor to E.R.Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 14,950, Feb. 8, 1993, abandoned.

This application Jan. 12, 1995, Ser. No. 371,671

Int. Cl.^{6} A61F *5/44*

U.S. Cl. 604—332 **12 Claims**

1. A flushable ostomy pouch for holding body waste that passes through a stoma comprising:

a) a pouch formed of flexible plastic sheet material defining a waste collection chamber for body waste that passes through a stoma,

b) a waste inlet opening formed in said pouch for passage of waste material from said stoma into said collection chamber,

c) said pouch having a top end portion, a bottom end portion opposite said top end portion, and opposite side edges extending between said top end portion and said bottom end portion, said side edge portions converging toward each other in a direction from said top end portion to said bottom end portion such that said pouch in plan view is substantially V-shaped, and

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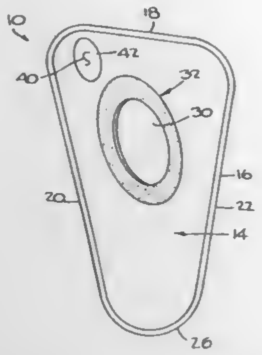


d) said pouch having a height of 6 to 8 inches extending from said top end portion to said bottom end portion, a top end portion width of 4.5 to 6 inches, and an angle of convergence of the side portions in the range of 15° to 25°.

5,709,674

OSTOMY COUPLING

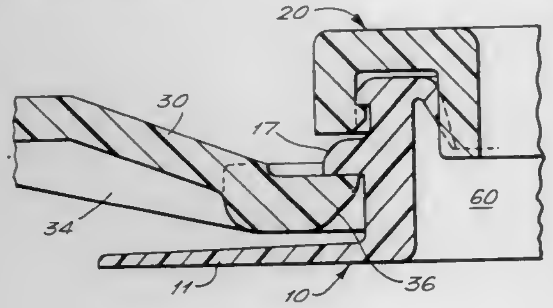
Peter L. Steer, Sussex, England, assignor to E.R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 8, 1996, Ser. No. 612,707

Claims priority, application United Kingdom, Mar. 9, 1995, 9504766

Int. Cl.^{6} A61F *5/44*

U.S. Cl. 604—342 6 Claims



1. An ostomy coupling comprising

a first coupling ring attachable to a medical grade adhesive pad and having a chute portion;

a second coupling ring engageable and disengageable with said first ring, said second ring being adapted for attachment to an ostomy pouch,

said first coupling ring having a cylindrical wall projecting outwardly away from said adhesive pad, said cylindrical wall having an upper portion, distal to said adhesive pad, capable of attachment to said second coupling, said cylindrical wall having a lower portion, proximate to said adhesive pad, including a groove, said lower portion having a rim extending radially outwardly from said cylindrical wall above said groove, and

an intervening ring partly capturable within said groove, said intervening ring being slidable in said groove along said lower portion of said cylindrical wall so as to permit a finger to be placed between said intervening ring and adhesive pad for pushing said intervening ring outwardly, said rim limiting said outward movement of said intervening ring.

5,709,675

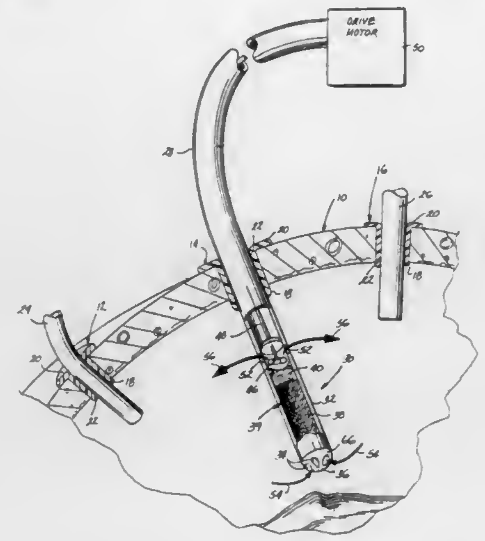
SMOKE REDUCING DEVICE FOR MINIMALLY INVASIVE SURGERY

Ronald A. Williams, Grand Rapids, Mich., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 24, 1996, Ser. No. 637,070

Int. Cl.^{6} A61B *17/20*

U.S. Cl. 606—1 18 Claims



1. A smoke elimination device for use inside a body of a patient comprising:

a housing having a hollow interior, an air inlet port and an air outlet port, the inlet and outlet ports being in fluid communication with the hollow interior, the inlet and outlet ports being positioned so that both the ports are received inside the body when the device is in the operative position;

a first filter member positioned inside the hollow interior of the housing, intermediate the air inlet and outlet ports; and

an air flow generator provided in the housing and adapted to draw air into the housing through the air inlet port, and force the air through the first filter member and the outlet port.

5,709,676

SYNERGISTIC TREATMENT OF STENOSED BLOOD VESSELS USING SHOCK WAVES AND DISSOLVING MEDICATION

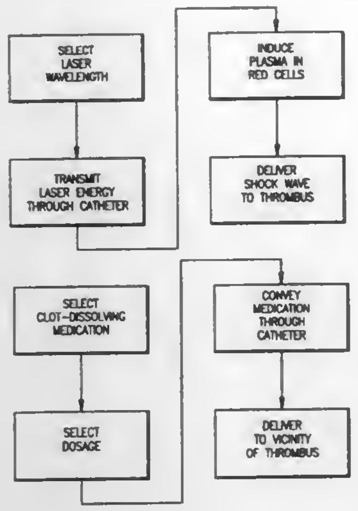
Eckhard Alt, Eichendorffstrasse 52, Ottobrunn, Germany, 85521

Continuation-in-part of Ser. No. 270,786, Jul. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 480,044, Feb. 14, 1990, abandoned. This application Nov. 27, 1995, Ser. No. 561,831

Int. Cl.^{6} A61N *5/06*

U.S. Cl. 606—7 28 Claims

1. A method of treating clots in a blood vessel of a patient, which comprises the steps of alternately applying, first, laser energy in the vessel to induce a plasma-based shock wave through the blood to impact the clot to create fissures therein, and, then, a clot-dissolving medication in a local, non-systemic manner to the clot; repeating a sequence of shock wave and dissolving medication applications over a period of time sufficient to fragment the clot; and removing fragmented clot material from the patient's bloodstream.


SELECT LASER WAVELENGTH
TRANSMIT LASER ENERGY THROUGH CATHETER
INDUCE PLASMA IN RED CELLS
DELIVER SHOCK WAVE TO THROMBUS
SELECT CLOT-DISSOLVING MEDICATION
SELECT DOSAGE
CONVEY MEDICATION THROUGH CATHETER
DELIVER TO VICINITY OF THROMBUS

5,709,677

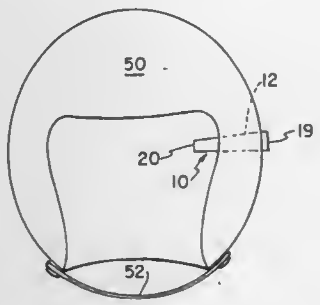
APPARATUS AND METHOD AS PREPARATION FOR PERFORMING A MYRINGOTOMY IN A CHILD'S EAR WITHOUT THE NEED FOR ANAESTHESIA

Michael Slatkine, Fairlawn, N.J., assignor to Laser Industries, Ltd., Tel Aviv, Israel

Filed Jul. 12, 1995, Ser. No. 501,514

Int. Cl.^{6} A61B *1/00*

U.S. Cl. 606—17 21 Claims



1. An apparatus useful in preparing to perform laser surgery without the need for anesthesia, comprising:

a helmet with a passage;

a viewing device within said helmet to be worn on a head with a target area so that the viewing device may be aimed at the target area;

a beam positioning device mounted to said helmet to direct a laser beam emitted from a laser to pass through the passage to strike the target area; and

a retainer that retains the helmet to move in unison with and in response to movement of the target area so as to maintain a relative position of said helmet relative to said target area throughout said movement, said beam positioning device being adjustable to change a course that the laser beam travels to strike the target area upon firing of the laser that emits the laser beam.

5,709,678

Patent Not Issued For This Number

5,709,679

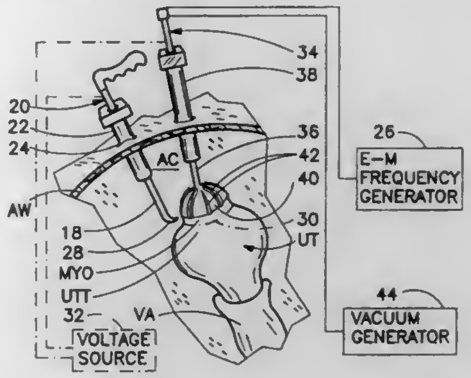
MYOMA REMOVAL TECHNIQUE AND ASSOCIATED SURGICAL DEVICE

Mitchell N. Essig, 227 High Brook Ct., Pelham, N.Y. 10803, and Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Mar. 3, 1994, Ser. No. 205,580

Int. Cl.^{6} A61N *5/00*

U.S. Cl. 606—46 15 Claims



1. A method for removing a myoma, comprising the steps of:

providing a first dissection and cauterization instrument with a first electrode at a first distal end and a second dissection and cauterization instrument with a second electrode at a second distal end, said first electrode taking the form of a cup;

placing said first electrode in contact with tissues of a patient's uterus, said step of placing including the step of covering a portion of said myoma with said cup;

positioning said second electrode in contact with uterine tissues proximate to a boundary between the myoma and normal tissues of said uterus; and

operating said first and said second dissection and cauterization instrument so that said second dissection and cauterization instrument cuts through said uterine tissues proximate to said boundary between said myoma and normal tissues of said uterus.

5,709,680

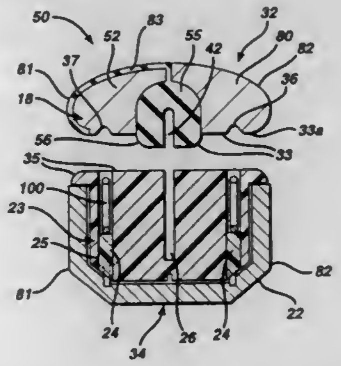
ELECTROSURGICAL HEMOSTATIC DEVICE

David C. Yates, West Chester; Jesse J. Kuhns, Cincinnati, and Warren P. Williamson, IV, Loveland, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 095,797, Jul. 22, 1993, Pat. No. 5,403,312, and Ser. No. 096,154, Jul. 22, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 362,065

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—50 17 Claims



1. An electrosurgical device having an end effector capable of receiving bipolar energy therein, said end effector comprising:

first and second opposing interfacing surfaces, said interfacing surfaces capable of engaging tissue therebetween;

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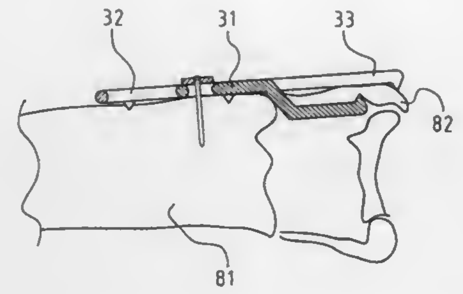
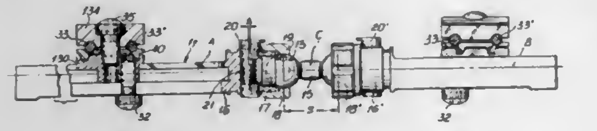
- electrically isolated first and second poles comprised of electrically opposite first and second electrodes respectively said electrodes capable of conducting bipolar energy therethrough;
- said first and second electrodes located on said first surface and separated by an insulator;
- said electrodes arranged so that bipolar energy may be communicated between said poles through the tissue engaged by said interfacing surfaces; and
- wherein said insulator forms a compression ridge for compressing tissue between said interfacing surfaces.



5,709,681
DEVICE FOR OSTEOSYNTHESIS

Dietmar Pennig, Hans-Driesch-Strasse 12, Köln, Germany
Filed Mar. 13, 1996, Ser. No. 614,742
Claims priority, application Germany, Sep. 19, 1995, 295 15 007.6
Int. Cl.^{6} A61B *17/60*
U.S. Cl. 606—54 10 Claims



1. In a bone-fixator construction comprising two axially elongate end members and a central connecting member, (a) wherein said central connecting member has separate ball-joint connection to one longitiudinal end of each of said end members, the separate connections being on separate spaced centers of ball-joint articulation, (b) wherein each of said end members has an elongate guideway extending beyond the ball-joint-connected end of each said member, and (c) wherein a bone-screw clamp has a base that is axially guided by and positionable in a single plane along each guideway and has provision for selectively clamped rotary orientation of one or more bone screws or bone pins about a feed pivot axis that is normal to said single plane; the improvement in which each bone-screw clamp comprises:

- (i) an upper clamp member, an intermediate clamp member end said base, pivotally retained on said pivot axis by a bolt extending centrally through said clamp members and having threaded engagement solely with said base;
- (ii) said upper and intermediate clamp members having confronting adjacent surfaces each of which has a pair of bone-screw or bone-pin-engageable groove formations at opposite radial offsets from said pivot axis; and
- (iii) said intermediate clamp member and said base having confronting adjacent surfaces with tongue-and-groove coacting engagement on a geometric locus which is circular about said pivot axis.

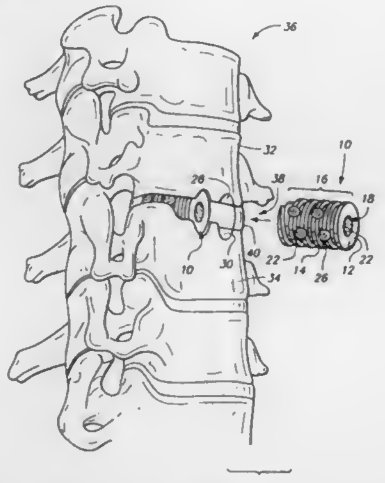
5,709,682
SURGICAL CLAMP FOR FIXATION OF BONE FRAGMENTS

Robert J. Medoff, 159 Ku'ukama St., Kailua, Hi. 96734
Filed Jan. 24, 1996, Ser. No. 590,899
Claims priority, application Sweden, Nov. 30, 1994, 9500538
Int. Cl.^{6} A61B *17/58*
U.S. Cl. 606—60 18 Claims

1. An implantable surgical buttressing means for fixation of one or more bone fragments to an adjacent stable bone, said buttressing means comprising a first part of U-shape including a U portion and two legs extending from said U portion to bear along an extraosseous surface of a stable bone, a bone screw for securing said first part against said stable bone, said legs having bends to pass through a fracture space between adjacent bone fragments and respective distal ends shaped to bear against an intraosseous surface of at least one said bone fragment and provide a buttressing action thereagainst without drilling into said at least one bone fragment.

5,709,683
INTERBODY BONE IMPLANT HAVING CONJOINING STABILIZATION FEATURES FOR BONY FUSION

George Bagby, Spokane, Wash., assignor to Spine-Tech, Inc., Minneapolis, Minn.
Filed Dec. 19, 1995, Ser. No. 577,143
Int. Cl.^{6} A61B *17/70*
U.S. Cl. 606—61 32 Claims



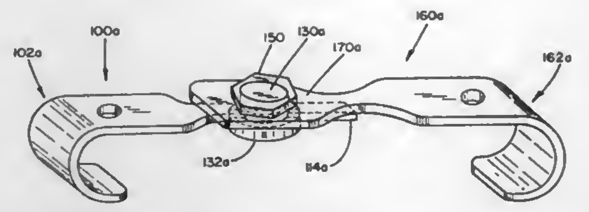
30. A bone joining member comprising:

- a tubular body having an outer dimension sized to be received between a pair of adjacent bone bodies to be joined and a thread extending about the body configured to engage in assembly with each adjacent bone body, the thread being undercut in a tapering fashion along a radial inner portion, providing a cross-sectional configuration with a radial outer portion having a dimension sized larger than a radial inner portion and engaging in interlocking relation with a correspondingly prepared bed in each bone body.

5,709,684
ADVANCED COMPRESSION LOCKING VARIABLE LENGTH CROSS-LINK DEVICE

Joseph P. Errico, Far Hills; Thomas J. Errico, Summit,, and James D. Ralph, Oakland, all of N.J., assignors to Fastenetix, LLC, Summit, N.J.
Continuation-in-part of Ser. No. 567,144, Dec. 4, 1995. This application Apr. 15, 1996, Ser. No. 632,561
Int. Cl.^{6} A61B *17/70*
U.S. Cl. 606—61 16 Claims

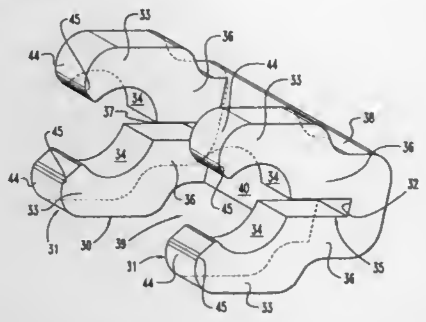
1. A variable length cross-link device for use with orthopaedic rod apparatuses having a plurality of rods, comprising:



- a first element having first and second ends, said first end including means for coupling to a first rod, said second end comprising a narrow extending portion;
- a second element having first and second ends, said first end including means for coupling to a second rod, said second end comprising a wide extending portion, said wide extending portion including a through hole;
- a post including an upper portion having a threading thereon, said upper portion being mounted through the through hole in the second element; and a lower portion having a passageway therethrough for receiving said narrow extending portion of said first element, such that said second end of said second element seats around said post at a position above said passageway; and
- a nut, threadably engageable with the upper portion of the post,
- whereby prior to tightening of the nut on the post, the first element is slideable relative to the post and the second element, and the post element has rotational freedom within the through hole such that the first and second elements may be angulated relative to one another, and whereby tightening of the nut on the post causes the first and second elements to be compressibly engaged, thereby crush locking the elements together.

5,709,685
POSITIONABLE CLIP FOR PROVISIONALLY CAPTURING A COMPONENT ON A SPINAL ROD

Edmund T. Dombrowski, Redlands, Calif.; Michael C. Sherman, Memphis, and Eddie Ray, III, Cordova, both of Tenn., assignors to SDGI Holdings, Inc., Memphis, Tenn.
Filed May 21, 1996, Ser. No. 651,967
Int. Cl.^{6} A61B *17/70*
U.S. Cl. 606—61 19 Claims

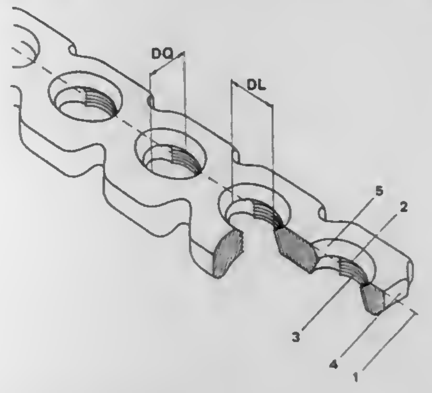


1. A positionable clip engageable about a component disposed on an elongated rod for provisionally capturing the component at a position on the rod, said positionable clip comprising:

- a pair of clamping members, each including a pair of arms arranged to simultaneously contact the elongated rod on substantially opposite sides thereof, each of said clamping members also including means for biasing said pair of arms together to provide a gripping force on the rod when the rod is disposed between said pair of arms; and
- a bar connecting said pair of clamping members in spaced apart relation, said bar having a length between said pair of clamping members sufficient to capture a component engaged on the elongated rod between said clamping members when the rod is disposed between said pair of arms of each of said pair of clamping members; wherein said means for biasing said arms together includes a resilient hinge between said pair of arms and said bar, whereby said hinge is resiliently openable to move said arms between a first position in which said arms are gripping the rod and a second position in which said arms are disposed apart sufficient for the rod to pass between said arms.

5,709,686
BONE PLATE

Gilbert Talos, Oberdorf, and Roland Schmoker, Bern, both of Switzerland, assignors to Synthes (U.S.A.), Paoli, Pa.
PCT No. PCT/CH95/00065, § 371 Date Nov. 26, 1996, § 102(e) Date Nov. 26, 1996, PCT Pub. No. WO96/29948, PCT Pub. Date Oct. 3, 1996
PCT Filed Mar. 27, 1995, Ser. No. 750,114
Int. Cl.^{6} A61B *17/80*
U.S. Cl. 606—69 14 Claims

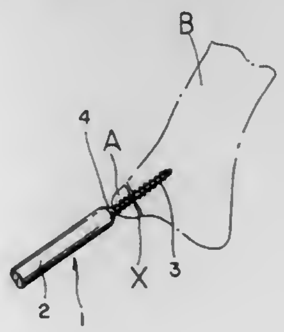


1. A bone plate comprising:

- an elongated plate defining a longitudinal axis along its length having an upper surface, a lower surface for application to a bone, and a plurality of elongated holes arranged along the length of the plate for receiving bone screws, said elongated holes being oblong in shape and having a major axis D_L and a minor axis D_Q, with D_L being greater than D_Q,
- wherein at least one of said elongated holes includes partial threaded portions arranged on an inner wall of the elongated hole, and is configured for seating a bone screw having a threaded head.

5,709,687
FIXATION PIN FOR SMALL-BONE FRAGMENTS

Dietmar Pennig, Hans-Driesch-Strasse 12, 50935, Köln, Germany
Continuation-in-part of Ser. No. 392,386, Feb. 22, 1995, Pat. No. 5,609,595, said Ser. No. 392,386is a continuation-in-part of Ser. No. 214,365, Mar. 16, 1994, Pat. No. 5,433,719. This application Jul. 12, 1996, Ser. No. 679,626
Int. Cl.^{6} A61B *17/58*
U.S. Cl. 606—73 35 Claims



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1. An elongate compression wire for fixating a fragment of a fractured bone to remainder structure of the same fractured bone in an osteosynthesis procedure, said wire having a shoulder between proximal and distal ends, said wire having a central axis and comprising a smooth-walled cylindrical shank portion extending from said shoulder to said proximal end and adapted for selective chuck engagement to a rotary power tool, said shank portion having a diameter in the range 1.5 to 3.0-mm and having a self-tapping threaded portion of lesser diameter than that of said shank, and said threaded portion having an advance per turn in the range 0.2 to 0.5-mm, wherein said threaded portion extends distally of said shoulder, whereby said wire may be power-driven for self-tapping threading advance through the bone fragment and into implantation in remainder bone structure to an extent of shoulder contact with cortex tissue of the bone fragment and bone-fragment retention against remainder bone structure.

5,709,688

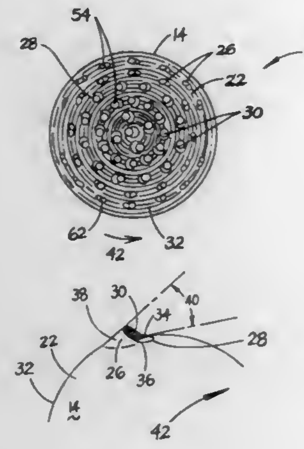
ACETABULAR REAMER CUP AND METHOD OF PRODUCING THE SAME

Paul E. Salyer, Warsaw, Ind., assignor to Othy, Inc., Warsaw, Ind.

Filed Jun. 7, 1995, Ser. No. 473,371

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—81 **9 Claims**



1. An acetabular reamer cup comprising a cutting bowl having a plurality of curved cutting edges, said cutting bowl having a plurality of openings preceding said cutting edges, said cutting bowl having a generally conical rise following said cutting edges, said conical rise having an apex angle generally from about 8° to about 33°, said cutting edges being spirally arranged about the axis of rotation of said cutting bowl, and a bottom adjoined to said cutting bowl, said bottom having a tool driver opening coaxial with said cutting bowl and said cutting edges.

5,709,689

DISTAL FEMUR MULTIPLE RESECTION GUIDE

Joseph M. Ferrante, Bartlett, and Rodney L. Houfburg, Cordova, both of Tenn., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

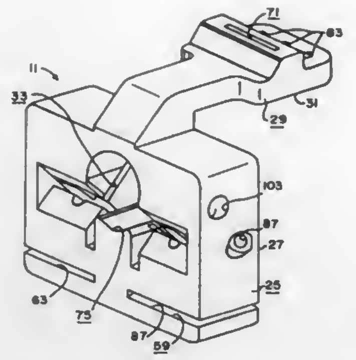
Filed Sep. 25, 1995, Ser. No. 533,339

Int. Cl.^{6} A61B *17/00;17/58;* **A61F** *5/00*

U.S. Cl. 606—86 **13 Claims**

1. A distal femur multiple resection guide for attachment to a distal femur having a resected anterior surface and a resected distal surface, and for guiding a cutting tool; the multiple resection guide comprising:

(a) a block member having a distal femoral resection contact surface for placement against the resected distal surface of the distal femur;



(b) an arm member having opposite sides and having an anterior resection contact surface for placement against the resected anterior surface of the distal femur;

(c) anterior bevel cut guide means on the block member for guiding the cutting tool to make an anterior bevel cut on the distal femur;

(d) posterior bevel cut guide means on the block member for guiding the cutting tool to make a posterior bevel cut on the distal femur;

(d) posterior condyle cut guide means on the block member for guiding the cutting tool to make a posterior condyle cut on the distal femur; and

(e) patellar track cut guide means on the arm member for guiding the cutting tool to make a patellar track cut on the distal femur; the patellar track cut guide means including a slot through the arm member substantially midway between the opposite sides of the arm member; the slot through the arm member having a guide surface for guiding the cutting tool; the plane of the guide surface of the slot through the arm member forming an oblique angle to the plane of the anterior resection contact surface of the arm member.

5,709,690

Patent Not Issued For This Number

5,709,691

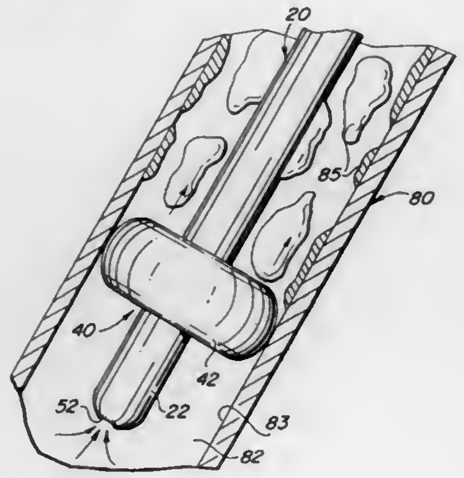
ENDOTRACHEAL TUBE CLEANING DEVICE

Orlando Morejon, 235 SW. 79th Ave., Miami, Fla. 33144

Filed Mar. 11, 1996, Ser. No. 613,277

Int. Cl.^{6} A61D *01/12*

U.S. Cl. 606—106 **15 Claims**



1. An endotracheal tube cleaning device to be used in an endotracheal tube including a flow through passage having an interior wall surface which defines an interior diameter of the endotracheal tube, said endotracheal tube cleaning device comprising:

an elongate, tubular member having a length at least equivalent to a length of the endotracheal tube and a diameter smaller than the interior diameter of the endotracheal tube,

said elongate tubular member including a first end and a second end,

a channel defined in said elongate tubular member and extending from a vicinity of said first end of said elongate tubular member towards said second end of said elongate tubular member,

said channel terminating in an outlet port defined in said elongate tubular member, at said vicinity of said second end thereof,

a resilient material bladder secured to said elongate tubular member, at said vicinity of said second end thereof, and structured to be inflated to at least approximately said interior diameter of the endotracheal tube,

said resilient material bladder being disposed in fluid flow communication with said outlet port of said channel such that fluid exiting said channel through said outlet port inflates said resilient material bladder, and

an expandable, exterior sheath disposed about and structured to completely encase said resilient material bladder so as to contain said resilient material bladder in case of rupture,

said exterior sheath being structured and disposed to substantially conform to said resilient material bladder, upon inflation thereof, and thereby engage the interior wall surface of the endotracheal tube so as to define an exterior, abrasive surface which affirmatively engages the interior wall surface of the endotracheal tube, under an outward, inflated pressure of said resilient material bladder, and thereby applies cleaning pressure to the interior wall surface of the endotracheal tube upon said elongate tubular member being removed from an inserted orientation within the flow though passage of the endotracheal tube.

5,709,692

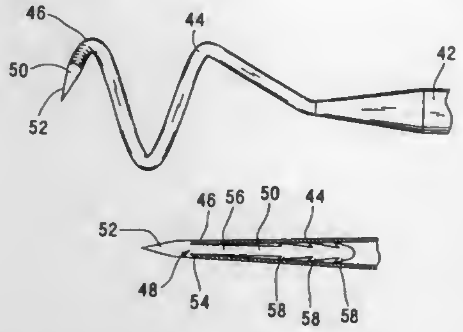
SURGICAL INSTRUMENT FOR PLACING SUTURE OR FASTENERS

Kenneth H. Mollenauer, Santa Clara, and Michelle Y. Monfort, Los Gatos, both of Calif., assignors to General Surgical Innovations, Cupertino, Calif.

Division of Ser. No. 307,188, Sep. 16, 1994, Pat. No. 5,562,685. This application Oct. 8, 1996, Ser. No. 727,196

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—141 **14 Claims**



1. A surgical suturing instrument comprising:

an elongate handle having opposite proximal and distal ends;

a projecting coil on the distal end of the handle, the projecting coil extending from the handle distal end through a curve of the coil to a pointed tip of the coil, the pointed tip and curve being configured to enable penetration of the pointed tip through body tissue and passage of the coil through the penetration, and

the coil pointed tip is removable from the coil and is removably received on a distal end of the coil, whereby the pointed tip can be passed through a tissue by penetrating the tissue with the coil pointed tip and passing the coil through the penetration, and then removing the pointed tip from the coil distal end as the coil is removed from the penetration of the tissue leaving the pointed tip in the penetration as the coil is removed.

5,709,693

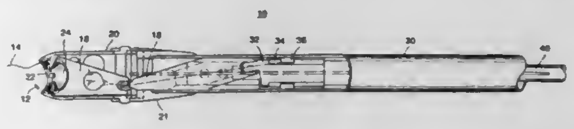
STITCHER

Charles Taylor, San Francisco, Calif., assignor to Cardiothoracic System, Inc., Cupertino, Calif.

Filed Feb. 20, 1996, Ser. No. 650,153

Int. Cl.^{6} A61B *17/04*

U.S. Cl. 606—145 **6 Claims**



3. An automated stitching device comprising a means for advancing an arcuate needle in a circular path and having one-way clutch means to engage and advance said arcuate needle, wherein said one-way clutch means comprises at least one static clutch body means and at least one dynamic clutch body means, and wherein said one-way clutch means further comprises multiple clutch fingers.

5,709,694

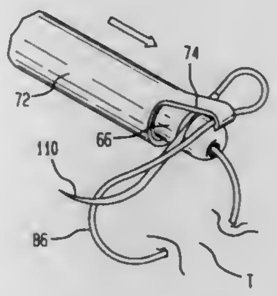
ENDOSCOPIC INTRACORPOREAL SUTURE TYING AID

Alex M. Greenberg; Douglas M. Spranger; Paul J. Mulbauser, and Mark C. Newby, all of New York, N.Y., assignors to Human Factors Industrial Design, Inc., and Greenberg Surgical Technologies, LLC, both of New York, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,829

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—148 **7 Claims**



1. A method for endoscopically forming a throw of a suture intracorporeally, comprising the steps of:

(a) loading a needle, the needle having an end of a suture connected thereto, in a needle holder of a surgical instrument;

(b) introducing the loaded surgical instrument to a surgical site;

(c) passing the needle through tissue at the surgical site;

(d) locating a hook in the vicinity of the suture;

(e) engaging the suture with the hook;

(f) pulling the hook proximally to create a loop in the engaged suture;

(g) forming at least one loop around the suture by rotating the needle and the end of the suture around the suture;

(h) pushing the hook distally so that the hook disengages the looped suture; and

cinching the disengaged suture.

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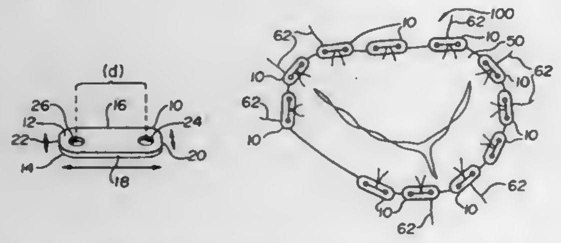
5,709,695
APPARATUS FOR REDUCING THE CIRCUMFERENCE OF A VASCULAR STRUCTURE

William F. Northrup, III, Edina, Minn., assignor to Segmed, Inc., Edina, Minn.

Division of Ser. No. 288,124, Aug. 10, 1994, Pat. No. 5,593,424. This application Aug. 29, 1996, Ser. No. 705,179

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—148 **23 Claims**



1. An anatomical structure circumference reduction apparatus for precisely reducing the circumference of an anatomical structure, the apparatus comprising:

a plurality of substantially rigid discrete support segments for disposition at least partially circumferentially about the anatomical structure to form a line of discrete support segments; each segment consisting of opposite sides, a proximal end, a distal end, and structure defining only two suture apertures, the two suture apertures being constructed to receive and support suture material for attaching each segment with respect to the anatomical structure at a precise location, the suture apertures extending from a top surface of each segment to a bottom surface of each segment, the top surface and the bottom surface of each segment each being substantially planar, the line of segments being disposed and the suture apertures being spaced such that suture material passing through the suture apertures reduces the circumference of the anatomical structure by a precise amount along the line of segments.

5,709,696

Patent Not Issued For This Number

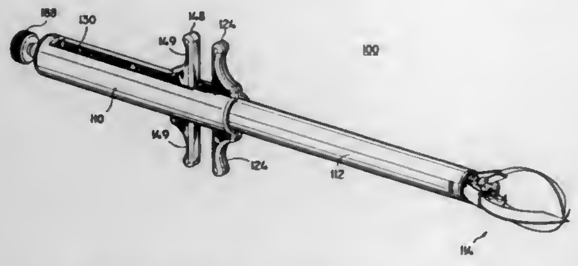
5,709,697
APPARATUS AND METHOD FOR REMOVING TISSUE

Keith Ratcliff, Newton; Salvatore Castro, Seymour, and Dragomir C. Marinkovich, Sandy Hook, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 22, 1995, Ser. No. 561,727

Int. Cl.^{6} A61B *17/32*

U.S. Cl. 606—180 **30 Claims**



1. A surgical instrument for cutting tissue, which comprises: a housing;

a cutting blade having a variable configuration movable between a retracted position disposed substantially within the housing wherein the cutting blade assumes a first configuration and a deployed position extending outwardly from the housing wherein the cutting blade assumes a second configuration different from the first configuration; and

a guide member configured and dimensioned to direct orientation of the cutting blade, operatively connected to the housing and defining a longitudinal axis, the guide member movable from a first orientation wherein the longitudinal axis of the guide member is aligned with a longitudinal axis of the housing to a second orientation wherein the longitudinal axis of the guide member is oriented at a predetermined angle relative to the longitudinal axis of the housing.

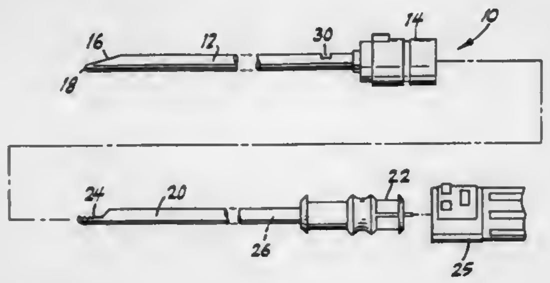
5,709,698
IRRIGATING/ASPIRATING SHAVER BLADE ASSEMBLY

Kenneth M. Adams, Tampa; Brian J. Fox, St. Petersburg; James Wallace, Holiday; Robert A. Van Wyk, Largo; Gary R. Heisler, Holiday; David Castagnetta, Clearwater, and Cris Van Varsseveld, Oldsmar, all of Fla., assignors to Linvatec Corporation, Largo, Fla.

Filed Feb. 26, 1996, Ser. No. 607,038

Int. Cl.^{6} A61B *17/32*

U.S. Cl. 606—180 **28 Claims**



1. A shaver blade assembly for resecting tissue from a surgical site while being connected to a source of fluid and a source of aspiration such that tissue at the surgical site may be selectively subjected to irrigating, aspirating or irrigating and aspirating a surgical site at the same time comprising:

an elongated outer tubular member having a distal end, a proximal end, a cutting opening at said distal end, a hub at said proximal end, and an irrigating fluid inflow port in said outer tubular member intermediate said distal and proximal ends;

an elongated inner tubular member adapted to move relative to said outer tubular member and having a distal end, proximal end, a cutting window at said distal end, and a hub at said proximal end;

an elongated channel between said irrigating fluid inflow port and said cutting window, said channel defined by the inner surface of said outer member and the outer surface of said inner member; and

a fluid adapter means selectively attachable to said outer tubular member adjacent said irrigating fluid inflow port for connecting said irrigating fluid port to said source of fluid.

5,709,699
BLOOD COLLECTION AND TESTING DEVICE

Henry A. Warner, Lake Forest, Ill., assignor to BioSafe Diagnostics Corporation, Lincolnshire, Ill.

Filed Sep. 1, 1995, Ser. No. 515,080

Int. Cl.^{6} A61B *17/32*

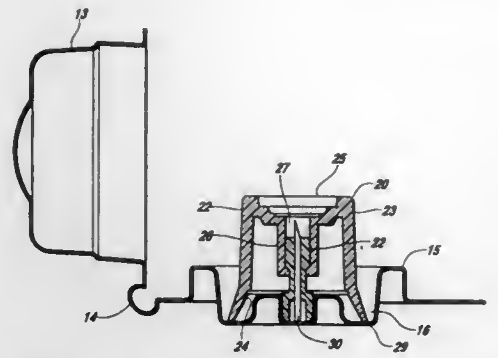
U.S. Cl. 606—181 **9 Claims**

1. Blood sampling device comprising;

A) a base;

B) a lid hingedly attached to the base;

C) a resilient cup having a top, bottom which is flexible and expands outwardly upon compression, and side wall mounted on the base;



D) the top of the resilient cup defining an opening for placing the finger to be lanced

E) a lancet attached to the base pointed the top of the cup; and

F) a bushing surrounding the lancet within the flexible cup providing support for the lancet when the resilient cup is compressed.

5,709,700
HOLE MAKING DEVICE

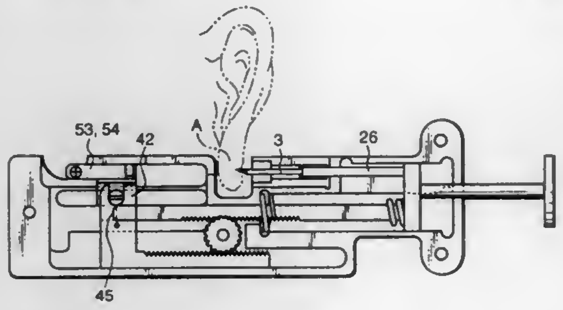
Masabo Hirota, Tokyo, Japan, assignor to Kato Spring Works Co., Ltd, Tokyo, and K & T Corporation, Ohmiya, both of Japan

Filed Apr. 11, 1996, Ser. No. 630,278

Claims priority, application Japan, Aug. 30, 1995, 7-222376

Int. Cl.^{6} A61B *17/34*

U.S. Cl. 606—188 **14 Claims**



1. Hole making device comprising:

a hole maintenance member having a rod portion;

a needle having a pointed tip and a recess therethrough for accommodating said rod portion of said hole maintenance member;

a piercing mechanism for passing said needle member accommodating said rod portion of said hole maintenance member through an object in which a hole is to be made;

an extraction mechanism for receiving said needle member after penetrating said object and extracting said needle member from said object in a a direction in which said pointed tip of said needle member points so as to leave said hole maintenance member in said object; and

an interlock mechanism for interlocking said piercing mechanism and said extraction mechanism.

5,709,701
APPARATUS FOR IMPLANTING A PROTHESIS WITHIN A BODY PASSAGEWAY

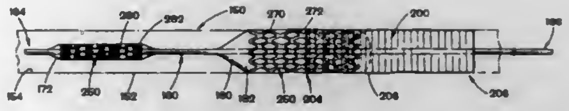
Juan C. Parodi, Mercedes 4255, Buenos Aires, Argentina, 1419

Filed May 30, 1996, Ser. No. 644,684

Int. Cl.^{6} A61M *29/00*

U.S. Cl. 606—194 **4 Claims**

1. An apparatus for repairing a body passageway, comprising:



a catheter having first and second ends, the first end of the catheter being insertable into the body passageway, a first inflatable portion disposed on the catheter proximate the first end of the catheter, and a second inflatable portion disposed on the catheter between the first inflatable portion and the second end of the catheter;

a prosthesis having first and second ends; and

a first means for securing the prosthesis to the body passageway, the first securing means being associated with the prosthesis proximate the first end of the prosthesis, and the first securing means and prosthesis being disposed upon the second inflatable portion of the catheter.

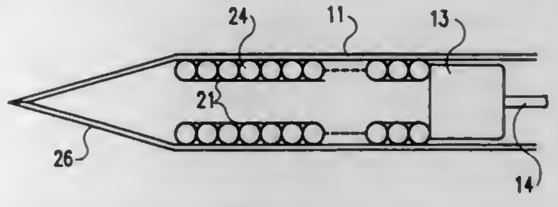
5,709,702
SURGICAL DEVICE FOR REPAIRING ANEURYSMS

Giuseppe Cogita, 11506 Newport Mill Rd., Silver Spring, Md. 20902

Filed Oct. 15, 1996, Ser. No. 730,456

Int. Cl.^{6} A61M *29/00;* **A61B** *17/00*

U.S. Cl. 606—198 **7 Claims**



1. A surgical device, comprising:

a length of flexible catheter tubing; and

a helical coil spring within said catheter tubing, said spring being wound under stress within said catheter tubing so that said spring will expand radially when released from said catheter tubing, a helical flap positioned between the coils of said helical spring and attached on one side thereof to said spring, said flap being arranged to allow flow from the exterior of said spring to the interior of the spring, but prevent flow through the coils of said spring from the interior of said spring to the exterior of the spring.

5,709,703
STENT DELIVERY DEVICE AND METHOD FOR MANUFACTURING SAME

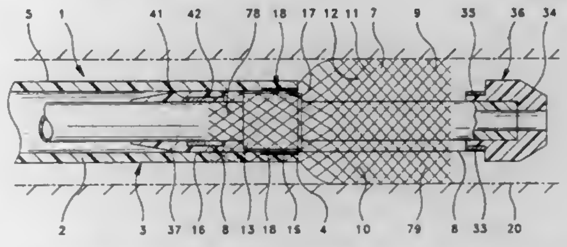
Goran Lukic, Bulach, and Marc Gianotti, Wiesendangen, both of Switzerland, assignors to Schneider (Europe) A.G., Bulach, Switzerland

Filed Nov. 5, 1996, Ser. No. 744,036

Claims priority, application European Pat. Off., Nov. 14, 1995, 95117923

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—198 **19 Claims**



1. A stent delivery device comprising: an elongated sheath having a distal area with a distal end; a self-expandable stent

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having proximal and distal end portions with proximal and distal ends and a braided tubular wall, said stent being placed in contracted condition within the distal area of the sheath; elongated core means having proximal and distal areas, said core means arranged in said sheath for relative longitudinal motion between the sheath and core means; and drive means between the distal area of the core means and the self-expandable stent, whereby relative longitudinal motion between said sheath and core means results in longitudinal relative motion between said stent and sheath so as to cause radial self-expansion of at least a longitudinal portion of the stent out of the distal area of the sheath or radial contraction of at least a longitudinal portion of the stent into the distal area of the sheath, and scratch protection tubular means of biocompatible material having an inner wall surrounding at least an end portion of the stent when the stent is in contracted condition in the distal area of the sheath.

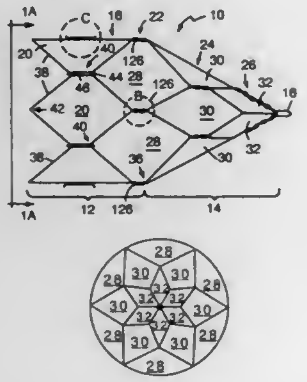
5,709,704
BLOOD CLOT FILTERING

Sepideh H. Nott, Canton; Hannah S. Kim, Boxborough; Naroun Suon, Lynn, and David L. Sandock, Littleton, all of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Filed Nov. 30, 1994, Ser. No. 346,733

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—200 **32 Claims**



1. A filter sized and constructed to be compressed and passed through the vasculature of a patient to be anchored against an inner wall surface of a blood vessel for capturing blood clots in a blood stream passing therethrough, said filter comprising

an anchoring portion comprising a generally cylindrical self-expanding body formed from resilient material, said generally cylindrical body having proximal and distal ends and defining an axial direction and having a structure of variable size diameter expandable from a low-profile compressed condition to a larger profile expanded condition, wherein said resilient material urges said generally cylindrical body to radially expand and to thereby apply anchoring radial force against the inner wall surface of the blood vessel, and

a generally conical filtering portion, axially aligned with said generally cylindrical body having an open proximal end coupled near the distal end of said anchoring portion and having an apical distal end.

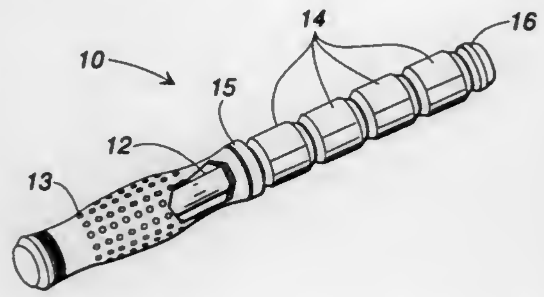
5,709,705
METHOD AND APPARATUS FOR REDUCING FACIAL WRINKLES

Pat E. Belcher, 120 Interstate N. Pkwy., East, Suite 424, Atlanta, Ga. 30339

Filed Aug. 19, 1996, Ser. No. 697,070

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—204.35 **10 Claims**



1. A method of reducing facial wrinkles comprising the steps of
(a) rolling the face with a roller until the face is flushed and warmed,
(b) rolling substantially the entire head with a roller with pressure applied to the head greater than the pressure applied to the face in step (a), and
(c) rolling facial wrinkles about the eyes or lips with a roller with firm pressure applied to the wrinkles for a period of time in excess of the combined periods of time consumed in performing steps (a) and (b).

5,709,706
SURGICAL INSTRUMENT

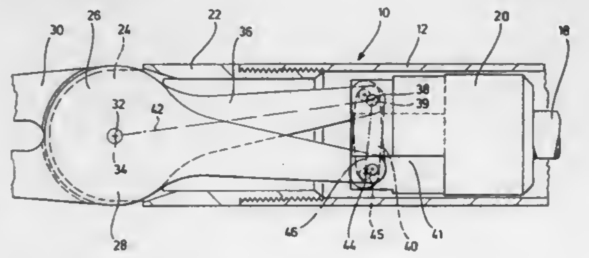
Karl-Ernst Kienzle, Tuttlingen; Rupert Mayenberger, Rielasingen; Markus Nesper, Tuttlingen, and Dieter Weisshaupt, Immendingen, all of Germany, assignors to Aesculap AG, Tuttlingen, Germany

Filed Dec. 27, 1996, Ser. No. 774,901

Claims priority, application Germany, Jun. 28, 1994, 44 22 621.7

Int. Cl.^{6} A61B *17/28;17/10*

U.S. Cl. 606—205 **17 Claims**



1. A surgical instrument, comprising:
a shank having a longitudinal axis and an inner width;
at least one swiveling tool including a first tool which is mounted for swivel movement at the end of said shank;
a second tool which opposes said first tool;
a first swivel element which is mounted for swivel movement about an axis of rotation for swiveling said first tool in a range of motion between a first position and a second position; and
a first actuating member actuatable from an end of said shank which is located opposite said first tool for swiveling said swivel element about said axis of rotation; wherein:
said first actuating member comprises an arm which is articulatedly connected to said first swivel element at a first articulation point;

said arm is adapted to position said first tool in said first position when said arm is at an incline to an axis of said first swivel element and at an incline to said shank axis;
said axis of said first swivel element extends perpendicularly to said axis of rotation through said first articulation point;
said arm is adapted to position said first tool in said second position when said arm is approximately perpendicular to said axis of said first swivel element and almost perpendicular to said shank axis; and
a length of said arm corresponds almost to said inner width of said shank.

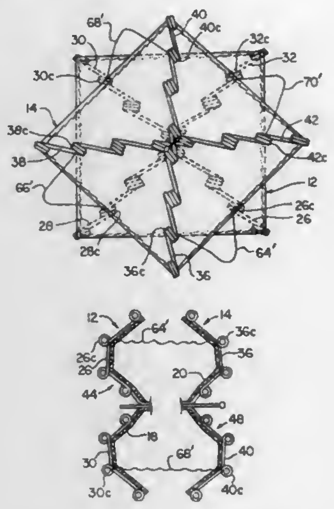
5,709,707
SELF-CENTERING UMBRELLA-TYPE SEPTAL CLOSURE DEVICE

James E. Lock, Newton; Carol A. Ryan, Lowell, and Clifford J. Dwyer, Wilmington, all of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Continuation of Ser. No. 550,215, Oct. 30, 1995, abandoned. This application Nov. 19, 1996, Ser. No. 751,371

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—213 **22 Claims**



1. A septal defect closure device, comprising:
a proximal occluder including a plurality of outwardly extending proximal arms supporting a proximal occlusion shell;
a distal occluder including a plurality of outwardly extending distal arms supporting a distal occlusion shell; and
a centering mechanism secured between said proximal occluder and said distal occluder to center said proximal and said distal occluders about a defect, said centering mechanism comprising at least two centering members, each of said centering members secured between a separate one of said proximal arms and a corresponding one of said distal arms, at least one of said centering members comprising an elastomeric material.

5,709,708
CAPTURED-LOOP KNOTLESS SUTURE ANCHOR ASSEMBLY

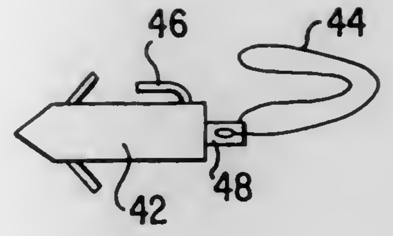
Raymond Thal, 11321 Bright Pond Ln., Reston, Va. 22094

Filed Jan. 31, 1997, Ser. No. 792,738

Int. Cl.^{6} A61B *17/04*

U.S. Cl. 606—232 **10 Claims**

1. A knotless suture anchor assembly for attachment of tissue to a bone mass, said assembly comprising:
a) an anchor means for attachment to said bone mass;



b) a suture element connected to said anchor means having a continuous loop formed along its length; and
c) a snag means located on said anchor means, wherein said snag means captures said continuous loop of said suture element to draw said tissue into secure attachment with said bone mass.

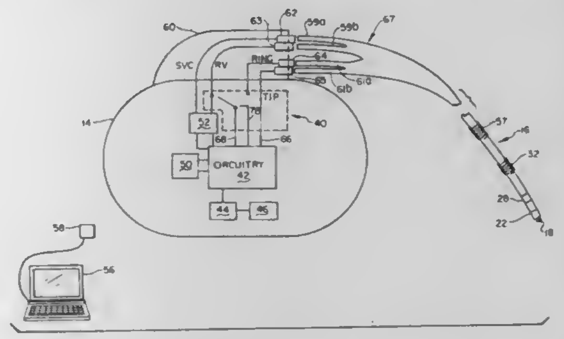
5,709,709
ICD WITH RATE-RESPONSIVE PACING

Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Feb. 13, 1996, Ser. No. 600,750

Int. Cl.^{6} A61N *1/39;1/365;1/362*

U.S. Cl. 607—4 **6 Claims**



1. An implantable cardioverter defibrillator system with rate responsive pacing which sense a minute-volume ventilation rate of a patient by the passage of a current between a coil electrode and a housing of the ICD system, the ICD system comprising:
an electrical pulse generating device having a housing containing pulse-generating circuitry therein;
a conductive lead connectable to the housing wherein the lead has a first electrode, a second electrode and a coil electrode;
switching circuitry contained in the housing and operatively connected to the coil electrode, the pulse-generating circuitry and the housing that selectively switches the coil electrode between a rate-responsive sensing mode in which the coil electrode is connected to the housing as part of a circuit for sensing the minute-volume ventilation rate of the patient and a defibrillation mode in which the coil electrode is connected to the pulse-generating circuitry to selectively deliver electrical therapy to the patient; and
control circuitry contained within the housing wherein the control circuitry controls the generation and delivery of both pacing signals and defibrillation countershocks by the pulse-generating circuitry, controls the delivery of a modulating signal to the coil electrode when the coil electrode is in the rate-responsive sensing mode, and senses changes in impedance between the coil electrode and the housing causing an alteration of a rate at which the pacing signals are delivered.

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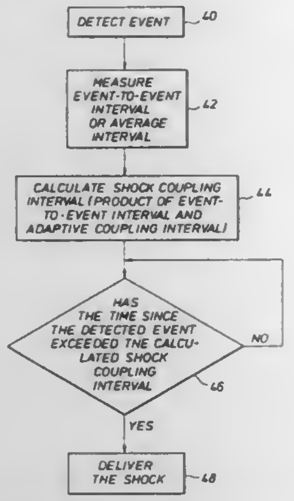
5,709,710
IMPLANTABLE CARDIOVERTER/DEFIBRILLATOR WITH ADAPTIVE SHOCK COUPLING INTERVAL AND METHOD

Randolph Kerry Armstrong, 4231 King Cotton La., Missouri City, Tex. 77459

Filed May 10, 1995, Ser. No. 435,404
Int. Cl.^{6} A61N *1/39*

U.S. Cl. 607—5 **5 Claims**


DETECT EVENT
40
MEASURE EVENT-TO-EVENT INTERVAL OR AVERAGE INTERVAL
42
CALCULATE SHOCK COUPLING INTERVAL (PRODUCT OF EVENT-TO-EVENT INTERVAL AND ADAPTIVE COUPLING INTERVAL)
44
HAS THE TIME SINCE THE DETECTED EVENT EXCEEDED THE CALCULATED SHOCK COUPLING INTERVAL
NO
46
YES
DELIVER THE SHOCK
48

1. A cardioverter/defibrillator having pulse carrying electrodes and a rate sensing electrode for connection to a heart, the cardioverter comprising:

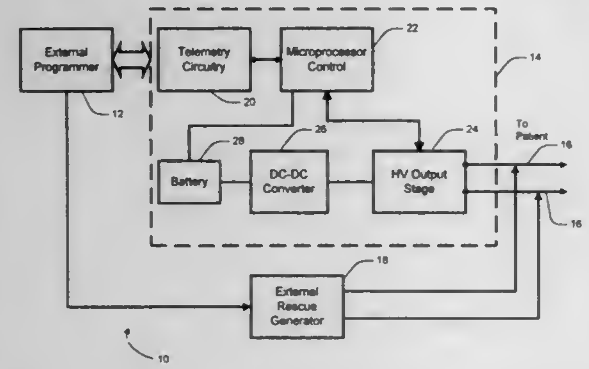
a. a shock pulse source coupled to the pulse carrying electrodes;
b. an event detector coupled to the rate sensing electrode;
c. means for determining a time duration between events detected by the event detector;
d. means for storing a predetermined adaptive coupling interval; and
e. central processor for calculating a shock coupling interval as a function of the determined time duration between events and the adaptive coupling interval, thereby triggering the shock pulse source based upon the calculated shock coupling interval to cardiovert the heart.

5,709,711
IMPLANTABLE DEFIBRILLATOR WITH ELECTROPHYSIOLOGIC TESTING CAPABILITIES

Eric S. Fain, Menlo Park, Calif., assignor to Pacesetter, Inc., Sunnyvale, Calif.

Filed Aug. 13, 1996, Ser. No. 689,631
Int. Cl.^{6} A61N *1/00*

U.S. Cl. 607—8 **15 Claims**



1. An implantable pulse generator system having electrophysiologic testing capability, said system comprising:

an external programmer for providing control commands;

an implantable pulse generator including telemetry circuitry for communication with said external programmer, a microprocessor coupled to said telemetry circuitry for controlling the operation of said pulse generator, a fibrillation induction circuit, capacitor means for storing electrical energy, a battery, and a charging system for charging said capacitor means from said battery, said fibrillation induction circuit deriving energy for delivery of an electrical signal from a source other than said capacitor means;

an electrode system for discharging stored energy in said capacitor means into said patient's heart; and

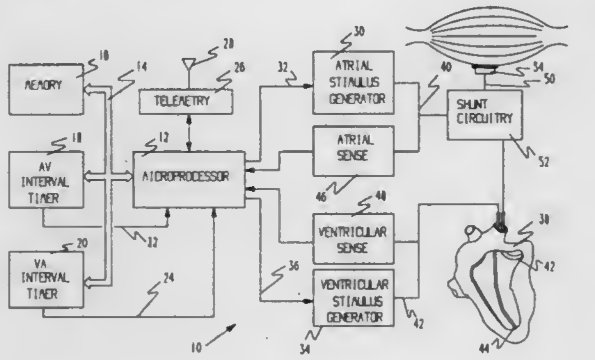
said microprocessor being programmed for an electrophysiologic testing mode to charge said capacitor means to a voltage level for de fibrillation upon command from said external programmer and prior to activation of said fibrillation induction circuit, to induce fibrillation with said fibrillation induction circuit and to discharge said capacitor means upon either command from said external programmer or at a prescribed time following induction of fibrillation by said fibrillation induction circuit.

5,709,712
IMPLANTABLE CARDIAC STIMULATION DEVICE WITH WARNING SYSTEM

Patrick J. Paul, and David Prutchi, both of Lake Jackson, Tex., assignors to Sulzer Intermedics Inc., Angleton, Tex.

Division of Ser. No. 426,949, Apr. 21, 1995, Pat. No. 5,628,776.
This application Sep. 30, 1996, Ser. No. 723,839
Int. Cl.^{6} A61N *1/37*

U.S. Cl. 607—27 **26 Claims**



1. An implantable medical device comprising

a cardiac therapy system having

means for producing a cardiac therapy,

at least one electrode adapted to be implanted adjacent a patient's heart for delivering said stimulation therapy to the heart,

a cardiac stimulation lead electrically connecting said therapy producing means to said electrode, and

a warning system

means for detecting a predetermined condition of said cardiac therapy system,

means for producing a physiologic stimulation to warn said patient of said detected condition,

at least one auxiliary electrode for implantation near an excitable tissue of said patient, and

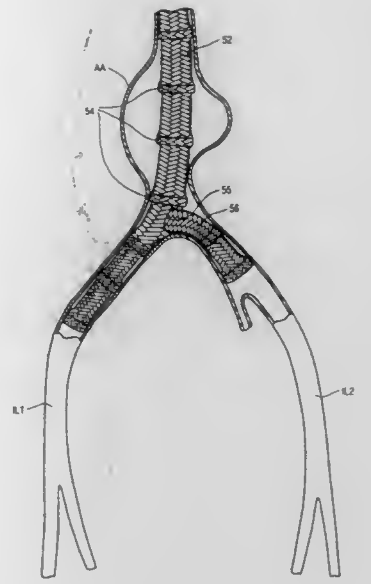
an auxiliary flexible, elongated lead electrically connecting said stimulation producing means and said auxiliary electrode, said auxiliary lead having an electrical conductor and a flexible biocompatible casing enclosing said conductor, and battery means for providing electrical power to said cardiac therapy system and said warning system.

5,709,713
RADIALLY EXPANSIBLE VASCULAR PROSTHESIS HAVING REVERSIBLE AND OTHER LOCKING STRUCTURES

Michael A. Evans, Palo Alto, and Gwendolyn A. Watanabe, Mountain View, both of Calif., assignors to Cardiovascular Concepts, Inc., Portola Valley, Calif.

Filed Mar. 31, 1995, Ser. No. 414,995
Int. Cl.^{6} A61F *2/06*

U.S. Cl. 623—1 **23 Claims**



1. A tubular prosthesis comprising:

a radially expansible tubular body having a first end, a second end, and a lumen extending from the first end to the second end; and

circumferential structure on the tubular body, wherein said structure defines at least one fold line for eversion of the tubular prosthesis;

wherein the circumferential structure comprises a circumferential score line over the tubular body at at least some of the fold lines.

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5,709,714

METHOD OF TREATING LEATHER WITH AMPHOTERIC POLYMERS

John Natoli, Ambler, and Anthony Frank Volpe, Jr., Lansdale, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 12, 1997, Ser. No. 799,175

Int. Cl.^{6} C14C *3/22*

U.S. Cl. 8—94.21 **8 Claims**

1. A method of treating a tanned leather stock comprising:

retanning said tanned leather stock with particles of an amphoteric polymer dispersed in an aqueous medium to produce a retanned leather stock having improved color expression characteristic, said amphoteric polymer particles being prepared by:

emulsion polymerizing in said aqueous medium at least one monomer containing an acid group in the range of from 0.5 percent to 20 percent with at least one first stage comonomer in the range of from 99.5 percent to 80 percent to form a first stage copolymer having a Tg varying from –40° C. to +60° C. and a GPC weight average molecular weight varying in the range of from 10,000 to 1,000,000, all percentages being in weight percent based on the total weight of amphoteric polymer solids;

raising the pH of said aqueous medium sufficiently to avoid coagulation of said amphoteric polymer particles in the presence of an amine group by adding a base to said aqueous medium;

emulsion polymerizing in said aqueous medium at least one monomer containing said amine group in the range of from 0.5 percent to 20 percent with at least one second stage comonomer in the range of from 99.5 percent to 80 percent to form a second stage copolymer having a Tg varying from –40° C. to +60° C. and a GPC weight average molecular weight varying in the range of from 10,000 to 1,000,000, all percentages being in weight percent based on the total weight of amphoteric polymer solids.

5,709,715

SILICON OR SILICA SUBSTRATE WITH A MODIFIED SURFACE, PROCESS FOR PRODUCING THE SAME, NEW ORTHOESTERS AND PROCESS FOR PRODUCING THE SAME

Bruno Guidotti, Freienbach; Walter Caseri; Ulrich Suter, both of Zürich, and Wolfgang Saur, Buttikon, all of Switzerland, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

PCT No. PCT/CH93/00173, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO94/02425, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 6, 1993, Ser. No. 211,191

Claims priority, application Switzerland, Jul. 23, 1992, 2327/92; Jun. 2, 1993, 1644/93

Int. Cl.^{6} C03C *17/28;* **C04B** *41/46;* **C07C** *69/54*

U.S. Cl. 8—115.51 **62 Claims**

1. A silicon substrate or silicon dioxide substrate having at least one surface comprising alcohol or silylether moieties prepared by contacting a surface of said substrate with at least one orthoester.

5,709,716

FIBRE TREATMENT

James Martin Taylor, Derby, United Kingdom, assignor to Courtaulds Fibres (Holdings) Limited, London, United Kingdom

PCT No. PCT/GB95/00484, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/24524, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 6, 1995, Ser. No. 704,632

Claims priority, application United Kingdom, Mar. 9, 1994, 9404510

Int. Cl.^{6} D06M *11/40;16/00;* **D06P** *1/673;3/60*

U.S. Cl. 8—401 **8 Claims**

1. A method of improving the colour properties of lyocell fibre, comprising the step of mercerizing the fibre.

5,709,717

PHTHALOCYANINE REACTIVE DYESTUFF MIXTURE

Wolfram Reddig, Leverkusen; Karl-Josef Herd, and Wolfgang Harms, both of Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 7, 1996, Ser. No. 646,185

Claims priority, application Germany, May 12, 1995, 195 17 503.4

Int. Cl.^{6} C09B *62/016;* **D06P** *1/38*

U.S. Cl. 8—549 **11 Claims**

1. A dye mixture comprising at least two phthalocyanine reactive dyestuffs which contain different reactive groups, which comprises at least one chlorine-free phthalocyanine-fluoropyrimidinyl reactive dyestuff 2 and at least one phthalocyanine sulfatoethyl sulfonyl reactive dyestuff 1 or one phthalocyanine-monochlorotriazinyl reactive dyestuff 3, or both.

5,709,718

FUEL COMPOSITIONS CONTAINING A POLYETHER

Charles Lee Edwards, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 404,782, Mar. 15, 1995, abandoned. This application Aug. 6, 1996, Ser. No. 692,217

Int. Cl.^{6} C10L *1/24*

U.S. Cl. 44—383 **12 Claims**

1. A fuel composition comprising a mixture of a major amount of hydrocarbons in the gasoline boiling range and from about 50 ppm by weight to about 400 ppm by weight of the fuel composition of an additive compound having the formula:

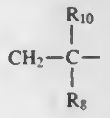
$$R_1\text{-}S\text{-}(R_2\text{-}O)_x\text{-}(R_3\text{-}O)_y\text{-}H$$

wherein

R_1 is acyl of 2 to 20 carbon atoms;

each R_2 is selected from alkyl of 2 to 12 carbon atoms;

each R_3 is alkyl of the formula:



$$CH_2-\overset{\overset{\large R_{10}}{|}}{\underset{\underset{\large R_8}{|}}{C}}-$$

wherein R_8 and R_{10} are each independently selected from the group consisting of hydrogen and alkyl of 1 to 18 carbon atoms;

x is from 1 to 5;

y is from 1 to 50; and

the weight average molecular weight of the additive compound is from about 800 to about 4000.

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5,709,719

POLY(OXYALKYLENE) ESTERS OF SUBSTITUTED POLYPHENYLETHERS AND FUEL COMPOSITIONS CONTAINING THE SAME

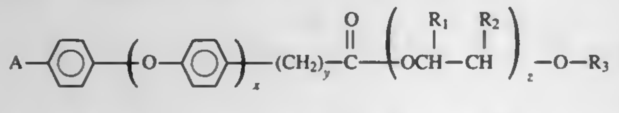
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Dec. 30, 1996, Ser. No. 778,199

Int. Cl.^{6} C10L *1/22*

U.S. Cl. 44—399 **27 Claims**

11. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an effective deposit-controlling amount of a compound of the formula:



wherein A is amino, aminomethyl, cyano, nitro, N-alkylamino or N-alkylaminomethyl wherein the alkyl group contains about 1 to about 6 carbon atoms, or N,N-dialkylamino or N,N-dialkylaminomethyl wherein each alkyl group independently contains about 1 to about 6 carbon atoms;

- R_1 and R_2 are independently hydrogen or lower alkyl having about 1 to about 6 carbon atoms and each R_1 and R_2 is independently selected in each —O—CHR$_1$-CHR$_2$- unit;
- R_3 is hydrogen, alkyl having about 1 to about 100 carbon atoms, phenyl, aralkyl having about 7 to about 100 carbon atoms, or alkaryl having about 7 to about 100 carbon atoms;
- x is an integer from 1 to about 10; y is an integer from 0 to about 10; and z is an integer from about 1 to about 100.

5,709,720

AROMATIC ETHERS OF POLYALKYLPHENOXYALKANOLS AND FUEL COMPOSITIONS CONTAINING THE SAME

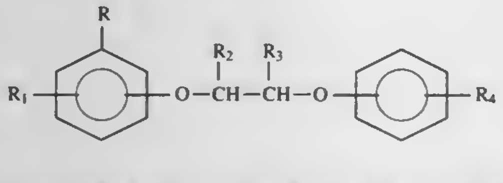
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Nov. 7, 1996, Ser. No. 746,098

Int. Cl.^{6} C10L *1/22;1/18*

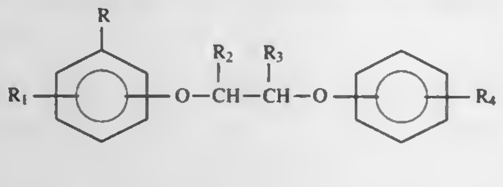
U.S. Cl. 44—413 **54 Claims**

1. A compound of the formula:



- or a fuel soluble salt thereof, wherein R is hydroxy, nitro or —$(CH_2)_x$—NR$_5$R$_6$, wherein R_5 and R_6 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms, and x is 0 or 1;
- R_1 is hydrogen, hydroxy, nitro or —NR$_7$R$_8$, wherein R_7 and R_8 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms;
- R_2 and R_3 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; and
- R_4 is a polyalkyl group having an average molecular weight in the range of about 450 to 5,000.

18. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an effective deposit-controlling amount of a compound of the formula:



or a fuel soluble salt thereof, wherein R is hydroxy, nitro or —$(CH_2)_x$-NR$_5$R$_6$, wherein R_5 and R_6 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms, and x is 0 or 1;

- R_1 is hydrogen, hydroxy, nitro or —NR$_7$R$_8$, wherein R_7 and R_8 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms;
- R_2 and R_3 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; and
- R_4 is a polyalkyl group having an average molecular weight in the range of about 450 to 5,000.

5,709,721

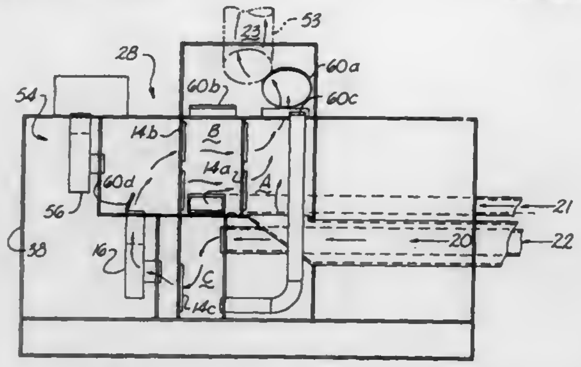
AIR HANDLING APPARATUS FOR TEXTILE MACHINES

Helmut Stueble, Spartanburg, S.C., assignor to LTG Technologies, Inc., Spartanburg, S.C.

Filed Jan. 31, 1996, Ser. No. 595,001

Int. Cl.^{6} B01D *39/00;39/02*

U.S. Cl. 55—212 **26 Claims**



1. An air handling apparatus for use with textile machines for filtering waste fiber material without adversely interrupting operation of the textile machine, said apparatus comprising:

- a common vacuum system, said common vacuum system configured for drawing first, second, and third independent air streams from the textile machine, each of said independent air streams conveying a type of waste fiber material from the textile machine; and
- a filtering system in pneumatic communication with said common vacuum system to combine and commonly filter said first, second, and third air streams, said filtering system comprising:
  - a first filter assembly configured to selectively filter any combination of said waste fiber material types from said first, second, and third air streams and to combine said first, second, and third air streams so that a desired at least one of said waste fiber materials is conveyed by the combined air stream; and
  - a second filter assembly downstream from said first filter assembly and configured to separate said at least one waste fiber material from the combined air stream.

5,709,722

PARTICULATE TRAP FOR DIESEL ENGINE

Youichi Nagai; Shunsuke Ban, and Tomohiko Ihara, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 30, 1996, Ser. No. 655,738

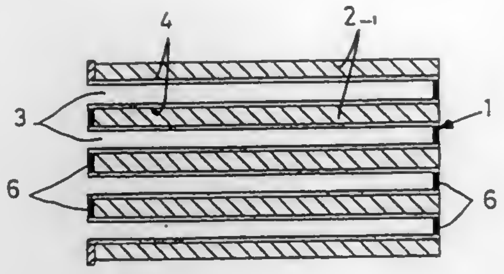
Claims priority, application Japan, May 30, 1995, 7-131611; May 30, 1995, 7-131944; Apr. 19, 1996, 8-98073

Int. Cl.^{6} B01D *46/24*

U.S. Cl. 055—499 **13 Claims**

1. A particulate trap for use in a diesel engine including a filter element comprising a plurality of filters made of three-dimensionally reticulated porous member comprising heat-resistant metal substrate having holes communicating with one another, said filters defining alternating, longitudinally extending exhaust incoming spaces end exhaust outgoing spaces between adjacent said filters, said exhaust incoming spaces having their outlet ends closed, said exhaust outgoing spaces having their inlet ends closed, said filter element being mounted in a container provided in an exhaust line of a diesel engine,

- wherein filter reinforcing members permeable to exhaust gases are provided in said exhaust outgoing spaces, at both ends of said filters, or both in said exhaust outgoing spaces and at both ends of said filters.



5,709,723

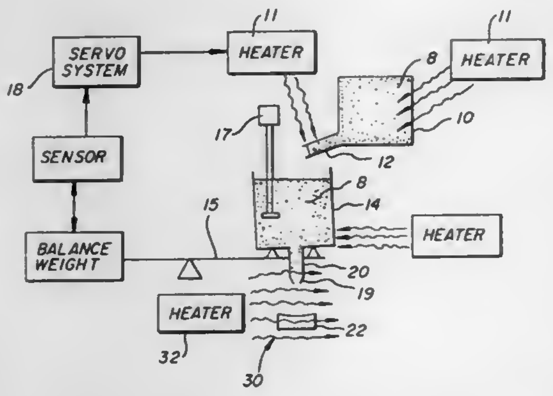
METHOD FOR PRODUCING LARGE GLASS PREFORMS

Daniel R. Gearing, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1996, Ser. No. 639,463

Int. Cl.^{6} C03B *11/16*

U.S. Cl. 65—29.11 **20 Claims**



1. A method of making a glass preform of predetermined shape comprising:

- i) holding a supply of molten glass in a container having an exit through a stem;
- ii) ejecting a measured gob from the supply of molten glass in the container through the exit in the stem;
- iii) moving up a catching tool towards the stem to receive a quantity of molten glass in a heating station;
- iv) allowing the gob to settle under gravity from the exit to said catching tool while heating the gob and the catching tool; and
- v) moving down said catching tool sufficiently so as to separate the stem from a tail on said gob;
- vi) continuing to heat at least said tail in said heating station; and
- vii) continuing to heat the gob and the catching tool until the gob has said predetermined shape.

5,709,724

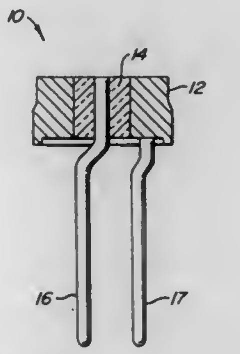
PROCESS FOR FABRICATING A HERMETIC GLASS-TO-METAL SEAL

Robert E. Naugler, Arvada, and Frank E. Anderson, Golden, both of Colo., assignors to Coors Ceramics Company, Golden, Colo.

Filed Aug. 4, 1994, Ser. No. 286,015

Int. Cl.^{6} C03C *27/02*

U.S. Cl. 65—59.4 **26 Claims**



1. A process for forming a glass-to-metal seal, said process comprising the steps of:

- (a) providing a conductive pin having an outer surface, said pin having a layer of a noble metal coated on at least a portion of said outer surface;
- (b) placing glass within a cavity of an outer body, said glass having a softening point of less than about 650° C.;
- (c) inserting said coated pin into said glass;
- (d) heating said body, said coated pin and said glass to a temperature of at least equal to the softening point of said glass and less than about 700° C.; and
- (e) cooling said outer body, said coated pin and said glass to solidify said glass and form a glass-to-metal seal.

5,709,725

PROCESS FOR PRODUCING A GLASS MELT

Katsuhiro Imashita, Shibuya-Ku, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1995, Ser. No. 539,702

Claims priority, application Japan, Oct. 6, 1994, 6-242845

Int. Cl.^{6} C03C *1/00;6/06*

U.S. Cl. 65—134.3 **8 Claims**

1. In a process for producing a glass melt which comprises heating raw materials for glass comprising as the main ingredients oxides for forming an oxide glass into a melt, the improvement which comprises heating said raw materials for glass in the presence of an ammonium halide selected from the group consisting of ammonium chloride and ammonium fluoride, whereby the melting temperature is lowered to form a homogeneous melt.

5,709,726

DEVICE FOR FORMING A PYROLYTIC COATING ON A HOT GLASS SUBSTRATE

Robert Terneu, Thiméon, and Secondo Franceschi, Gosselies, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Continuation of Ser. No. 178,906, Jan. 6, 1994, abandoned.

This application Nov. 2, 1995, Ser. No. 552,048

Claims priority, application United Kingdom, Jan. 11, 1993, 93 00 400

Int. Cl.^{6} C03C *17/00;* **C23C** *16/00*

U.S. Cl. 65—157 **18 Claims**

1. A device for the formation, by pyrolysis, of a coating having a coating width and being composed of metal or metal compound on a face of a hot glass substrate which is in motion by bringing the face into contact with a gaseous reagent, the device comprising:

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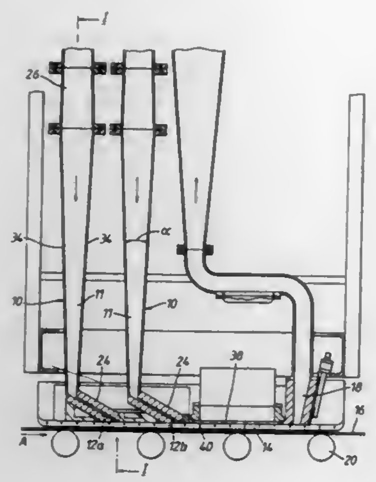


a vault;

support means for conveying the hot glass substrate along a path through a coating chamber defined between the vault and the hot glass substrate;

means for supplying and distributing gaseous reagent to the coating chamber as a flow;

means for discharging exhaust gas from the coating chamber; and

a plurality of struts,

wherein the means for supplying and distributing of gaseous reagent to the coating chamber includes an ejection nozzle having defined therein a slot which opens directly into the coating chamber, the slot having opposing longitudinal internal walls which are substantially parallel to each other, the slot extending transverse to the path of the hot glass substrate, and the slot having a length which is at least substantially equal to the coating width of the coating formed on the hot glass substrate,

wherein the plurality of struts are positioned at spaced intervals and connect said opposing longitudinal internal walls of the slot together to thereby maintain the longitudinal internal walls of the slot in substantially parallel disposition to each other, and

wherein the ejection nozzle has longitudinal internal walls which define a continuous convergent path which terminates at and communicates with the slot and has an angle of convergence (α), thereby causing the flow of gaseous reagent to conform to the slot, the angle of convergence (α) of the convergent path being up to but not greater than 14° at any point.

5,709,727
HEAT TRANSFER DEVICE

Krishna M. Bobba, Gahanna, Ohio, assignor to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

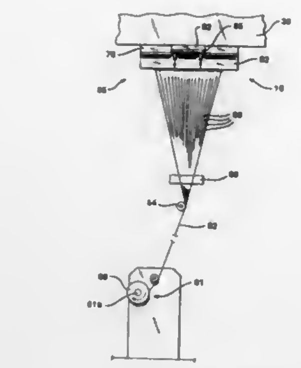
Filed Apr. 18, 1996, Ser. No. 634,469

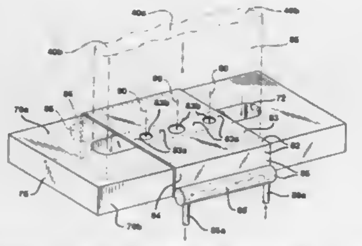
Int. Cl.^{6} C03B *37/10;5/44;37/085;5/26*

U.S. Cl. 65—481 **20 Claims**

12. A heat transfer device for use with a bushing having a plurality of tips, a receiving block and a forehearth for removing energy in the form of heat from a stream of molten glass passing from said forehearth, through an orifice in said receiving block and through said bushing, said heat transfer device comprising:

at least one cooling element extending into the stream of molten glass, said cooling element transferring energy in the form of heat away from said molten glass and for redirecting the flow





of the stream of molten glass to provide a more uniform temperature distribution in the stream of molten glass.

5,709,728
METHOD AND DEVICE FOR THE PRODUCTION OF MINERAL WOOL BY USING MINERAL WOOL WASTE AS RECYCLED STARTING MATERIAL

Hermann Fleckenstein, Ludwigshafen, and Helmut Hornung, Oftersheim, both of Germany, assignors to Isover Saint-Gobain, Courbevoie, France

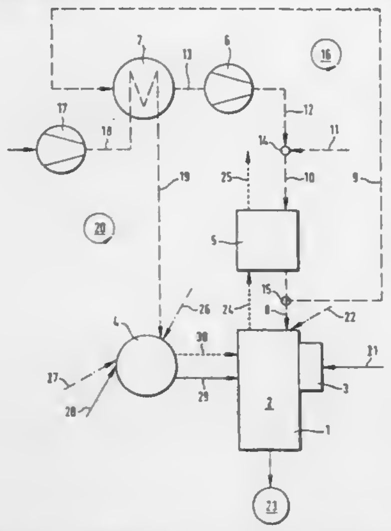
PCT No. PCT/EP94/02526, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO95/04003, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 29, 1994, Ser. No. 406,999

Claims priority, application Germany, Jul. 30, 1993, 43 25 726.7

Int. Cl.^{6} C03B *37/02;3/02*

U.S. Cl. 65—482 **10 Claims**



1. A method for producing mineral wool including the steps of:

introducing mineral wool waste, fuel and air into a combustion fuel melting unit,

combusting the fuel and air in the melting unit to melt the mineral wool waste to form a recycled molten material thereby producing a first exhaust gas,

introducing air, fuel and a raw material into a melting tub,

combusting the fuel and air in said melting tub to melt the raw material and produce a molten mass and tub exhaust gas,

introducing the recycled molten material and said first exhaust gas into the melting tub such that the molten material mixes with the molten mass and the first exhaust gas mixes with the tub exhaust gas,

using the exhaust gas discharged from said melting tub to heat the air introduced into the melting tub,

attenuating the molten mass into discontinuous fibers and depositing the fibers to form mineral wool in random orientation, and

diverting a portion of the air heated by the exhaust gas discharged from said melting tub, channelling the portion of air in heat exchange relation with additional air so as to heat the additional air and introducing at least a portion of additional air into said melting unit.

5,709,729
FORMULATION AND PRODUCTION OF GROWING MEDIA FROM GREEN ORGANIC MATERIAL

Howard J. Mitchell, Bundoora, Australia, assignor to Environmental and Resource Technology Holdings Pty. Ltd., Australia

PCT No. PCT/AU94/00577, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/09138, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 27, 1994, Ser. No. 619,565

Claims priority, application Australia, Sep. 28, 1993, PM1495

Int. Cl.^{6} C05F *9/04*

U.S. Cl. 71—9 **2 Claims**

1. A process of pasteurizing, treatment, and stabilization of green organic material, said process comprising the steps of:

(a) grinding any type of green organic material so as to a maximum dimension of less than about 65 mm to form a mixture comprising between 0 to 50% of material having a maximum dimension in the range of 40 to 25 mm, between 10 to 40% of material having a maximum dimension in the range of 25 to 15 mm, between 20 to 40% of material having a maximum dimension of 15 to 6 mm, and between 10 to 40% of material having maximum dimension of less than 6 mm;

(b) adding moisture and nutrients to the mixture, the amount of moisture being between 50% and 60% of the total blended content weight;

(c) thoroughly mixing the mixture from step (b) and forming it into a windrow or windrows having a substantially triangular cross-section and a height in the range of 1.5 to 2.5 m, the amount of said moisture and nutrients in the mixture being such that microbial activity is achieved at least within the inner portions of the windrow(s) giving rise to an increase in temperature in said inner portions, said temperature passing through three distinct phases: from ambient to about 20° C.; from about 20° C. to 50° C.; and from 50° C. to a maximum temperature of 70° C.; and

(d) turning the outer layers of the windrow(s) to the inner portions of the windrow(s) to regenerate microbial activity giving rise to further heating into at least said third phase of 50° C. to about 70° C.

5,709,730
HYDROMETALLURGICAL PROCESSING OF FLUE DUST

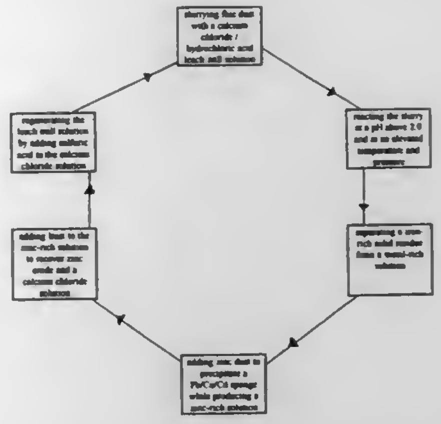
Joseph B. Cashman, P.O. Box 122, Baring, Wash. 98224

Filed Jan. 23, 1995, Ser. No. 376,778

Int. Cl.^{6} C21B *11/10*

U.S. Cl. 75—10.63 **22 Claims**

1. A hydrometallurgical process for the recovery of base metals including any of zinc, cadmium, and copper from electric arc flue dust containing, in addition to the base metals, any of iron, sodium, magnesium, and potassium capable of forming jarosites or pseudojarosites while producing only solid, stable byproducts suitable for sale or recycle, comprising the steps of:



(a) mixing dry electric arc flue dust powder with a calcium chloride/hydrochloric acid leach mill solution to produce a slurry having a pH of about 2.6 and a solids content (pulp density) of about 15–30 wt. %;

(b) oxidizing the base metals in the slurry to produce a metal-rich solution containing the base metals and to also produce an insoluble hematite complex by beating the slurry in an oxygen atmosphere at a temperature of about 90–120 deg C and a pressure of about 50–90 psi;

(c) filtering the hematite complex from the metal-rich solution;

(d) recovering base metal oxides including zinc oxide from the metal-rich solution while producing a calcium chloride recycle stream;

(e) adding sulfuric acid to the calcium chloride recycle stream to regenerate the calcium chloride/hydrochloric acid leach mill solution while producing gypsum;

(f) recycling the hematite complex to an electric arc furnace;

(g) recovering zinc metal from the base metal oxides;

(h) recycling the calcium chloride/hydrochloric acid leach mill solution.

5,709,731
SLURRY PIPELINE LEACHING METHOD

William P. Armstrong, North Vancouver, Canada, assignor to Cominco Ltd., Vancouver, Canada

Continuation of Ser. No. 297,743, Aug. 30, 1994, abandoned. This application Jul. 8, 1996, Ser. No. 676,853

Claims priority, application Chile, Sep. 3, 1993, 1075/93

Int. Cl.^{6} C22B *3/04*

U.S. Cl. 75—712 **14 Claims**

1. A method of concurrently transporting and leaching metal values from an ore or concentrate containing said metal values in a pipeline from an originating site to a delivery site which comprises the steps of:

crushing, grinding, or crushing and grinding the ore or concentrate to form a particulate having a size range suitable for pumping as a solid constituent in an aqueous slurry;

forming an aqueous slurry of from about 30 to about 70 percent by weight of said particulate in an aqueous medium;

adjusting said aqueous slurry to contain an effective amount of lixiviant for dissolution of said metal values into the aqueous medium;

transporting said aqueous slurry with lixiviant by pumping, gravity, or combination thereof, in an elongated pipeline under a static pressure and for a residence time sufficient for dissolution of a substantial portion of the metal values in the pipeline during transportation within the pipeline;

and separating the aqueous medium with the dissolved metal values from the solids constituent of the slurry thereby recovering said metal values at an extraction of at least about 60% from said ore.

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5,709,732

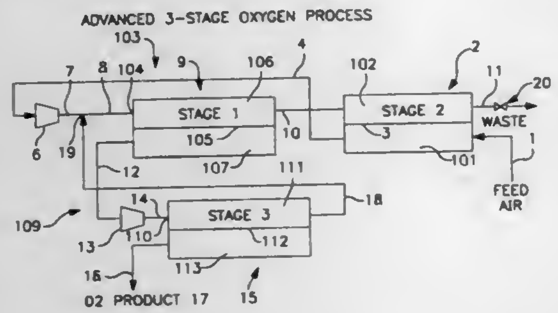
ADVANCED MEMBRANE SYSTEM FOR SEPARATING GASEOUS MIXTURES

Ravi Prasad, East Amherst, N.Y., assignor to Praxalr Technology, Inc., Danbury, Conn.

Filed Apr. 2, 1996, Ser. No. 626,559

Int. Cl.^{6} B01D *53/22*

U.S. Cl. 95—45 **21 Claims**



1. A method for separating a gaseous mixture into a purified component gas thereof, said method comprising:

- (a) providing a separation apparatus containing the following components:
  - (1) a first permeator containing a first gas separation membrane that divides said first permeator into a first permeate side and a first retentate side,
  - (2) a second permeator containing a second gas separation membrane that divides said second permeator into a second permeate side and a second retentate side,
  - (3) a third permeator containing a third gas separation membrane that divides said third permeator into a third permeate side and a third retentate side,
  - (4) a first conduit connecting an effluent end of said second permeate side to an influx end of said first retentate side for conducting a gaseous stream from said second permeator to said first permeator,
  - (5) a second conduit connecting an effluent end of said first retentate side to an influx end of said second retentate side for conducting a gaseous stream from said first permeator to said second permeator,
  - (6) a third conduit connecting an effluent end of said first permeate side to an influx end of said third retentate side for conducting a gaseous stream from said first permeator to said third permeator, and
  - (7) a fourth conduit connecting an effluent end of said third retentate side to said first conduit or an influx end of said first retentate side, for conducting a recyclable gaseous effluent from said third retentate side to said first conduit or said influx end of said first retentate side and for intermixing said recyclable effluent into a gaseous stream flowing through said first conduit or said influx end of said first retentate side;
  - (8) an inlet for receiving said feed mixture into a position selected from the group consisting of the first conduit, the second permeate side, and the first retentate side, and
  - (9) a compressor upstream of said first retentate side;
- (b) introducing a feed mixture of gases to be purified into said separation apparatus; and
- (c) recovering said purified component gas as permeate from said third permeator.

5,709,733

GAS SEPARATION METHOD

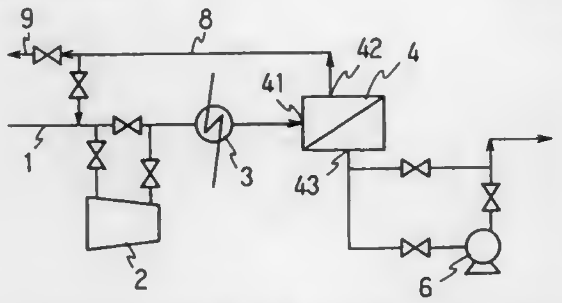
Hisao Hachisuka; Kenichi Ikeda, and Kenichl Inoue, all of Osaka, Japan, asslgnors to Nitto Denko Corporation, Osaka, Japan

Filed May 29, 1996, Ser. No. 654,570

Claims priority, application Japan, May 29, 1995, 7-130341

Int. Cl.^{6} B01D *53/22*

U.S. Cl. 95—51 **12 Claims**



1. A method of separating a gas from a gas mixture comprising said gas at a low temperature using a gas separation membrane permeable to said gas, comprising the step of cooling at least one selected from said gas mixture and said gas separation membrane using at least one cooling medium selected from the group consisting of liquefied petroleum gas and liquefied natural gas,

- wherein said gas separation membrane comprises a polymer layer and an elastomer polymer layer laminated on said polymer layer,
- said polymer layer comprises a material selected from the group consisting of silicone resin, polytrimethylsilylpropyne, cellulose acetate, polycarbonate, polysulfone, polyimide and fluorine-containing polyimide,
- said elastomer polymer layer is formed of crosslinkable silicone resin, and
- said gas separation membrane has a permeation rate of 1×10^{-4} to 5×10^{-2}N cm^3/cm^{2}cm Hg sec) for carbon dioxide at 25° C. and a separation factor of 10 to 200 for carbon dioxide and nitrogen at 25° C.

5,709,734

METHOD FOR DISPOSING OF OZONE-DEGRADING AND CLIMATICALLY ACTIVE HALOGENATED COMPOUNDS

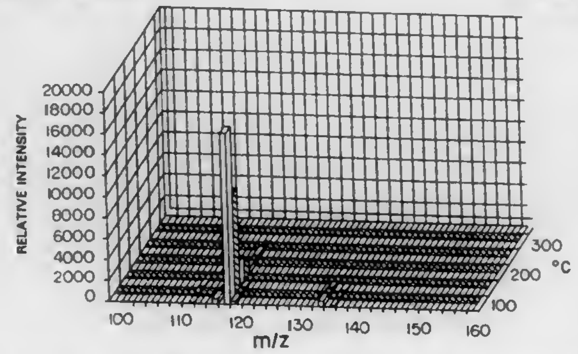
Christoph Scholz, Waakirchen; Walter Holzinger, Deisenhofen, and Robert Schloegl, Berlin, all of Germany, asslgnors to CS-GmbH Halbleiter- und Solartechnologie, Ismaning, Germany

Filed Feb. 10, 1995, Ser. No. 387,417

Claims priority, application Germany, Feb. 11, 1994, 44 04 329.5

Int. Cl.^{6} B01D *53/02*

U.S. Cl. 95—131 **9 Claims**



1. A method for disposing of ozone-degrading and climatically active fluorine-containing halogenated compounds selected from the group consisting of fluorocarbons, chlorofluorohydrocarbons, bromofluorohydrocarbons, bromochlorofluorohydrocarbons, partially halogenated fluorocarbons having from 1 to 4 carbon atoms and partially halogenated chlorofluorohydrocarbons having from 1 to 4 carbon atoms, comprising the steps of passing the halogenated compounds in the form of vapor in an inert carrier gas through a solid sorbent heated to at least 100° C. and containing a phyllosilicate and at least one member selected from the group consisting of an iron oxide, iron oxyhydroxide, iron hydroxy salt and iron oxyhydroxy salt and binding the halogenated compounds and any decomposition products and reaction products, other than water, in the sorbent, so that only water may be emitted from the sorbent.

5,709,735

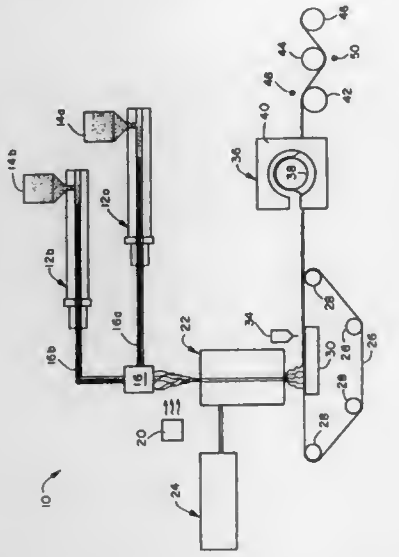
HIGH STIFFNESS NONWOVEN FILTER MEDIUM

David Grant Midkiff, Alpharetta, Ga., and James Richard Neely, Appleton, Wis., asslgnors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Oct. 20, 1995, Ser. No. 546,007

Int. Cl.^{6} B01D *39/08;46/52*

U.S. Cl. 96—17 **19 Claims**



1. A filter medium comprising a nonwoven web of conjugate fibers having a Frazier permeability above 200 CFM, an NaCl efficiency above 75 percent, a Gurley Stiffness above 700 mg, and a SEP value of above 80.

5,709,736

MOISTURE CONTROL UNIT

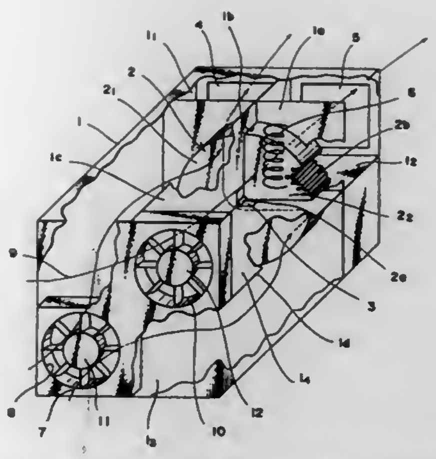
Yasuyuki Fujimura, Zushl, Japan, assignor to Kankyo Co., Ltd., Yokohama, Japan

Filed Nov. 1, 1995, Ser. No. 551,529

Claims priority, application Japan, Nov. 24, 1994, 6-312349; Dec. 2, 1994, 6-324015

Int. Cl.^{6} B01D *53/26*

U.S. Cl. 96—144 **2 Claims**



1. A moisture control unit comprising:

- a housing containing a partition wall which divides the housing into at least two chambers, one of the chambers being an absorption chamber and the other chamber being a regeneration chamber;
- a dehumidifying opening provided in one of the absorption and regeneration chambers and a humidifying opening provided in the other of the absorption and regeneration chambers;
- a self-rotating moisture absorption rotor rotatably supported so that it is disposed in both the absorption chamber and the regeneration chamber, said rotor absorbing moisture from air in the absorption chamber, discharging moisture in the regeneration chamber and being self-rotating due to the imbalance in weight thereof caused by the absorption and discharge of moisture; and
- a heater disposed adjacent the moisture absorption rotor for evaporating moisture absorbed therein.

5,709,737

INK JET INKS AND PRINTING PROCESSES

Sbadi L. Malhotra; Kirit N. Naik, both of Mississauga; David N. MacKinnon, Etobicoke; James D. Mayo, Mississauga; Yvan Gagnon, Mississauga, and H. Bruce Goodbrand, Hamilton, all of Canada, asslgnors to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1996, Ser. No. 603,516

Int. Cl.$_6$ C09D *11/02*

U.S. Cl. 106—31.43 **22 Claims**

1. An ink composition which comprises an aqueous liquid vehicle, a colorant, and an additive material selected from the group consisting of (a) symmetric acetylenic bisester alcohols of the general formulae

$$[HO(CH_2)]_3CCH_2OOC(R)_nC\equiv C(R)_nCOOCH_2C[(CH_2)OH]_3 \qquad \text{I.}$$

$$[HO(CH_2)]_2C(R_1)CH_2OOC(R)_nC\equiv C(R)_nCOOCH_2C(R_1)[(CH_2OH)]_2 \qquad \text{II.}$$

$$(HOCH_2)C(R_1)(R_2)CH_2OOC(R)_nC\equiv C(R)_nCOOC(R_1)(R_2)(CH_2OH) \qquad \text{III.}$$

wherein R is CH_2, CH_2OCH_2, or $C_2H_5OC_2H_5$, R_1 and R_2 each, independently, are hydrogen atoms, alkyl groups, substituted alkyl groups, or alkoxy groups, end n is an integer of from 0 to 10; (b) symmetric acetylenic bisalkyl alcohols and acetylenic bisalkoxy alcohols of the general formula

$$HOC(R_1)(R_2)(CH_2OCH_2)_m(R)_xC\equiv C(R)_x(CH_2OCH_2)_mC(R_1)(R_2)OH \qquad \text{IV.}$$

wherein R is a straight chain alkyl group or a substituted straight chain alkyl group, R_1 and R_2 each, independently of the other, are hydrogen atoms, alkyl groups, substituted alkyl groups, or alkoxy groups, x is an integer of 0 or 1, and m is an integer of from 1 to about 100; (c) symmetric acetylenic bisamido alcohols of the general formulae

$$[HO(CH_2)_m]_3CNHCOC\equiv CCONHC[(CH_2)_mOH]_3 \qquad \text{V.}$$

$$[HO(CH_2)_m]_2C(R_1)NHCO\equiv CONHC(R_1)[(CH_2)_mOH]_2 \qquad \text{VI.}$$

$$[HO(CH_2)_m]C(R_1)(R_2)NHCOC\equiv CCONHC(R_1)(R_2)[CH_2)_mOH] \qquad \text{VII.}$$

wherein R_1 and R_2 each, independently of the other, are hydrogen atoms, alkyl groups, substituted alkyl groups, or alkoxy groups, and m is an integer of from 1 to about 10; (d) symmetric bisamido alcohols of the general formulae

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$[HO(CH_2)]_3CNHCO(R)_xCONHC[(CH_2)OH]_3$ VIII.

$[HO(CH_2)]_2C(R_1)NHCO(R)_xCONHC(R_1)[(CH_2)OH]_2$ IX.

$[HOCH_2]C(R_1)(R_2)NHCO(R)_xCONHC(R_1)(R_2)[CH_2OH]$ X.

wherein R is a straight chain alkyl group or a substituted straight chain alkyl group, R_1 and R_2 each, independently of the other, are hydrogen atoms, alkyl groups, substituted alkyl groups, or alkoxy groups, and x is an integer of 0 or 1; (e) mono amido alcohols of the general formula

$RCONR_1(CH_2)_nOH$ XI.

wherein R is an aryl group, a substituted alkyl group, an arylalkyl group, a substituted arylalkyl group, a pyridine group, a substituted pyridine group, a piperidine group, a substituted piperidine group, a piperazine group, a substituted piperazine group, a quinoline group, a substituted quinoline group, a pyrrolidine group, a substituted pyrrolidine group, an imidazoline group, or a substituted imidazoline group, R_1 is H, CH_2, or CH_2OCH_2, and n is an integer of from 0 to about 5; (f) trialkylhydroxy compounds selected from the group consisting of N-[tris(hydroxymethyl)methyl]glycine, N-tri(hydroxymethyl)methyl] acrylamide, 2-(bromomethyl)-2-(hydroxymethyl)- 1,3-propane diol, 2-(nitro)-2-(hydroxymethyl)-1,3-propanediol, 1,3,5-tris(2-hydroxyethyl)cyanuric acid, nitromethane-trispropanol, amino tris propanol, and mixtures thereof; (g) derivatives of 1,2-diols and 1,3-diols selected from the group consisting of 1-phenyl-1,2-ethanediol; 1-(2 -nitrophenyl)-1,2-ethanediol; 3-methoxy-1,2-propanediol; 3-ethoxy-1,2-propanediol; 3-phenoxy-1,2-propanediol; 3-(4-methoxy phenoxy)-1,2-propane diol; 3-(2-methyl phenoxy)-1,2-propanediol; 5-hexene-1,2-diol; 7-octene-1,2-diol; 2-phenyl-1,2-propanediol; 3-(diethylamino)-1,2propanediol; 3-diisopropyl amino)-1,2-propanediol; 3-(N-benzyl-N-methylamino)- 1,2-propanediol; 3-pyrrolidino-1,2-propanediol; 3 -piperidino-1,2-propanediol; 3-morpholino-1,2-propanediol; 2,2-dimethyl- 1-phenyl-1,3-propane diol; 2-benzyloxy-1,3-propanediol; 2-bromo-2-nitro- 1,3-propanediol and mixtures thereof; (h) thio diols selected from the group consisting of 2-hydroxyethyl disulfide; 3,6-dithia-1,8-octane diol; 2,2'-sulfonyl diethanol; 3,3'-thiodipropanol; bis(2-hydroxypropyl sulfide; bis(2-hydroxypropyl)disulfide; and mixtures thereof; (i) aromatic and heterocyclic diols selected from the group consisting of 2,5-furandimethanol, 3-cyclohexene-1-1-dimethanol, 2'-phenylene -dioxy)diethanol, 4-8-bis(hydroxymethyl)tricyclo[5.2.1.$0^{2.6}$]decane, 5 -nitro-m-xylene-α,α'-diol, 2,3,5,6-tetramethyl-p-xylene-α,α'- diol, 2-hydroxybenzyl alcohol, 3,5-dihydroxybenzylalcohol, 4-hydroxy-3-methoxy benzylalcohol, 3-hydroxy-4-methoxybenzylalcohol, homovanillyl alcohol, hydroxyphenethyl alcohol, and mixtures thereof; (j) imino alcohols selected from the group consisting of 2,2'methyliminodiethanol; N,N-bis(2-hydroxyethyl)-2-amino ethane sulfonic acid; 1-[N,N-bis(2-hydroxyethyl)isopropanolamine; 3-[bis(2-hydroxyethyl)amino] -2-hydroxy-1-propane sulfonic acid; 2,2'(phenylamino)diethanol; 2,2'-(tolylimino)diethanol; bis(2-hydroxypropyl)amine (di-isopropanol amine); bis(3-hydroxypropyl)amine; N,N'-bis(2-hydroxyethyl)ethylenediamine; N,N-bis(2-hydroxypropyl)ethanolamine; triethanol amine ethoxylate; 1-4-bis(2-hydroxyethyl)piperazine; 1-[2(2-hydroxyethoxy)ethyl]-piperazine; bis[(2 -hydroxyethoxy)ethyl]-piperazine; 1,4-bis(2-hydroxypropyl)piperazine; 1,4 -bis(2-hydroxypropyl)2-methyl piperazine; bis(2-hydroxypropyl)-2,5 -dimethyl-piperazine; 1-(2-N,N-bis(2-hydroxypropyl)amino)ethyl 4-(2-hydroxpropyl piperazine; N,N-bis(3-hydroxypropyl)homopiperazine; 4,4'-trimethylene bis(1-piperidine ethanol); and mixtures thereof; (k) salts of hydroxyl compounds selected from the group consisting of pantothenic acid calcium salt hydrate; pantothenic acid sodium salt; 4-(2,3 -dihydroxypropyl)-2-isononylsuccinate potassium salt; 4-(2,3 -dihydroxypropyl)-2-(2-methylene-4,4-dimethylpentyl)succinate potassium salt; xylonic acid calcium salt; threonic acid calcium salt; and mixtures thereof; (l) saccharides and saccharide derivatives selected from the group consisting of 5,6-isopropylidene ascorbic acid; gluconic γ-lactone; α-glucoheptonic γ-lactone; α,β-gluco octanoic-γ-lactone; δ-gluconolactone; glucono-1,5-lactone; 1,2-O-isopropylidene-glucofuranose; 1,2-O-isopropylidene-xylofuranose; 1,2-O-isopropylidene-β-idofuranose; 2,5-O-methylene-mannitol; 3,4-O-isopropylidene-mannitol; 1,2,5,6-di-O-isopropylidene-mannitol; 4,6-O-ethylidene-α-glucose; hydrindantin dihydrate; ellagic acid dihydrate; rutin trihydrate; amygdalin; melezitose dihydrate; raffinose pentahydrate; α-galactosyl-α -galactosyl-α-glucosyl-β-fructose; inulin; and mixtures thereof; and (m) mixtures thereof.

5,709,738

COATING COMPOSITION FOR INK JET PRINTING

Malcolm Cronlund, 8221 Old Post Rd. East, East Amherst, N.Y. 14251, and William P. Subsara, 801 Stine Rd., Fremont, Ohio 43420

Filed Jun. 6, 1996, Ser. No. 659,433

Int. Cl.^{6} C09D *11/02;* **B41M** *5/155*

U.S. Cl. 106—31.67 **36 Claims**

1\. An ink jet printable coating composition comprising:
a structured clay;
a hydrated alumina;
a binder; and
a bivalent metal salt of a C_{12} to C_{24} alkyl acid.

5,709,739

RELEASE AGENTS FOR HYDRAULIC BINDERS

Leonhard Wittich, Lagenfeld; Stephan Heck, Pulheim; Lothar Friesenhagen, Duesseldorf; Guenther Demmering, Solingen; Horst-Dieter Komp, Langenfeld; Michael Koehler, Mettmann; Ingo Wegener, Duesseldorf, and Hans-Juergen Sladek, Krefeld, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/04324, § 371 Date Aug. 16, 1996, § 102(e) Date Aug. 16, 1996, PCT Pub. No. WO95/18704, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 27, 1994, Ser. No. 666,496

Claims priority, application Germany, Jan. 10, 1994, 40 00 272.6; May 30, 1994, 44 18 807.2

Int. Cl.^{6} B28B *7/36;7/38*

U.S. Cl. 106—38.22 **21 Claims**

1\. A release agent for hydraulic binders, comprising:
(1) optionally water; and
(2) a component comprising:
  (a) at least 68% by weight of at least one water-immiscible monohydric alcohol, liquid at temperatures of between 5° C. to 15° C., selected from the group consisting of unsaturated fatty alcohols containing 12 to 22 carbon atoms and having an iodine value of 40 to 170, Guerbet alcohols containing 16 to 28 carbon atoms, oxoalcohols containing 8 to 15 carbon atoms, and saturated alcohols containing 6 to 10 carbon atoms;
  (b) up to 15% by weight of water-immiscible organic compounds different from (a), wherein (a) and (b) form an oil component;
  (c) 0.5 to 5% by weight of an emulsifier.

5,709,740

THERMALLY EXPANDABLE, VISCOSITY MODIFIED WAX COMPOSITIONS AND METHOD OF USE IN ACTUATORS

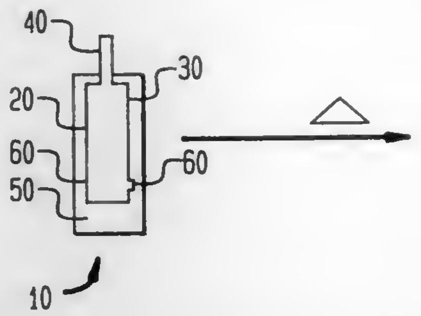
M. Ishaq Haider, Bernardsville; James E. Kuder, Fanwood; Barbara J. Long, Linden; Joseph D. Menczel, Somerset; James B. Stamatoff, Wetfield, all of N.J., and Michael Bayer, Langweid, Germany, assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Feb. 23, 1996, Ser. No. 606,111

Int. Cl.^{6} C08L *91/06;* **H01B** *1/22;1/24*

U.S. Cl. 106—272 **12 Claims**

1\. A thermally expandable wax composition for use in actuators consisting essentially of:



(a) a wax matrix material in a proportion of about 20 to about 95 per cent by weight of said composition;
(b) a polymeric viscosity modifier having a melt index of less than about 30 present in an amount of about 0.5 to about 30 weight percent of said composition and being operative in said proportions to increase the melt viscosity of said wax matrix material by a factor of at least 100 and up to a factor of 10^6 as compared to the viscosity of unmodified wax matrix material, said increase being measured at a temperature of about 120° C., with the proviso that the weight ratio of said wax matrix material to said polymeric viscosity modifier is from about 5:1 to about 99:1;
(c) a thermally conductive filler present in an amount of from 10 weight percent to about 50 weight percent of said composition; and
(d) optionally including a thermoxidative stabilizer.

5,709,741

WATER REPELLENT FOR APPLICATION TO GLASS AND WATER-REPELLENT GLASS

Shoji Akamatsu, Chiba Prefecture, and Toshiyuki Okada, Kanagawa Prefecture, both of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

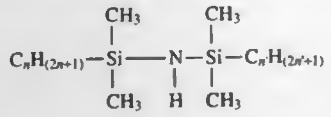
Filed Feb. 22, 1996, Ser. No. 605,604

Claims priority, application Japan, Feb. 28, 1995, 7-065148

Int. Cl.^{6} C09D *183/16*

U.S. Cl. 106—287.11 **4 Claims**

1\. A composition comprising a disilazane having the formula:



$$C_nH_{(2n+1)}-\underset{CH_3}{\overset{CH_3}{Si}}-\underset{H}{N}-\underset{CH_3}{\overset{CH_3}{Si}}-C_{n'}H_{(2n'+1)}$$

in which n and n' are the same or different integers having values from 2 to 20, wherein said composition includes at least one of silica, calcium carbonate, or magnesium oxide, and said disilazane is present in an amount from 5 to 50 percent by weight of the total composition.

5,709,742

REACTIVE TRICALCIUM PHOSPHATE COMPOSITIONS

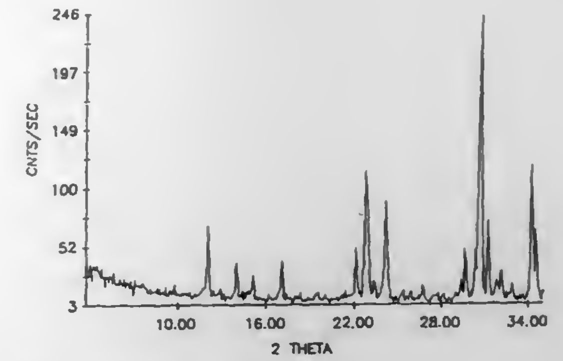
Mark Fulmer, San Jose; Brent R. Constantz, Los Gatos; Ira C. Ison, Campbell, and Bryan M. Barr, San Jose, all of Calif., assignors to Norian Corporation, Cupertino, Calif.

Continuation of Ser. No. 334,519, Nov. 4, 1994, Pat. No. 5,569,442. This application May 15, 1996, Ser. No. 648,318

Int. Cl.^{6} C04B *12/02*

U.S. Cl. 106—690 **13 Claims**

1\. A calcium phosphate cement formulation for use in the preparation of a calcium phosphate mineral by combining dry ingredients of said cement with a lubricant to produce a kneadable product capable of setting into said calcium phosphate mineral in less than 10 minutes, said formulation comprising as dry ingredients:



reactive tricalcium phosphate consisting of particles having a mean diameter of 3 to 5 μm and a surface area ranging from about 2.5 to 3.5 m^2/gm;
at least one additional calcium source; and
a partially neutralized phosphoric acid source.

5,709,743

SETTING AND HARDENING ACCELERATING AGENT FOR SILICEOUS HYDRAULIC BINDERS

Philippe Leture, Villeurbanne; Jacques Chappuis, Frontonas, and Bruno Latrasse, Villefontaine, all of France, assignors to LaFarge Coppee, Paris, France

PCT No. PCT/FR94/00744, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO95/04007, PCT Pub. Date Feb. 9, 1995

PCT Filed Jun. 20, 1994, Ser. No. 586,697

Claims priority, application France, Jul. 29, 1993, 93 09582

Int. Cl.^{6} C04B *22/00*

U.S. Cl. 106—713 **18 Claims**

1\. A calcium silicate hydrate accelerating agent for siliceous hydraulic binders, which comprises an accelerating agent obtained by hydration and wet grinding of an aqueous suspension comprising Portland cement and optionally containing gypsum; wherein the particles of the suspension are sufficiently fine so that an aqueous suspension in a sedimentation specimen at 20° C. containing 10 grams dry weight of the accelerating agent in 100 ml of water has a sedimentation deposit height at the end of 2 days at least equal to 50% of the initial height; and wherein the accelerating agent is in the form of an aqueous suspension having a solids content from 5% to 55% by weight.

5,709,744

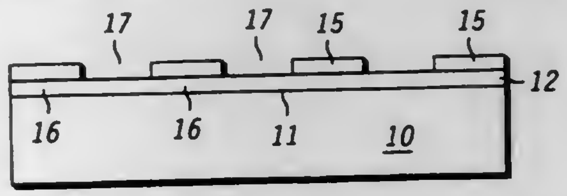
MASKING METHODS DURING SEMICONDUCTOR DEVICE FABRICATION

Shiralagi Kumar, Chandler, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Mar. 1, 1996, Ser. No. 609,704

Int. Cl.^{6} C30B *25/02*

U.S. Cl. 117—95 **11 Claims**



1\. A method of masking surfaces during fabrication of semiconductor devices comprising the steps of:
providing a gallium arsenide substrate with a surface to be patterned;
positioning a mask adjacent the surface so as to define a growth area and an unmasked portion on the surface;

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directing a bright light onto the unmasked portion of the surface to selectively grow an oxide film on the unmasked portion of the surface;
removing the mask; and
using the oxide film on the unmasked portion of the surface as a masking film to fabricate semiconductor devices on the gallium arsenide substrate.

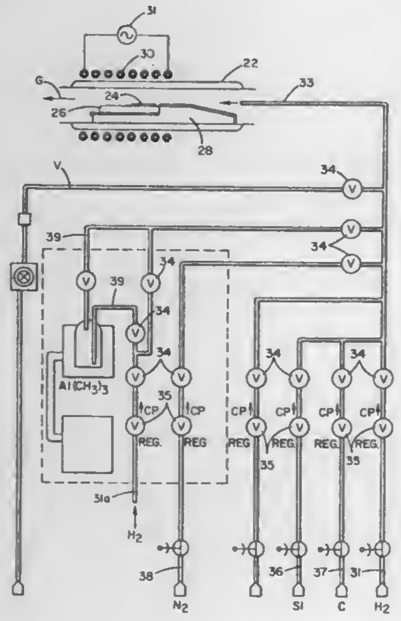
5,709,745
COMPOUND SEMI-CONDUCTORS AND CONTROLLED DOPING THEREOF

David J. Larkin, Valley City; Philip G. Neudeck, Cleveland; J. Anthony Powell, North Olmsted, and Lawrence G. Matus, Amherst, all of Ohio, assignors to Ohio Aerospace Institute, Brook Park, Ohio

Continuation-in-part of Ser. No. 276,599, Jul. 18, 1994, Pat. No. 5,463,978, which is a continuation of Ser. No. 8,650, Jan. 25, 1993, abandoned. This application Nov. 6, 1995, Ser. No. 554,201

Int. Cl.^{6} C30B *23/08*

U.S. Cl. 117—96 **52 Claims**



1. A method of regulating an amount of at least one non-crystal element deposited in a given growth area of a single crystal formed from at least two crystal elements as said crystal is grown in a growth chamber, said crystal elements comprising a first crystal element and a second crystal element, said crystal having at least two crystal growing sites wherein said first crystal element is deposited in a first growth site and said second crystal element is deposited in a second element growth site, said at least one non-crystal element being competitive for said first site, said method comprising the steps of:

a. selecting an amount of said non-crystal element to be deposited in said given growth area;
b. selecting a ratio of said first crystal element to said second crystal element, said ratio being dependent on said selected amount of said non-crystal element to be deposited in said given growth area;
c. flowing a controlled amount of at least one gaseous crystal element compound through said chamber to grow said crystal, said controlled amount corresponding to said selected ratio of said first crystal element to said second crystal element in said growth chamber, and each of said element compound including at least one of said crystal element;
d. selecting a new amount of said non-crystal element to be deposited in said given growth area;
e. selecting a new ratio of said first crystal element to said second crystal element to obtain said new amount of said non-crystal element to be deposited in said given growth area; and,
f. changing said ratio of said crystal elements in said growth chamber during the growing of said crystal to regulate said amount of said at least one non-crystal element deposited in said competitive crystal growth site at said growth area to obtain said new amount of said non-crystal element being deposited in said given growth area.

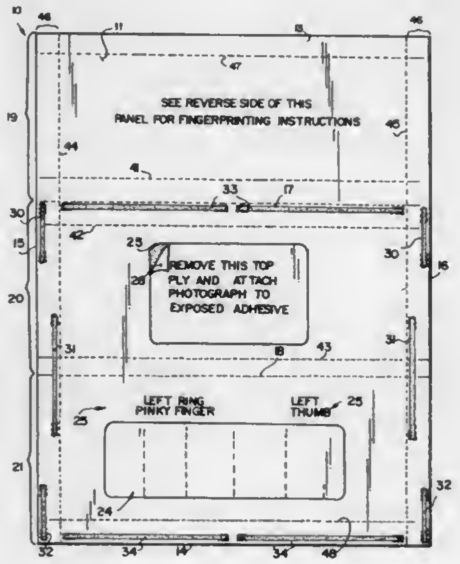
5,709,746
SELF-CONTAINED FINGERPRINT KIT

Patricia A. Ballard, Manchester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 25, 1996, Ser. No. 669,935

Int. Cl.^{6} B05C *19/00*

U.S. Cl. 118—31.5 **19 Claims**


10
46
11
13
47
SEE REVERSE SIDE OF THIS PANEL FOR FINGERPRINTING INSTRUCTIONS
19
45
44
41
33
17
30
15
42
25
28
REMOVE THIS TOP PLY AND ATTACH PHOTOGRAPH TO EXPOSED ADHESIVE
16
20
31
18
43
LEFT RING PINKY FINGER
LEFT THUMB
21
24
32
34
14
48

1. A self-contained fingerprint kit, comprising:
first, second and third panels, each having a top face and a bottom face, and connected to each other by lines of weakness so that said panels are readily separable from each other;
panel joining adhesive for holding said panels together so that said top face of said second panel engages said bottom face of said first panel, and said bottom face of said second panel engages said top face of said third panel, said panels substantially parallel to each other;
a first dry fingerprint chemical disposed in an area provided on one of said first panel bottom face or said second panel top face; and
a fingerprint application area provided on said second panel bottom face, or said third panel top face, for receipt of fingerprints with fingerprint chemical transferred from said first dry fingerprint chemical, said fingerprint application area comprising a second dry fingerprint chemical disposed thereon, said first and second fingerprint chemicals cooperating to provide a developed fingerprint.

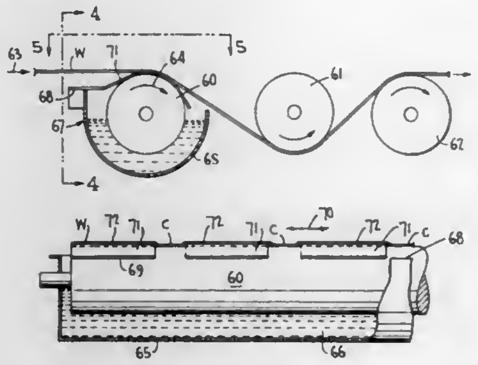
5,709,747
COATING SELECTIVE ZONES OF THIN WEBS TO CHANGE THE PERVIOUS CHARACTER THEREOF, USING A COVER

Moshe Goldwasser, Tel Aviv, Israel, assignor to Avgol Nonwoven Industries, Israel

Continuation-in-part of Ser. No. 232,692, Apr. 25, 1994, abandoned. This application May 5, 1995, Ser. No. 434,672

Int. Cl.^{6} B05C *11/00;1/06*

U.S. Cl. 118—211 **6 Claims**



1. Apparatus for coating a web of integrated nonwoven material, said apparatus including:
a cylinder roll
a body of liquid material
means to rotate said roll which is partially submerged in said body whereby to coat a partially submerged surface of said roll with said liquid material
at least one cover having an upper surface and positioned above part of an un-submerged surface of said roll
means to guide said web across the upper surface of the cover and into contact with the un-submerged portion of said roll not covered by said cover, whereby to apply said liquid material only to the portion of the web not in contact with the cover.

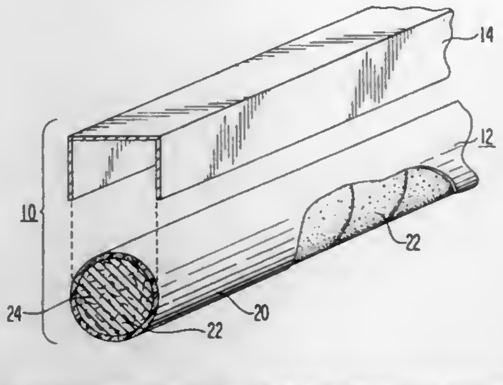
5,709,748
RELEASE AGENT SUPPLY WICK FOR PRINTER APPARATUS

Robert L. Sassa, Newark, Del.; Alex R. Hobson; Elizabeth Marie Crowley, both of Elkton, Md., and Kristin E. Williamson, Bear, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 456,799, Jul. 11, 1995, abandoned, which is a division of Ser. No. 235,021, Apr. 28, 1994, Pat. No. 5,478,423, which is a continuation-in-part of Ser. No. 127,670, Sep. 28, 1993. This application Apr. 15, 1997, Ser. No. 839,730

Int. Cl.^{6} B05C *1/08*

U.S. Cl. 118—262 **8 Claims**



1. A release agent delivery apparatus adapted to be mounted against a roller which comprises
an absorbent textile core filled with release agent;
a tubular permeable membrane of polytetrafluoroethylene (PTFE), the tubular membrane having open ends and surrounding the textile core to form a sheathed wick member with open ends; and
an open ended mounting sleeve which receives the sheathed wick member and retains the wick member in contact with the roller;
wherein the sheathed wick member is readily removable from the sleeve and reinsertable therein with a different surface in contact with the roller;
and further wherein the membrane includes a texture on its surface.

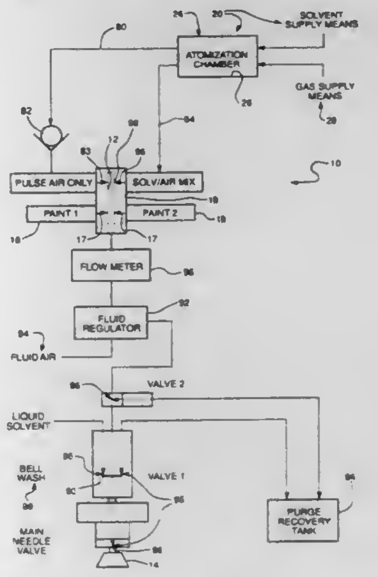
5,709,749
SOLVENT SUPPLY FOR PAINT SPRAYER

Mark E. Dion, St. Clair Shores, and Bernard J. McCabe, Riverview, both of Mich., assignors to Behr Systems, Inc., Auburn Hills, Mich.

Filed Oct. 3, 1994, Ser. No. 296,004

Int. Cl.^{6} B05B *17/00*

U.S. Cl. 118—302 **16 Claims**



1. A cleaning assembly (**10**) for removing residual coating material from flow passages in a coating material distribution system, said assembly (**10**) comprising:
a manifold (**16**) having a flow passage and a plurality of individual inlets (**17**) in fluid communication with said flow passage (**12**);
solvent supply means (**20**) in communication with said manifold for supplying a variable pressure and variable volume flow of solvent to said manifold (**16**) during a cleaning cycle to remove residual coating material from said flow passage (**12**) after a completed coating cycle to prepare for a new coating cycle;
a constant differential flow controlling means (**22**) in communication with said manifold, said flow controlling means maintaining a constant volume flow of solvent to said manifold (**16**) independent of solvent pressure fluctuations; and
said flow controlling means (**22**) including a constant differential flow controller (**30**) having a solvent inlet (**32**), a separate reference solvent inlet (**34**) and a constant volume solvent outlet (**36**).

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5,709,750

APPARATUS FOR APPLYING A LIQUID MEDIUM

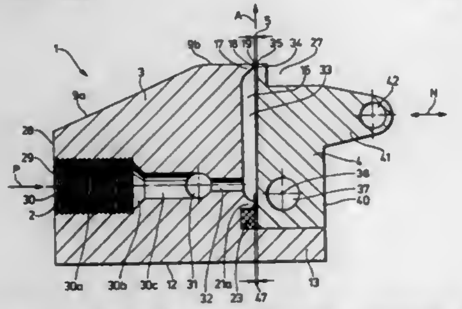
Rolf Schiefer, Arnoldstr. 14, D-41238 Mönchengladbach, Germany

Filed Mar. 8, 1996, Ser. No. 613,052

Claims priority, application Germany, Mar. 15, 1995, 295 04 451.9

Int. Cl.^{6} B05C *3/02*

U.S. Cl. 118—410 **10 Claims**



1. Apparatus for applying a liquid medium comprising an application slot having first and second longitudinal edges defining the width of opening of the slot which is fixed by the mutual spacing of the first and second oppositely disposed longitudinal edges, feeding means for feeding the liquid medium to the application slot, and control means for displacing at least one of the first and second longitudinal edges with respect to another of the first and second longitudinal edges such that the first and second longitudinal edges are adapted to be displaced from being in sealing contact with each other to being spaced a selected distance from each other.

5,709,751

SQUEEGEE APPARATUS FOR COATING SUBSTANTIALLY CYLINDRICAL OBJECTS

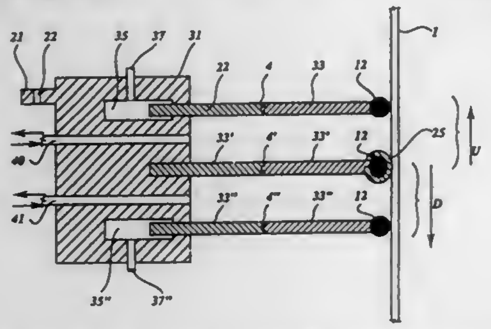
Antonius Maria van der Meulen, Helmond, Netherlands, assignor to Stork Screens, B.V., Boxmeer, Netherlands

Continuation of Ser. No. 326,708, Oct. 20, 1994, Pat. No. 5,647,907. This application Sep. 18, 1996, Ser. No. 710,461

Claims priority, application Netherlands, Oct. 20, 1993, 9301820

Int. Cl.^{6} B05C *21/00*

U.S. Cl. 118—413 **17 Claims**



1. An assembly for coating substantially cylindrical objects with a coating material, said assembly comprising:

- (a) an annular squeegee comprising a top surface, a bottom surface, an outer mounting edge and an inner leveling edge having a ridged circumferential face;
- (b) feed means adjacent said annular squeegee for feeding coating material onto an object being coated by said assembly; and
- (c) a plurality of ridges spaced along said ridged circumferential face and extending from said top surface to said bottom surface, the spaces between said ridges defining a plurality of grooves, which grooves form channels between said ridged circumferential face and the object being coated by said assembly, and which grooves are designed to receive the coating material for coating the object.

5,709,752

APPARATUS FOR FILLING INTERSPACES BETWEEN LEADS AND A SHEATH OF A CABLE

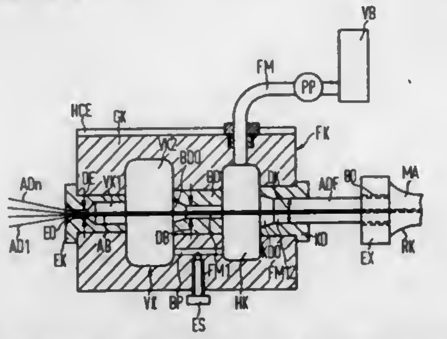
Horst Knoch, Coburg, Germany; Norbert Niesemeyer, Hickory, N.C., and Wilfried Reissenweber, Roedental, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 31, 1992, Ser. No. 922,796

Claims priority, application Germany, Sep. 18, 1991, 41 31 064.0

Int. Cl.^{6} B05C *3/12*

U.S. Cl. 118—420 **17 Claims**



1. In an apparatus for filling the interspaces between leads and a sheath of an optical and/or electrical cable with a filling compound, said apparatus including a filling head that has a pre-filling chamber and a main filling chamber, the improvements comprising the pre-filling chamber having a common admission channel for receiving a plurality of leads, which are loosely bundled together to form a bundle having a bundle diameter, said common admission channel having a diameter of the through-opening thereof slightly larger than said bundle diameter, said admission channel being followed by the pre-filling chamber into which said bundle of loosely bundled leads enters, said apparatus including a coating nozzle having a diminished cross section positioned to receive the bundle leaving the pre-filling chamber and discharging the bundle into the main filling chamber, a bypass interconnecting the pre-filling chamber and the main filling chamber said pre-filling chamber having openings for said admission channel, said coating nozzle and said bypass end being otherwise closed and pressurizable, the main chamber being connected to a reservoir containing the filling compound and pump means for maintaining said filling compound pressurized in said main chamber and in said pre-filling chamber.

5,709,753

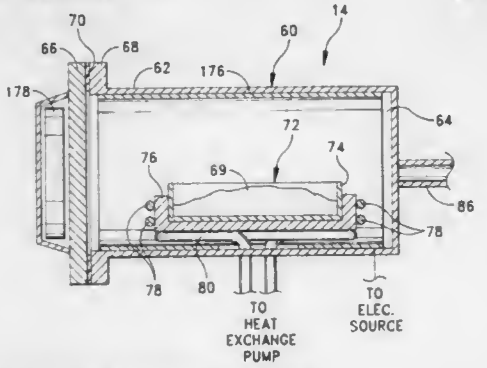
PARYLENE DEPOSITION APPARATUS INCLUDING A HEATED AND COOLED DIMER CRUCIBLE

Roger A. Olson, Amery, Wis.; William F. Beach, Bridgewater, N.J., and John Wary, Noblesville, Ind., assignors to Specialty Coating Sysetms, Inc., Indianapolis, Ind.

Filed Oct. 27, 1995, Ser. No. 549,395

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—719 **20 Claims**



1. A deposition apparatus comprising:

a vaporization chamber;

a thermally conductive heat transfer receptacle disposed in said vaporization chamber;

a first heater capable of heating said heat transfer receptacle to a predetermined temperature;

a second heater capable of heating inner walls of said vaporization chamber;

a pyrolysis chamber coupled to said vaporization chamber;

a deposition chamber coupled to said pyrolysis chamber;

a platen disposed within the deposition chamber; and

a device for heating and cooling the platen.

5,709,754

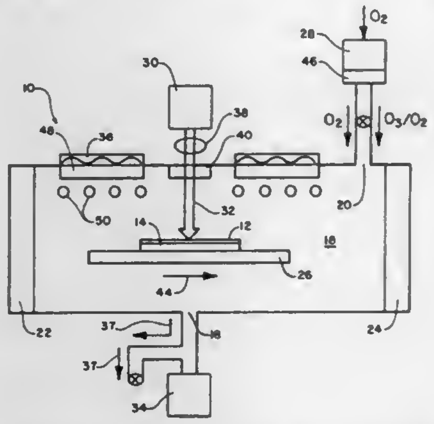
METHOD AND APPARATUS FOR REMOVING PHOTORESIST USING UV AND OZONE/OXYGEN MIXTURE

Keith Morinville, and J. Brett Rolfson, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 29, 1995, Ser. No. 581,107

Int. Cl.^{6} B08B *7/00*

U.S. Cl. 134—1.3 **14 Claims**



1. A method for removing photoresist from a substrate comprising:

providing a reaction chamber;

placing the substrate in the reaction chamber;

injecting a first oxidizing gas into the reaction chamber, said first oxidizing gas comprising oxygen;

moving the substrate through the reaction chamber in a first pass;

directing a UV laser beam at the photoresist during the first pass to remove at least some of the photoresist;

injecting a second oxidizing gas different than the first oxidizing gas into the reaction chamber, said second oxidizing gas comprising oxygen and ozone; and

moving the substrate through the reaction chamber in a second pass while directing the UV laser beam at the photoresist to remove a remainder of the photoresist.

5,709,755

METHOD FOR CMP CLEANING IMPROVEMENT

So Wein Kuo, Hsin-chu; Tsu Shih, Chahwag, and Chung-Long Chang, Dou-Liu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-chu, Taiwan

Filed Aug. 9, 1996, Ser. No. 694,728

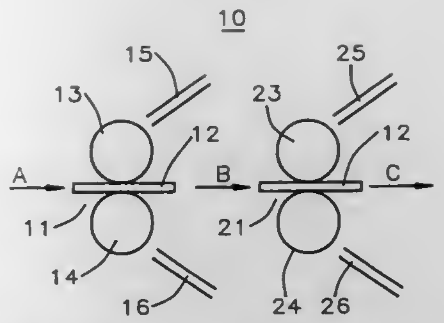
Int. Cl.^{6} H01L *21/304;21/30*

U.S. Cl. 134—1.3 **15 Claims**

1. A method for removing chemical mechanical polish residue from a semiconductor wafer, having front and back sides, comprising:

passing the wafer from a chemical mechanical polishing station to a first station having a first set of rotating brushes;

scrubbing said wafer on both sides with said first set of rotating brushes;



removing said residue from both sides of said wafer by applying a first rinse of a solution of ammonium hydroxide, hydrogen peroxide in water (APM) to both sides of said wafer;

passing said wafer from said first station to a second station having a second set of rotating brushes;

brushing said wafer on both sides with said second set of rotating brushes;

removing remaining residue particles from both sides of said wafer by applying a second rinse to both sides of the wafer; and

removing said wafer from said second station.

5,709,756

BASIC STRIPPING AND CLEANING COMPOSITION

Irl E. Ward, Bethlehem; Francis W. Michelotti, Easton, both of Pa., and Darryl W. Peters, Stewartsville, N.J., assignors to Ashland Inc., Dublin, Ohio

Filed Nov. 5, 1996, Ser. No. 744,013

Int. Cl.^{6} H01L *21/302;* **B08B** *3/08*

U.S. Cl. 134—1.3 **11 Claims**

1. An aqueous and basic stripping and cleaning composition comprising the admixture of:

- a) about 25 to 48% by weight of a hydroxylamine;
- b) about 1 to 20% by weight of ammonium fluoride; and
- c) the remainder being water; said composition having a pH greater than about 8.

5,709,757

FILM FORMING AND DRY CLEANING APPARATUS AND METHOD

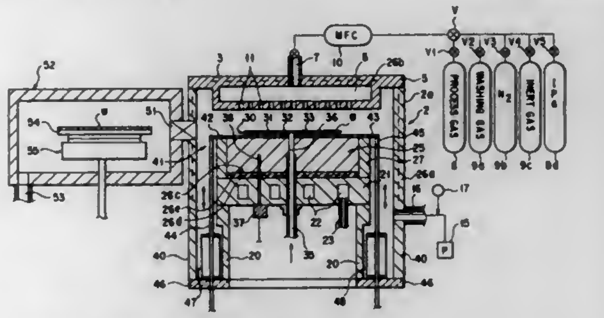
Tatsuo Hatano, Nirasaki; Seishi Murakami, Kofu, and Kunihiro Tada, Nirasaki, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,980

Claims priority, application Japan, Aug. 25, 1994, 6-225494; Jan. 17, 1995, 7-023490

Int. Cl.^{6} B08B *3/10*

U.S. Cl. 134—22.14 **63 Claims**



1. A dry cleaning apparatus, comprising:

a process chamber for containing a substrate to be processed;

process gas introducing means for introducing into said process chamber a process gas for processing said substrate;

means for processing said substrate;

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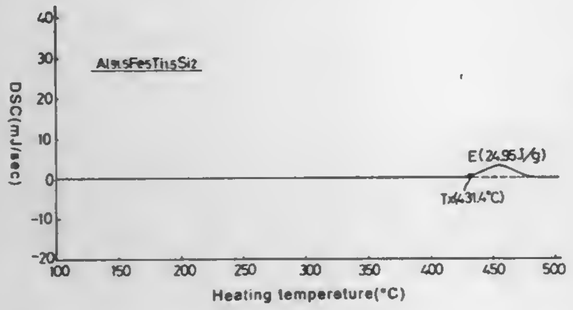
- cleaning gas introducing means for introducing into said process chamber a cleaning gas containing nitrogen trichloride;
- means for heating an inner part of said process chamber to a temperature of from room temperature to 250° C., so that the cleaning gas introduced into the process chamber cleans at least one of a metal and a metal compound adhering to the inner part of said process chamber due to said process;
- after-treatment gas supply means for supplying a cleaning after-treatment gas containing an alcohol into said process chamber; and
- means for discharging the cleaning gas, the cleaning after-treatment gas and a reaction product of the cleaning gas and for cleaning the after-treatment gas.

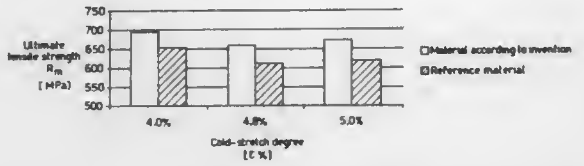
5,709,758
PROCESS FOR PRODUCING STRUCTURAL MEMBER OF ALUMINUM ALLOY
Kenji Okamoto; Hiroyuki Horimura; Masahiko Minemi, all of Saitama; Yoshinobu Takeda, Hyogo; Yoshishige Takano, Hyogo, and Toshihiko Kaji, Hyogo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of Japan
Continuation of Ser. No. 286,553, Aug. 5, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,787
Claims priority, application Japan, Aug. 6, 1993, 5-195858
Int. Cl.⁶ B22F *3/02*
U.S. Cl. 148—514 **18 Claims**



11. A process for producing a structural member of aluminum alloys having a stable phase, comprising the steps of:

- subjecting a first aluminum alloy powder having a metastable phase and an Al_2O_3 film on its surface to a thermal treatment, said first aluminum alloy powder exhibiting an exotherm E of $E \geqq 20$ J/g and a percent volume shrinkage R of $R > 1.2\%$ at the time of the phase-transformation of the metastable phase to the stable phase, thereby providing a second aluminum alloy powder having the metastable phase, the Al_2O_3 film on its surface and exhibiting an exotherm E of $E < 20$ J/g and a percent volume shrinkage R of $R \leqq 1.2\%$;
- forming a green compact by use of said second aluminum alloy powder;
- subjecting the green compact to a heating treatment thereby raising the green compact to a forging temperature and breaking the Al_2O_3 film on the surface of the second aluminum alloy powder; and
- subjecting the green compact, which has been heated to the forging temperature, to a powder forging technique to provide the structural member.

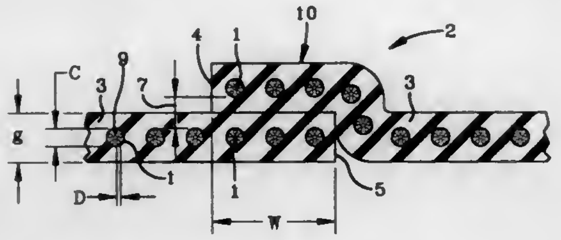
5,709,759
METHOD OF WORKING A HOT-ROLLED STRIP
Sten Ljungars, and Christer Herre, both of Torsbälla, Sweden, assignors to Avesta Sheffield Aktiebdag (publ), Stockholm, Sweden
Filed Apr. 22, 1996, Ser. No. 635,715
Claims priority, application Sweden, Apr. 21, 1995, 9501459
Int. Cl.⁶ C21D *8/02*
U.S. Cl. 148—645 **6 Claims**



1. A method of working a hot-rolled stainless steel strip in order to produce a finished product having a reduced thickness and enhanced mechanical strength, said method comprising the steps of:

- cold-rolling a hot-rolled strip with at least a 10% thickness reduction to form a cold-rolled strip having a thickness which is at least 2% and at most 10% greater than an intended final thickness of the finished product;
- annealing said cold-rolled strip at a temperature of between 1050° C. and 1250° C. to form an annealed cold-rolled strip; and
- cold-stretching and bending said annealed cold-rolled strip about rolls during stretching to plasticize and permanently elongate said annealed cold-rolled strip and reduce its thickness by 2–10%.

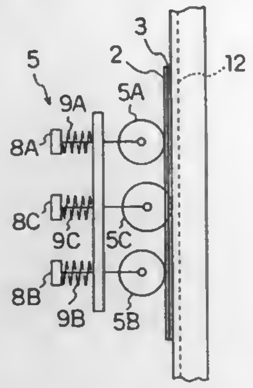
5,709,760
THIN GAUGE, FINE DIAMETER STEEL CORD REINFORCED TIRE PLY FABRIC WHICH IS LAP SPLICED
Amit Prakash, Hudson; William James Head, Ravenna; Gary Edwin Tubb, Copley, and Terry Kenneth Woods, Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 18, 1995, Ser. No. 544,510
Int. Cl.⁶ B29D *30/16;* **B32B** *3/00;* **B60C** *9/04;9/08*
U.S. Cl. 152—556 **16 Claims**



16. A radial ply pneumatic tire having a tread and a carcass, the carcass comprising;

- a single steel cord reinforced tire ply fabric having a first and second end, the fabric comprising a plurality of uniformly spaced free diameter steel cords, the cords having a diameter C in millimeters and one or more filaments each filament having a diameter D and a tensile strength of at least (−2000D+4400 MPs)× 95% where D is the diameter of the filament in millimeters, C being less than 0.75 mm, an elastomeric material encapsulating the cords, the elastomeric material having a gauge thickness in the range of the cord diameter C plus 0.22 mm to C plus 1.25 mm, and wherein prior to vulcanization the first and second ends are lap spliced overlapping and substantially aligning at least one cord of the respective first and second ends in the circumferential direction of the fabric.

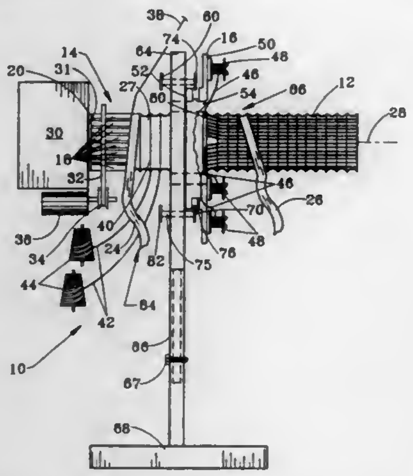
5,709,761
RUBBER SHEET JOINING METHOD AND RUBBER SHEET JOINING DEVICE
Yoshitaka Tajima, and Shigenori Noguchi, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan
Filed Nov. 9, 1994, Ser. No. 337,534
Claims priority, application Japan, Nov. 25, 1993, 5-294875
Int. Cl.⁶ B65H *21/00*
U.S. Cl. 156—159 **19 Claims**



1. A rubber sheet joining method for joining edge parts of first and second unvulcanized rubber sheets so as to cut the rubber sheets stacked and join cut edge parts thereof, said method comprising:

- a first step of aligning edges of the first and second unvulcanized rubber sheets with each other in a position where the rubber sheets are stackable and then clamping the edge parts of the rubber sheets thereby stacking them;
- a second step of pressing the clamped edge parts of the rubber sheets along a line by a rotatably supported pressing disk having a peripheral pressing face thereby forming joined parts in said edge parts of a given width; and
- a third step of cutting an intermediate part of said joined parts of the rubber sheets along the line pressed by said disk in a width direction by a rotatably supported cutting disk having a sharp edge.

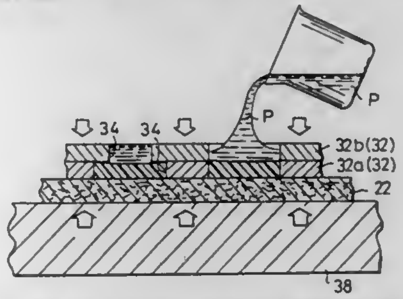
5,709,762
METHOD FOR MAKING REINFORCED FLEXIBLE DUCTING
Gene R. Rowan, Dickinson, Tex., assignor to Karen F. Hurwitz and Daniel N. Lundeen, P.C., Houston, Tex.
Filed Jan. 27, 1995, Ser. No. 379,748
Int. Cl.⁶ B65H *81/00*
U.S. Cl. 156—195 **5 Claims**



1. A method for making reinforced flexible ducting, comprising the steps of:

- spirally winding and laminating from orbitally fixed positions a plurality of tapes on a mandrel to form a flexible ducting;
- positioning a wheel to concentrically receive the mandrel through a central opening of the wheel between adjacent uptakes of respective tapes;
- mounting a plurality of spools on the wheel;
- rotating the wheel to match a rotational speed of the ducting on the mandrel;
- generally continuously drawing strings from the spools, and guiding the strings adjacent to the mandrel and between adjacent layers of the tapes to form a laminated duct with longitudinal string reinforcement.

5,709,763
RUGGED SHAPED SHEET AND PROCESS FOR MANUFACTURING SAME
Motoyasu Nakanishi, Fuji, and Akira Takayama, Shimizu, both of Japan, assignors to Suzuki Sogyo Co., Ltd., Shizuoka, Japan
Division of Ser. No. 328,458, Oct. 25, 1994, which is a division of Ser. No. 79,376, Jun. 21, 1993, Pat. No. 5,389,176. This application Jan. 4, 1996, Ser. No. 582,897
Claims priority, application Japan, Jun. 19, 1992, 4-185923; Oct. 21, 1992, 4-307574; Dec. 9, 1992, 4-351902; Feb. 26, 1993, 5-62843; Jun. 11, 1993, 5-166110
Int. Cl.⁶ B29C *41/18*
U.S. Cl. 156—242 **10 Claims**



1. A process for manufacturing a rugged shaped sheet comprising the steps of:

- arranging, on a base, perforated plates formed with perforations of a predetermined shape in a pattern-like manner;
- pouring an elastomer liquid material into the perforations of each of the perforated plates, followed by a squeegee treatment;
- arranging a base sheet member on the perforated plates and holding the former on the latter while downwardly pressing, leading to curing of the elastomer liquid material; wherein
  - the perforated plates include at least a base-side perforated plate and a ground-side perforated plate;
  - the ground-side perforated plate is and charged with the elastomer liquid material in a predetermined amount;
  - the elastomer liquid material poured in the ground-side perforated plate is subjected to the squeegee treatment and then semicured, leading to formation of a ground layer; and
  - a base layer is laminated on the ground layer.

5,709,764
METHOD FOR ASSEMBLING A DISC-SHAPED RECORDING MEDIUM
Takatsugu Funawatari; Kenji Takahashi, and Hiroyuki Ishikawa, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1995, Ser. No. 518,459
Claims priority, application Japan, Aug. 24, 1994, 6-199556
Int. Cl.⁶ B32B *31/12;31/28*
U.S. Cl. 156—275.7 **4 Claims**

1. A method for assembling a disc-shaped recording medium in which a hub is mounted on a disc substrate having an information

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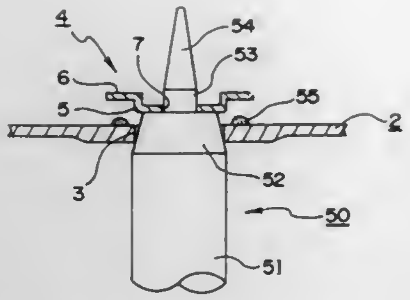


recording area formed on at least one surface thereof and having a center opening, said hub having a fitting portion with a diameter substantially equal to a diameter of the center opening and a flange portion extending outwardly from said fitting portion, with a spindle shaft opening formed at a center of said fitting portion and adapted to be engaged by a disc drive spindle, wherein an assembly guide member is employed and is movable in a direction perpendicular to one major surface of the disc substrate and includes a first guide portion with a taper guide conical surface to be engaged in said center opening in the disc substrate, a second guide portion formed integrally with the first guide portion and having a longitudinal axis aligned with a distal end of said first guide portion, said second guide portion to be fitted in said spindle shaft opening in said hub, comprising the steps of:

arranging said disc substrate in position by inserting from a first side of said disc substrate said first guide portion of said assembly guide member in said center opening, wherein said first guide portion is inserted through said center opening so that said disc substrate is solely supported on said conical surface, thereby centering said disc surface with said longitudinal axis;

coating an adhesive on an outer rim formed around said center opening on a second side of said disc substrate;

assembling said hub from said second side of said disc substrate by fitting said hub on said second guide portion in said spindle shaft opening; and

moving said assembly guide member in a direction perpendicular to said disc substrate away from said first side of said disc substrate and out of said center opening for fitting said fitting portion of said hub in said center opening of said disc substrate so that said flange portion of said hub is in contact with said adhesive.

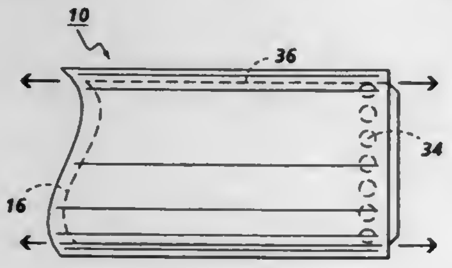
5,709,765
FLEXIBLE BELT SYSTEM

William G. Herbert, Williamson; Robert C.U. Yu, Webster; Geoffrey M.T. Foley, Fairport; William W. Limburg; Richard L. Post, both of Penfield; Donald C. VonHoene, Fairport, and Satchidanand Mishra, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 334,010

Int. Cl.^{6} G03G ***15/02***

U.S. Cl. 156—293 **20 Claims**



1. A method for fabricating a cylindrical device having at least one distinct outer layer comprising

providing a preformed rigid cylindrical support drum having a predetermined outer circumference, a first end and a second end;

providing a flexible belt having an outer surface and an inner surface circumference of at least about 0.05 percent smaller than said outer circumference of said drum, said belt comprising a major segment and at least one narrow minor segment, said narrow minor segment extending from one end of said belt to the opposite end and being more extendible than said major segment under the same externally applied tension;

circumferentially expanding said belt with a flowing fluid under pressure until said inner surface circumference of said belt adjacent said drum is stretched to a new dimension of at least about 0.1 percent greater than said outer circumference of said support drum while maintaining said belt below the elastic limit of said belt;

sliding said belt onto said support drum from said first end of said drum toward said second end of said drum; and

terminating said flow of said flowing liquid to allow said belt to contract onto said outer surface of said drum to form said cylindrical device.

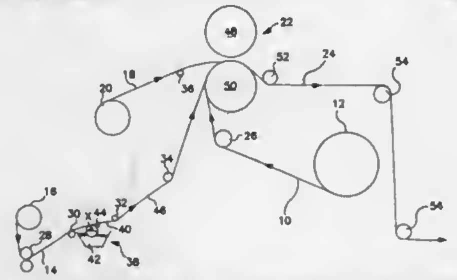
5,709,766
PROCESS FOR PREPARING A POLYURETHANE COATED FABRIC

Stuart Press, 42 Academy St., New Haven, Conn. 06511, and Hal Hoder, 31 Country Club Dr., Woodbridge, Conn. 06525

Filed Jul. 10, 1995, Ser. No. 500,340

Int. Cl.^{6} B32B ***31/26***

U.S. Cl. 156—307.3 **28 Claims**



1. A process for preparing a polyurethane coated fabric, comprising the steps of:

providing a fabric;

providing a sheet of polyurethane film;

providing a bonding material comprising a bonding agent and a solvent;

wiping a surface of said polyurethane film with said bonding material so as to provide said polyurethane film with a bonding material wiped surface; and

laminating said polyurethane film to said fabric with said bonding material wiped surface contacting said fabric so as to provide polyurethane coated fabric whereby said bonding material reacts with said polyurethane film so as to form an adhesive bond between the fabric and the polyurethane film.

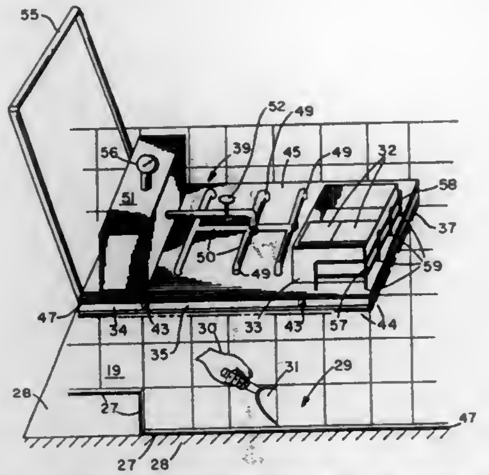
5,709,767
METHOD OF REMOVING ASBESTOS FLOOR TITLES

Onofrio G. Petino, 1580 E. 13th St., Brooklyn, N.Y. 11230

Continuation of Ser. No. 213,809, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 897,027, Jun. 11, 1992, Pat. No. 5,296,083. This application Feb. 23, 1996, Ser. No. 606,518

Int. Cl.^{6} B32B ***35/00***

U.S. Cl. 156—344 **26 Claims**



10. A device for debonding obsolete floor tile previously adhered to a subfloor by a bonding agent, which floor tile contains one or more hazardous materials in an environment, comprising a movable vehicle having a housing comprising a frame defining a predetermined peripheral configuration; means for retaining a temperature reducing agent in association with said frame of said movable vehicle; and, means for initiating and stopping the lowering of said floor tile temperature, and means for directing said temperature reducing agent to be disposed within said predetermined peripheral configuration for a selected period of time so as to control causing a reduction of the temperature of floor tile beneath said predetermined peripheral configuration and the underlying bonding agent to a level whereby the bonding agent is rendered substantially ineffective as a bonding medium, and

whereby the debonded floor tiles may be removed and suitably containerized with minimal contamination for disposal thereof, the debonding effectiveness of the temperature reducing agent is maximized and the uncontrolled scattering of the temperature reducing agent is eliminated.

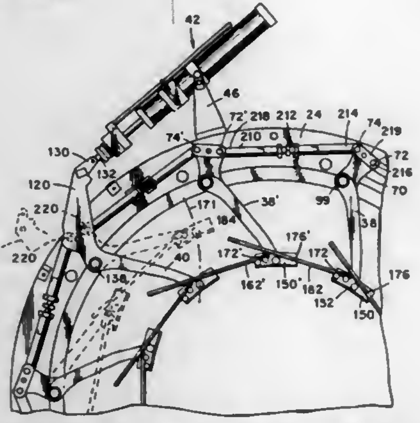
5,709,768
APPARATUS WITH ADJUSTABLE CIRCUMFERENCE MADE UP OF A PLURALITY OF INTERCONNECTED SHOES

Mark S. Byerley, Greenback, Tenn., assignor to WYKO, Inc., Greenback, Tenn.

Continuation-in-part of Ser. No. 547,381, Oct. 24, 1995, Pat. No. 5,635,016. This application Oct. 29, 1996, Ser. No. 739,676

Int. Cl.^{6} B29D ***30/26***

U.S. Cl. 156—406.2 **5 Claims**



1. In an apparatus defining an outer circumference or an inner circumference suitable to serve as a forming surface or as a circumference-engaging surface, the improvement comprising

frame means having a central axis,

a plurality of shoes each of which includes an arcuate surface which in combination with the arcuate surfaces of others of the shoes collectively define a circumference,

means for hingedly mounting each of said shoes to said frame means in circumferentially adjacent relationship about said central axis of said frame means, said shoes being radially displaceable inwardly and outwardly with respect to the central axis of said frame means such that said shoes move toward one another when said shoes are moved radially inwardly and away from one another when said shoes are moved radially outwardly,

said means for hingedly mounting each of said shoes including elongated link means having an inboard end and an outboard end and means rotatably securing said link means to said frame means at a location along the length dimension of said link means intermediate its inboard and outboard ends,

each of said shoes including first slot means

defined in a first side margin thereof and second slot means defined in a second and opposite side margin thereof so that when said shoes are mounted in circumferentially adjacent relationship, the first slot means of each shoe faces the second slot means of a circumferentially adjacent shoe,

a plurality of rigid rod means having first and second end portions, each of said rods having one of its end portions anchored in one of said first slot means of a first one of said plurality of shoes, and having its opposite end portion slidably received within a second slot means of a circumferentially adjacent one of said shoes to thereby interconnect and restrain said plurality of shoes to substantially identical degrees of rotation about their respective hinge axes.

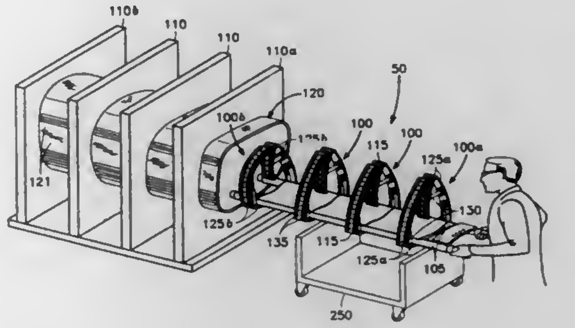
5,709,769
DUCT ASSEMBLY SYSTEM

George Nicholas Bullen, Oxnard; Stephen A. Brazil, Palmdale; Douglas D. Decker, Redondo Beach, and Ian MacAllister, Irvine, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 14, 1995, Ser. No. 490,191

Int. Cl.^{6} B28B ***7/30***

U.S. Cl. 156—423 **14 Claims**



1. A duct assembly system for shaping and supporting a skin against a bulkhead to form a duct, comprising:

an articulating skin expanding member conforming, in an expanded position, to a cross section of said bulkhead, said expanding member applying uniform pressure on the skin against the bulkhead and comprising a plurality of bushings for drilling fastener holes in said skin; and

support means for insertion of said expanding member into said duct and alignment of said expanding,member adjacent to said bulkhead.

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5,709,770
APPARATUS FOR DECORATING ARTICLES VIA HEAT TRANSFER LABELLING

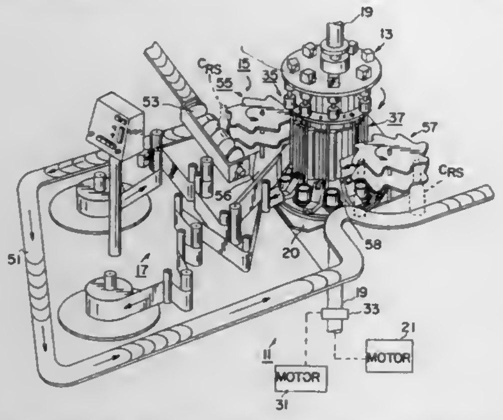
Syed A. Asghar, Brockton, and Joseph F. Callinan, Natick, both of Mass., assignors to Avery Dennison Corporation, Pasadena, Calif.

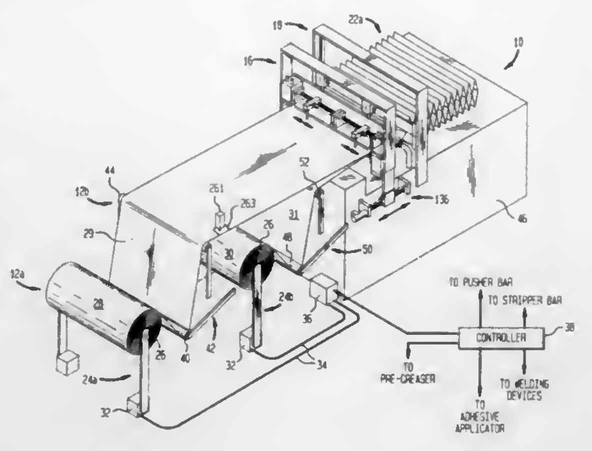
PCT No. PCT/US93/08191, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/05515, PCT Pub. Date Mar. 17, 1994

Continuation-in-part of Ser. No. 938,929, Aug. 31, 1992, abandoned. This PCT application Aug. 31, 1993, Ser. No. 397,078

Int. Cl.^{6} B65C *9/18;9/24;9/30;* **B41F** *17/18*

U.S. Cl. 156—447 **8 Claims**





1. Apparatus for applying heat transfer labels, disposed on a web, to round containers comprising:

a. a continuously rotating turret, said turret having thereon a plurality of decorating stations at which labels can be transferred from said web to said containers, each decorating station including an a container holding assembly having a continuously rotating cup and a label transfer assembly, said label transfer assembly including a transfer roller and a heater/platen, said heater/platen being coupled to said transfer roller,

b. means for moving said web along a path which passes through at least two of said plurality of decorating stations,

c. means for delivering containers to be decorated to said continuously rotating turret and carrying away containers from said continuously rotating turret after decoration,

d. a first motor for driving said continuously rotating turret and said delivering means, and

e. a second motor for driving said continuously rotating cup and said web moving means.

5,709,771
METHOD AND APPARATUS FOR FORMING AN EXPANDABLE-COLLAPSIBLE ARTICLE HAVING A CONTOURED SURFACE

Ralph Fritzman, Sarasota, Fla., assignor to Cellular Designs Unlimited, Inc., Sarasota, Fla.

Filed Aug. 30, 1994, Ser. No. 298,496

Int. Cl.^{6} B32B *3/12*

U.S. Cl. 156—474 **67 Claims**

1. Apparatus for forming an expandable-collapsible product from sheet material, comprising:

a frame along which the sheet material is movable;

a stripper bar movable with respect to said frame between a folding position proximate said frame, and a discharge position spaced from said frame;

a pusher bar movable toward and away from said stripper bar in successive folding operations, said pusher bar being effective in the course of each folding operation to contact the sheet material at a contact position spaced from said stripper bar and to move a portion of the sheet material in a direction toward said stripper bar so that the sheet material contacts said stripper bar at said folding position;

a drive mechanism, associated with said pusher bar, including at least one drive member which is adjustable so as to be capable of varying the location of each successive contact position at which said pusher bar contacts the sheet material whereby a selected length of sheet material can be moved into contact with said stripper bar during each of said folding operations.

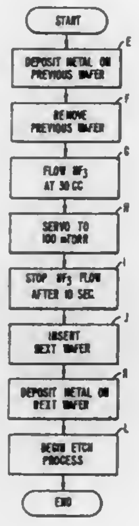
5,709,772
NON-PLASMA HALOGENATED GAS FLOW TO PREVENT METAL RESIDUES

Steve Ghanayem, Sunnyvale; Moris Kori, Palo Alto; Maitreyee Mahajani, Santa Clara, and Ravi Rajagopalan, Sunnyvale, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 29, 1996, Ser. No. 625,485

Int. Cl.^{6} H01L *21/306;* **C23F** *1/00*

U.S. Cl. 156—646.1 **14 Claims**



1. A process for preventing residue formation after the etchback of metal in a semiconductor manufacturing process, comprising the steps of:

injecting a halogen-containing, non-metal-containing gas without a plasma into a processing chamber;

exposing a semiconductor wafer to remnants of said gas;

depositing a layer of metal on said semiconductor wafer; and

etching said layer of metal.

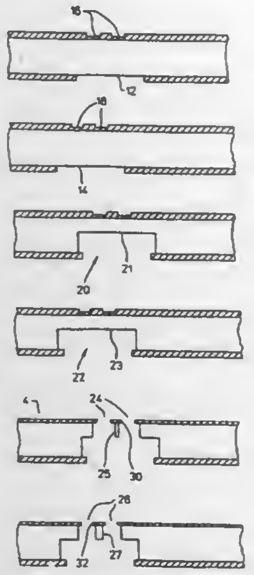
5,709,773
SILICON MICROSTRUCTURES AND PROCESS FOR THEIR FABRICATION

Leslie A. Field, and Phillip W. Barth, both of Portola Valley, Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Division of Ser. No. 216,206, Mar. 22, 1994. This application Nov. 15, 1996, Ser. No. 749,588

Int. Cl.^{6} H01L *21/00;* **B44C** *1/22*

U.S. Cl. 156—647.1 **13 Claims**



1. A bulk micromachining method comprising the steps of:

providing a first substrate having first and second opposing surfaces;

etching the second surface of the substrate to provide a first thinned region; and

anisotropically etching a first recessed feature having a vertical side wall into the first surface of the first substrate so that the first recessed feature is integral with the first thinned region;

providing a second substrate including third and fourth opposing surfaces;

etching the fourth surface of the second substrate to provide a second thinned region;

anisotroically etching a second recessed feature having a vertical side wall into the third surface of the second substrate so that the second recessed feature is integral with the second thinned region;

coupling the first surface of the first substrate to the third surface of the second substrate; and

severing a portion of the coupled substrates so as to provide a free standing microstructure.

5,709,774
HEAT TREATED HIGH LIGNIN CONTENT CELLULOSIC FIBERS

Shahrokh A. Naieni, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 218,797, Mar. 24, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 638,463

Int. Cl.^{6} D21C *9/00*

U.S. Cl. 162—9 **9 Claims**

1. A method of preparing heat-treated-in-air high cellulosic fibers having at least about 10.0 wt. % lignin content on a dry basis which are free of moieties from crosslinking agents and have a water retention value ranging from 90 to 135 and a dry resiliency defined by a 5K density ranging from 0.08 to 0.20 g/cc, said method comprising the steps of:

(a) providing high lignin content cellulosic fibers at a consistency of 40 to 80%, which are free of admixture with crosslinking agent;

(b) subjecting the fibers to defibration,

(c) heating said high lignin content cellulosic fibers in air at atmospheric pressure to remove any moisture content and heat treating the resulting moisture-free high lignin content cellulosic fibers at a temperature of between about 120° C. to about 280° C. for at least 5 seconds.

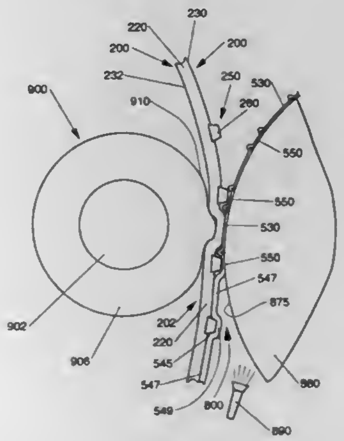
5,709,775
PAPER STRUCTURES HAVING AT LEAST THREE REGIONS INCLUDING A TRANSITION REGION INTERCONNECTING RELATIVELY THINNER REGIONS DISPOSED AT DIFFERENT ELEVATIONS, AND APPARATUS AND PROCESS FOR MAKING THE SAME

Paul Dennis Trokhan, Hamilton, and Dean Van Phan, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 268,213, Jun. 29, 1994. This application Jun. 5, 1995, Ser. No. 463,347

Int. Cl.^{6} D21H *23/00*

U.S. Cl. 162—117 **16 Claims**



1. A method of forming a paper web, the method comprising the steps of:

providing a generally uncompacted, generally monoplanar wet web of paper making fibers;

deflecting the web at a consistency of between about 8 and about 30 percent in a first deflection step to provide a non-monoplanar web having a first region at a first elevation and a second region at a second elevation different from the first elevation;

deflecting the first region relative to the second region in a second deflection step after the first deflection step to reduce the difference in elevation between the first web region and the second web region provided in the first deflection step wherein the second deflection step is performed at a web consistency of between about 20 and about 80 percent;

compacting at least a portion of the first web region at a consistency of between about 20 and about 80 percent to provide a first compacted web region;

compacting at least a portion of the second web region at a consistency of between about 20 and about 80 percent to provide a second compacted web region; and

restoring at least some of the difference in elevation between the first web region and the second web region lost in the second deflection step to provide a first compacted web region disposed at a first elevation and a second compacted web region disposed at a second elevation different from the first elevation.

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5,709,776
PROCESS FOR TREATING AND SIZING PAPER SUBSTRATES

Paul David Coleman, Sewell, and John Russell Robertson, Glen Mills, both of N.J., assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 379,045, Jan. 27, 1995, Pat. No. 5,605,605, which is a continuation of Ser. No. 136,174, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 844,346, Mar. 2, 1992, abandoned. This application Nov. 25, 1996, Ser. No. 756,321

Int. Cl.^{6} D21H *19/16*

U.S. Cl. 162—135 **22 Claims**

1. A process for treating a paper substrate comprising the step of applying a composition comprising (a) an isocyanate and (b) an isocyanate-reactive component comprising at least one polyol having an ethylene oxide content of at least 1%, wherein said composition does not contain water, to the paper substrate by means of an electrostatic spraying device having a linear orifice.

5,709,777
DEVICE AND METHOD FOR THE NON-CLOGGING THROTTLING OF A FLUID STREAM OF SUSPENDED MATTER

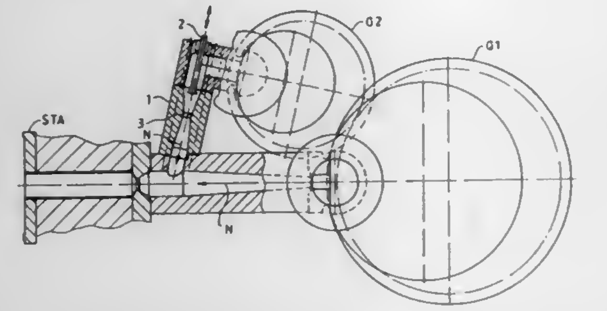
Ulrich Begemann, Leonberg, and Helmut Heinzmann, Bömenkirch, both of Germany, assignors to J.M. Voith GmbH, Germany

Continuation of Ser. No. 269,672, Jul. 1, 1994, abandoned. This application Feb. 3, 1997, Ser. No. 794,137

Claims priority, application Germany, Jul. 5, 1993, 43 22 321.4; Jan. 28, 1994, 44 02 516.5

Int. Cl.^{6} D21F *1/06;* **F15D** *1/02;* **F16K** *1/32;25/02*

U.S. Cl. 162—216 **16 Claims**



1. A method for reducing clogging of a valve or throttling device for a paper-making maching having a headbox, wherein the valve or throttling device has a hollow body of substantially rotational symmetry and having a longitudinal axis defining a main direction of fluid flow;

the method comprising the steps of:

moving fluid through the body generally in a direction substantially along the longitudinal axis of the hollow body;

imparting a rotary component to the fluid flow entering the body so that the fluid rotates in the body with respect to the longitudinal axis, and imparting said rotary component of motion to the fluid at least in a region of a throttled cross section in the hollow body, the region of throttled cross section being positioned in the pulp suspension feed to the headbox of the papermaking machine; and

permitting the fluid to exit from the hollow body after passing the region of throttled cross section.

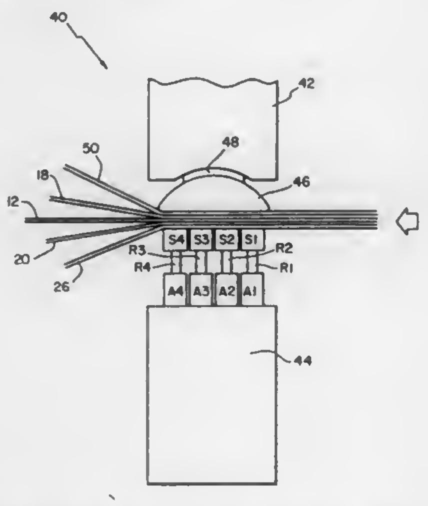
5,709,778
MULTIPLE SHOE PRESS FOR A PAPER MAKING MACHINE

Werner Kade, Neenah, and Edwin X. Graf, Menasha, both of Wis., assignors to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Oct. 30, 1996, Ser. No. 741,059

Int. Cl.^{6} D21F *3/06*

U.S. Cl. 162—358.3 **1 Claim**



1. In a paper making machine, a shoe press for removing water from a traveling fiber web, said shoe press comprising:

a beam including a generally D-shaped member having a substantially planar surface defining a backing surface;

a shoe assembly disposed adjacent to said backing surface, said shoe assembly and said backing surface forming an extended substantially planar press nip therebetween extending in a running direction of the traveling fiber web, said shoe assembly including a plurality of mechanical shoes disposed adjacent to each other in the running direction of the fiber web, each said mechanical shoe having a mechanical pressing surface, each said mechanical shoe being configured to apply a selected and independence compressive force to the fiber web in said press nip, said compressive forces associated with said plurality of mechanical shoes sequentially increasing in the running direction of the traveling fiber web, said plurality of pressing surfaces being structured and arranged and said plurality of compressive forces being selected to conjunctively define a selected pressure profile curve acting on the fiber web in said press nip, said pressure profile curve being selected to define at least one of a stepped pressure profile curve and a linear pressure profile curve;

at least four felts extending through said press nip for carrying the fiber web through said press nip, two of said felts being positionable on one side of the fiber web and two other of said felts being positionable on an other side of the fiber web;

a plurality of hydraulic rams respectively connected with said plurality of mechanical shoes, each said hydraulic ram being structured and arranged to move said respective mechanical shoe in directions toward and away from said press nip; and

a plurality of actuators respectively connected with said plurality of hydraulic rams, each said actuator independently effecting said movement of said respective hydraulic ram.

5,709,779
DEVICE FOR CONVEYING WASTE IN A PYROLYSIS REACTOR

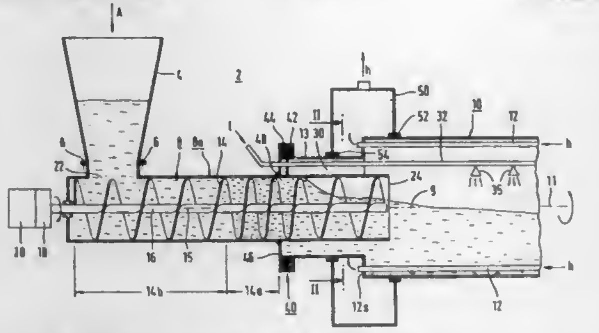
Karl May, Bad Vilbel; Hartmut Herm, Dreleich, and Karlheinz Unverzagt, Seligenstadt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 27, 1996, Ser. No. 625,404

Claims priority, application Germany, Sep. 27, 1993, 43 32 865.2

Int. Cl.^{6} C10B *21/20*

U.S. Cl. 202—100 **9 Claims**



1. A device for conveying waste, comprising:

a waste feed chute;

a stationary conveyor pipe being connected to said waste feed chute and having a sealed-off end and a housing with a nonround cross section defining a longitudinal direction;

a screw conveyor disposed in the longitudinal direction of said conveyor pipe;

a motor for driving said screw conveyor;

a pyrolysis reactor into which said conveyor pipe discharges, defining a first space between said housing of said conveyor pipe and said pyrolysis reactor, said pyrolysis reactor having an inlet end and a longitudinal axis about which said pyrolysis reactor is rotatable;

an inlet tube in which said sealed-off end of said conveyor pipe is disposed, defining a second space between said inlet tube and said conveyor pipe, said inlet tube communicating with said inlet end of said pyrolysis reactor and having a smaller cross section than said pyrolysis reactor; and

at least one supply line leading from outside into said pyrolysis reactor, said at least one supply line being disposed in said first space and being extended through said second space.

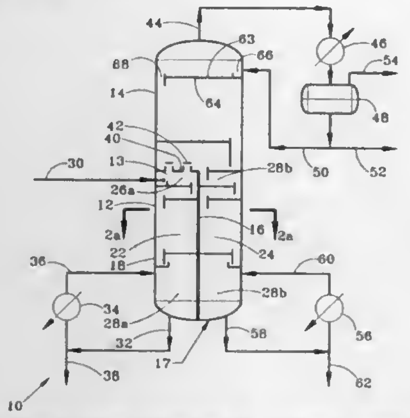
5,709,780
PARTITIONED DISTILLATION COLUMN

Thomas P. Ognisty, The Woodlands, Tex., and David B. Manley, Rolla, Mo., assignors to The M. W. Kellogg Company, Houston, Tex.

Continuation of Ser. No. 448,064, Jul. 24, 1995. This application Dec. 12, 1996, Ser. No. 766,369

Int. Cl.^{6} B01D *3/14*

U.S. Cl. 202—158 **4 Claims**



1. An integrated stripper/distillation column consisting essentially of:

a vertically oriented single shell housing a refluxed upper absorption section and a lower stripping section, each of said absorption and stripping sections having multiple means for vapor liquid contacting;

a generally vertical wall partitioning the stripping section into an auxiliary stripping portion on one side of the wall for preliminarily stripping a single primarily liquid feed stream and a main distillation stripping portion on an opposite side of the wall for stripping a liquid passed downwardly from the absorption section, each of said portions having an upper end in fluid communication with the lower end of the absorption section;

a distribution pan at an upper end of the auxiliary stripping portion for separating the auxiliary stripping portion from the absorption section, for facilitating the passage of vapors from the auxiliary stripping portion upwardly to the absorption section and for limiting liquid flowing downwardly from the absorption section to the main distillation stripping portion;

a single feed line adjacent the upper end of the auxiliary stripping portion and below the distribution pan for introducing the single primarily liquid feed stream into the column;

first and second respective boilers for heating the auxiliary stripping and main distillation stripping portions of the stripping section;

first and second bottom lines for recovering first and second bottoms products from the auxiliary stripping and main distillation stripping portions respectively of the stripping section wherein the first bottoms stream is relatively less volatile than the second bottoms stream; and

an overhead line for recovering a distillate product from the absorption section.

5,709,781
SEPARATION OF 1-BUTANOL FROM 2-PENTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715

Filed Feb. 11, 1997, Ser. No. 799,701

Int. Cl.^{6} B01D *3/40;* **C07C** *29/84*

U.S. Cl. 203—57 **2 Claims**

1. A method for recovering 1-butanol from 2-pentanol from a mixture consisting of 1-butanol and 2-pentanol which consists essentially of distilling said mixture consisting of 1-butanol and 2-pentanol in the presence of an extractive agent, recovering the 1-butanol as overhead product and obtaining the 2-pentanol and the extractive agent as bottoms product, wherein said extractive agent consists of one material selected from the group consisting of ethyl benzoate, hexyl formate, butyl butyrate, methyl salicylate, ethyl salicylate ethyl nonanate, 2,6-dimethyl- 4-heptanone, 2-undecanone, butyl ether, anisole, acetol, nitrobenzene and 2,6-dimethylphenol.

5,709,782

Patent Not Issued For This Number

5,709,783
PREPARATION OF SPUTTERING TARGETS

Lloyd E. Sanchez, Huntington Beach, and Arthur J. McDonald, Fountain Valley, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 154,106, Nov. 18, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 414,597

Int. Cl.^{6} C23C *14/34;* **C03B** *29/00;* **C04B** *33/34;* **B29D** *7/00*

U.S. Cl. 204—192.18 **25 Claims**

1. A method for preparing a sputtering target which sputters out atoms when bombarded by ions in a sputtering environment to produce ferroelectric capacitors and which comprises:

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- reacting organometallic precursor alkoxides of a metal selected from the group consisting of titanium, lanthanum, strontium, zirconium, barium, and mixtures thereof, with a soluble lead compound, in predetermined stoichiometric ratios and in an organic solvent, and in the presence of aqueous ammonium hydroxide, to form a sol-gel with corresponding molecular stoichiometric ratios,
- removing the solvent from said sol-gel resulting in the formation of a powder of said sol-gel,
- mixing said powder with a liquid medium to form a slurry of said powder,
- casting said slurry on a support substrate,
- drying said slurry to form a plurality of tapes of said sol-gel,
- forming said plurality of said tapes into layers of a stack,
- laminating the stack of layers,
- firing said laminated stack at a temperature in an oxidizing atmosphere sufficient to completely drive off any binder with may be present to form a monolithic homogenous molecularly mixed metal oxide material structure but at a temperature sufficient to avoid compromising the efficiency of the monolithic material structure, and
- mechanically forming said monolithic structure into a sputtering target of a desired shape such that the target is placed in a selected sputtering environment and bombarded by ions to sputter out ferroelectric atoms for depositing thin films of the monolithic structure on a substrate and in corresponding stoichiometric ratios.

5,709,784
PROCESS AND APPARATUS FOR WORKPIECE COATING

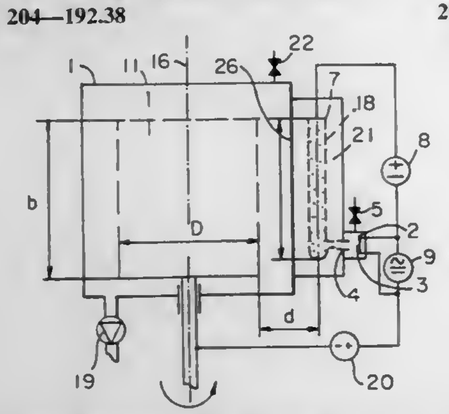
Hans Braendle, Sargans, Switzerland, and Bruno Kind, Triesen, Liechtenstein, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Sep. 11, 1996, Ser. No. 710,095

Claims priority, application Switzerland, Mar. 11, 1996, 627/6

Int. Cl.⁶ C23C *14/34;14/32*

U.S. Cl. 204—192.38 **20 Claims**



1. A coating arrangement for coating workpieces (**11**) in a processing zone and with a vacuum process chamber (**1**), comprising:

- a holding device for one of positioning the workpieces in the processing zone of the process chamber and for moving the workpieces in a transport direction in the process chamber;
- a plasma source arrangement mounted to the process chamber for generating an arc discharge (**18**), the plasma source arrangement having an active direction;
- a coating source (**23**) mounted to the process chamber and having an active direction;
- said holding device defining a treatment width (b) for positioning the workpieces or for passing the workpieces in the transport direction in front of said plasma source arrangement and said coating source;
- said plasma source arrangement and said coating source both being positioned at a selected distance (d) from the holding device with the workpieces, and both having the same active direction with respect to the holding device and the position of the workpieces or to the transport direction of the workpieces; said plasma source arrangement comprising a hot cathode low-voltage discharge arrangement having an active extent (**1**) which is transverse to the active direction and which substantially corresponds to the treatment width (b), and a field device for generating an electrical field (**20**) between the disc discharge (**18**) and workpieces (**11**) of the holding device.

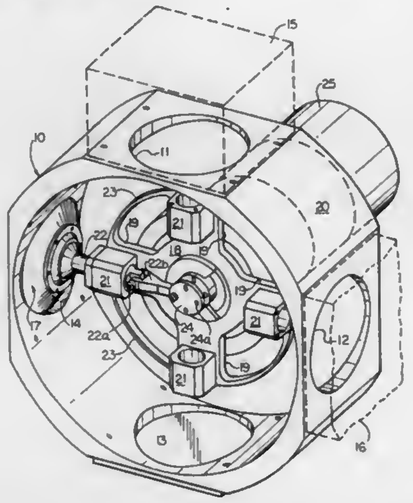
5,709,785
METALLIZING MACHINE

Arthur R. LeBlanc, III, Kennebunk; Donald W. MacMillan, Saco; Donald G. Parent, Windham; Scott R. Parent, Saco, and Brian C. Rossignol, South Portland, all of Me., assignors to First Light Technology Inc., Saco, Me.

Filed Jun. 4, 1996, Ser. No. 658,170

Int. Cl.⁶ C23C *14/50;14/56;16/00*

U.S. Cl. 204—298.25 **15 Claims**



11. Apparatus for vacuum metallizing compact discs, said apparatus comprising:

- a vacuum chamber, said vacuum chamber having at least one loading-unloading station and at least one sputtering station disposed on walls of said chamber, each of said stations being entered through ports;
- at least two platter bases disposed within said vacuum chamber, each platter base being formed of a rigid material and having an obverse side and a face side, each platter base having a recess disposed in said face side to receive a platter;
- a platter disposed within each of said recesses, said platters each having an obverse side and a face side, said face sides each comprising longitudinally-extending, substrate-receiving surfaces, each of said obverse sides being resiliently attached to a platter base;
- a circumferentially-arranged ring disposed on the face side of each platter and another ring disposed around the ports, the rings on said face sides being adapted to engage the rings around the ports whereby to align said platters and relative to said ports;
- an articulated push rod extending from and resiliently attached to each of said platter bases, said push rod being arranged to receive non-axial forces and translate said forces into axial forces to urge said platter base and said platter towards said wall in an axial direction, each push rod being reciprocatable with a platter base whereby to force the perimeter of the platter base into sealing face-to-face contact with said ports;
- means to rotate said platters on an axis of rotation whereby to index said platters from said loading-unloading station to said sputtering station and thence to a loading-unloading station;
- a toggle shaft and a linkage extending between each toggle shaft and each push rod;

- means to rotate said toggle shaft in one direction to move said platters normal to said axis of rotation and means to toggle said linkages whereby to force the perimeters of said platter bases against said walls and engage said walls with face-to-face sealing contact; and
- means to rotate said toggle shaft in the opposite direction to withdraw said platters from engagement with said walls for further rotation of said platters about said axis.

5,709,786
SINTERED SOLID ELECTROLYTE HAVING A HIGH OXYGEN-ION CONDUCTIVITY

Karl-Hermann Friese, Leonberg, and Werner Gruenwald, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/01009, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO94/11322, PCT Pub. Date May 26, 1994

PCT Filed Oct. 23, 1993, Ser. No. 433,460

Claims priority, application Germany, Nov. 17, 1992, 42 38 688.8

Int. Cl.⁶ G01N *27/26*

U.S. Cl. 204—421 **9 Claims**

1. A sintered layer system, comprising:

- an ion-conductive solid electrolyte layer which has a high oxygen ion conductivity and which is comprised of a solid electrolyte material comprising at least one oxide of tetravalent metals and at least one stabilizer oxide; and
- at least one functional layer which comprises a mixture of the solid electrolyte material and at least one further material,
- wherein the solid electrolyte material of the ion-conductive solid electrolyte layer and the solid electrolyte material of the at least one functional layer are comprised of nanocrystallites having a mean diameter of <100 nanometers.

5,709,787
WIDE-RANGE AIR FUEL RATIO OXYGEN SENSOR

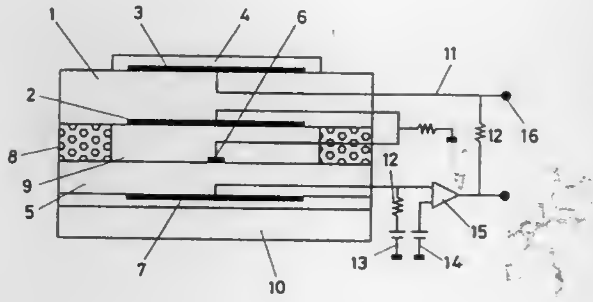
Chang-bin Lim, Seoul, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 28, 1995, Ser. No. 535,916

Claims priority, application Rep. of Korea, Sep. 30, 1994, 94-25202

Int. Cl.⁶ G01N *27/27*

U.S. Cl. 204—425 **8 Claims**



1. A wide-range air fuel ratio oxygen sensor comprising a pump cell, a sensor cell, and a porous diffusion layer interposed between the pump cell and the sensor cell, wherein a catalyst is distributed in the porous diffusion layer.

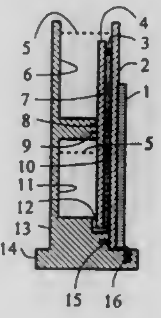
5,709,788
DEVICE AND METHOD FOR VERTICAL SLAB GEL CASTING AND ELECTROPHORESIS IN A SINGLE ENCLOSURE

Stephen L. Chen, 18510 SW Honeywood Dr., Aloha, Oreg. 97006

Filed Nov. 25, 1995, Ser. No. 563,666

Int. Cl.⁶ G01N *27/26;27/447*

U.S. Cl. 204—619 **3 Claims**



1. An device for gel casting and gel electrophoresis in a single enclosure, comprising

- a first plate and a second plate in rectangular shape at a substantially upright position, said second plate having a size greater than that of said first plate and placed in parallel with said first plate;
- two spacers, placed between said first plate and said second plate along two upright sides of said first plate, separating said first plate from said second plate;
- a gel space, defined by said first plate, said second plate, and said two spacers, having an open top, and an open bottom;
- an upper buffer chamber having a shelf as bottom and three substantially upright walls, a fourth upright wall of said upper buffer chamber being constructed by an upper portion of said first plate, said upper buffer chamber having buffer communication with said gel space via said open top of said gel space;
- a lower buffer chamber, located underneath said upper buffer chamber, having said shelf as top, a stepped base as bottom, and three substantially upright walls, a lower portion of said first plate being constructed as a fourth upright wall of said lower buffer chamber, said lower buffer chamber having buffer communication with said gel space via said open bottom of said gel space;
- an inlet of said lower buffer chamber being sealable by a first sealing member to set said lower buffer chamber as a closed chamber for creating a back pressure in said lower buffer chamber to oppose movement of a gel forming solution out of said gel space through said open bottom of said gel space;
- a second sealing member located between said upper portion of said first plate and said upper buffer chamber along an edge of said shelf and two stepped edges of said three substantially upright walls of said upper buffer chamber, said second sealing member sealing said first plate to said upper buffer chamber;
- a third sealing member located between said lower portion of said first plate and said lower buffer chamber along said edge of said shelf and two stepped edges of said three substantially upright walls of said lower buffer chamber, said third sealing member sealing said first plate to said lower buffer chamber;
- a fourth sealing member located between said second plate and both of said upper buffer chamber and said lower buffer chamber along an edge of said stepped base and said two stepped edges of said three substantially upright walls of both of said upper buffer chamber and said lower buffer chamber, said fourth sealing member sealing said second plate to both of said upper buffer chamber and said lower buffer chamber; and
- a fastening member pressing both of said first plate and said second plate against both of said upper buffer chamber and said lower buffer chamber to secure sealing.

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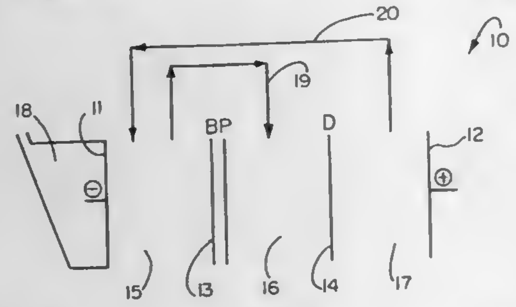
5,709,789
ELECTROCHEMICAL CONVERSION OF NITROGEN CONTAINING GAS TO HYDROXYLAMINE AND HYDROXYLAMMONIUM SALTS

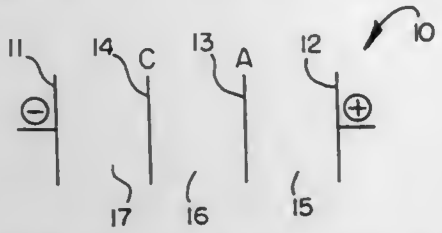
Christopher D. Shay, and Hossein Sharifian, both of Austin, Tex., assignors to Sachem, Inc., Austin, Tex.
Filed Oct. 23, 1996, Ser. No. 734,858
Int. Cl.^{6} C25B *3/00;* **B01D** *59/42;59/50;61/44*
U.S. Cl. 205—437 **20 Claims**



1. A method of electrochemically preparing hydroxylamine, comprising the steps of:
- (A) providing an electrochemical cell comprising an anode, a cathode, a bipolar membrane positioned between the anode and the cathode, the bipolar membrane having an anion selective side facing the anode and a cation selective side facing the cathode, and a divider positioned between the bipolar membrane and the anode, to define a feed compartment on the cation selective side of the bipolar membrane, a recovery compartment on the anion selective side of the bipolar membrane, and an anolyte compartment between the divider and the anode;
- (B) charging the feed compartment with an acidic electrolyte and the recovery and anolyte compartments with a solution;
- (C) introducing nitrogen containing gas into the feed compartment;
- (D) passing a current through the electrochemical cell to produce hydroxylammonium salt in the feed compartment;
- (E) transferring at least a portion of the hydroxylammonium salt from the feed compartment to the recovery compartment to produce hydroxylamine in the recovery compartment; and
- (F) recovering hydroxylamine from the recovery compartment.

5,709,790
ELECTROCHEMICAL PROCESS FOR PURIFYING HYDROXIDE COMPOUNDS

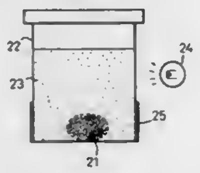
Hossein Sharifian, and John E. Mooney, both of Austin, Tex., assignors to Sachem, Inc., Austin, Tex.
Filed Oct. 3, 1996, Ser. No. 725,609
Int. Cl.^{6} B01D *61/44*
U.S. Cl. 205—437 **21 Claims**

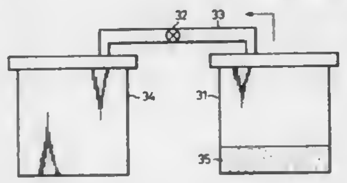


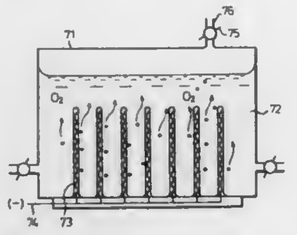
1. A process for purifying solutions containing a hydroxide compound, comprising the steps of:
- (A) providing an electrochemical cell comprising an anode, a cathode, a cation selective membrane and an anion selective membrane, wherein the cation selective membrane is positioned between the cathode and the anion selective membrane, and the anion selective membrane is positioned between the cation selective membrane and the anode, thereby defining a feed compartment between the cation selective membrane and the anion selective membrane, a recovery compartment between the cathode and the cation selective membrane, and a water compartment between the anion selective membrane and the anode;
- (B) charging a solution of an ionic compound at a first concentration to the water compartment, and water to the recovery compartment;
- (C) charging a solution of the hydroxide compound at a second concentration to the feed compartment;
- (D) passing a current through the cell to produce the hydroxide compound at a third concentration in the recovery compartment; and
- (E) recovering hydroxide compound from the recovery compartment.

5,709,791
METHOD FOR PRODUCING OXYGEN AND HYDROGEN

Kouetsu Hibino, Susono, and Kyoichi Tange, Mishima, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Mar. 1, 1996, Ser. No. 609,346
Claims priority, application Japan, Mar. 1, 1995, 7-041838; Mar. 6, 1995, 7-045514; Feb. 26, 1996, 8-038085
Int. Cl.^{6} C01B *7/01;7/19;* **C25B** *1/00;1/24*
U.S. Cl. 205—464 **16 Claims**







1. A method of producing a hydrogen halide and oxygen by reacting water with a halogen in a reaction system as represented by the chemical equation:

$$H_2O+X_2 \rightarrow 2HX+1/2O_2 \tag{1}$$

wherein X is a halogen, wherein activated carbon is used as a catalyst and wherein the reaction is performed in an aqueous solution while removing oxygen from the reaction system.

10. The method of claim 1, wherein a negative electric potential is applied to the activated carbon.

5,709,792
METHOD OF CHARACTERIZING A GAS MIXTURE BY CATALYTIC OXIDATION

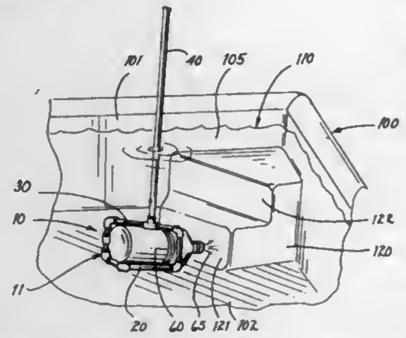
Isabelle Zdanevitch, Paris, and Gérard Rose, Villers-Saint-Paul, both of France, assignors to Institut National de l' Environnement Industriel ET des Risques, France
Continuation of Ser. No. 413,255, Mar. 30, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 619,154
Claims priority, application France, Mar. 31, 1994, 94 03825
Int. Cl.^{6} G01N *27/26*
U.S. Cl. 205—775 **14 Claims**

1. A method of detecting one of a plurality of known oxidizable gases in a gaseous medium based on air, the method comprising the steps of:

- placing a single catalytic transducer in said gaseous medium;
- heating said single catalytic transducer to a first set threshold temperature at which said oxidizable gas is substantially not oxidized;
- capturing a first value of a parameter characteristic of an output signal of said single catalytic transducer heated to said first set threshold temperature;
- heating said single catalytic transducer to a second set threshold temperature at which said oxidizable gas in contact with said single catalytic transducer oxidizes substantially, said second set threshold temperature and said first set threshold temperature defining a temperature range;
- capturing a second value of a parameter characteristic of an output signal of said single catalytic transducer heated to said second set threshold temperature;
- using a set law to obtain a response signal representative of a characteristic of said gaseous medium produced from the difference between said second and first values of said parameters, said set law defining a value representative of a characteristic of the type, quantity, and content of said oxidizable gas actually oxidized during heating at said second set threshold temperature; and
- cooling said single catalytic transducer to a temperature below said first set threshold temperature to monitor said gaseous medium for said oxidizable gas.

5,709,793
APPARATUS AND METHOD FOR IN-SITU APPLICATION OF CHEMICAL IN A SWIMMING POOL OR SPA

Kim T. Kisner, 2125 E. Balboa, Tempe, Ariz. 85282
Filed Apr. 19, 1996, Ser. No. 634,973
Int. Cl.^{6} E04H *4/16*
U.S. Cl. 210—169 **25 Claims**

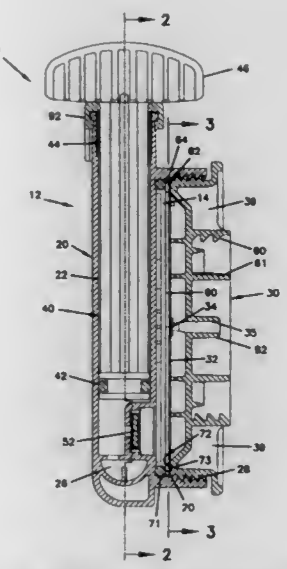


1. An apparatus for in-situ application of chemical in a swimming pool or spa comprising:
- a frame for receiving, encompassing, and holding a container that is capable of holding swimming pool or spa chemical, and
- a handle receiving portion attached to the frame that is able to receive and hold a handle wherein the handle can be grasped by a user to allow the user to move the frame and the container in the swimming pool or spa and to allow the chemical in the container to flow to desired areas of the swimming pool or spa.

5,709,794
LOW-COST PORTABLE WATER FILTER

David James Emmons, Plymouth; Timothy Jordan Prescott, Minneapolis, and Daniel Theodore West, Crystal, all of Minn., assignors to Recovery Engineering, Inc., Minneapolis, Minn.
Filed May 19, 1995, Ser. No. 444,614
Int. Cl.^{6} B01D *29/05;39/20*
U.S. Cl. 210—351 **22 Claims**

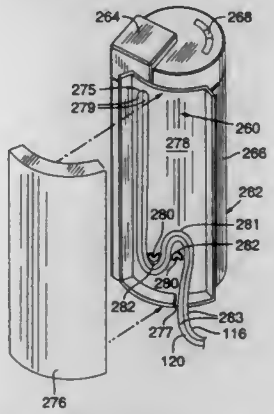
1. A portable water treatment device having a replaceable filter, comprising:



- (a) a pump body having a plunger chamber for receiving contaminated water;
- (b) a cover releasably connected to said pump body to define a water filtration chamber, said cover having an outlet for purified water;
- (c) a filter in said water filtration chamber comprising a disk having a compressible peripheral portion disposed between first and second annular sealing surfaces, said peripheral portion being compressed by said cover and pump body when said cover is connected to said pump body; and
- (d) a plunger received within said plunger chamber, for forcing contaminated water from said plunger chamber, into said water filtration chamber and through said filter to produce purified water exiting from said outlet of said cover.

5,709,795
FLUID FILTRATION SYSTEM HAVING A FLUID HOSE STORAGE SYSTEM

Eric Y. Park; David Knaub; David Thorpe; Howard Barney, and Joshua Hoyt, all of Portland, Oreg., assignors to Ziba Design, Inc., Portland, Oreg.
Division of Ser. No. 372,649, Jan. 13, 1995, Pat. No. 5,549,010. This application Aug. 16, 1996, Ser. No. 689,706
Int. Cl.^{6} B01D *35/30*
U.S. Cl. 210—460 **13 Claims**



1. A fluid filter assembly, comprising:
- a filter element in fluid communication with a filter inlet and a filter outlet so that fluid flowing into the filter inlet passes through the filter element and flows out of the filter outlet;
- a container for housing the filter element, the container including a hose storage compartment within which lengths of inlet and outlet hoses are routed side by side along their lengths, the hose storage compartment having first and second ports

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through which the inlet and outlet hoses pass, the inlet and outlet hoses each having filter and faucet ends that pass through the respective first and second ports, the filter end of the inlet hose in fluid communication with the filter inlet and the filter end of the outlet hose in fluid communication with the filter outlet; and

a hose management guide structure located within the hose storage compartment to facilitate adjustment of the lengths of the inlet and outlet hoses and storage of any unneeded hose length after fluid filter assembly installation, the hose management guide structure including multiple spaced-apart pegs placed within the hose storage compartment, the multiple pegs including two spaced-apart, proximally positioned pegs between which the inlet and outlet hoses are routed so that they travel along and their lengths define within the hose storage compartment a serpentine path that loops below one and above the other, of the two spaced-apart pegs as the inlet and outlet hoses are fed lengthwise through the second port.

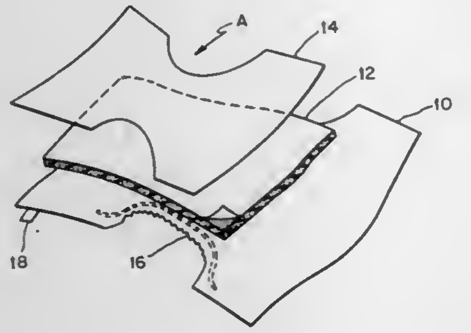
5,709,796
PROCESS FOR DIGESTING CELLULOSE CONTAINING SOLID WASTES

Clark R. Fuqua, Greenwood; Ronald L. Thomas, and Charles H. Gooding, both of Clemson, all of S.C., assignors to Bio-Sep, Inc., Clemson, S.C.

Continuation of Ser. No. 214,839, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 849,469, Mar. 11, 1992, Pat. No. 5,326,477, which is a continuation-in-part of Ser. No. 824,699, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 520,102, May 7, 1990, abandoned. This application May 21, 1996, Ser. No. 651,667

Int. Cl.⁶ C02F *3/34*

U.S. Cl. 210—632 **16 Claims**



1. A solid waste digestion process comprising reducing the mass and volume of substantially untreated solid waste having cellulose as its major component by subjecting the solid waste to a preliminary enzymatic digestive process, in the presence of an enzymatic solution at a controlled temperature without appreciable bacterial fermentation from added microorganisms, to convert the solid waste into a liquefied waste and any residual solid waste; separating the resulting liquefied waste from said any residual solidified waste and discharging the resulting liquefied waste.

9. A solid waste digestion process for reducing the mass and volume of substantially untreated solid waste having cellulose as its major component, the process consisting essentially of: subjecting solid waste having cellulose as its major component to a preliminary enzymatic digestive process, in the presence of an enzymatic solution at a controlled temperature, to convert the solid waste into a liquefied waste and any residual non-cellulose solid waste; separating the resulting liquefied waste from said any residual non-cellulose solid waste; and discharge the resulting liquefied waste.

5,709,797
METHOD OF ISOLATING CYCLOSPORINS

Giannettore Bocchiola, Magherno; Vittorio Buran, Corsico, and Ambrogio Magni, Osnago, all of Italy, assignors to Poli Industria Chimica S.p.A., Milan, Italy

Filed Jun. 5, 1996, Ser. No. 658,731

Int. Cl.⁶ B01D *15/08*

U.S. Cl. 210—635 **42 Claims**

41. A method for isolating cyclosporin A from a mixture by adsorption chromatography, said method comprising the steps of:

(a) lysing cells containing intracellular cyclosporin A with a lysis solution-comprising acetone to produce lysed cells;

(b) microfiltering said lysed cells to separate cellular debris and to produce a crude solution comprising cyclosporin A;

(c) loading said crude solution containing cyclosporin A and compounds to be separated therefrom onto an adsorption chromatography column, said column containing a adsorption resin that both adsorbs said cyclosporin A and said compounds to be separated therefrom; then

(d) separately eluting said cyclosporin A from said adsorption chromatography column by passing an eluting solvent therethrough, said eluting solvent comprising water and acetone, wherein said cyclosporin A is separately eluted from said column by providing a water/acetone balance in said eluting solvent that selectively desorbs said cyclosporin A from said adsorption resin to provide eluted cyclosporin A essentially free of said compounds to be separated therefrom;

and wherein said water/acetone balance is provided by varying the ratio of water to acetone in said eluting solvent from about 50:50 at the initiation of said step (c) of separately eluting said cyclosporin A, to about 20:80 at the end of said step (c) of separately eluting said cyclosporin A; then

(e) collecting said eluted cyclosporin A.

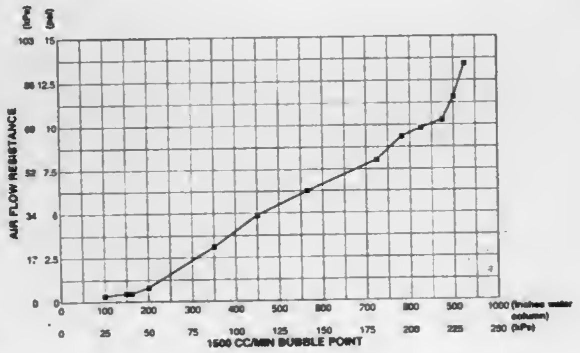
5,709,798
FIBROUS NONWOVEN WEB

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, East Hills, N.Y.

Filed Jun. 19, 1995, Ser. No. 492,420

Int. Cl.⁶ B01D *61/00*

U.S. Cl. 210—651 **36 Claims**



1. A fibrous nonwoven web characterized by having a titer reduction of at least about 10^1 with respect to PR772 coliphage and an air flow resistance of about 30 psi or less at a thickness of about 0.01 inch or less.

15. A method of filtering a fluid comprising passing a fluid through the fibrous nonwoven web of claim 1.

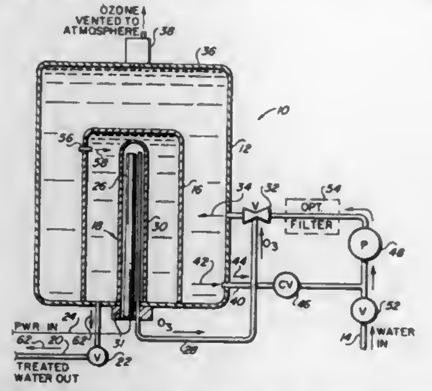
5,709,799
SUPER OZONATING WATER PURIFIER

Rolf Engelbard, Prescott, Ariz., assignor to Vortex Corporation, Prescott, Ariz.

Filed Jun. 3, 1996, Ser. No. 660,194

Int. Cl.⁶ C02F *1/32;1/78*

U.S. Cl. 210—748 **27 Claims**



1. A method for purifying water, said method comprising in combination:

(a) directing water to be purified into a first tank;

(b) entraining ozone in the water to be purified;

(c) conveying ozonated water from the first tank into a second tank disposed within the first tank;

(d) irradiating the ozonated water in the second tank with ultraviolet radiation; and

(e) discharging the ozonated and irradiated water from the second tank.

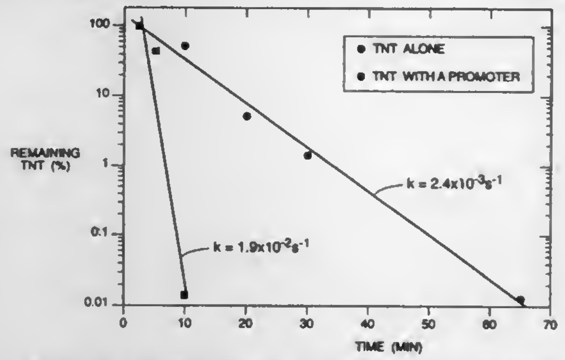
5,709,800
ENVIRONMENTALLY ACCEPTABLE WASTE DISPOSAL BY HYDROTHERMAL DECOMPOSITION OF LABILE COMPOUNDS WITH NITRITE

David S. Ross, Palo Alto, and Indira Jayaweera, Fremont, both of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 91,617, Jul. 13, 1993, Pat. No. 5,409,617. This application Jan. 16, 1996, Ser. No. 652,920

Int. Cl.⁶ C02F *1/02;1/72*

U.S. Cl. 210—762 **11 Claims**



1. A process for the disposal of waste or the conversion of hydrothermally labile chemical groups and compounds by hydrothermal decomposition to compounds which are environmentally acceptable, or are amenable to further degradation by conventional disposal systems to produce environmentally acceptable products, which process comprises:

(a) conveying an aqueous solution of slurry of the waste material into a reaction zone capable of withstanding the temperatures and pressures of the hydrothermal decomposition;

(b) reacting the waste material in the reaction zone with an aqueous composition comprising a promoting reagent independently selected from alkali metal nitrite, alkaline earth metal nitrite or combinations thereof at between 200 C. and 500 C. and at a pressure between 20 and 400 atmospheres for between about 0.01 and 10 minutes wherein water as a liquid is always present with the proviso that no oxidant or transition metal catalyst is added to the reaction mixture;

(c) producing 99.9% or greater decomposition of the waste material or 99.9% or greater conversion of the waste material to compounds which are environmentally acceptable or are amenable to further degradation; and

(d) optionally degrading further the compounds of step (c) by reaction to environmentally acceptable products.

5,709,801
REMOVAL OF LIQUID FROM PULLULAN

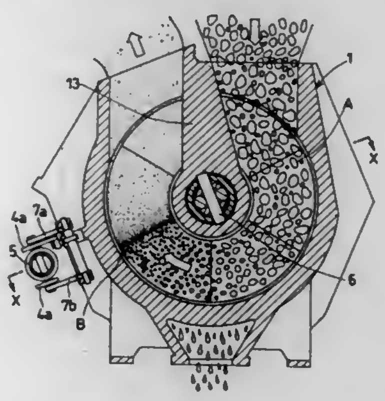
Kanji Murofushi; Shigehiro Nagura, and Jiro Moriya, all of Niigata-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan, and Shin-Etsu Bio, Inc., San Diego, Calif.

Filed Sep. 9, 1996, Ser. No. 708,847

Claims priority, application Japan, Sep. 12, 1995, 7-233563

Int. Cl.⁶ B01D *37/00*

U.S. Cl. 210—770 **13 Claims**



7. A method for the recovery of pullulan, comprising the steps of:

a) providing a press having an inlet, an outlet, and a pair of screens facing one another to define a pressing space therebetween.

b) feeding, to the inlet, a dispersion containing precipitated pullulan;

c) pressing said screens towards one another to squeeze said dispersion between said screens;

d) forcing a component of said dispersion through said screens during said step of pressing; and

e) discharging pullulan in the form of a semi-dry cake from between said screens at the outlet upon completion of said step of pressing and discharging by scraping said semi-dry cake of pullulan from said screens by rotating the semi-dry pullulan component past a scraper member, the space between the screens and the scraper being 1 mm or less.

5,709,802
METHOD OF MAKING A MICRO-ACTUATOR DEVICE

Tomotake Furuhata, Kawasaki, and Toshiki Hirano, Tokyo, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 233,486, Apr. 26, 1994, Pat. No. 5,489,812, which is a division of Ser. No. 890,455, May 29, 1992, Pat. No. 5,351,412. This application Apr. 3, 1995, Ser. No. 415,821

Claims priority, application Japan, Jun. 11, 1991, 3-165259

Int. Cl.⁶ B23Q *16/00;* **H02N** *2/00*

U.S. Cl. 216—2 **18 Claims**

1. A method of fabricating a semiconductor integrated micro actuator, comprising the steps of:

a. depositing an insulating layer on both sides of each of two substrates;

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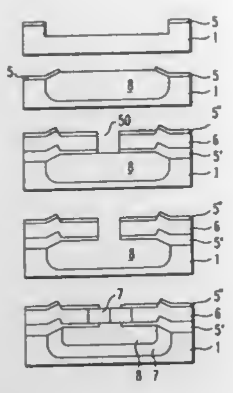


b. forming a pattern on one surface of the first of said two insulated substrates, said pattern is shaped to provide an air channel;
c. growing a wedged pattern on one surface of the insulated second of said two substrates, for providing an air valve;
d. selectively removing said insulated layer from each of the first and second substrates;
e. bonding the first and second substrates to obtain a desired driving section; and
f. forming a contact pin on said driving section.

5,709,803

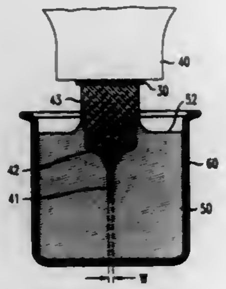
CYLINDRICAL FIBER PROBES AND METHODS OF MAKING THEM

Robert William Filas, Bridgewater, and Herschel Maclyn Marchman, New Providence, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 247,165, May 20, 1994, which is a continuation-in-part of Ser. No. 91,808, Jul. 15, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,734

Int. Cl.^{6} C03C *15/00;25/00*

U.S. Cl. 216—11 **22 Claims**



1. A method of making a probe device comprising the steps of:
(a) providing an initial cylindrical fiber;
(b) coating an upper cylindrical portion of the fiber with a protective layer that protects the upper cylindrical portion from etching during step (c) but does not protect a lower cylindrical portion, said lower cylindrical portion terminating in a tip;
(c) etching, prior to step (d), the lower cylindrical portion of the fiber for a first controlled time duration, whereby the width of the lower cylindrical portion is reduced, but the width of the upper cylindrical portion remains essentially unchanged,
(d) cleaving the tip of the lower portion of the fiber, whereby a cleaved lower portion of the fiber is formed; and
(e) etching, subsequent to step (d), the cleaved lower portion of the fiber for a second controlled time duration, whereby the width of the cleaved lower portion is further reduced.

5,709,804

METHOD OF PRODUCING APERTURE GRILL

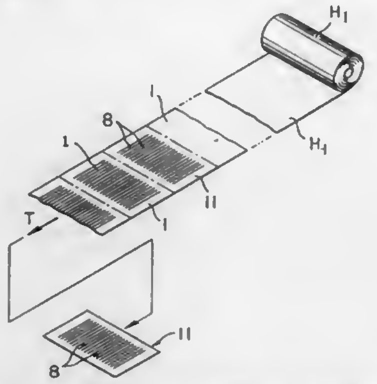
Akira Makita; Yutaka Matsumoto, and Takahito Aoki, all of Tokyo, Japan, assignors to Dal Nippon Printing Co., Ltd., Japan

Division of Ser. No. 312,867, Sep. 27, 1994, Pat. No. 5,552,662. This application Jun. 5, 1996, Ser. No. 658,607

Claims priority, application Japan, Sep. 28, 1993, 5-263119

Int. Cl.^{6} H01J *9/00;* **B44C** *1/22*

U.S. Cl. 216—12 **4 Claims**



1. A method of producing an aperture grill for a cathode ray tube, comprising the steps of:
preparing a steel plate;
applying front and rear photosensitive resist layers to opposite surfaces of the steel plate, respectively;
applying front and rear slit pattern masks to the front and rear photosensitive resist layers, respectively;
printing the front and rear slit pattern masks to the front and rear resist layers, respectively;
developing printed slit patterns in the front and rear resist layers;
etching the opposite surfaces of the steel plate through the thus developed front and rear resist layers, respectively, to produce a front recess and a rear recess;
causing the front recess and the rear recess to communicate with each other as the step of etching proceeds, thereby to form a slit together with adjacent parallel tapes; and
removing the front and rear resist layers from the opposite surfaces of the steel plate:
said method further comprising the steps of:
preparing said steel plate in the form of a cold-rolled low-carbon steel plate of a thickness of 100 μm or less, from a hoop steel having a rolling direction;
processing the steel plate to have a residual stress of 7.0 Kg/mm^2 or less;
tensioning the steel plate in said rolling direction; and
coinciding the direction of said tapes of the aperture grill with the rolling direction.

5,709,805

METHOD FOR PRODUCING MULTI-LAYER CIRCUIT BOARD AND RESULTING ARTICLE OF MANUFACTURE

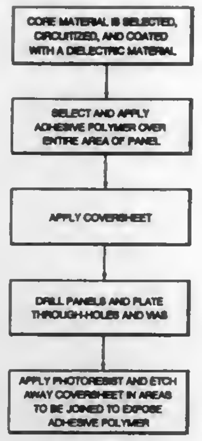
Charles Robert Davis, Wappingers Falls, and Thomas P. Gall, Lancester, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 679,874, Jul. 15, 1996. This application Nov. 20, 1996, Ser. No. 755,527

Int. Cl.^{6} B44C *1/22;* **C23F** *1/00*

U.S. Cl. 216—18 **14 Claims**

1. A method for producing a panel of a multi-layer electronic circuit package, comprising the steps of:
selecting, circuitizing, and coating a core material with dielectric material and metal sheets on an outer surface of the core material;
forming circuits on the surface of the core material;
selecting and applying an adhesive polymer over the entire area of the panel;
applying a cover sheet;


CORE MATERIAL IS SELECTED, CIRCUITIZED, AND COATED WITH A DIELECTRIC MATERIAL
SELECT AND APPLY ADHESIVE POLYMER OVER ENTIRE AREA OF PANEL
APPLY COVERSHEET
DRILL PANELS AND PLATE THROUGH-HOLES AND VIAS
APPLY PHOTORESIST AND ETCH AWAY COVERSHEET IN AREAS TO BE JOINED TO EXPOSE ADHESIVE POLYMER

drilling the panel and plating through-holes and vias; and
applying photoresist, and selectively etching away the cover sheet in areas of the panel to be joined, to selectively expose the adhesive polymer.

5,709,806

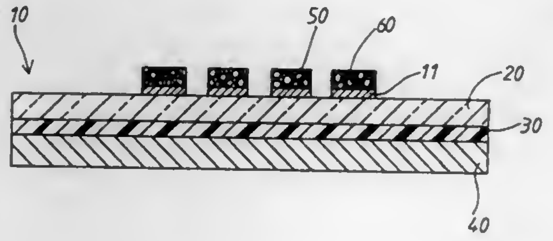
METHOD OF MANUFACTURING A HOT-STAMPED DECAL

Chih Chin Chang, 6F-6,186, Section 1, Wen Hsin Rd., Taichung, Taiwan

Filed Nov. 22, 1996, Ser. No. 753,279

Int. Cl.^{6} B32B *31/12*

U.S. Cl. 216—41 **4 Claims**



1. A method of manufacturing a hot-stamped decal and comprising the following steps:
step (a): preparing a metalized polyester film comprising a metalized layer disposed on a top surface thereof, a clear polyester sheet disposed to an under side of said metalized layer, an adhesive layer disposed to an under side of said clear polyester sheet and a release sheet disposed to an under side of said adhesive layer;
step (b): preparing crystallized particles;
step (c): adding said crystallized particles into a volatile solution to let said crystallized particles in said volatile solution be in an over-saturated status;
step (d): adding ink into said over-saturated solution of step (c);
step (e): using said solution of step (d) to execute a printing process on said metalized layer to form a pattern thereon composed of a printed ink layer;
step (f): mopping said printed ink layer with an alkaline corrosive solution to corrode said top surface of said metalized layer not covered by said printed ink layer; and
step (g): a neutralization reaction being executed by mopping an acid solution on said metalized layer after said metalized layer is corroded completely.

5,709,807

FLOW RATE ADJUSTING FOR ROTARY NOZZLE TYPE MOLTEN METAL POURING UNIT

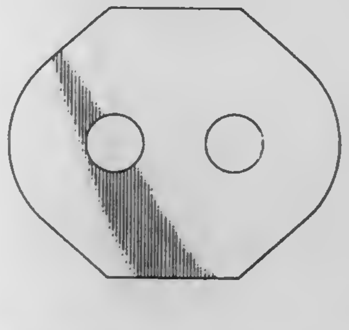
Tetsuya Yoshihara, Kanagawa-Ken, Japan, assignor to NKK Corporation, Tokyo, Japan; Tokyo Yogyo Kabushiki Kaisha, Tokyo, Japan; Nippon Rotary Nozzle Co., Ltd., Kawasaki, Japan, and Kokan Kikai Kogyo Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 416,643, Apr. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 32,456, Dec. 19, 1994, Pat. No. Des. 371,825, which is a continuation of Ser. No. 846,393, Mar. 4, 1992, abandoned. This application Nov. 7, 1996, Ser. No. 745,897

Claims priority, application Japan, Sep. 5, 1991, 3-26602; Sep. 5, 1991, 3-26603

Int. Cl.^{6} B22P *41/08*

U.S. Cl. 222—600 **20 Claims**



1. A flow rate adjusting plate for a rotary-nozzle molten-metal pouring unit, said plate comprising
a body generally in the shape of an octagon and having a periphery including six straight sides connected in groups of three and two arcs, said arcs being at opposite sides of said octagon with said arcs between and connecting said groups to complete said octagon, said arcs connecting smoothly to adjacent of said straight sides; and
said body being provided with two holes for passing said molten metal, each of said holes having a center which is substantially the same as the center of one of said arcs, said arcs and said holes being spaced apart by a distance which is larger than the diameter of said holes.

5,709,808

FORMWORK TO BE USED WITH A WALL FORM ASSEMBLY FOR FORMING A DOOR OPENING IN A CONCRETE WALL

Kuo-An Lee, No. 851, Chung-Shan Rd., Nan-Shing Tsun, Kui-Jen Hsiang, Tainan Hsien, Taiwan

Filed Jul. 2, 1996, Ser. No. 677,451

Int. Cl.^{6} E04G *15/02*

U.S. Cl. 249—39 **12 Claims**

1. A formwork adapted to be used with a wall form assembly which includes a parallel pair of spaced wall form plates that confine a concrete pouring space for forming a concrete wall therebetween, said formwork to be disposed between the wall form plates so as to form a door opening in the concrete wall, said formwork comprising:
a parallel pair of spaced mold frame members, each of which is adapted to be secured to a respective one of the wall form plates of the wall form assembly; and
each of said mold frame members having a peripheral portion provided with a partition plate that extends toward the other one of said mold frame members, said partition plates of said mold frame members overlapping one another and being in sealing contact with each other, said partition plates being movable with said mold frame members towards and away

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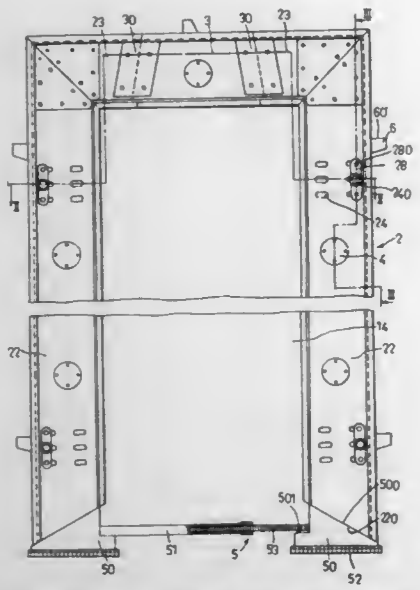


from each other, said partition plates confining the door opening which is isolated from the concrete pouring space.

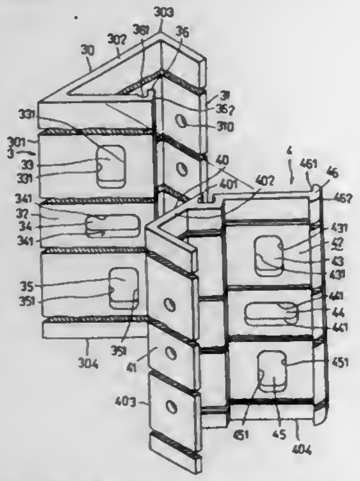
5,709,809
MODULAR WALL FORM ASSEMBLY

Wen-Yuan Lee, 7F-3, No. 8, Lane 390, Sec. 1, Chien-Kang Rd., Tainan City, Taiwan

Filed Mar. 25, 1996, Ser. No. 622,467

Int. Cl.⁶ E04G *11/10*

U.S. Cl. 249—195 **6 Claims**



1. A modular wall form assembly comprising:

a first form unit having an upright first flat panel with a mating edge, a first connecting plate extending rearwardly and inclinedly from said mating edge of said first flat panel, said first connecting plate having a first positioning hole, said first positioning hole having a generally oblong cross-section with a first width, a first length which is larger said first width, and a pair of opposed side walls defining said first width of said first positioning hole;

a second form unit having an upright second flat panel with a mating edge, a second connecting plate extending rearwardly and inclinedly from said mating edge of said second flat panel, said second connecting plate having a second positioning hole, said second positioning hole having a generally oblong cross-section with a second width, a second length which is larger said second width, and a pair of opposed side walls defining said second width of said second positioning hole, said second width of said second positioning hole equal to said first width of said first positioning hole, said first and second connecting plates being adapted to contact complementarily one another when said first and second flat panels are disposed side-by-side such that said first and second positioning holes are at least partially aligned with one another; and

a fastening lever having a handle portion and a fastening portion formed on one end of said handle portion, said fastening portion having a base portion with a flat fastening face, and a neck portion which projects from said fastening face and which has a generally oblong cross-section with a length and a width that equals said width of said first and second positioning holes, said neck portion having two opposed shorter sides in a lengthwise direction, said fastening portion further having an enlarged head portion connected to a distal end of said neck portion, said head portion having a generally oblong cross-section and a longitudinal axis parallel to that of said neck portion in order to form a clamping space between said head portion and said fastening face of said base portion, said head portion has a width which is smaller than said width of said first and second positioning holes and a length which is smaller than said length of said first and second positioning holes so that said head portion of said fastening lever can extend through said first and second positioning holes with said neck portion being received in said first and second positioning holes when said first and second positioning holes are at least partially aligned with one another;

whereby, after said head portion has been extended through said first and second positioning holes and said neck portion has received in said first and second positioning holes while said first and second positioning holes are partially aligned, said fastening lever can be rotated such that said shorter sides of said neck portion abut tightly against said side walls of said first and second positioning holes and said side walls are received in said clamping space between said head portion and said base portion, thereby pushing each of said side walls of said first positioning hole to be flush with a corresponding one of said side walls of said second positioning hole and retaining said first and second connecting plates between said head portion and said base portion of said fastening lever.

5,709,810
MERCERIZATION WETTING AGENT COMPOSITIONS

Albert Stehlin, Rosenau, France, and Thomas Maier, Schliengen, Germany, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,614

Claims priority, application Switzerland, Dec. 8, 1994, 3725/94

Int. Cl.⁶ D06M *13/256;13/328*

U.S. Cl. 252—8.81 **4 Claims**

1. A mercerization wetting agent composition comprising

(a) a compound of the formula

$$R_1\text{—}CH_2(CHOH)_mCO\text{—}NH\text{—}R_2, \qquad (3)$$

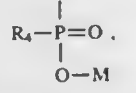
wherein

R_1 is hydroxyl or —SO_3M, and M is an alkali metal ion

R_2 is C_4–C_{10}alkyl and

m is from 2 to 6 and

(b) a phosphoric ester of the formula



$$R_4-\overset{\displaystyle R_3}{\underset{\displaystyle O-M}{P}}=O\,. \qquad (2)$$

wherein

R_3 is C_4–C_6-alkoxy; and

R_4 is O—M or C_4–C_6alkoxy.

5,709,811
MAGNETIC MATERIAL FOR MICROWAVE AND HIGH-FREQUENCY CIRCUIT COMPONENT USING THE SAME

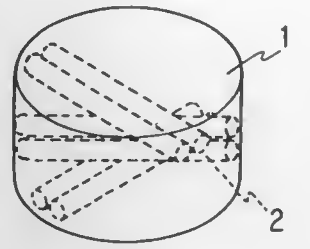
Toshifumi Satoh, Nara; Hirotaka Furukawa, Osaka; Osamu Inoue, Osaka; Takayuki Takeuchi, Osaka; Kenji Iijima, Kyoto, and Koichi Kugimiya, Oska, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 8, 1996, Ser. No. 629,101

Claims priority, application Japan, Apr. 11, 1995, 7-085709; Jul. 27, 1995, 7-191678; Oct. 6, 1995, 7-259764; Dec. 19, 1995, 7-330012; Dec. 20, 1995, 7-331435

Int. Cl.⁶ C04B *33/40*

U.S. Cl. 252—62.57 **24 Claims**



1. A sintered magnetic material for microwave, comprising a phase having garnet structure, said phase comprising a component represented by Formula 1

$$(A_{3-a}Bi_a)B_xO_y \qquad \text{Formula 1}$$

where A represents a component comprising at least one element selected from yttrium (Y) and rare earth elements, B represents a component comprising Fe, a represents a number in the range of 0 to less than 2.00, x represents a number in the range of 4.76 to less than 5.00, and y represents a number satisfying an inequality $1.5(3+x)\leqq y\leqq 12$.

5,709,812
DEICING COMPOSITION AND METHOD

George A. Janke, 5600 N. Poinsettia, #1507, West Palm Beach, Fla. 33407, and Warren D. Johnson, Jr., 511 SW. Bay Pointe Cir., Palm City, Fla. 34990

Filed Apr. 25, 1996, Ser. No. 637,614

Int. Cl.⁶ C09K *3/18;3/00;* **C23F** *15/00*

U.S. Cl. 252—70 **16 Claims**

1. An antifreeze and deicing composition for inhibiting the accumulation of snow and ice on outdoor surfaces, which composition comprises in combination from 14 to 80% by weight of whey and from 20 to 86% by weight of water.

5,709,813
DEICING COMPOSITION AND METHOD

George A. Janke, 5600 N. Poinsettia, #1507, West Palm Beach, Fla. 33407, and Warren D. Johnson, Jr., 511 SW. Bay Pointe Cir., Palm City, Fla. 34990

Filed Mar. 21, 1996, Ser. No. 620,127

Int. Cl.⁶ C09K *3/18;3/00;* **C23F** *15/00*

U.S. Cl. 252—70 **21 Claims**

1. An antifreeze and deicing composition for inhibiting the accumulation of snow and ice on outdoor surfaces, which composition comprises from 14 to 80% by weight of a wine-making residue and from 20 to 86% by weight of water.

5,709,814
AQUEOUS SYSTEM CONTAINING A SYNERGISTIC PHOSPHONATE SCALE CONTROL COMBINATION

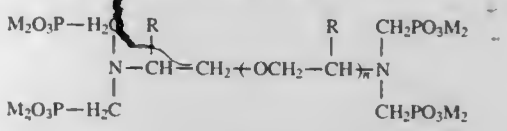
Jasbir S. Gill, McKees Rocks, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 6, 1995, Ser. No. 540,268

Int. Cl.⁶ C02F *5/10*

U.S. Cl. 252—180 **18 Claims**

1. An aqueous system containing scale forming salts and wherein the pH of said system is at least 8.5 and the calcite saturation of said system level is at least 100 times the solubility limit of calcium as calcite, which further contains a synergistic effective amount of a combination comprising: (A) a polyether polyamino methylene phosphonate of the formula:



$$\begin{array}{l} M_2O_3P-H_2C \\ \qquad\qquad\quad N-\overset{R}{CH}=CH_2\!\left(OCH_2-\overset{R}{CH}\right)_{\!n}N \\ M_2O_3P-H_2C \end{array}\begin{array}{l} CH_2PO_3M_2 \\ \\ CH_2PO_3M_2 \end{array}$$

where n is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a cation of an alkali metal salt; and each R may be the same or different and is independently selected from hydrogen and methyl; (B) a terpolymer comprising the monomers of acrylic acid, sulfophenomethallyl ether and maleic acid, wherein the weight average molecular weight for said terpolymer is in the range from about 4,000 to 10,000; and (C) a hydroxyphosphonoacetic acid.

5,709,815
PEROXYGEN BLEACH COMPOSITION ACTIVATED BY OXO-PIPERIDINIUM SALTS

Robert Joseph Heffner, and Robert John Steltenkamp, both of Somerset, N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Filed Dec. 23, 1996, Ser. No. 771,493

Int. Cl.⁶ C11D *7/54*

U.S. Cl. 252—186.39 **5 Claims**

1. A peroxygen bleaching composition which comprises by weight a mixture of:

(a) about 1 to about 75% of a peroxygen bleaching compound; and

(b) about 1 to about 75% of a peroxygen bleaching compound activator which is an oxopiperidinium salt comprising 1,1-dialkyl-4-oxopiperidinium methosulfate.

5,709,816
SINGLET OXYGEN QUENCHERS AND EXTERNAL COMPOSITIONS CONTAINING THE SAME

Masakazu Yamaguchi; Hiroyuki Ohsu; Eiichi Nishizawa; Mitsuru Sugiyama, all of Ichikai-machi; Koichi Nakamura, Tokyo, and Yoshinori Takema, Ichikai, all of Japan, assignors to Kao Corporation, Tokyo, Japan

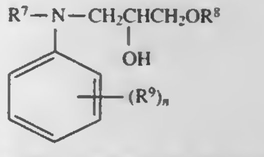
Filed Jul. 22, 1996, Ser. No. 685,926

Claims priority, application Japan, Jul. 21, 1899, 7-185792; Jul. 21, 1995, 7-185793; Dec. 25, 1995, 7-336840; Dec. 25, 1995, 7-336841; Dec. 25, 1995, 7-336842; Dec. 25, 1995, 7-336843

Int. Cl.⁶ A61K *7/50;* **C07C** *211/00*

U.S. Cl. 252—188.28 **5 Claims**

1. A compound represented by the following formula (1c) or a salt thereof:



(1c)

wherein R^7 represents an alkyl group, R^8 represents a hydrogen atom or an alkyl group; each R9, in the number of n, independently

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represents a hydrogen atom, an alkyl group, or an alkoxyl group; and n represents an integer of from 1 to 4; with the proviso that when: (1) R^8 and R^9s in the number of n are all hydrogen atoms; (2) R^8 is a hydrogen atom, R^7 is an ethyl group, n is 1, and R^9 is a methyl group substituted at the meta-position; (3) R^7 and R^8 are both methyl groups and R^9s in the number of n are all hydrogen atoms; or (4) R^7 and R^8 are both methyl groups, n is 1, and R^9 is a methyl group substituted at the meta-position, the resulting compounds are excluded.

5,709,817
CHIRAL COMPOUNDS CONTAINING A TETRAHYDROPYRAN RING

Karl Siemensmeyer, Frankenthal; Volkmar Vill, Muenster; Hanns-Walter Tunger, and Matthias Paul, both of Hamburg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

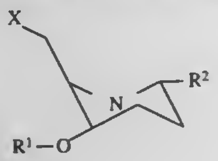
Filed Nov. 24, 1995, Ser. No. 562,466

Claims priority, application Germany, Nov. 30, 1994, 44 42 614.3

Int. Cl.^{6} C07D *309/10;* **C09K** *19/34*

U.S. Cl. 252—299.61 **17 Claims**

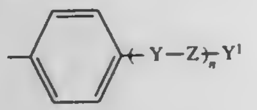
1. A chiral compound of the formula I


I

where

R^1 is hydrogen or —Y—Z—Y^1,

R^2 is



and

X is fluorine, chlorine, bromine, iodine, hydroxyl or OR^1, where

Y is, independently, a direct bond, CO or C_1- to C_8-alkylene in which nonadjacent carbon atoms may be replaced by O, CO, COO or OCO,

Z is, independently, a group containing one or more saturated or unsaturated carbocyclic rings,

Y^1 is, independently, C_1- to C_{15}-alkyl, C_2- to C_{15}-alkenyl, C_1- to C_{15}-alkoxy, C_2- to C_{15}-alkenyloxy, C_1- to C_{15}-alkanoyloxy or C_3- to C_{15}-alkenoyloxy, it being possible for nonadjacent carbon atoms in these radicals to be replaced by oxygen, OCO or COO, and

n is 0, 1 or 2.

5,709,818
LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE AND LIQUID CRYSTAL APPARATUS

Masataka Yamashita, Chigasaki; Masahiro Terada, Hadano; Shosei Mori, Hiratsuka; Syuji Yamada, Atsugi; Hiroshi Mizuno, Zama; Ikuo Nakazawa, and Koji Noguchi, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,159

Claims priority, application Japan, Jan. 31, 1995, 7-032950

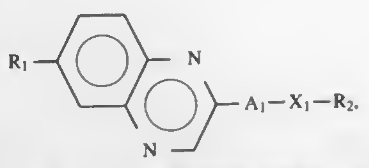
Int. Cl.^{6} C09K *19/34;19/32;19/30;* **C02F** *1/13*

U.S. Cl. 252—299.61 **15 Claims**

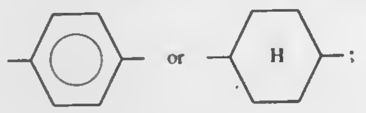
1. A liquid crystal composition, comprising:

a mesomorphic compound represented by the following formula (A):

(A)



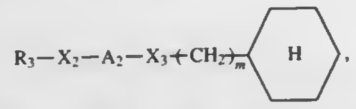
wherein R_1 and R_2 independently denote a linear or branched alkyl group having 1–18 carbon atoms; X_1 denotes a single bond, —O—, —CO—O— or —O—CO—; and A_1 denotes



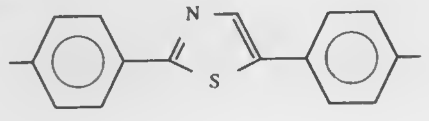
and

a mesomorphic compound represented by the following formula (B):

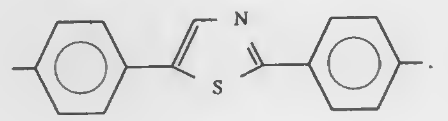
(B)



wherein R_3 denotes a linear or branched alkyl group having 1–18 carbon atoms; X_2 and X_3 independently denote a single bond, —O—, —CO—O— or —O—CO—; m is an integer of 3–16; and A_2 denotes



or



5,709,819
LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE AND LIQUID CRYSTAL APPARATUS

Masataka Yamashita, Chigasaki; Kazuharu Katagiri, Tama; Masahiro Terada, Hadano; Shosei Mori, Hiratsuka; Syuji Yamada, and Koji Noguchi, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,576

Claims priority, application Japan, Jan. 31, 1995, 7-032956

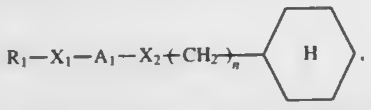
Int. Cl.^{6} C09K *19/34;19/32;19/30*

U.S. Cl. 252—299.61 **15 Claims**

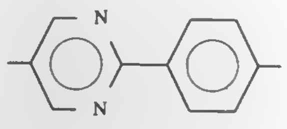
1. A liquid crystal composition, comprising:

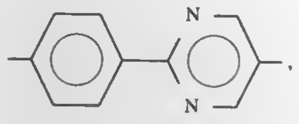
a mesomorphic compound represented by the following formula (A):

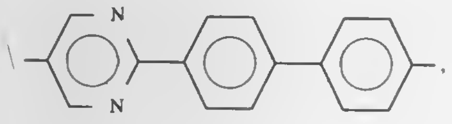
(A)

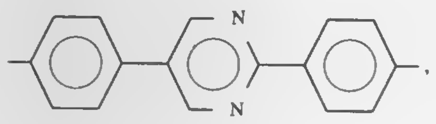


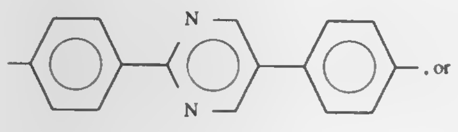
wherein R_1 denotes a linear or branched alkyl group having 1–18 carbon atoms; X_1 denotes a single bond, —O—, —CO—O— or —O—CO—; X_2 denotes a single bond, —OCH_2—, —CO—O— or —O—CO—; n is an integer of 3–16; and A_1 denotes

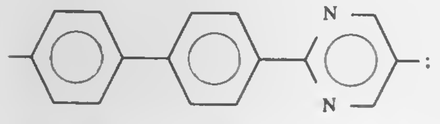






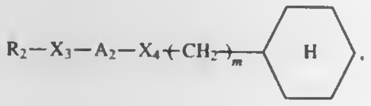




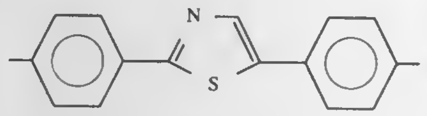


and a mesomorphic compound represented by the following formula (B):

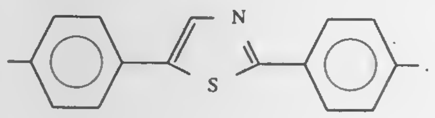
(B)



wherein R_2 denotes a linear or branched alkyl group having 1–18 carbon atoms; X_3 and X_4 independently denote a single bond, —O—, —CO—O— or —O—CO—; m is an integer of 3–16; and A_2 denotes



or



5,709,820
ALKENYL CYCLOHEXANE DERIVATIVES AND LIQUID CRYSTAL COMPOSITION

Takashi Kato; Shuichi Matsui; Kazutoshi Miyazawa; Yasuko Sekiguchi, and Etsuo Nakagawa, all of Ichihara, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 31, 1996, Ser. No. 655,965

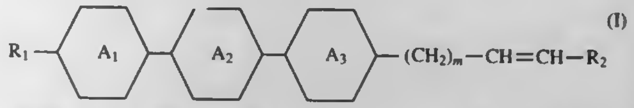
Claims priority, application Japan, Jun. 5, 1995, 7-161417

Int. Cl.^{6} C09K *19/34;19/30;* **C07D** *319/06*

U.S. Cl. 252—299.61 **14 Claims**

1. A liquid crystalline compound of formula (I)

(I)



wherein R_1 is an alkyl group of 1–15 carbons, an alkenyl group of 2–15 carbons or an alkyl or alkenyl group in which one or plural non-adjacent methylene groups (—CH_2—) is or are replaced by —O—, —S—, [—C≡C—] or —COO—, R_2 is a hydrogen atom or an alkyl group of 1–10 carbons; m is 0–5; when m is 2 or more, one methylene group or plural non-adjacent methylene groups in —$(CH_2)_m$— may be replaced by —O—; and the rings A_1, A_2 and A_3 are independently a 1,4-cyclohexylene group, a cyclohexene-1,4-diyl group a 1,3-dioxane-2,5, diyl group, a tetrahydropyrane-2,5, diyl group, a 1,3-dithian-2,5-diyl group or a tetrahydrothiopyrane-2,5-diyl group, provided A_3 is not a 1,3-dioxane-2,5-diyl group when A_2 is a 1,4-cyclohexylene group and no methylene group in —$(CH_2)_m$— may be replaced by —O— when rings A1, A2 and A3 are all 1,4-cyclohexylene groups.

5,709,821
GEL FORMERS HAVING REDUCED GELLING TIME AND FORMING GELS WITH IMPROVED MELTING RESISTANCE

Wulf von Bonin, Odenthal; Roland Leroux, Stadecken-Elsheim; Markus Steigenberger, Bischofsheim; Thomas Karschti, Budenheim, and Markus Ring, Westhofen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, and Schott Glaswerke, Mainz, both of Germany

Filed Jan. 16, 1996, Ser. No. 587,197

Claims priority, application Germany, Jan. 23, 1995, 195 01 839.7; Feb. 2, 1995, 195 03 283.7

Int. Cl.^{6} B01J *13/00;* **C09K** *21/00;* **C04B** *16/00*

U.S. Cl. 252—315.01 **10 Claims**

1. A gel former containing a) an acid aluminum phosphate and b) a reaction product of boric acid with an alkanolamine, in which a) and b), calculated as solids, are present in a weight ratio of from 100:95 to 100:0.5 wherein the said gel former additionally contains one or more alkali metal compounds in an atomic ratio of aluminum to alkali metal of 1:1.3–2.5.

5,709,822
FUEL REGULATING MECHANISM FOR A ROTARY THROTTLE VALVE TYPE CARBURETOR

Michiyasu Togashi, Tokyo, Japan, assignor to Walbro Corporation, Cass City, Mich.

Filed Jul. 17, 1996, Ser. No. 682,124

Int. Cl.^{6} F02M *9/08*

U.S. Cl. 261—44.2 **7 Claims**

1. In a fuel regulating mechanism for a carburetor in which a throttle valve having a throttle hole is disposed in an air intake passage of a carburetor body, and wherein the quantity of air flow in the air intake passage is controlled by movement of the throttle valve to thereby vary the opening area of the throttle hole exposed to the intake passage upstream of the throttle valve, and a quantity of fuel is controlled by a relative position of a fuel regulating needle attached to the throttle valve to a fuel jet port of a fuel supply pipe secured to the carburetor body due to movement of the

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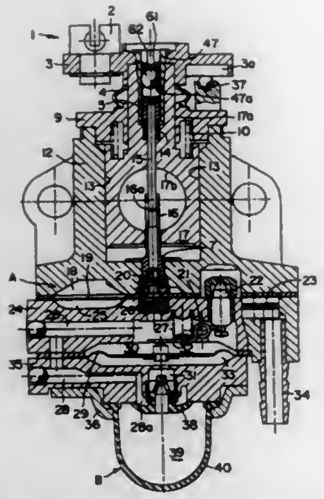


throttle valve, and wherein the throttle valve is cylindrical and rotatable about an axis transverse to the axes of the throttle hole and carburetor air intake passage for controlling air flow through the carburetor air intake passage and wherein the throttle valve is movable along an axis transverse to the axes of the throttle hole and carburetor air intake passage for controlling air flow through the carburetor air intake passage, the improvement in combination therewith of a bypass air passage for variably communicating the throttle hole of the throttle valve at an upstream portion thereof with the air intake passage of the carburetor body in bypass relation to the opening area of the throttle hole exposed to the air intake passage at engine idle setting of the throttle valve, wherein an air quantity regulating needle valve is provided in said bypass air passage to variably adjust the quantity of air flowing in the bypass air passage to the throttle hole, wherein a closing member is non-removably fitted in said carburetor to permanently prevent exterior access to an adjustment portion of the fuel regulating needle located at one end thereof, and the end of the needle opposite said one end is inserted into said fuel supply pipe so that the adjustment of needle regulation of said fuel jet port cannot be made from outside of said carburetor after a low speed fuel quantity has been set prior to fitment of said closing member and wherein said bypass air passage has an outlet constructed and arranged relative to said throttle valve so as to be closed by movement of said throttle valve out of idle setting toward high speed and/or maximum power setting and thereby de-register the throttle hole with said bypass air passage outlet.

5,709,823

METHOD FOR PRODUCING SONOTRODES

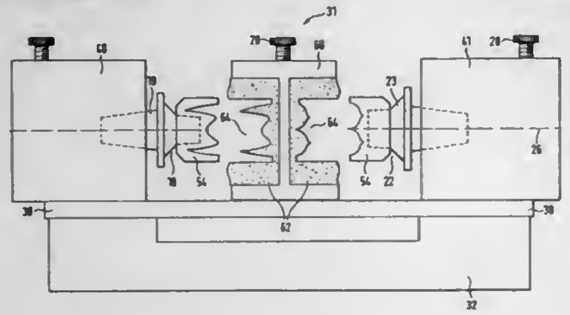
Rainer Hahn, Rottenburg, Germany, assignor to THERA patent Gmbh & Co. KG Gesellschaft fur industrielle Schutzrechte, Seefeld, Germany

Division of Ser. No. 164,554, Dec. 10, 1993, abandoned. This application Sep. 16, 1996, Ser. No. 714,365

Claims priority, application Germany, Dec. 12, 1992, 42 41 936.0

Int. Cl.^{6} A61C *13/00;13/20;13/08*

U.S. Cl. 264—16 **11 Claims**



1. A method of producing a dental restoration part from a ceramic material by means of ultrasonic working, comprising:

(a) forming a negative mold from a master sonotrode,
(b) forming a pre-working sonotrode from said negative mold,
(c) ultrasonically working a workpiece using said pre-working sonotrode, and
(d) ultrasonically working said workpiece made of ceramic material using said master sonotrode to form said dental restoration part.

5,709,824

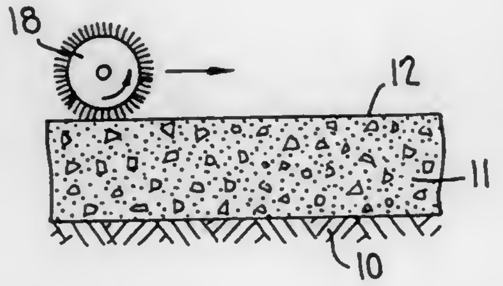
METHOD FOR FORMING A ROLLER COMPACTED CONCRETE INDUSTRIAL FLOOR SLAB

Carl N. Ytterberg, Denver, Colo., and Ernest K. Schrader, Walla Walla, Wash., assignors to Kalman Floor Co., Inc., Evergreen, Colo.

Division of Ser. No. 505,884, Jul. 24, 1995, Pat. No. 5,643,509, which is a continuation-in-part of Ser. No. 115,090, Sep. 2, 1993, abandoned. This application Feb. 13, 1997, Ser. No. 799,463

Int. Cl.^{6} E04B *1/16*

U.S. Cl. 264—34 **13 Claims**



1. A method for forming a roller compacted concrete topped floor slab, comprising the steps of;

producing a no-slump concrete having a saturated surface-dry condition using a mixture of:
aggregate having a nominal maximum size aggregate in a range from ¼ inch to 1.0 inch;
150 to 700 pounds per cubic yard of cementitious material; and
150 to 700 pounds per cubic feet of water;
placing the no-slump concrete on the ground to form a concrete slab having an upper surface, a lower surface and an interior;
roller compacting the upper surface of the slab prior to curing by applying rolling and vibratory forces to the surface at a frequency in the range of 10 to 50 Hz to compact the slab to substantially its maximum practically achievable density allowing the aggregate to remain dispersed throughout the slab from the upper surface to the surface thereof without sinking into the interior of the slab;
roughening the upper surface of the concrete slab in preparation for a concrete topping;
applying a layer of topping ½ to ¾ inch thick to the roughened upper surface, the topping having an Upper surface and comprising a mixture of the following ingredients in pounds per cubic yard of the topping;
a) 500 to 1500 washed concrete sand;
b) 1500 to 3500 coarse aggregate;
c) 500 to 850 cementitious material; and
d) 100 to 425 water.

5,709,825

METHOD OF DETERMINING A THERMOFORMING PROCESS WINDOW OF A THERMOPLASTIC MATERIAL

Wayne Ken Shih, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 19, 1996, Ser. No. 636,747

Int. Cl.^{6} B29C *51/00*

U.S. Cl. 264—40.1 **8 Claims**

1. A method for thermoforming a rectangular sheet of a thermoplastic material having a length, a width, and a thickness including determining a thermoforming process window comprising the steps of:

a) measuring a length and a width of a rectangular sheet of a thermoplastic material,
b) clamping the sheet at each of four sides of the sheet,
c) heating the sheet to a temperature at which the sheet sags from exposure to heat,
d) periodically measuring an apex depth at a center of sag,
e) periodically determining a Sag Number by:

$$S=100*h/d$$

wherein S is the Sag Number, h is the apex depth measured at the center of sag and d is a characteristic length determined by:

$$d=(l+w)/2$$

wherein l is the length as measured of said sheet and w is the width as measured of the sheet, and

f) upon the Sag Number being between 10 and 40, thermoforming the sheet into an end product.

5,709,826

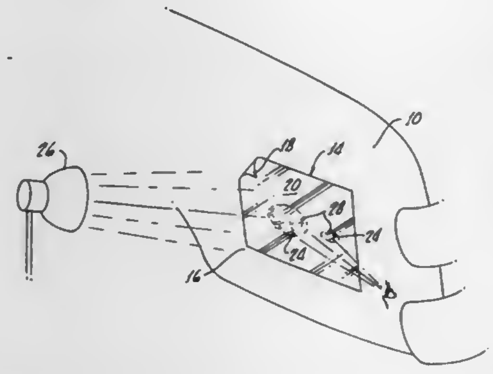
METHOD FOR RESURFACING PANELS SUCH AS AUTOMOBILE PANELS OR THE LIKE

Mark Greenberg, Santa Ana, Calif., assignor to Olaf Haas, Mission Viejo, Calif.

Filed Oct. 4, 1996, Ser. No. 726,389

Int. Cl.^{6} B29C *73/02;* **G01B** *11/30*

U.S. Cl. 264—40.1 **19 Claims**



1. A method for surfacing a panel, said method comprising the steps of:

(a) applying a thin, reflective, flexible sheet to a panel to be surfaced;
(b) illuminating the sheet and comparing differing levels of brightness on the sheet in order to identify irregularities in the panel underlying the sheet;
(c) selectively removing portions of the sheet that are overlying the identified irregularities in order to expose irregular portions of the panel;
(d) correcting the identified irregular portions; and
(e) removing a remaining portion of the sheet from the corrected panel.

5,709,827

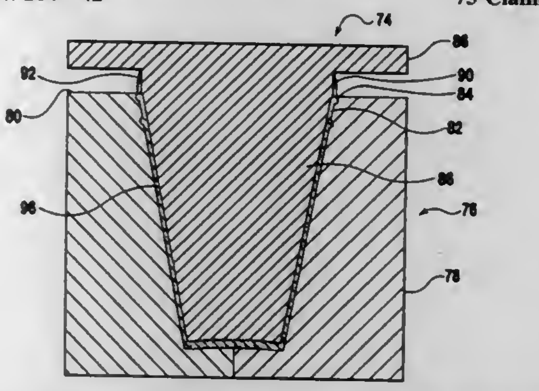
METHODS FOR MANUFACTURING ARTICLES HAVING A STARCH-BOUND CELLULAR MATRIX

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 327,524, Oct. 21, 1994, Ser. No. 288,667, Aug. 9, 1994, Ser. No. 218,971, Mar. 25, 1994, Ser. No. 109,100, Aug. 18, 1993, abandoned, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 982,383, Nov. 25, 1992, abandoned, and Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 327,524Ser. No. 288,667, Ser. No. 218,971, Ser. No. 109,100, Ser. No. 95,662, Ser. No. 982,383, , each is a continuation-in-part of Ser. No. 929,898. This application Dec. 9, 1994, Ser. No. 353,544

Int. Cl.^{6} B29C *65/00*

U.S. Cl. 264—42 **73 Claims**



1. A method for manufacturing an article of manufacture having a fiber-reinforced, starch-bound cellular matrix, the method comprising the steps of:

mixing water, a thickening agent, an ungelatinized starch-based binder and fiber having an average aspect ratio greater than about 25:1 together to form a starch-based composition, the water and thickening agent comprising a fluid fraction having a yield stress such that the fibers are substantially uniformly dispersed throughout the starch-based composition during the mixing step;
forming the starch-based composition into a desired shape of the article of manufacture by heating the composition in a mold to a temperature sufficient to substantially gelatinize the starch-based binder and remove at least a portion of the water by evaporation in order to solidify the starch-based binder; and
removing the formed article from the mold after a substantial portion of the water has been removed from the starch-based composition.

5,709,828

METHOD OF FABRICATING A FOAMED INTERIOR TRIM PRODUCT

Claude E. Bemis, York, Me.; Craig B. Labrie, Dover, and Norman J. Clavette, Rollinsford, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Oct. 26, 1995, Ser. No. 548,643

Int. Cl.^{6} B29C *44/06;44/12*

U.S. Cl. 264—46.5 **6 Claims**

1. A method of making a vehicle interior trim component comprising the steps of:

preparing a shell of flexible material having a peripheral return flap;
preparing an insert panel having inner and outer sides and a peripheral edge;
positioning the shell in spaced relation over the inner side of the insert and extending the shell return flap around the edge and to the outer side of the insert to envelop a foam space between the shell and the insert panel;
joining a backing panel to the insert panel to provide an overflow chamber between the panels and a peripheral gap

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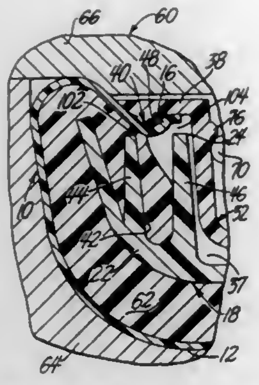


between the foam space and chamber, and capturing the return flap of the shell within the gap;

introducing foam core material in a flowable state into the foam space and allowing the material to flow throughout and fill the space to produce a foam core therein, the return flap of the shell being so supported within the gap as to permit any gases and excess foam contained in the foam space to pass through the gap between the return flap and the insert and into the overflow chamber to relieve the foam space of such gases and excess foam while sealing the gap against external leakage of such excess foam past the return flap and backing panel;

supporting the return flap of the shell within the peripheral gap such that the return flap deflects toward and seals against the backing panel as the gases and excess foam passes through the gap to prevent the external leakage of such excess foam past the return flap and backing panel; and

providing at least one peripheral ridge projection on the backing panel and positioning the return flap of the shell within the gap such that it extends over the ridge projection during passage of the gases and excess foam through the gap to effect a foam-tight seal between the return flap and the backing plate to prevent the leakage of foam therepast.

5,709,829
METHOD FOR MANUFACTURING PRODUCT IN MEMBRANE OR FILM FORM

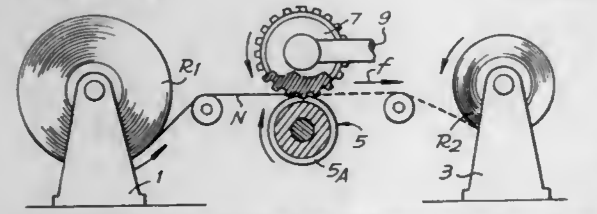
Claudio Giacometti, Pistola, Italy, assignor to PANTEX S.r.l., Pistoia, Italy

Continuation of Ser. No. 433,679, May 4, 1995, abandoned, and a continuation of Ser. No. 151,562, Nov. 12, 1993, abandoned. This application Jul. 8, 1996, Ser. No. 676,885

Claims priority, application European Pat. Off., Nov. 17, 1992, 92830624

Int. Cl.^{6} B26F *1/18;1/20*

U.S. Cl. 264—156 **4 Claims**



1. A method for forming a web that is permeable to liquids and designed to separate two environments and to allow liquid to flow in one direction from one of said environments to the other, said method including:

providing a web of material,

providing two contra-rotating rollers,

providing on one roller projections with outer surfaces,

providing a smooth surface on the other roller,

pressing said rollers together,

rotating said rollers at different speeds whereby to provide a slipping action between the smooth surface of the one said other roller and the outer surfaces of the said projections on the said one roller,

adjusting peripheral speed of the outer surface of the projections of the one roller to be greater than peripheral surface of the smooth surface of the other roller,

feeding said web between said rollers at a speed slower than the peripheral speed of the outer surfaces of said projections, wherein the projections penetrate the web material and create holes in the material and also create a thickening of the web material by pushing web material from said holes and piling the web material up at a side of the holes while said web is in contact with said smooth roller.

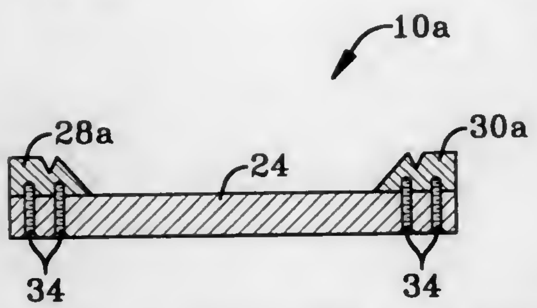
5,709,830
METHOD FOR WINGED OR WINGLESS TYPE PRECURE TREAD PRODUCTION

Spiros Apostolou Triantafyllis, Thessaloniki, Greece, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1996, Ser. No. 605,418

Int. Cl.^{6} B29C *35/02*

U.S. Cl. 264—219 **1 Claim**



1. A method for converting a wingless tire tread mold to a winged tire tread mold, said mold comprising a main portion capable of forming a ground engaging surface of an associated precured tread, a first pair of inserts capable of producing lateral edges of said associated precured tread without wings, a second pair of inserts capable of producing lateral edges of said associated precured tread with wing portions, and securing means for alternatively and selectively securing said first and second pairs of inserts to said main portion, said method comprising the steps of:

securing said first pair of inserts to said main portion to form said wingless tire tread mold;

utilizing said wingless mold to produce said associated wingless tread;

removing said first pair of inserts from said main portion;

securing said second pair of inserts to said main portion to convert said wingless tire tread mold to said winged tire tread mold; and,

utilizing said winged mold to produce said associated winged tread.

5,709,831
METHOD OF PRODUCING CONNECTOR WITH REAR HOLDER

Takayoshi Endo; Yuji Hatagishi; Nolio Kawamura; Junichi Hamamoto; Motohisa Kashiyama; Yasuhiro Yamaguchi; Toshihiko Yamamoto, and Takeyuki Hamaguchi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

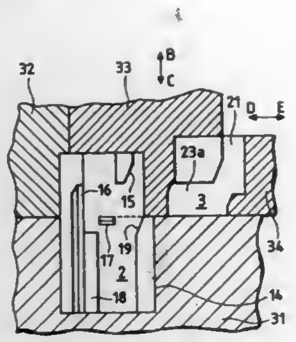
Filed Jun. 5, 1996, Ser. No. 655,237

Claims priority, application Japan, Jun. 5, 1995, 7-138077; Dec. 28, 1995, 7-342956

Int. Cl.^{6} B29C *45/14;45/40*

U.S. Cl. 264—238 **6 Claims**

1. A method of producing a connector with a rear holder wherein a plurality of connection terminals are received in a connector housing, and are retained in a double manner by the rear holder, comprising the steps of:



molding the connector housing and the rear holder using a set of molds comprising a first mold disposed between an inner side of the connector housing and an inner side of the rear housing, and a second mold adjacent to an outer side of the rear holder;

moving the first mold to form a space between the connector housing and the rear holder; and

urging the second mold to move the rear holder to engage the connector housing, to provisionally retaining the rear holder on the connector housing.

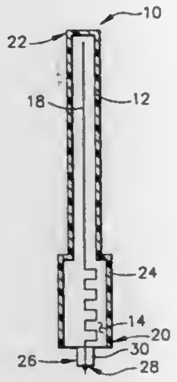
5,709,832
METHOD OF MANUFACTURING A PRINTED ANTENNA

Gerard James Hayes, Wake Forest, and Ross Warren Lampe, Raleigh, both of N.C., assignors to Ericsson Inc., RTP, N.C.

Filed Jun. 2, 1995, Ser. No. 460,578

Int. Cl.^{6} B29C *45/14*

U.S. Cl. 264—272.11 **8 Claims**



1. A method of manufacturing a printed monopole antenna, comprising the following steps:

(a) providing a first substantially planar printed circuit board of desired length and width having a first side, a second side, a feed end, and an open end, wherein said first printed circuit board is made of a dielectric material having at least a minimum degree of flexibility;

(b) incorporating a feed port with said printed monopole antenna, said feed port having a signal feed portion and a ground portion;

(c) fabricating a main radiating element of a desired electrical length on said first printed circuit board first side, wherein said main radiating element is coupled to said signal feed portion of said feed port;

(d) fabricating at least one additional radiating element having an electrical length different than said main radiating element electrical length on said first printed circuit board first side, said additional radiating elements not being connected to said feed port, wherein said printed monopole antenna is resonant at a plurality of frequency bands through electrical coupling of said additional radiating elements with said main radiating element; and

(e) overmolding both sides of said printed circuit board.

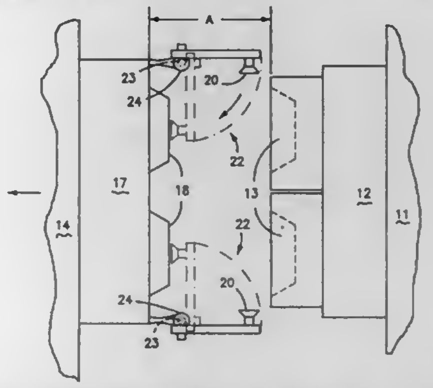
5,709,833
PIVOTING WORKPIECE REMOVAL METHOD

John Di Simone, Woodbridge, Canada, assignor to Husky Injection Molding Systems Ltd., Canada

Division of Ser. No. 263,815, Jun. 22, 1994, Pat. No. 5,518,387. This application Feb. 29, 1996, Ser. No. 608,755

Int. Cl.^{6} B29C *45/76*

U.S. Cl. 264—328.1 **6 Claims**



1. A method of minimizing the cycle time of an injection molding machine having a full linear stroke corresponding to the full open condition of the machine, said machine including a rotatably movable molded article retrieval device attached to the machine, said retrieval device including an arm having a length and rotatable about an axis generally perpendicular to said linear stroke, a first rotary motion of said retrieval device corresponding to an empty condition and a second rotary motion of said device corresponding to a loaded condition;

comprising the steps of:

providing an adjustable motive means for operating and controlling the rotatable retrieval device;

adjusting the motive means so that said first rotary motion of the retrieval device corresponds to a first linear stroke of the injection molding machine which is less than the full linear stroke, for movement of the retrieval device in an empty condition, wherein the first linear stroke is at least equal to the length of the arm of the retrieval device;

adjusting the motive means further so that said second rotary motion of the retrieval device corresponds to a second linear stroke of the injection molding machine which is greater than said first linear stroke, for movement of said retrieval device in a loaded condition; and

including the steps of rotating the empty retrieval device in said first rotary motion to retrieve a molded article in the first linear stroke, and rotating the retrieval device in said second rotary motion with a molded article in said second linear stroke.

5,709,834
DEVICE FOR REMOVING GAS AND IMPURITIES FROM THE MOLTEN ALUMINUM

Yeun-Junn Lin, 5F, NO. 23, Lane 10, Tian Bao Street, Taichung, Taiwan

Filed Sep. 11, 1996, Ser. No. 712,466

Int. Cl.^{6} C21C *7/00*

U.S. Cl. 266—217 **3 Claims**

1. A device for removing gas and impurities from the molten aluminum, said device comprising:

a driving portion having an output shaft;

a transmission portion having a transmission shaft which is driven by said output shaft and is provided with an axial hole;

an agitating portion having a plurality of blades fastened with said transmission shaft such that said blades extend outwards from an axis of said transmission shaft, an upper end surface and a lower end surface of said blades forming respectively with said axis of said transmission shaft an angle, said blades provided respectively with at least one channel in communication with said axial hole of said transmission shaft;

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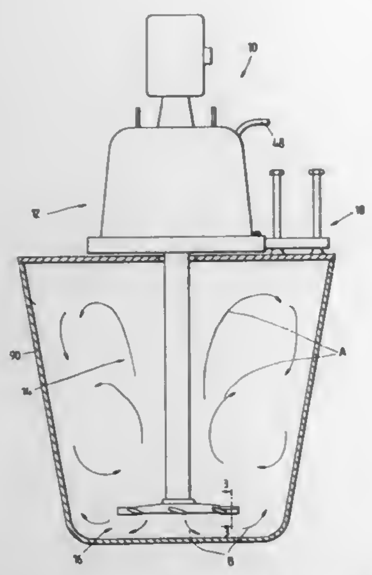


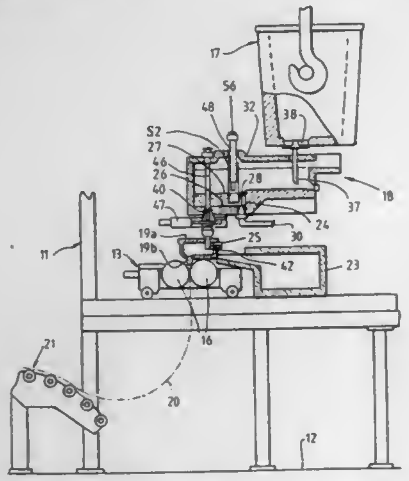
a connection seat having a through hole and a gas duct, said through hole of said connection seat being engaged pivotally with one end of said transmission shaft such that said gas duct of said connection seat is in communication with said axial hole of said transmission shaft;

said connection seat being fastened securely under said driving portion and having a ring slot in an inner wall of said through hole thereof; wherein said gas duct communicates between said ring slot and an outer side of said connection seat; wherein said transmission shaft is provided with at least one gas guiding hole in communication with said ring slot; and

wherein said transmission shaft is provided with a main body fastened securely therewith, said main body provided therein with a receiving cell in communication with said axial hole of said transmission shaft and with said channels of said blades.

5,709,835
HEATING MOLTEN METAL

Rodney Meeuwissen, Yellow Rock, Australia, assignor to Ishikawajima-Harima Heavy Industries Company, Tokyo, Japan, and BHP Steel (JLA) Pty Ltd., Melbourne, Australia
Filed Sep. 20, 1996, Ser. No. 717,182
Claims priority, application Australia, Oct. 16, 1995, PN5950
Int. Cl.⁶ C21C ***7/00***
U.S. Cl. 266—217 **3 Claims**



1. Apparatus for applying heat to a reservoir of molten metal, comprising:

a container to hold the reservoir of molten metal to be heated;

a raiseable and lowerable structure extending over said container;

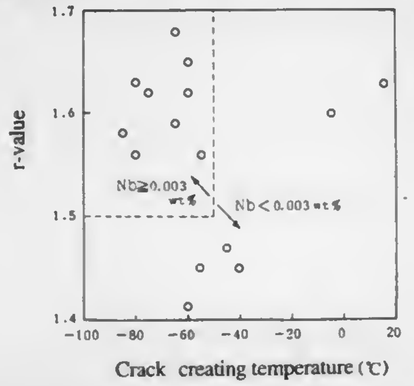
hoist means operable to raise and lower said structure over the container;

a plasma torch mounted on said structure so as to extend downwardly from that structure into proximity with the surface of the reservoir of molten metal within the container;

an elongate refractory return electrode mounted on said structure at a location spaced apart from the mounting of the plasma torch on said structure so as to extend downwardly from the structure such that the electrode and the torch are in spaced apart relationship, the electrode being set relative to the plasma torch so as to project downwardly below the bottom of the plasma torch whereby to dip into the reservoir of molten metal to be heated at a location spaced laterally away from the plasma torch as the bottom of the plasma torch approaches the surface of the molten metal, the electrode being removable from said structure and replaceable independently of the plasma torch.

5,709,836
CHROMIUM STEEL SHEETS HAVING AN EXCELLENT PRESS FORMABILITY

Mitsuyuki Fujisawa; Yasushi Kato; Takumi Ujiro; Susumu Satoh, and Koji Yamato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan
PCT No. PCT/JP95/01341, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO96/01335, PCT Pub. Date May 18, 1996
PCT Filed Jul. 5, 1995, Ser. No. 602,857
Claims priority, application Japan, Jul. 5, 1994, 6-153831
Int. Cl.⁶ C22C ***38/26;38/28***
U.S. Cl. 420—41 **10 Claims**



1. An iron-chromium steel sheet having excellent press formability consisting essentially of:

C: not more than 0.03 wt %, Si: not more than 1.0 wt %,
Mn: not more than 1.0 wt %, P: not more than 0.05 wt %,
S: not more than 0.015 wt %, Al: not more than 0.10 wt %,
N: not more than 0.02 wt %, Cr: not less than 11 wt % but not more than 60 wt %,
Ti: 4(C+N)–0.5 wt %, Nb: 0.003–0.020 wt %,
B: 0.0002–0.005 wt %,

and the balance being Fe and inevitable impurities.

5,709,837
DRY ANALYTICAL ELEMENT CONTAINING AMPHOLYTE

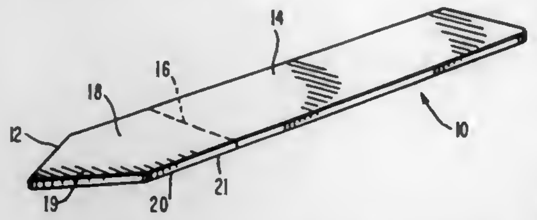
Toshihiro Mori, Saitama; Masashi Ogawa, Kanagawa, and Yoshikazu Amano, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 19, 1995, Ser. No. 545,233
Claims priority, application Japan, Oct. 19, 1994, 6-253546
Int. Cl.⁶ G01N ***21/17***
U.S. Cl. 422—56 **20 Claims**

1. A dry analytical element comprising, laminated in this order, a support, at least one water-permeable reagent layer and a porous

spreading layer, wherein at least one layer contains a water-soluble polybasic amino carboxylic acid which is an ampholyte having the formula $R—NH—(CH_2CH_2—N)—_nH$, wherein R is H or $—(CH_2—)_mCOOH$, provided that m is 1 or 2, and n is 3, 4 or 5.

5,709,838
SINGLE USE SAMPLING DEVICE

V. Christine Porter, Chatham, and George H. Geisinger, Mountainside, both of N.J., assignors to NIK Public Safety, Inc., Yulee, Fla.
Continuation of Ser. No. 543,638, Oct. 16, 1995, abandoned, which is a continuation of Ser. No. 129,556, Sep. 29, 1993, abandoned, which is a continuation of Ser. No. 891,246, Jun. 1, 1992, abandoned. This application Aug. 27, 1996, Ser. No. 705,695
Int. Cl.⁶ G01N ***35/10***
U.S. Cl. 422—61 **13 Claims**



1. A single use sampling device for test kit comprising:

(a) a unitary, one-piece strip divided into interconnected first and second parts, said first and second parts being defined by a line of weakness provided therebetween, said first part having a first side and a second side, each of said sides having a surface to serve as a spatula to collect and deliver a sample into a test kit, said surfaces being formed such that at least a portion of one of said surfaces having a pressure sensitive adhesive applied thereto to facilitate a sample collection phase and a sample delivery phase into the test kit, said second part serving as a handle for manipulating said first part;

(b) said spatula serving portion and said handle serving portion being separated from each other by grasping and separating along the line of weakness between the two parts after completing the sample collection and delivery phases of the test and prior to a sample assay phase.

5,709,839
MULTI-SENSOR SYSTEMS

John Vincent Dobson, Hartlepool, Great Britain, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom
PCT No. PCT/GB94/01994, § 371 Date Apr. 23, 1996, § 102(e) Date Apr. 23, 1996, PCT Pub. No. WO95/08112, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 13, 1994, Ser. No. 604,985
Claims priority, application United Kingdom, Sep. 14, 1993, 9318940
Int. Cl.⁶ G01N ***27/416;35/08***
U.S. Cl. 422—81 **4 Claims**

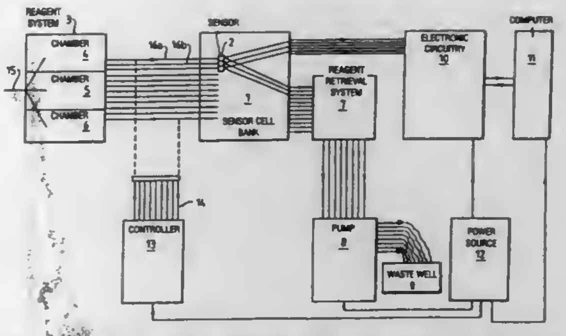
1. A multi-sensor flow through system for detection of certain materials within a fluid sample, said system comprising:

a plurality of flow through sensor cells wherein each sensor cell is provided in an independent and isolated sample channel,

a chamber for providing said fluid sample to each of said sample channels

a waste well, an exit end of each sample channel feeding into said waste well,

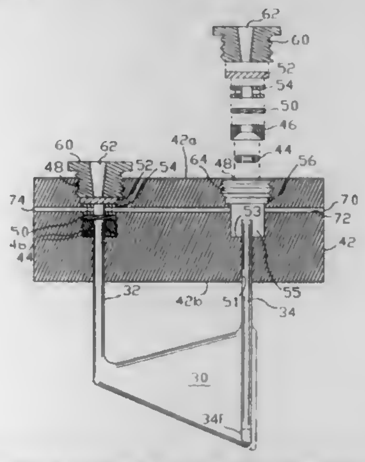
wherein said fluid sample flowing through each sample channel is isolated from said fluid sample flowing in another channel; and



a free space provided between the exit ends of the sample channels and the waste well, the fluid sample in each channel having to pass through the free space before mixing with a fluid in the waste well thereby ensuring that there are no cross-field effects between sample solutions in different sample channels.

5,709,840
REACTOR FLASK

David L. Juranas, Bahama, N.C., assignor to Tecan US., Inc., Research Triangle Park, N.C.
Filed Jan. 11, 1996, Ser. No. 584,660
Int. Cl.⁶ B01L ***3/00***
U.S. Cl. 422—99 **14 Claims**



1. An apparatus for chemical synthesis comprising:

(a) a reactor block having a pair of passages each extending from an upper block surface to a lower block surface;

(b) a reactor flask formed with an upper portion releasably connected to said reactor block and in fluid communication with each of said passages;

(c) each of said passages having a pair of substantially parallel penetrable sealing members in vertically spaced apart relation; and

(d) means between said sealing members for preventing leakage of fluids escaping said flask through either of said passages after each said sealing member has been perforated.

5,709,841
WASTE STREAM TREATMENT

Ronald Anthony Reimer, Orange, Tex., assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 23, 1996, Ser. No. 606,140
Int. Cl.⁶ C01B ***35/10***
U.S. Cl. 423—283 **6 Claims**

1. A process for the hydrolysis of organoboron compounds which comprises treating an aqueous solution having a pH of less than 9 but greater than 5 containing one or more organoboron compounds of the formula $R_3—B$, $R_4—B^{-1}$, and $R_2—B—OH$

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wherein the R's are the same or different and are aryl or substituted aryl groups having 6 to 12 carbon atoms at a temperature of 150° C. or greater at a pressure sufficiently high to prevent substantial evaporation of the aqueous solution to convert the organoboron compounds to boric acid and the corresponding hydrocarbons.

5,709,842

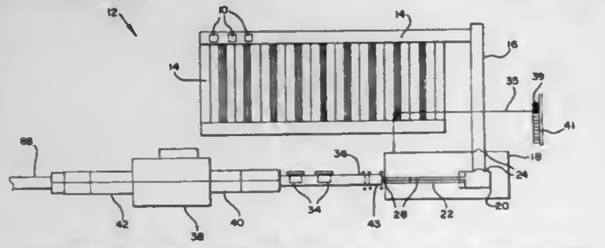
APPARATUS AND METHOD FOR PROCESSING MEDICAL WASTE

Jeffery S. Held, Chicago, and James W. Sharp, Arlington Heights, both of Ill., assignors to Stericycle, Inc., Deerfield, Ill.

Continuation of Ser. No. 826,022, Jan. 27, 1992, abandoned, which is a division of Ser. No. 586,442, Sep. 21, 1990, Pat. No. 5,106,594, which is a continuation-in-part of Ser. No. 502,293, Mar. 30, 1990, abandoned, and Ser. No. 530,438, Jun. 1, 1990, Pat. No. 5,035,858, which is a continuation of Ser. No. 421,332, Oct. 13, 1989, abandoned. This application Jun. 25, 1992, Ser. No. 903,906

Int. Cl.^{6} A61L *2/00*

U.S. Cl. 422—292 **20 Claims**



1. An apparatus for processing medical waste materials comprising:

a radio-frequency electromagnetic radiation source to apply radio-frequency electromagnetic radiation to medical waste materials in an amount sufficient to disinfect the medical waste materials;

a conveyor device to transport said disinfected medical waste materials to a compression device, wherein said conveyor device is operatively connected to said radio-frequency electromagnetic radiation source and said compression device; and

said compression device receives said disinfected medical waste materials from said conveyor device to compress the disinfected medical waste materials.

5,709,843

ENGRAFTMENT AND DEVELOPMENT OF XENOGENEIC CELLS IN NORMAL MAMMALS HAVING RECONSTITUTED HEMATOPOIETIC DEFICIENT IMMUNE SYSTEMS

Yair Reisner, Tel Aviv, Israel, assignor to Yeda Research and Development Co. Ltd., Rehovot, Israel

Division of Ser. No. 61,706, May 17, 1993, which is a continuation-in-part of Ser. No. 892,911, Jun. 3, 1992, abandoned, and Ser. No. 792,480, Nov. 15, 1991, abandoned, said Ser. No. 892,911is a continuation-in-part of Ser. No. 792,480, which is a continuation-in-part of Ser. No. 618,303, Nov. 26, 1990, abandoned. This application Nov. 23, 1994, Ser. No. 347,088

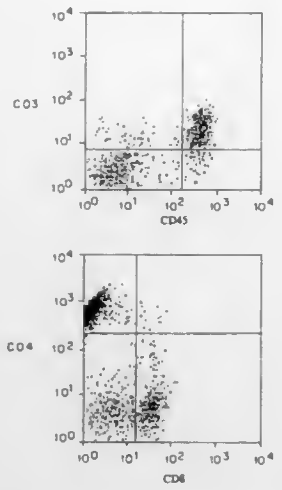
Claims priority, application Israel, Jan. 15, 1990, 93067; Jun. 4, 1991, 98 369

Int. Cl.^{6} A61K *49/00;* **G01N** *31/00;* **A01N** *63/00;65/00*

U.S. Cl. 424—9.2 **23 Claims**

1. A method for evaluating the efficacy of a therapeutic agent or modality potentially useful for treating a human disease, comprising:

(a) providing a chimeric mouse or rat M4 having xenogeneic cells or xenogeneic tissue, said mouse or rat M4 comprising a mouse or rat M1, other than a SCID mouse the hematopoietic



cells of which have been substantially destroyed, said mouse or rat M1 having transplanted therein cells or tissue from at least two different sources, at least one of said sources being hematopoietic cells from a mouse M2 having a T and/or B cell immunodeficiency, and at least a second of said sources being human cells or tissue which are either

(i) pathological or diseased cells or tissue, or

(ii) normal cells or tissue susceptible to being infected by a pathogen causing the human disease, wherein said T and/or B cell immunodeficiency of said mouse M2 is such that the T and/or B cell immunodeficiency can be reconstituted with xenogeneic hematopoietic cells,

(b) when said cells or tissue are said normal cells or tissue, infecting said mouse or rat M4 with a pathogen;

(c) treating said mouse or rat M4 with the therapeutic agent or modality; and

(d) testing said mouse or rat M4 for signs of said disease or for symptoms associated with said disease, the efficacy of said agent or modality being inversely related to the extent of said signs or symptoms.

5,709,844

TRANSGENIC MICE EXPRESSING HPV EARLY REGION ONCOGENE DEVELOP PROGRESSIVE CERVICO-VAGINAL NEOPLASIA

Jeffrey M. Arbeit, and Douglas Hanahan, both of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 257,339, Jun. 9, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,997

Int. Cl.^{6} A61K *49/00;* **C12N** *5/00;15/00*

U.S. Cl. 424—9.2 **16 Claims**

1. A method for determining the efficacy of a composition in the inhibition of vaginal of cervical neoplasia, the method comprising,

providing a transgenic mouse, wherein the genome of the mouse has integrated into it an HPV early region oncogene operably linked to a promoter, wherein the promoter regulates expression of the oncogene in a transient amplifying epithelial cell,

administering an estrogenic compound to the mouse;

administering the test compound to the mouse; and

monitoring the mouse for the development of vaginal or cervical epithelium dysplasia or vaginal or cervical neoplasia.

5,709,845

TRICYCLIC FUNCTIONAL DYES FOR CONTRAST ENHANCEMENT IN OPTICAL IMAGING

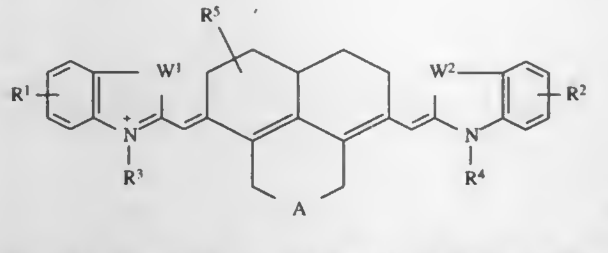
Raghavan Rajagopalan, 13031 Vinson Ct., Maryland Heights, Mo. 63043, and Ella Y. Fung, 1329-D Whispering Pines, St. Louis, Mo. 63146

Filed May 13, 1996, Ser. No. 645,376

Int. Cl.^{6} A61K *49/00;* **G01N** *31/00;33/48*

U.S. Cl. 424—9.6 **10 Claims**

1. A diagnostic composition comprising a compound of the formula:



wherein R^1, R^2, and R^5 may be the same or different and are selected from the group consisting of hydrogen, C_1–C_{10} alkyl, C_1–C_{10} alkoxyl, hydroxyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} alkoxyalkyl, C_1–C_{10} aryl, carboxyl, C_1–C_{10} carboxylalkyl, halogen, nitro, C_1–C_{10} alkoxycarbonyl, mercapto, C_1–C_{10} mercaptoalkyl, C_1–C_{10} alkylthio, sulfonate, and —$(CH_2)_m$—$N(R^6)(R^7)$ wherein R^6 and R^7 are independently hydrogen or C_1–C_{10} alkyl, C_1–C_{10} acyl, and R^6 and R^7 are capable of forming 5, 6, or 7 membered rings which may optionally be substituted with —O—, —NR^8, or —S—; R^3 and R^4 may be the same or different and are selected from the group consisting of C_1–C_{10} alkyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} alkoxyalkyl, C_1–C_{10} aryl, C_1–C_{10} carboxyalkyl, C_1–C_{10} alkyl sulfonate, mercapto alkyl and —$(CH_2)_mN(R^6)(R^7)$; W^1 and W^2 may be the same or different and are selected from the group consisting of —S—, —O—, —Se—, —Te—, —NR^8 and $C(R^9)(R^{10})$; and m is about 0–10; R^8 is hydrogen, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_1–C_{10} mercaptoalkyl, hydroxyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} alkoxyalkyl, C_1–C_{10} aryl, C_1–C_{10} carboxylalkyl, C_1–C_{10} alkoxycarbonyl, C_1–C_{10} alkylthio, and —$(CH_2)_m$—$N(R^6)(R^7)$; R^9 and R^{10} are independently hydrogen, C_1–C_{10} alkyl, C_1–C_{10} alkoxyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} alkoxyalkyl, C_1–C_{10} carboxyalkyl, C_1–C_{10} alkoxycarbonyl, and —$(CH_2)_m$—$N(R^6)(R^7)$; and A is selected from the group consisting of —$(CH_2)_m$, —$C(R^9)(R^{10})$, —$(CH_2)_m$—$N(R^6)(R^7)$, —O—, —S—, or —NR^8.

5,709,846

IODINATED DERIVATIVES, THEIR PREPARATION AND THEIR USE AS CONTRAST AGENTS IN X-RAY RADIOLOGY

Gaël Le Lem, Saint-Cloud, and Dominique Meyer, Saint-Maur, both of France, assignors to Guerbet S.A., Villepinte, France

PCT No. PCT/FR95/01213, § 371 Date May 21, 1996, § 102(e) Date May 21, 1996, PCT Pub. No. WO96/09281, PCT Pub. Date Mar. 28, 1996

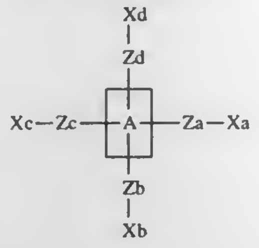
PCT Filed Sep. 20, 1995, Ser. No. 648,168

Claims priority, application France, Sep. 22, 1994, 94 11326

Int. Cl.^{6} A61K *49/04;* **C07C** *233/65*

U.S. Cl. 424—9.452 **22 Claims**

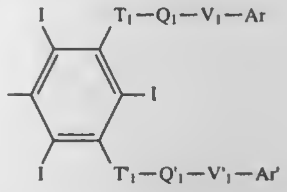
1. A compound of formula



in which

Za, Zb, Zc and Zd, which are identical or different, are Tz-Qz-Vz and Tz and Vz, which are identical or different, are selected from the group consisting of O, CO—ND and ND—CO groups with D being selected from the group consisting of H, C_1 to C_6 alkyl, hydroxyalkyl and polyhydroxyalkyl and Qz being selected from the group consisting of C_1 to C_6 alkylene, hydroxyalkylene and polyhydroxyalkylene or QZ and/or Tz do not exist,

Xa, Xb, Xc and Xd, which are identical or different, have the following formula II



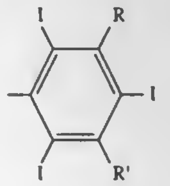
II

and

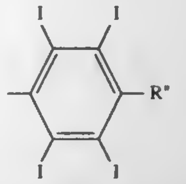
T_1, T'_1, V_1 and V'_1, which are identical or different, are selected from the group consisting of CO—ND' and ND'—CO with D' being selected from the group consisting of H, C_1 to C_6 alkyl and C_1 to C_6 alkyl carrying one or several OH groups;

Q_1 and Q'_1, which are identical or different, are selected form the group consisting of C_1 to C_6 alkylene and C_1 to C_6 alkylene carrying one or more OH groups;

Ar and Ar', which are identical or different, are selected from the group consisting of formula III and formula IV:



III

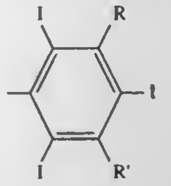


IV

in which formula III, R is COOH and R' is selected from the group consisting of CO—$NR'_1R'_2$ and $N(R'_1)$—CO—R'_2, R'_1 and R'_2 being selected from the group consisting of H, C_1 to C_8 alkyl, hydroxyalkyl and polyhydroxyalkyl, so that they contain between them more than 4 OH groups; or in which R and R', which are identical or different, are selected from the group consisting of CO—$NR'_1R'_2$ and $N(R'_1)$—CO—R'_2 and R'_1 and R'_2 are selected from the group consisting of H, C_1 to C_8 alkyl, hydroxyalkyl and polyhydroxyalkyl and R and R' contain between them more than 6 OH groups,

and in which formula IV, R" is selected from the group consisting of CO—$NR'_1R'_2$ and $N(R'_1)$—CO—R'_2, R'_1 and R'_2 being selected from the group consisting of C_1 to C_8 hydroxyalkyl and polyhydroxyalkyl, such that they contain between them more than 8 OH groups,

or Ar and Ar', which are identical or different are selected from the group consisting of formula V and formula VI



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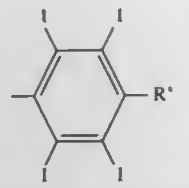


VI

in which R and R', which are identical or different, are selected from the group consisting of T_2-Q_2-V_2-Ar_2 and T'_2-Q'_2-V'_2-Ar'_2, T_2, T_2, Q_2, Q'_2, V_2 and V'_2 groups respectively having the meanings of T_1, Q_1 are V_1 groups and Ar_2 and Ar'_2 having the meanings of formulae III or IV.

and in which formula VI, R" is T_2-Q_2-V_2-Ar_2 which can have one of the meanings given for formula V

and A is a biocompatible moiety from an aliphatic, alicyclic or aromatic moieties with a molecular weight of less than 2000, the 4 free bonds of which can form a molecule containing an amide or ether group with Za, Zb, Zc or Zd,

or its salt with a pharmaceutically acceptable base.

5,709,847
COMPOSITIONS COMPRISING A RADICAL SCAVENGING COMPOUND AND AN ANTI-INFLAMMATORY AGENT

Donald Lynn Bissett, Hamilton; Rodney Dean Bush, Cincinnati, and Ranjit Chatterjee, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 543,945, Jun. 26, 1990, abandoned, which is a division of Ser. No. 346,435, Jun. 26, 1989, Pat. No. 4,954,332, which is a division of Ser. No. 112,575, Oct. 22, 1987, Pat. No. 4,847,017. This application Nov. 8, 1996, Ser. No. 744,891

Int. Cl.^{6} A61K *7/42;7/00*

U.S. Cl. 424—59 **16 Claims**

1. A non-sunscreen, chronically photoprotective composition useful for topical application consisting essentially of:

a) a safe and photoprotectively effective amount of a radical scavenging compound selected from ascorbic acid and its salts;

b) a safe and photoprotectively effective amount of an anti-inflammatory agent selected from the group consisting of steroidal anti-inflammatory agents; non-steroidol anti-inflammatory agents selected from the group consisting of oxicams, acetic acid derivatives selected from the group consisting of diclofenac, fenclofenac, indomethacin, sulindac, tolmetin, isoxepac, furofenac, tiopinac, zidometacin, acemetacin, fentiazac, zomepirac, clidanac, and felbinac, fenamates, propionic acid derivatives selected from the group consisting of ibuprofen, naproxen, benoxaprofen, flurbiprofen, ketoprofen, fenoprofen, fenbufen, indoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, tioxaprofen, suprofen, alminoprofen, and tiaprofenic, pyrazoles, 2,6-di-tert-butyl phenol derivatives selected from the group consisting of 4-(4'-pentyn-3'-one)-2,6-di-t-butylphenol, 4-(5'-hexynoyl)-2,6-di-t-butylphenol, 4-((S)-(−)-3'-methyl-5'-hexynoyl)- 2,6-di-t-butylphenol, 4-((R)-(+)-3'-methyl-5'-hexynoyl)-2,6-di-t-butylphenol, and 4-(3',3'-dimethoxy propionyl)-2,6-di-t-butylphenol, 2-naphthyl-containing ester compounds selected from the group consisting of (S)-naproxen-(S)- 2-butylester, (S)-naproxen-(R)-2-butylester, (S)-naproxol-(R)-2-methyl butyrate, (S)-naproxol-(S)-2-methyl butyrate, diasteromeric mixtures of (S)-naproxen-(S)-2-butyl ester and (S)-naproxen-(R)-2 -butyl ester, and diasteromeric mixtures of (S)-naproxol-(R)-2-methyl butyrate and (S)-naproxol-(S)-2-methyl butyrate; and natural anti-inflammatory agents selected from the group consisting of candelilla wax, alpha bisabolol, aloe vera, Manjistha and Guggal; and

c) a safe and effective amount of a topical carrier.

5,709,848
PHOTOCLEAVABLE METAL-CHELATING AGENTS AND COMPOSITIONS CONTAINING THE SAME

Jean-Baptiste Galey, Aulnay-sous-Bois, and Jacqueline Dumats, Villepinte, both of France, assignors to L'Oreal, Paris, France

Filed Sep. 7, 1995, Ser. No. 528,653

Claims priority, application France, Sep. 8, 1994, 94 10763

Int. Cl.^{6} A61K *7/42*

U.S. Cl. 424—59 **15 Claims**

1. A composition, comprising a chelating agent for a transition metal and a cosmetically and/or dermatologically acceptable medium, wherein said chelating agent contains a group containing at least one chelating functional group for a transition metal, blocked by a photocleavable substituent, wherein

said chelating functional group is selected from the group consisting of amine, carbonyl, nitrile, oxime, carboxylic, hydroxyl, hydroxamic, alkoxy, enolic, phenolic, phenoxy, hydrazide and sulfur-containing functional groups and combinations thereof.

5,709,849
SUPPRESSING STICKINESS TO SKIN OF COSMETIC COMPOSITION

Kenzo Ito, and Shoji Nishiyama, both of Yokohama, Japan, assignors to Shiseido Company Ltd, Tokyo, Japan

Continuation of Ser. No. 583,780, Sep. 17, 1990. This application Sep. 3, 1992, Ser. No. 940,731

Claims priority, application Japan, Sep. 20, 1989, 1-244779

Int. Cl.^{6} A61K *7/02;7/48*

U.S. Cl. 424—63 **5 Claims**

1. A method of suppressing stickiness to the skin of a cosmetic composition containing (i) at least one compound selected from the group consisting of 5 to 40% by weight of at least one water-soluble polyhydric alcohol selected from the group consisting of propylene glycol, dipropylene glycol, tripropylene glycol, 1,3 -butylene glycol, glycerol, diglycerol, triglycerol, tetraglycerol, maltose, maltitose, sucrose, fructose, xylitol, sorbitol, maltotriose, threitol, erythritol, amylolyzed sugars, and reduced alcohol sugars, which comprises incorporating in said composition (ii) 0.000–1 to 5% by weight of at least one bivalent metal salt of an organic acid selected from the group consisting of the calcium salts and the magnesium salts of aspartic acid, glutamic acid, pyrrolidone-carboxylic acid, lactic acid and citric acid, all based on the total weight of the cosmetic composition.

5,709,850
HAIR-SETTING COMPOSITION

Jean Mondet, Drancy; Jean-Michel Sturla, Suresnes; Bertrand Lion, Livry Gargan; Christine Dupuis, and Colette Cazeneuve, both of Paris, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 256,019, Aug. 29, 1994, abandoned. This application May 29, 1996, Ser. No. 654,761

Claims priority, application France, Oct. 28, 1992, 92 12872

Int. Cl.^{6} A61K *7/11*

U.S. Cl. 424—70.16 **12 Claims**

1. An aqueous cosmetic composition for fixing the hair comprising:

(1) a plasticized pseudolatex consisting of an aqueous dispersion of:

(a) particles of a film-forming polymer containing carboxylic acid functions having an average diameter of between 10 and 300 nm and a size polydispersity from 0.1 to 0.4, said film-forming polymer being selected from the group consisting of:

(i) vinyl acetate/crotonic acid polyoxyethylenated copolymers,

(ii) vinyl acetate/crotonic acid copolymers,

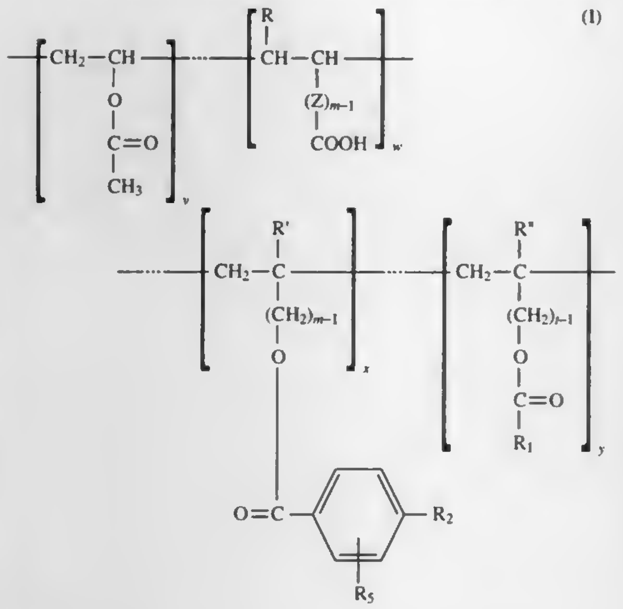
(iii) vinyl acetate/crotonic acid/vinyl neodecanoate terpolymers,

(iv) N-octylacrylamide/methyl methacrylate/hydroxypropyl methacrylate/acrylic acid/tert-butylaminoethyl methacrylate copolymers,

(v) methyl vinyl ether/maleic anhydride alternating copolymers monoesterified with butanol,

(vi) acrylic acid/ethyl acrylate/N-tert-butyl-acrylamide terpolymers, and

(vii) polymers corresponding to the following formula:



(I)

in which:

R, R' and R", which may be identical or different, represent a hydrogen atom or a methyl radical;

m, n and t are 1 or 2;

R_1 represents a saturated or unsaturated, linear or branched alkyl radical having from 2 to 21 carbon atoms;

R_2 represents a hydrogen atom, a methyl, ethyl, tert-butyl, ethoxy, butoxy or dodecyloxy radical;

R_3 represents a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms or an alkoxy radical having 1 to 4 carbon atoms;

Z represents a bivalent radical selected from the group consisting of: $—CH_2—$, $—CH_2—O—CH_2—$ and $—CH_2—O—(CH_2)_2—$;

v represents a number corresponding to from 10 to 91% by weight of said polymer;

w represents a number corresponding to from 3 to 20% by weight of said polymer;

x represents a number corresponding to from 4 to 60% by weight of said polymer; and

y represents a number corresponding to from 0 to 40% by weight of said polymer;

v+w+x+y being a number corresponding to 100% by weight of said polymer;

the carboxylic acid functions of said film-forming polymer being neutralized to a degree of neutralization of between 30% and 80% when said polymer has less than 2 meq/g of carboxylic functions, and the carboxylic acid functions of said film-forming polymer being neutralized to a degree of neutralization of between 10% and 50% when said polymer has more than 2 meq/g of carboxylic acid functions; and

(b) a plasticizing agent, present between 0.1 to 80% by weight relative to the weight of the neutralized film-forming polymer, said agent being distributed according to said agent's partition coefficient between said particles and the aqueous phase, said plasticized pseudolatex being used in a proportion in which the particles of the dispersed film-forming polymer are present between 2 and 30% by weight relative to the total weight of the composition; and

(2) water in a proportion in which the total water content is between 38 and 90% by weight relative to the total weight of the composition.

10. An aqueous cosmetic composition for fixing the hair comprising:

(1) a plasticized pseudolatex consisting of an aqueous dispersion of:

(a) particles of a film-forming polymer containing carboxylic acid functions having an average diameter of between 10 and 300 nm and a size polydispersity from 0.1 to 0.4, said film-forming polymer being selected from the group consisting of:

(i) vinyl acetate/crotonic acid polyoxyethylenated copolymers,

(ii) vinyl acetate/crotonic acid copolymers,

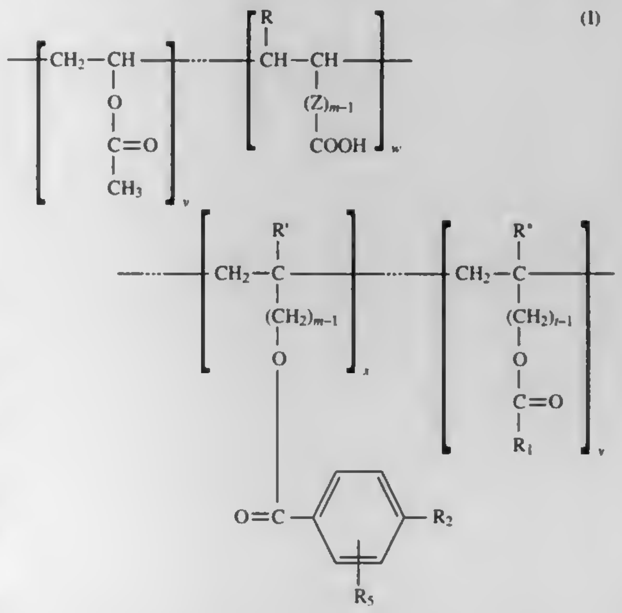
(iii) vinyl acetate/crotonic acid/vinyl neodecanoate terpolymers,

(iv) N-octylacrylamide/methyl methacrylate/hydroxypropyl methacrylate/acrylic acid/tert-butylaminoethyl methacrylate copolymers,

(v) methyl vinyl ether/maleic anhydride alternating copolymers monoesterified with butanol,

(vi) acrylic acid/ethyl acrylate/N-tert-butyl-acrylamide terpolymers, and

(vii) polymers corresponding to the following formula:



(I)

in which:

R, R' and R", which may be identical or different, represent a hydrogen atom or a methyl radical;

m, n and t are 1 or 2;

R_1 represents a saturated or unsaturated, linear or branched alkyl radical having from 2 to 21 carbon atoms;

R_2 represents a hydrogen atom, a methyl, ethyl, tert-butyl, ethoxy, butoxy or dodecyloxy radical;

R_3 represents a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms or an alkoxy radical having 1 to 4 carbon atoms;

Z represents a bivalent radical selected from the group consisting of: $—CH_2—$, $—CH_2—O—CH_2—$ and $—CH_2—O—(CH_2)_2—$;

v represents a number corresponding to from 10 to 91% by weight of said polymer;

w represents a number corresponding to from 3 to 20% by weight of said polymer;

x represents a number corresponding to from 4 to 60% by weight of said polymer; and

y represents a number corresponding to from 0 to 40% by weight of said polymer;

v+w+x+y being a number corresponding to 100% by weight of said polymer;

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the carboxylic acid functions of said film-forming polymer being neutralized to a degree of neutralization of between 10 and 80% with a non-volatile monobasic agent; and

(b) a plasticizing agent, present between 0.1 to 80% by weight relative to the weight of the neutralized film-forming polymer, said agent being distributed according to said agent's partition coefficient between said particles and the aqueous phase, said plasticized pseudolatex being used in a proportion in which the particles of the dispersed film-forming polymer are present between 2 and 30% by weight relative to the total weight of the composition; and

(2) water in a proportion in which the total water content is between 38 and 90% by weight relative to the total weight of the composition;

said composition being selected from the group consisting of an aqueous aerosol hair lacquer, an aqueous hair-setting lotion and an aqueous hair styling mousse.

12. An aerosol hair lacquer for fixing the hair comprising:

(1) 2% to 15% by weight of particles of a plasticized pseudolatex consisting of an aqueous dispersion of:

(a) particles of a film-forming polymer containing carboxylic acid functions having an average diameter of between 10 and 300 nm and a size polydispersity from 0.1 to 0.4, said film-forming polymer being selected from the group consisting of:

(i) vinyl acetate/crotonic acid polyoxyethylenated copolymers,

(ii) vinyl acetate/crotonic acid copolymers,

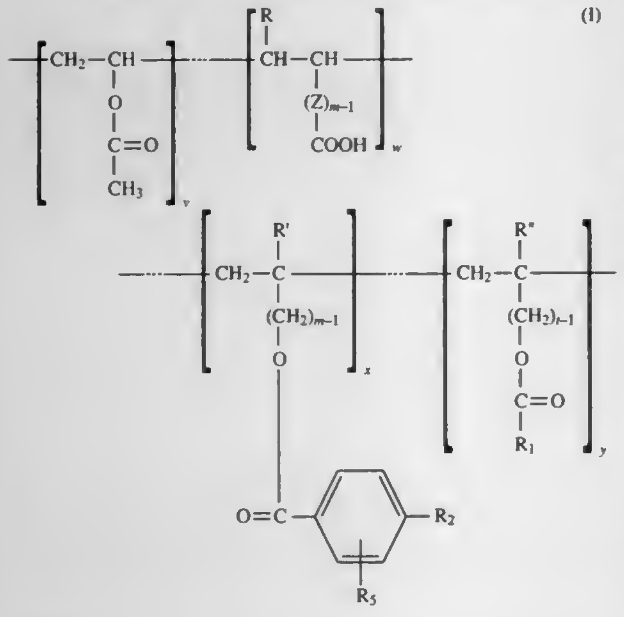
(iii) vinyl acetate/crotonic acid/vinyl neodecanoate terpolymers,

(iv) N-octylacrylamide/methyl methacrylate/hydroxypropyl methacrylate/acrylic acid/tert-butylaminoethyl methacrylate copolymers,

(v) methyl vinyl ether/maleic anhydride alternating copolymers monoesterified with butanol,

(vi) acrylic acid/ethyl acrylate/N-tert-butyl-acrylamide terpolymers, and

(vii) polymers corresponding to the following formula:



(I)

in which:

R, R' and R" which may be identical or different, represent hydrogen atom or a methyl radical;

m, n and t are 1 or 2;

R_1 represents a saturated or unsaturated, linear or branched alkyl radical having from 2 to 21 carbon atoms;

R_2 represents a hydrogen atom, a methyl, ethyl, tert-butyl, ethoxy, butoxy or dodecyloxy radical;

R_3 represents a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms or an alkoxy radical having 1 to 4 carbon atoms;

Z represents a bivalent radical selected from the group consisting of: $—CH_2—$, $—CH_2—O—CH_2—$ and $—CH_2—O—(CH_2)_2—$;

v represents a number corresponding to from 10 to 91% by weight of said polymer;

w represents a number corresponding to from 3 to 20% by weight of said polymer;

x represents a number corresponding to from 4 to 60% by weight of said polymer; and

y represents a number corresponding to from 0 to 40% by weight of said polymer;

v+w+x+y being a number corresponding to 100% by weight of said polymer;

the carboxylic acid functions of said film-forming polymer being neutralized to a degree of neutralization of between 30% and 80% when said polymer has less than 2 meq/g of carboxylic functions, and the carboxylic acid functions of said film-forming polymer being neutralized to a degree of neutralization of between 10% to 50% when said polymer has more than 2 meq/g of carboxylic acid functions; and

(b) a plasticizing agent, present in an amount of between 0.1 to 80% by weight relative to the weight of the neutralized film-forming polymer, said agent being distributed according to said agent's partition coefficient between said particles and the aqueous phase, said plasticized pseudolatex being used in a proportion in which the particles of the dispersed film-forming polymer are present in an amount of between 2 and 30% by weight relative to the total weight of the composition;

(2) 38% and 90% by weight of water; and

(3) 20% to 60% by weight of dimethylether as propellant.

5,709,851

PHARMACEUTICAL IODINE COMPOSITIONS WITH REDUCED IRRITANCY

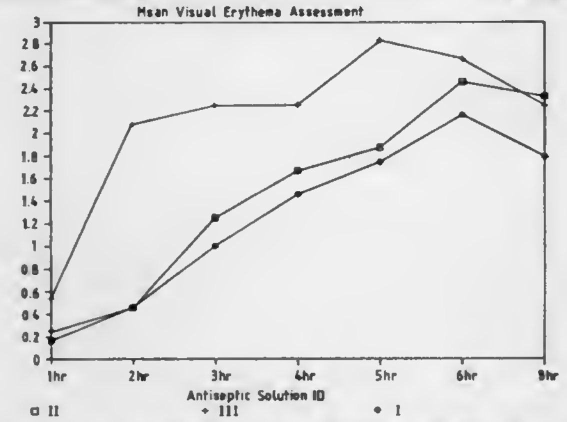
Ian Richard Buxton; Stewart Thomas Leslie; Sandra Therese Antoinette Malkowska, all of Cambridge; Allan John Miller, Surrey, all of United Kingdom; Ronald Brown Miller, Basel, Switzerland, and Derek Allan Prater, Cambridge, United Kingdom, assignors to Euro-Celtique, S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 940,202, Sep. 1, 1992, abandoned, which is a continuation of Ser. No. 664,370, Mar. 4, 1991, abandoned. This application May 16, 1994, Ser. No. 243,534

Claims priority, application United Kingdom, Mar. 21, 1990, 9006346

Int. Cl.⁶ A61K ***31/74;*** **A01N** ***25/32***

U.S. Cl. 424—78.07 **20 Claims**



1. Method of preparing a stable pharmaceutical aqueous iodine composition which upon application is substantially non-irritating, which comprises forming an aqueous solution containing an amount of about 0.1 to about 1.4% of elemental iodine by weight of the composition and at least one organic substance selected from the group consisting of iodine solubilizers; iodine complexing polymers, non-ionic surface active agents, cationic surface active agents and artionic surface active agents; adding iodate ions in an amount such that the resulting composition contains from about 0.01% to about and not more that 0.04% iodate ions by weight of said composition, said iodate ions controlling loss of elemental iodine in said composition due to a reaction with said organic substance to maintain the germicidal effective amount of elemental iodine, and providing the resulting composition with apH of from about 3 to about 7, such that said resulting composition provides germicidal action without substantially irritating skin or mucosa when applied topically to an affected area of skin or mucosa.

5,709,852

ETHYLENE OXIDE/PROPYLENE OXIDE/ETHYLENE OXIDE (EO/PO/EO) TRIBLOCK COPOLYMER CARRIER BLENDS

Sridhar Gopalkrishnan, Woodhaven, Mich.; Richard J. Holland, Flanders; John J. Burke, Lake Mohawk, both of N.J., and Kathleen M. Guiney, Wyandotte, Mich., assignors to BASF Corporation, Mount Olive, N.J.

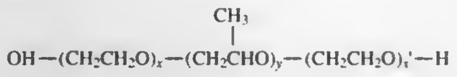
Filed Dec. 5, 1995, Ser. No. 568,604

Int. Cl.⁶ A61K ***31/74***

U.S. Cl. 424—78.08 **6 Claims**

1. A stable non-aqueous carrier for personal care compositions comprising:

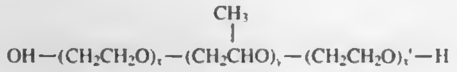
a. 88–92% of a liquid EO/PO/EO triblock copolymer having the Formula:



$$OH-(CH_2CH_2O)_x-(CH_2\underset{|}{\overset{CH_3}{C}}HO)_y-(CH_2CH_2O)_{x'}-H$$

wherein x+x'=500; y=1,000; molecular weight=1,500;

b. 8–12% of a solid EO/PO/EO triblock copolymer having the Formula:



$$OH-(CH_2CH_2O)_x-(CH_2\underset{|}{\overset{CH_3}{C}}HO)_y-(CH_2CH_2O)_{x'}-H$$

wherein x+x'=7,000; y=3,000; molecular weight=10,000.

5,709,853

METHOD OF TREATMENT OF ATOPIC DISEASE

Shiro Iino, Tokyo, and Yoshiharu Kawashima, Kanagawa-ken, both of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP94/00124, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO95/20395, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 28, 1994, Ser. No. 525,755

Int. Cl.⁶ A61K ***38/21***

U.S. Cl. 424—85.6 **3 Claims**

1. A method of treating atopic disease comprising administering to a patient in need thereof an effective dose of interferon-β.

5,709,854

TISSUE FORMATION BY INJECTING A CELL-POLYMERIC SOLUTION THAT GELS IN VIVO

Linda Griffith-Cima, Lexington; Anthony Atala, Wesson; Charles A. Vacanti, Lexington, and Keith T. Paige, Brookline, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 30, 1993, Ser. No. 56,140

Int. Cl.⁶ C12N ***5/08;5/06;11/10;11/04***

U.S. Cl. 424—93.7 **11 Claims**

1. A method for injecting a cell suspension into an animal to form tissue within the animal comprising

forming a cell-polymeric solution by mixing a solution of a biodegradable, biocompatible natural or synthetic organic polymer, wherein the polymer is capable of being cross-linked via covalent, ionic, or hydrogen bonds to create a three-dimensional open-lattice structure which entraps water molecules to form a gel, with dissociated cells, wherein the cells are selected from the group consisting of chondrocytes, osteoblasts, muscle cells, fibroblasts, and cells acting primarily to synthesize, secret or metabolize materials, to form an injectable cell-polymeric solution having cells dispersed therein and

injecting the cell-polymeric solution into the animal which crosslinks to form a polymeric hydrogel having cells dispersed therein inside the animal, whereby the cells form tissue.

5,709,855

COMPOSITIONS OF SPIRULINA ALGAE AND OMEGA FATTY ACIDS FOR TREATMENT OF INFLAMMATION AND PAIN

Barry I. Bockow, 16122 - 8th Ave. SW., Seattle, Wash. 98166

Filed Sep. 22, 1995, Ser. No. 538,992

Int. Cl.⁶ A61K ***35/80;31/20;31/60;31/19***

U.S. Cl. 424—93.7 **18 Claims**

1. A composition comprising an omega fatty acid, a spirulina blue-green algae, and a pharmaceutically acceptable carrier or diluent.

5,709,856

ASTAXANTHIN-PRODUCING YEAST CELLS, METHODS FOR THEIR PREPARATION AND THEIR USE

Bent Flenø, Stenløsé; Ib Christensen, Allerød; Robert Larsen, Virum; Steffen Radich Johansen, Ega, all of Denmark, and Eric A. Johnson, Madison, Wis., assignors to Gist-brocades N.V., Delft, Netherlands

Division of Ser. No. 322,690, Oct. 13, 1994, which is a division of Ser. No. 919,986, Jul. 27, 1992, Pat. No. 5,356,810, which is a continuation of Ser. No. 424,306, Dec. 11, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 478,292

Claims priority, application Denmark, Apr. 15, 1987, 1998/87

Int. Cl.⁶ A61K ***35/72;*** **C12P** ***23/00;*** **C12N** ***1/16;*** **A23L** ***1/28***

U.S. Cl. 424—93.51 **19 Claims**

1. An animal feed composition comprising *Phaffia rhodozyma* yeast cells or cell parts containing astaxanthin in an amount of at least 600 μg per g of *Phaffia rhodozyma* yeast dry matter when determined by HPLC, and other feed constituents selected from protein sources, carbohydrate sources, fats, vitamins and minerals, the astaxanthin-containing *Phaffia rhodozyma* yeast cells or cell parts constituting at the most 10% by weight of the total feed composition dry matter.

5,709,857

LACTOBACILLUS STRAINS OF HUMAN ORIGIN, THEIR COMPOSITONS AND USES THEREOF

Lorenzo Morelli; Vittorio Bottazzi; Luigia Gozzini, and Christoph De Haen, all of Milan, Italy, assignors to Dibra S.p.A., Italy

Continuation of Ser. No. 448,840, May 24, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 664,447

Claims priority, application Italy, May 26, 1994, MI94A1073; Aug. 25, 1994, MI94A1773

Int. Cl.⁶ A01N ***63/00;*** **C12N** ***1/20***

U.S. Cl. 424—93.45 **7 Claims**

1. Isolated Lactobacillus genus strains, deposited at the CNCM collection of the Institut Pasteur, under accession numbers I-1390, I-1391, I-1392 or I-1447.

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5,709,858
ANTIBODIES SPECIFIC FOR RSE RECEPTOR PROTEIN TYROSINE KINASE

Paul J. Godowski; Melanie R. Mark, both of Burlingame, Calif., and David T. Scadden, Weston, Mass., assignors to Genentech, Inc., South San Francisco, Calif., and New England Deaconess Hosp., Boston, Mass.

Continuation of Ser. No. 170,558, Dec. 20, 1993, which is a continuation of Ser. No. 157,563, Nov. 23, 1993, abandoned. This application May 22, 1995, Ser. No. 445,640

Int. Cl.^{6} A61K *39/395;* **C07K** *16/28*

U.S. Cl. 424—143.1 **31 Claims**

1. An isolated antibody or antigen binding fragment thereof capable of binding Rse receptor protein tyrosine kinase(rPTK) having the amino acid sequence as in SEQ ID NO:2 or SEQ ID NO:10.

5,709,859
MIXED SPECIFICITY FUSION PROTEINS

Alejandro A. Aruffo, Edmonds; Peter S. Linsley; Jeffrey A. Ledbetter, both of Seattle; Nitin K. Damle, Bellevue, and H. Perry Fell, Jr., Redmond, all of Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jan. 24, 1991, Ser. No. 645,522

Int. Cl.^{6} A61K *45/00;* **C07K** *16/46*

U.S. Cl. 424—134.1 **22 Claims**

1. A substantially pure heterodimeric molecule comprising two chimeric chains, each of said chains comprising an immunoglobulin heavy chain constant domain and a binding region fir a cellular adhesion molecule wherein each chain has a binding region for a different cellular adhesion molecule and wherein the two chains of said heterodimeric molecule are associated via the immunoglobulin heavy chain constant domains.

5,709,860
INDUCTION OF CYTOTOXIC T-LYMPHOCYTE RESPONSES

Syamal Raychaudhuri, San Diego, and William H. Rastetter, Rancho Santa Fe, both of Calif., assignors to IDEC Pharmaceuticals Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 919,787, Jul. 24, 1992, which is a continuation-in-part of Ser. No. 735,069, Jul. 25, 1991, abandoned. This application Dec. 7, 1994, Ser. No. 351,001

Int. Cl.^{6} A61K *39/000;39/008;39/12;39/390*

U.S. Cl. 424—184.1 **23 Claims**

1. A composition comprising an antigen mixed with a microfluidized antigen formulation comprising:

(a) a stabilizing detergent,

(b) a micelle-forming agent, and

(c) a biodegradable and biocompatible oil, said antigen formulation being formulated as a stable oil-in-water emulsion, said antigen formulation being substantially free of immunostimulating peptides and wherein said composition upon administration to an animal selected from the group consisting of humans, domesticated animals and agricultural animals is capable of inducing a specific cytotoxic T-lymphocyte response against the antigen contained in the composition.

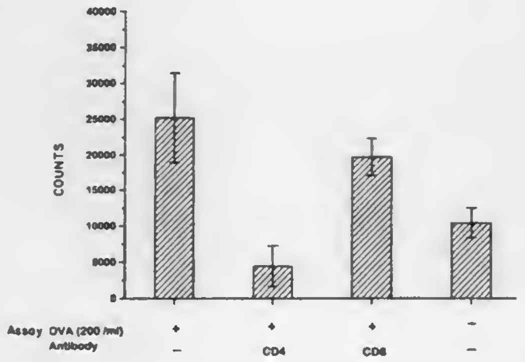
5,709,861
COMPOSITIONS FOR THE DELIVERY OF ANTIGENS

Noemi B. Santiago, Hawthorne; Susan Haas, Monsey, both of N.Y.; Andrea Leone-Bay, Ridgefield, Conn.; Sam J. Milstein, Larchmont, and Evgueni Barantsevitch, New Rochelle, both of N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

Continuation-in-part of Ser. No. 51,019, Apr. 22, 1993, Pat. No. 5,451,410, and a continuation-in-part of Ser. No. 231,622, Apr. 22, 1994, Pat. No. 5,629,020. This application Jan. 13, 1995, Ser. No. 372,208

Int. Cl.^{6} A61K *39/00*

U.S. Cl. 424—184.1 **13 Claims**



1. A composition comprising:

(a) an antigen; and

(b) at least one carrier comprising a member selected from the group consisting of:

(i) an acylated amino acid;

(ii) a poly amino acid comprising at least one acylated amino acid;

(iii) a sulfonated amino acid;

(iv) a poly amino acid comprising at least one sulfonated amino acid; or

(v) any combination thereof.

5,709,862
ISOLATED PROTEIN FROM EIMERIA USEFUL AS A CROSS SPECIES VACCINE

David M. Anderson, Rockville; Russell J. McCandliss, Gaithersburg; Susan Lee Strausberg; Robert L. Strausberg, both of Silver Spring; Michael D. Ruff, Bowie; Harry D. Danforth, Severn, and Patricia C. Augustine, Laurel, all of Md., assignors to British Technology Group USA Inc., Gulph Mills, Pa., and The United States of America as represented by the Department of Agriculture, Washington, D.C.

Division of Ser. No. 879,137, May 5, 1992, Pat. No. 5,279,960, which is a continuation of Ser. No. 215,162, Jul. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 746,520, Jun. 19, 1985, abandoned, and a continuation-in-part of Ser. No. 627,811, Jul. 5, 1984, abandoned. This application Nov. 8, 1993, Ser. No. 148,279

Int. Cl.^{6} A61K *39/002;39/012;* **C07K** *14/455*

U.S. Cl. 424—191.1 **2 Claims**

2. A method for reducing the severity of avian coccidiosis in an avian host caused by *Eimeria tenella, Eimeria acervulina,* or *Eimeria tenella* and *Eimeria acervulina,* comprising the step of administering subcutaneously to said avian host an effective amount of a vaccine comprising an isolated protein consisting of an amino acid sequence as shown in FIG. 5 and a carrier.

5,709,863
PROPERTIES OF CATS' FACIAL PHEROMONES

Patrick Pageat, Lo Paniere - Route de Saint-Saturnin, R4400 Apt, France

Filed Aug. 4, 1995, Ser. No. 511,601

Claims priority, application European Pat. Off., Feb. 3, 1995, 95400229

Int. Cl.^{6} A61K *35/78;31/20*

U.S. Cl. 424—195.1 **20 Claims**

1. A composition comprising:

(a) an emulsion comprising a mixture of oleic acid, azelaic acid, pimelic acid and palmitic acid, said mixture being capable of preventing cats from urinating in a marked spot; and

(b) a compound of vegetal origin that has an attractive effect on cats.

5,709,864
COSMETIC OR PHARMACEUTICAL AND PARTICULARLY DERMATOLOGICAL, COMPOSITION CONTAINING AN EXTRACT OF TEPHROSIA, PARTICULARLY *TEPHROSIA PURPUREA*

Patrice Andre, Neuvilles aux Bois; Sylvie Darnault, Orleans, and Isabelle Renimel, Trainou, all of France, assignors to Parfums Christian Dior, Paris, France

PCT No. PCT/FR94/00956, § 371 Date Jan. 26, 1996, § 102(e) Date Jan. 26, 1996, PCT Pub. No. WO95/03780, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 28, 1994, Ser. No. 596,164

Claims priority, application France, Jul. 28, 1993, 93 09283

Int. Cl.^{6} A61K *35/78*

U.S. Cl. 424—195.1 **35 Claims**

1. A method of performing a treatment of body zones selected from the epidermis and the hair, comprising stimulating the enzyme adenylate cyclase by applying on the body zones a stimulating effective amount of an extract of a plant of the genus Tephrosia.

5,709,865
IMMUNOGENIC COMPOSITION AGAINST BOVINE VIRAL DIARRHEA VIRUS II GLYCOPROTEIN 53 (BVDV-II GP53)

Jan van den Hurk, Saskatoon, and Peter Tijssen, Pointe Claire, both of Canada, assignors to Biostar Inc., Saskatoon, Canada

Continuation-in-part of Ser. No. 337,618, Nov. 10, 1994, abandoned. This application May 22, 1995, Ser. No. 445,746

Int. Cl.^{6} A61K *39/12;* **C12N** *15/00;* **C07K** *1/00;* **C07H** *21/02*

U.S. Cl. 424—218.1 **4 Claims**

1. An immunogenic composition for generating an immune response in a cow against bovine vital diarrhea virus group II (BVDV-II), comprising

a BVDV-II gp53 polypeptide, and

a pharmacologically acceptable vehicle.

5,709,866
DUAL BAG MOUTH CARE PACKAGE

John Booras, Wildwood, and Charles E. Young, Crystal Lake, both of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.

Filed Dec. 5, 1996, Ser. No. 761,017

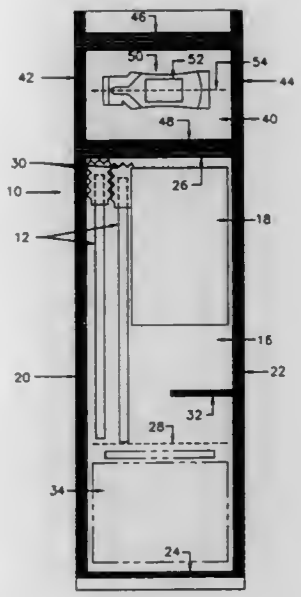
Int. Cl.^{6} A61M *35/00*

U.S. Cl. 424—400 **11 Claims**

1. A mouth care kit, comprising

a. a first sealed bag comprising opposite plastic sheets having a peripheral seal,

b. at least one swab located in said first bag,



c. a frangible first pouch disposed within said first bag, said first pouch containing a first liquid and including means for opening said first pouch while sealed within said first bag to release said first liquid to impregnate an absorbent head of said swab,

d. means in said first bag for orientating said first pouch proximate said absorbent head of said swab,

e. a second sealed bag comprising opposite plastic sheets having a peripheral seal,

f. a second pouch disposed within said second bag, said second pouch containing a second liquid, and

g. means joining said first and second bags as a unitary structure.

5,709,867
POLYAROMATIC AMIDE COMPOUNDS AND PHARMACEUTICAL/COSMETIC COMPOSITIONS COMPRISED THEREOF

Jean-Michel Bernardon, Le Rouret, France, assignor to Centre International De Recherches Dermatologiques Galderma, Valbonne, France

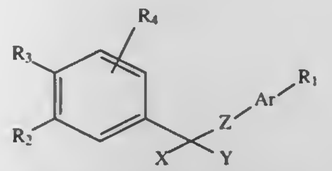
Filed Dec. 15, 1994, Ser. No. 356,680

Claims priority, application France, Dec. 15, 1993, 93 15066

Int. Cl.^{6} A61K *7/48*

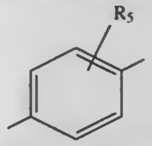
U.S. Cl. 424—401 **27 Claims**

1. A polyaromatic amide compound having the structural formula (I):



(I)

in which Z represents —CO—H— or —NH—CO—; Ar is a radical having the following formula (a):



(a)

R_1 is (i) a hydrogen atom, (ii) a radical —CH_3, (iii) a radical —CH_2—O—R_6, (iv) a radical —O—R_6, (v) a radical —CO—R_7, or (vi) a radical —S(O),R_9; X is a hydrogen atom or a lower alkyl radical; Y is (i) a radical of the formula;

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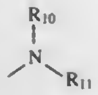
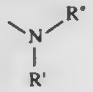
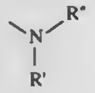


(ii) a radical —CH_2OR_{12}, (iii) a radical —COR_{13} or (iv) a radical —$(CH_2)_n$—COR_{14}; R_2 and R_3, which may be identical or different, are each a hydrogen atom, a linear or branched alkyl radical having from 1 to 20 carbon atoms, a radical —OR_6 or a radical —SR_6, and R_2 and R_3 may together form, with the carbon atoms from which they depend, a 5- or 6-membered ring optionally substituted by methyl groups and/or optionally interrupted by an oxygen or sulfur atom; R_4 is a hydrogen atom, a halogen atom, a lower alkyl radical or a radical —OR_6; R_5 has the definition of R_4, and R_4 and R_6 may be identical or different; R_6 is a hydrogen atom, a linear or branched alkyl radical baving from 1 to 20 carbon atoms or a radical —CO—R_9 and further wherein the radicals R_6 may be identical or different; R_7 is (a) a hydrogen atom, (b) a lower alkyl radical, (c) a radical of the formula:



or (d) a radical —OR_8 wherein R_8 is a hydrogen atom, a linear or branched alkyl radical having from 1 to 20 carbon atoms, an alkenyl radical, a mono- or polyhydroxyalkyl radical, or a phenyl, benzyl or phenethyl radical, which are optionally substituted by at least one halogen atom, or a hydroxyl or nitro functional group ; the radicals R_9, which may be identical or different, are each a lower alkyl radical; R_{10} is a hydrogen atom or a lower alkyl radical; R_{11} is a hydrogen atom, a lower alkyl radical, a radical —CO—R_9 or a radical —$COOR_9$; R_{12} is a radical R_6 or a radical —CH_2— —O—CH_2—CH_2—O—CH_3; R_{13} is a hydrogen atom or a lower alkyl radical; R_{14} is a radical —OR_8, or a radical of the formula:



wherein R' and R", which may be identical or different, are each a hydrogen atom, a lower alkyl radical, a mono- or polyhydroxyalkyl radical, or a phenyl radical optionally substituted by at least one halogen atom, or a hydroxyl or nitro functional group, or R' and R" together with the nitrogen atom attached may form a piperidino, morpholino, pyrrolidino or piperazino radical which are optionally substituted at the 4-position by a C_1–C_5 alkyl radical or a mono- or polyhydroxyalkyl radical; t is an integer equal to 0, 1 or 2; n is an integer equal to 0 or 1; and the radicals X and Y may together form a double bond-containing single radical of the formula =N—OR_6 or =CH—COR_{14}; or pharmaceutically/cosmetically acceptable salt or optical or geometric isomer thereof.

5,709,868

LIPOIC ACID IN TOPICAL COMPOSITIONS

Nicholas V. Perricone, 27 Coginchaug Ct., Guilford, Conn. 06437

Filed Sep. 20, 1995, Ser. No. 531,290

Int. Cl.^{6} A61K *7/48;7/42*

U.S. Cl. 424—401 **15 Claims**

1. A method for treating skin inflamation or aging mediated by free radicals, said method comprising topically applying to skin areas to be treated a composition containing an active compound selected from the group consisting of lipoic acid, lipoic acid esters, lipoic acid amines, salts of lipoic acid, and mixtures thereof, in an amount sufficient to provide free radical scavenging in the skin.

5,709,869

METHOD FOR TREATING NERVE INJURY PAIN ASSOCIATED WITH SHINGLES

Harry Hind, Los Altos, Calif., assignor to Hind Health Care, Inc., Los Altos, Calif.

Continuation of Ser. No. 611,168, Mar. 5, 1996, Pat. No. 5,589,180, which is a continuation-in-part of Ser. No. 526,771, May 18, 1990, Pat. No. 5,601,838, which is a continuation of Ser. No. 325,373, Mar. 17, 1989, abandoned. This application Dec. 23, 1996, Ser. No. 773,529

Int. Cl.^{6} A61K *9/70*

U.S. Cl. 424—402 **7 Claims**

1. A method for treating neuropathies causing pain at a site with the induction of analgesia by intradermal administration, said method comprising:

applying at the site of pain, a plaster or gel, comprising from about 2 to 10% by weight of lidocaine at least in part as the free base in a formulation which provides for intradermal transport of said lidocaine,

whereby said lidocaine is transported intradermally to provide for analgesia at the site of said neuropathy.

5,709,870

ANTIMICROBIAL AGENT

Shoji Yoshimura, and Hiroyuki Minami, both of Sakai-gun, Japan, assignors to Rengo Co., Ltd., Osaka, Japan

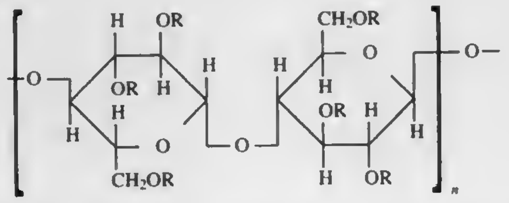
Filed Oct. 18, 1995, Ser. No. 544,532

Claims priority, application Japan, Oct. 18, 1994, 6-251939

Int. Cl.^{6} A01N *25/08*

U.S. Cl. 424—404 **9 Claims**

1. An antimicrobial agent comprising a silver salt of carboxymethylcellulose of formula



wherein R is H or a carboxymethyl group which is selected from the group of CH_2COOH and CH_2COOM wherein M is an alkali metal, and n is 100–2000;

wherein R is H and not a carboxyl group to the extent that the degree of substitution is not less than 0.4, and

wherein H in CH_2COOH or M in CH_2COOM is replaced with silver to the extent necessary to provide a compound with a silver content of 0.01 to 1% by weight.

5,709,871

SOLID FORMULATION

Alister Christie Hill, Kent, England, assignor to Shell Research Limited, London, United Kingdom

Filed Aug. 5, 1994, Ser. No. 286,724

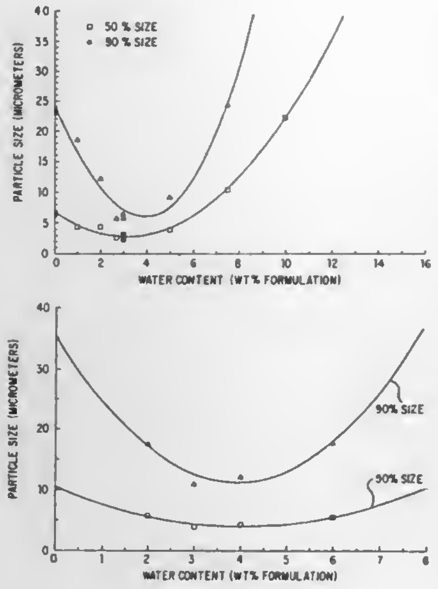
Claims priority, application European Pat. Off., Aug. 5, 1993, 93306195

Int. Cl.^{6} A01N *33/26*

U.S. Cl. 424—409 **19 Claims**

1. A water dispersible solid formulation comprising:

an active pesticide ingredient consisting essentially of of effective amount of triazamate, having an average particle size by volume of less than about 50 μm;



a surfactant of non-ionic type selected from the group consisting of an alcohol and ester;

a surfactant of an anionic type; and

at least 30 wt % of urea.

5,709,872

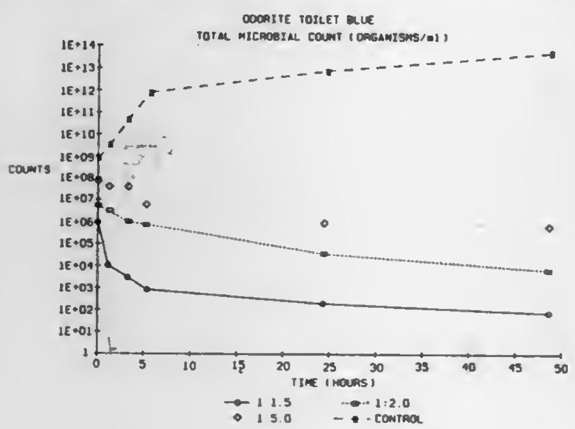
PHOPHOLIPID METHOD FOR DEODORIZING TOILETS

Norman A. Van Rees, Kirkwood, Mo., assignor to Chemia Corporation, Kirkwood, Mo.

Filed Oct. 20, 1995, Ser. No. 546,522

Int. Cl.^{6} A01N *25/04*

U.S. Cl. 424—420 **33 Claims**



1. A method of deodorizing a closed toilet system of the type that recirculates the flushing fluid, the method comprising the step of adding a phospholipid to the flushing fluid in a concentration effective to inhibit odor-causing bacteria.

5,709,873

METHOD OF TREATING CONDITIONS OF TEETH AND THEIR SUPPORTING TISSUE

Daniel Bar-Shalom, Kokkedal; Niels Bukh, Hellerup, and Jesper Hamburger, Rungsted Kyst, all of Denmark, assignors to Niels Bukh A/S, Hellerup, Denmark

Continuation of Ser. No. 70,232, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 939,969, Sep. 4, 1992, Pat. No. 5,240,710, which is a continuation of Ser. No. 375,006, Aug. 4, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 465,613

Claims priority, application Denmark, Feb. 26, 1988, 1024/88; Sep. 9, 1988, 5055/88

Int. Cl.^{6} A61K *7/20;7/16;31/735*

U.S. Cl. 424—422 **27 Claims**

1. A toothpaste useful in prevention or treating dental disease in a human which comprises (a) a prophylactically or therapeutically effective amount of an active compound which is a sulfated sucrose or a salt or complex thereof, and (b) a dental polishing agent.

5,709,874

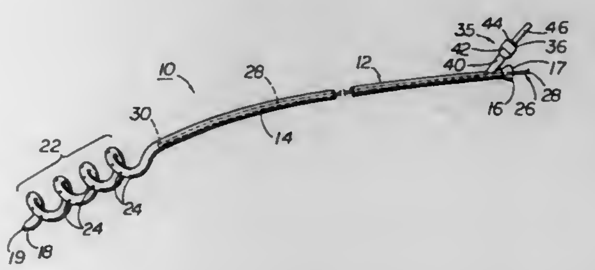
DEVICE FOR LOCAL DRUG DELIVERY AND METHODS FOR USING THE SAME

Stephen R. Hanson, Stone Mountain; Neal A. Scott, Atlanta; Spencer B. King, III, Atlanta, and Laurence A. Harker, Atlanta, all of Ga., assignors to Emory University, Atlanta, Ga.

Continuation of Ser. No. 188,248, Jan. 28, 1994, Pat. No. 5,523,092, which is a continuation-in-part of Ser. No. 46,622, Apr. 14, 1993, Pat. No. 5,399,352. This application Jun. 3, 1996, Ser. No. 660,203

Int. Cl.^{6} A61M *25/088*

U.S. Cl. 424—423 **48 Claims**



1. A device for the local delivery of a substance at a predetermined site in a natural tissue conduit in the mammalian body, the conduit having a luminal surface defining a lumen, comprising:

a) an elongated flexible tube of a preselected length and diameter having an external surface, a proximal end, an opposite distal end, and a lumen extending longitudinally therethrough interconnecting the proximal and distal ends with the proximal end defining an opening therethrough, the tube having a substance delivery segment adjacent the distal end and defining a plurality of substance delivery holes through the external surface which are in fluid communication with the lumen of the tube, the substance delivery segment being moveable among a first rest position wherein it has a first shape, a second position wherein it has a second shape, and a third operative position wherein it has a third shape, the third position being intermediate the first and second positions;

b) means for moving the substance delivery segment from its first position to its second position, the substance delivery segment tending to return to the first position when the moving means is no longer applied to the substance delivery segment; and

c) means for introducing the substance into the lumen of the tube for delivery into the natural tissue conduit.

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5,709,875

IMPLANTABLE BIODEGRADABLE MATERIAL AND PROCESS FOR ITS PRODUCTION

Albert Lebugle, Saint Orens; Anne Julia, Montastruc la Conseillere; Fernand Rodriguez, Castanet, and Paul Bonnevialle, Toulouse, all of France, assignors to Centre National de la Rechierche Scientifique (C.N.R.S), Paris, France

Continuation of Ser. No. 877,171, Jun. 26, 1992, abandoned.
This application Sep. 30, 1994, Ser. No. 316,062
Claims priority, application France, Oct. 26, 1990, 90 13424
Int. Cl.⁶ A61K *9/10;47/36*

U.S. Cl. 424—426 **13 Claims**

1. A process for producing a powdered composition for implantation in human or animal tissue comprising providing about 1% to about 30% of a powdered biodegradable ose or polyoside and powdered calcium phosphate having an apatitic or triclinic structure and containing both HPO_4 and PO_4 groups to form a mixture, adding to said mixture an active substance having amine groups for fixing the active substance on the HPO_4 and PO_4 groups of the calcium phosphate and mixing the substances together.

5,709,876

SACCHARIDE-BASED MATRIX

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

Division of Ser. No. 365,591, Dec. 28, 1994, Pat. No. 5,597,608, which is a division of Ser. No. 847,595, Mar. 5, 1992, Pat. No. 5,387,431, which is a continuation-in-part of Ser. No. 782,430, Oct. 25, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,778
Int. Cl.⁶ A61K *47/00*

U.S. Cl. 424—439 **46 Claims**

1. A saccharide-based matrix comprising a feedstock including maltodextrin and a component selected from the group consisting of food ingredients, pharmaceuticals, cosmetics, dyes and mixtures thereof, which has been subjected to conditions of force and temperature which induce flash flow of said feedstock without causing degradation of said feedstock whereby said matrix possesses physically or chemically altered structure from said feedstock.

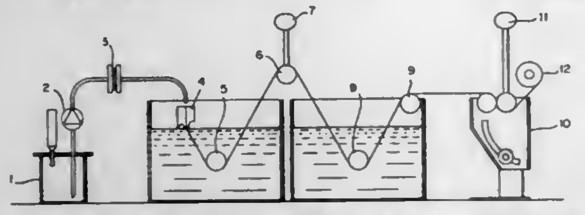
5,709,877

GELS IN THE FORM OF HIGHLY HYDRATED SELF-SUPPORTING FILM, THE PROCESS FOR THEIR PREPARATION, AND THEIR USE IN THE THERAPY OF CUTANEOUS LESIONS AND/OR PATHOLOGIES

Francesco Della Valle; Alessandro Rastrelli, both of Padua; Gabriella Calderini, Carrara San Giorgio, and Aurello Romeo, Rome, all of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Continuation of Ser. No. 707,790, May 30, 1991, Pat. No. 5,523,093. This application Jun. 7, 1995, Ser. No. 476,569
Claims priority, application Italy, May 30, 1990, 20477A90
Int. Cl.⁶ A61K *9/70;47/36;* **A61L** *15/28;15/64*

U.S. Cl. 424—444 **35 Claims**



1. A hydrated self-supporting gel film for use as wound medication or covering material to be applied in direct contact with the area to be treated in the therapeutic treatment of cutaneous lesions and/or cutaneous pathologies, consisting essentially of a quantity of between 1% and 7.5% of at least one alkaline alginate, between 0.1% and 5% of alkaline earth alginate, between 0.1% and 10% of a polyhydric alcohol and between 0.05% and 10% of a polymer of hydrophilic character selected from the group consisting of hyaluronic acid and derivatives thereof, the remaining constituent being water.

5,709,878

TRANSDERMAL DELIVERY OF DEHYDROEPIANDROSTERONE

Jerry Rosenbaum, 5901 SW. 94 St., Miami, Fla. 33156, and George Suarez, 741 N. Green Way, Coral Gables, Fla. 33143

Filed Aug. 2, 1996, Ser. No. 691,244
Int. Cl.⁶ A61F *13/00*

U.S. Cl. 424—449 **16 Claims**

1. A non-staining topical composition in the form of a solution cream, lotion or gel for enhancing the serum concentration of dehydroepiandrosterone in a person being topically administered said composition, comprising an effective amount in the range of 0.1 grams to 25 grams per 100 grams of composition of at least one dehydroepiandrosterone compound selected from the group consisting of dehydroepiandrosterone and a fluorinated dehydroepiandrosterone and an amount effective to increase the transdermal transmission thereof in the range of 1 grams to 90 grams per 100 grams of composition of at least one phospholipid.

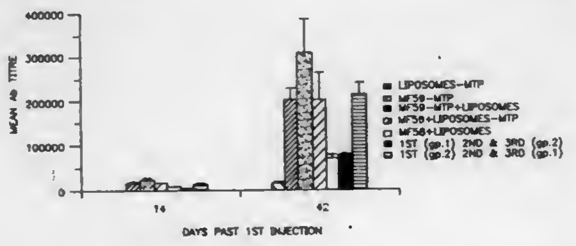
5,709,879

VACCINE COMPOSITIONS CONTAINING LIPOSOMES

Gail L. Barchfeld, Hayward; Gary Ott, Oakland, and Gary A. Van Nest, El Sobrante, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 308,622, Sep. 19, 1994, abandoned, which is a continuation of Ser. No. 154,160, Nov. 18, 1993, abandoned, which is a continuation of Ser. No. 722,862, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,585, Jun. 29, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 469,444
Int. Cl.⁶ A61K *9/127*

U.S. Cl. 424—450 **37 Claims**



1. A vaccine composition, comprising:

(1) an immunostimulating amount of an antigenic substance in association with liposomes, wherein the liposomes have a net negative charge; and

(2) an oil-in-water emulsion comprising a metabolizable oil in a continuous phase surrounding said liposomes, said emulsion being present in an amount sufficient to increase immune responce relative to that of said antigenic substance and liposomes in the absence of said emulsion.

5,709,880

METHOD OF MAKING TABLETIZED IONENE POLYMERS

L. Fernando Del Corral, Memphis; Percy A. Jaquess, Tigrett; Wallace E. Puckett, and Russel E. Fues, both of Memphis, all of Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Jul. 10, 1995, Ser. No. 500,466
Int. Cl.⁶ A61N *25/08;* **A61K** *31/785*

U.S. Cl. 424—464 **13 Claims**

1. A method of making a tabletized ionene polymer composition comprising the steps of:

mixing an aqueous solution or dispersion of an ionene polymer with a salt carrier matrix to form a moist mass,

drying the moist mass to form dry granules,

reducing the size of the granules to form a powder, and

compressing the powder into a tablet, wherein the resulting tablet absorbs no more than 3 percent by weight moisture upon standing for 30 days in air at approximately 25° C. and approximately 70 percent humidity, wherein the weight ratio of solution or dispersion to carrier matrix in the mixing step is from about 1:10 to 4:10.

5,709,881

TABLET CAPSULE OR GRANULE COMPRISING DESOGESTREL

Pieter de Haan, and Johannes Gerardus Joseph Egberink, both of Oss, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 458,373, Jun. 2, 1995, abandoned.
This application May 28, 1997, Ser. No. 864,435
Claims priority, application European Pat. Off., Jun. 8, 1994, 94201625
Int. Cl.⁶ A61K *9/14;9/20*

U.S. Cl. 424—465 **6 Claims**

1. A pharmaceutical composition free from organic solvents in a solid matrix for oral administration comprising desogestrel mixed or dissolved in a solid selected from a lubricant, a waxy substance that is not a lubricant and mixtures thereof.

5,709,882

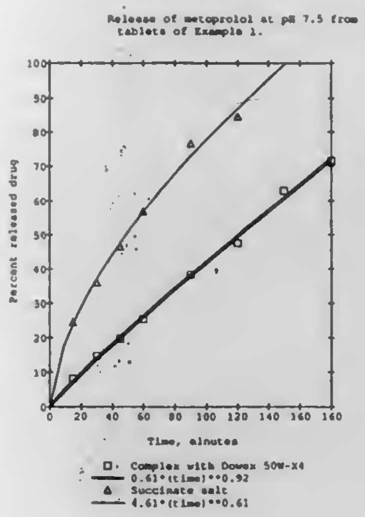
PHARMACEUTICAL FORMULATIONS CONTAINING A PHARMACOLOGICALLY ACTIVE IONIZABLE SUBSTANCE AS WELL AS A PROCESS FOR THE PREPARATION THEREOF

Bengt Magnus Lindstedt, and Per Johan Gunnar Lundberg, both of Mölndal, Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 802,325, Dec. 4, 1991. This application Mar. 22, 1994, Ser. No. 216,028
Claims priority, application Sweden, Dec. 7, 1990, 9003903
Int. Cl.⁶ A61K *9/26;9/10;9/22*

U.S. Cl. 424—469 **15 Claims**

1. A pharmaceutical composition for extended release of a pharmaceutically active ionizable substance comprising an ionic complex of an active ionic substance with an oppositely charged ion-exchange resin; the ionic complex being embedded in a hydrophilic eroding matrix consisting of 100% to 10% by weight of a derivatized cellulose and 0% to 90% by weight of a synthetic polymer; the hydrophilic eroding matrix being proportioned to the complex so as to effect a linear release of the active substance.



5,709,883

LONG ACTING NARCOTIC ANALGESICS AND ANTAGONISTS

Alan Drizen; Peter Rothbart, both of Ontario, Canada, and Gary M. Nath, Bethesda, Md., assignors to L.A.M. Pharmaceuticals, LLC, Miami, Fla.

Division of Ser. No. 630,205, Apr. 10, 1996, which is a continuation-in-part of Ser. No. 536,750, Sep. 29, 1995. This application Jan. 22, 1997, Ser. No. 787,396
Int. Cl.⁶ A61K *9/08*

U.S. Cl. 424—488 **9 Claims**

1. A long acting analgesic, opioid antagonist, or agonist-antagonist drug composition which comprises:

a water soluble analgesic, opioid antagonist or agonist-antagonist drug dispersed within a polymer matrix which is solubilized in an aqueous medium, wherein the polymer matrix is comprised of negatively charged polymers selected from the group consisting of hyaluronic acid salts, chondroitin sulfate, and mixtures thereof; and a nonionic polymer selected from the group consisting of carboxymethyl cellulose sodium, hydroxyethyl cellulose, hydroxypropyl cellulose and mixtures thereof, and wherein the ratio of negatively charged polymer to nonionic polymer is 1:0.5 to 2.

5,709,884

PROCESS FOR CONDITIONING SUBSTANCES

Eva Ann-Christin Trofast, and Lars-Erik Briggner, both of Lund, Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE94/00780, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO95/05805, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 25, 1994, Ser. No. 379,471
Claims priority, application Sweden, Aug. 27, 1993, 9302777
Int. Cl.⁶ A61K *9/14;9/50*

U.S. Cl. 424—489 **22 Claims**

1. A process for providing a stable crystallinic form to a fine-grained substance or a substance mixture, which can be produced, stored and used while maintaining the aerodynamic properties required for inhalation of such a substance or a substance mixture, which comprises the steps of

a) in the case of a substance mixture, either preparing a homogenous mixture of the substances or leaving the components of the mixture separate;

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- b) micronizing, direct precipitating or diminishing by any conventional method the substance(s), or substance mixture into a particle size required for inhalation, the particle size being less than 10 μm;
- c) preparing a homogenous mixture of the desired substances in the case wherein each substance has been introduced separately from stage b) in the form of fine-grained particles;
- d) conditioning said substance or substance mixture by treatment with a water-containing vapour phase in a controlled fashion; and
- e) drying the substance or substance mixture and wherein said substance or at least one of the substances of said substance mixture is selected from the group consisting of formoterol; salmeterol; salbutamol; bambuterol; terbutaline; fenoterol; clenbuterol; procaterol; bitolterol; broxaterol; ipratropium bromide; budesonide; (22R)-6α,9α-difluoro-11β,21-dihydroxy-16α,17α-propylmethylenedioxy-4-pregnen-3,20-dione; fluticasone; beclomethasone; tipredane; momethasone; pharmacologically acceptable esters, salts and solvates thereof; and solvates of such esters or salts.

5,709,885

PROCESS FOR THE PREPARATION OF DRUG PELLETS

Leena Hellén, Tuulensuunkatu 5 a, FIN-21100 Naantali; Isabelle Husson, Meriusva 5 as 43, FIN-02320 Espoo; Eeva Kristoffersson, Säynävätie 2 A, FIN-02170 Espoo, and Jouko Yliruusi, Valkonauhantie 6 A, FIN-02700 Kauniainen, all of Finland

PCT No. PCT/FI93/00409, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/08567, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 8, 1993, Ser. No. 411,804

Claims priority, application Finland, Oct. 9, 1992, 924590

Int. Cl.^{6} A61K *9/14*

U.S. Cl. 424—489 **17 Claims**

1. A process for preparation of drug pellets, comprising the steps of:

- granulating a drug-containing powder in a rotor-type granulator;
- contacting said drug-containing powder with a granulating liquid to produce a granulate, said granulating liquid comprising an anti-adhesion agent in an amount from about 0.001% to about 5.0% by weight of the granulating liquid;
- extruding said granulate;
- spheronizing said extruded granulate into pellets; and,
- drying said pellets.

5,709,886

EFFERVESCENT MICROCAPSULES

Marie Jean Bettman, Dayton; Phillip J. Percel, Troy, and Thomas C. Powell, Alexandria, all of Ohio, assignors to Eurand America, Incorporated, Vandalia, Ohio

Division of Ser. No. 383,342, Feb. 3, 1995, Pat. No. 5,639,475. This application Feb. 19, 1997, Ser. No. 802,147

Int. Cl.^{6} B01J *13/08*

U.S. Cl. 424—495 **1 Claim**

1. A process for microencapsulating a finely divided admixture of sodium bicarbonate and citric acid to produce a taste masked effervescent material comprising individual microcapsules each containing an effervescent mixture of sodium bicarbonate and citric acid encapsulated with ethylcellulose, which process comprises forming a granulate admixture of sodium bicarbonate and citric acid, and charging the admixture of sodium bicarbonate and citric acid to a coascervating medium including cyclohexane as the solvent, ethylcellulose as the encapsulating polymer, and a phase inducing polymer, and separating the microcapsules.

5,709,887

METHOD AND COMPOSITION FOR TREATING TUMORS

Clifford R. Bryan, deceased, late of New Orleans, La., and by Marguerite Bryan, administratrix, 7310 Culpepper Dr., No. H, New Orleans, La. 70126

Filed Jun. 6, 1995, Ser. No. 466,435

Int. Cl.^{6} A61K *35/12;35/34;35/37;35/54*

U.S. Cl. 424—520 **21 Claims**

1. A composition for treatment or preventing recurrence of tumors comprising a suspension containing at least one active ingredient obtained from the pleuroperitoneal organs of an amphibian or larva of an amphibian, from the notochord and surrounding tissues of an Agnathan, or from mesenteries and visceral organs from the pleuroperitoneal cavity of fish or tadpoles of frogs at the stage when both the tail and the four legs are present;

- wherein said active ingredient is obtained by
- harvesting tissues obtained from the pleuroperitoneal organs of an amphibian or a larva of an amphibian, or obtained from the notochord and surrounding tissues of an Agnathan or from mesenteries and visceral organs from the pleuroperitoneal cavity of fish or tadpoles of frogs at the stage when both the tail and four legs are present;
- subdividing said organs to form a suspension; and
- placing said suspension in tissue culture medium.

5,709,888

HIGH FAT NUTRITIONAL FORMULA FOR INFANTS AND ADULTS

Angel H. Gil; Jesus L. Jimenez, and Jose C. Moreno, all of Granada, Spain, assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 624,230, Dec. 7, 1990, abandoned. This application Mar. 25, 1996, Ser. No. 621,368

Claims priority, application Spain, Oct. 30, 1990, P.90102.759

Int. Cl.^{6} A61K *35/12;35/60;31/70;31/685*

U.S. Cl. 424—522 **21 Claims**

1. A fat mixture for use in a nutritional product; comprising:

- a) between about 30.5% and about 43.0% by weight olive oil per 100 g of mixture,
- b) between about 10.5% and about 14.3% by weight soy oil,
- c) between about 18.1% and about 49.7% by weight milk fat,
- d) between about 4.8% and about 28.7% by weight medium chain triglycerides,
- e) between about 1.0% and 4.5% by weight phospholipids and
- f) up to about 3.5% by weight fish oil.

5,709,889

COAGULATION ASSAYS AND REAGENTS

Roy E. Speck, Indianapolis, Ind., assignor to Analytical Control Systems, Inc., Fishers, Ind.

Division of Ser. No. 158,538, Nov. 29, 1993, Pat. No. 5,451,509, which is a division of Ser. No. 946,811, Sep. 16, 1992, abandoned, which is a continuation of Ser. No. 510,178, Apr. 17, 1990. This application Feb. 17, 1995, Ser. No. 389,848

Int. Cl.^{6} A61K *33/24;35/14*

U.S. Cl. 424—617 **16 Claims**

1. A method of stemming bleeding from a bleeding site, comprising the step of applying to the bleeding site an effective amount of a hemostatic agent comprising a metal ion selected from the group consisting of Ni^{++}, Co^{++}, Cu^{++}Cu^{+}and Fe^{+++}and a hydroxy-substituted aromatic compound selected from the group consisting of propyl gallate and tannin.

5,709,890

POLYASPARTIC ACID AND ITS ANALOGUES IN COMBINATION WITH INSECTICIDES

J. Larry Sanders, Bedford Park, Ill., assignor to Donlar Corporation, Bedford Park, Ill.

Division of Ser. No. 615,445, Mar. 14, 1996, Pat. No. 5,646,133. This application Mar. 20, 1997, Ser. No. 821,037

Int. Cl.^{6} A01N *59/14;59/22;27/00;37/34*

U.S. Cl. 424—620 **7 Claims**

1. An insecticide composition which comprises, an insecticide selected from the group consisting of chlorinated hydrocarbons, pyrethroids, natural boron insecticidal compounds, and natural arsenic insecticidal compounds, and

- a small but insecticide absorption enhancing effective amount of a water soluble, non-aromatic, polyorganic acid or salt thereof which is polyaspartic acid, said polyaspartic acid having a molecular weight larger than 1500.

5,709,891

Patent Not Issued For This Number

5,709,892

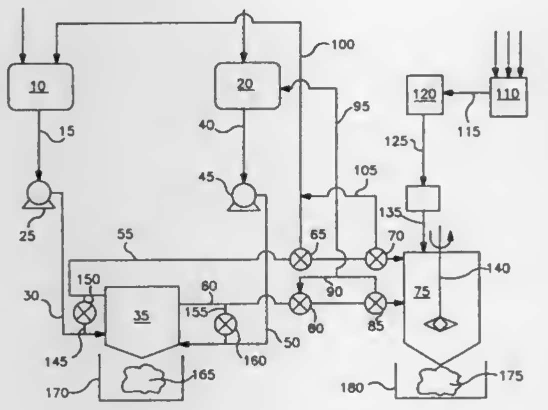
SYSTEM FOR PRODUCING A FOAMED ISOCYANATE-BASED POLYMER

Paul V. Farkas, Willowdale, Canada, assignor to Woodbridge Foam Corporation, Willowdale, Canada

Division of Ser. No. 278,549, Jul. 21, 1994, Pat. No. 5,523,330. This application Mar. 22, 1996, Ser. No. 620,611

Int. Cl.^{6} B29C *31/06*

U.S. Cl. 425—4 R **13 Claims**



1. A system for producing a foamed isocyanate-based polymer, the system comprising a base line and a complementary line,

- the base line comprising a first mixing device operable in a first mode and a second mode and having an active hydrogen-containing compound input and an isocyanate input,
- the complementary line comprising a second mixing device having a filler material input,
- wherein in the first mode, the first mixing device receives a feed from the active hydrogen-containing compound input and the isocyanate input, mixes the feed to produce a first foamable polymeric composition and dispenses the first foamable polymeric composition in a first mold, and
- in the second mode, the first mixing device returns the feed, without mixing thereof, from the active hydrogen-containing compound input and the isocyanate input to the second mixing device which mixes the feed with feed from the filler material input to produce a second foamable polymeric composition and dispenses the second foamable polymeric composition in a second mold.

5,709,893

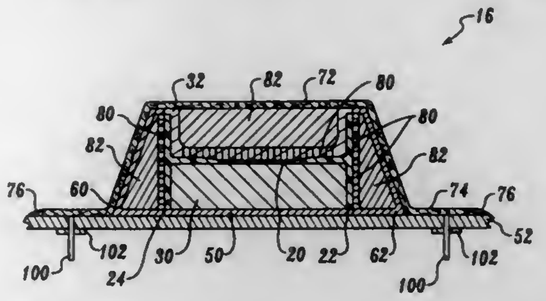
BREATHABLE TOOLING FOR FORMING PARTS FROM VOLATILE-EMITTING COMPOSITE MATERIALS

Douglas A. McCarville, Auburn; Joseph L. Sweetin, Seattle, and Irwin Medoff, Shoreline, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 6, 1995, Ser. No. 468,807

Int. Cl.^{6} B29C *43/56*

U.S. Cl. 425—389 **20 Claims**



1. An apparatus for forming a part from a composite material that emits volatiles during processing, the apparatus comprising:

- a tool having a rigid forming surface that is placed adjacent a composite workpiece, the tool including a plurality of passages extending from the forming surface through the tool, the passages being spaced over the forming surface and being in fluid contact with an exhaust port;
- a heat source that heats the composite workpiece to a temperature at which volatiles are emitted from the composite workpiece; and
- means for removing the volatiles from the composite workpiece through the passages and exhaust port.

5,709,894

FEED ADDITIVE FOR RUMINANT ANIMALS AND A METHOD FOR FEEDING A RUMINANT

William E. Julien, Omaha, Nebr., assignor to Biovance Nebraska, Omaha, Nebr.

Filed Jun. 7, 1995, Ser. No. 486,226

Int. Cl.^{6} A23K *1/06;1/18*

U.S. Cl. 426—53 **13 Claims**

1. A feed additive for ruminants, comprising dried glutamic acid fermentation solubles, dried corn fermentation solubles, or a mixture of dried glutamic acid fermentation solubles and dried corn fermentation solubles, wherein said dried solubles have been dried to a total moisture content of less than 30% by weight at a temperature not less than 80° F. and not more than 900° F. and wherein said dried solubles enhance ruminal microbial fermentation and increase the amount of microbial protein delivered to the digestive organs of a ruminant when fed to a ruminant as compared to said solubles which have not been dried.

5,709,895

PROCESS FOR PRODUCING FLAVOR-CONTAINING CAPSULE

Shigeru Tanaka, Whippany; Charles H. Manley, Ringwood, both of N.J., and Katsumi Nagano, Kanagawa, Japan, assignors to Takasago International Corporation (USA), N.J., and Takasago International Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 251,289, May 31, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 417,965

Int. Cl.^{6} A23L *1/00*

U.S. Cl. 426—96 **5 Claims**

1. A process for producing flavor-containing sugar-free capsules comprising the steps of:

- (a) heating a carbohydrate mixture containing at least one modified starch and at least one hydrogenated saccharide at a

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weight ratio of from about 15:85 to about 85:15 on a solid basis to give a molten material;
(b) adding a flavor to said molten material and mixing said flavor and said molten material to thereby give a uniform mixture;
(c) solidifying said uniform mixture by rapidly cooling under extrusion to yield a solid material; and
(d) cutting or grinding the solid material thus obtained, wherein said at least one hydrogenated saccharide is one or more substances selected from the group consisting of xylitol, lactitol, maltitol, isomalt, and hydrogenated corn syrup.

5,709,896

REDUCED-FAT FOOD DISPERSIONS AND METHOD OF PREPARING

Susan Erin Hartigan, Franklin Park; Mark T. Izzo, Flemington; Carol A. Stahl, Princeton, and Marlene T. Tuazon, Iselin, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

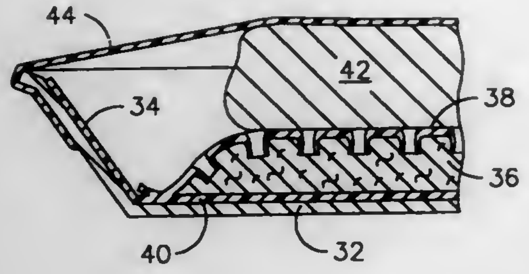
Filed Jun. 18, 1996, Ser. No. 665,625
Int. Cl.^{6} A23G *1/00;3/00*
U.S. Cl. 426—103 **35 Claims**

1. An aqueous dispersion comprising from about 50–90 weight percent sugar, from about 0.2–6 weight percent aggregated microcrystalline cellulose and a gum selected from galactomannan gum, glucomannan gum and mixtures thereof, from about 2–20 weight percent water from about 0–20 weight percent of fat, from about 0–25 weight percent of glycerin, and from about 0–30 percent of a flavoring material, based on the weight of the dispersion.

5,709,897

ABSORBENT PACKAGING FOR FOOD PRODUCTS

Leonard Pearlstein, 1441 Waverly Rd., Gladwyn, Pa. 19035
Filed Sep. 12, 1995, Ser. No. 527,672
Int. Cl.^{6} B65D *85/00*
U.S. Cl. 426—106 **11 Claims**



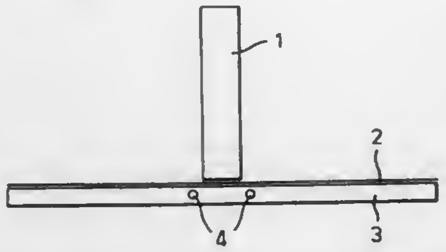
1. A package containing a food product having a tendency to exude liquid, the package including an improved absorber comprising a core of absorbent material disposed between first and second layers made of substantially liquid-impervious material, the first layer being a film having an inner surface facing the core and an outer surface, and at least part of the first layer having a plurality of apertures with sidewalls projecting from the inner face toward the core, the sidewalls having terminating edges remote from said inner surface of the first layer and in contact with the core, the lengths of the sidewalls of the apertures being at least approximately five times the thickness of the first layer measured from its inner surface to its outer surface, whereby the apertures conduct liquid exuded by the food product to the absorbent core, and resist reverse flow of liquid from the core outwardly through the apertures.

5,709,898

PROCESS FOR THE MANUFACTURE OF A FOOD PRODUCT

Donald Reginald Biggs, Bedford, United Kingdom; Gerlof Louwrens van Hoek, Nijverdal, Netherlands; Johannes Krieg, Rotterdam, Netherlands, and Franciscus Johannes Hersbach, Zevenhuizen, Netherlands, assignors to Good Humor-Breyers Ice Cream, Division of Conopco Inc., Green Bay, Wis.

Filed Aug. 19, 1996, Ser. No. 699,376
Claims priority, application European Pat. Off., Aug. 22, 1995, 95305856
Int. Cl.^{6} A21D *13/00*
U.S. Cl. 426—297 **8 Claims**

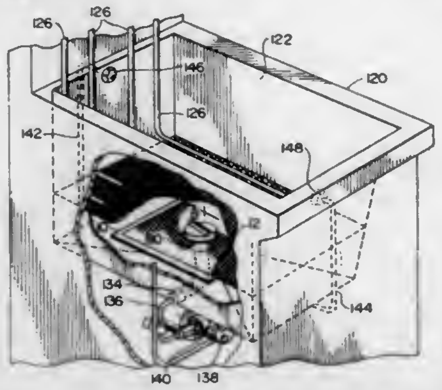


1. A process for the manufacture of a food product comprising a wafer filled with a food core, said process including the steps of:
(i) shaping the food core;
(ii) heating at least part of the wafer in order to provide sufficient plastic properties to the wafer to shape; and
(iii) shaping the wafer around the pre-shaped food core, the food core acting as a former.

5,709,899

CONTINUOUS FILTERING AND TREATING DEVICE AND METHOD

Thomas H. Bivens, 6907 FM 1488, Magnolia, Tex. 77355-1250
Continuation-in-part of Ser. No. 236,890, May 2, 1994, Pat. No. 5,595,107. This application Jan. 17, 1997, Ser. No. 786,090
Int. Cl.^{6} A47J *37/00;37/12;* **C11B** *5/00*
U.S. Cl. 426—417 **13 Claims**



1. A filtering and treating device for continuous filtering and treating of cooking oil disposed in a fryer comprising:
a frame constructed of rigid material;
at least one wire mesh envelope exterior of said frame;
said at least one wire mesh envelope comprising at least one wire mesh filter screen surrounding said frame;
at least one pouch having a treating material therein;
said at least one pouch constructed to allow fluid flow therethrough;
at least one interior compartment of said frame for receiving said at least one pouch;
said at least one pouch removably positioned in said interior compartment;
suction means in fluid communication with said interior compartment;
so that upon engagement of said suction means, liquid is drawn through said at least one wire mesh screen, said interior compartment, and said at least one pouch; and
thereby the liquid is both filtered and treated by the device.

5,709,900

METHOD FOR MANUFACTURE OF LOW FAT NATURAL CHEESE

Mark S. Miller, Arlington Heights; Kevin J. Surber, Lombard; David Mehnert, Antioch; Paul Wrezel, Chicago; Sylvia Irene Crawford, DesPlaines, and Ronald L. Meibach, Deerfield, all of Ill., assignors to Kraft Foods, Inc., Northfield, Ill.
Continuation-in-part of Ser. No. 195,270, Feb. 14, 1994, Pat. No. 5,532,018. This application Mar. 4, 1996, Ser. No. 610,043
Int. Cl.^{6} A23C *19/00*
U.S. Cl. 426—582 **13 Claims**

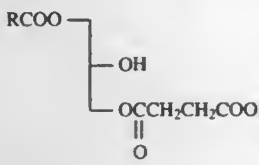
1. A method for manufacture of low fat natural cheese comprising;
(a) adding a gel-forming fat mimetic selected from the group consisting of starch and starch hydrolysis products to skim milk to provide a cheese substrate;
(b) setting, cutting, cooking and draining said substrate to provide a cheese curd containing a fat mimetic gelled in situ;
(c) curing said cheese curd to provide low-fat skim milk cheese having a gelled matrix dispersed therein;
(d) comminuting said skim milk cheese and heating said cheese to an elevated temperature of from about 140° F. to about 180° F.;
(e) holding said cheese at said elevated temperature for a period of from about 0.5 minutes to about 8 minutes; to provide a homogeneous cheese mass; and
(f) packaging said cheese mass to provide a low-fat cheese.

5,709,901

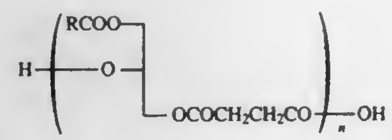
MEAT MODIFIER AND FOOD MEAT OR MEAT PRODUCT PROCESSED WITH SAME

Koichi Okisaka; Manabu Toi; Yoko Sakurai; Yutaka Shoga, and Hirofumi Takigawa, all of Ibaraki, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Aug. 11, 1995, Ser. No. 514,230
Claims priority, application Japan, Aug. 17, 1994, 6-216660; Apr. 28, 1995, 7-106272
Int. Cl.^{6} A23D *7/01*
U.S. Cl. 426—611 **7 Claims**

1. A meat modifier composition, comprising an ester composition comprising a succinate monomer of formula (1) and a succinate polymer of formula (2):



$$\begin{array}{l}\mathrm{RCOO}-\\ \qquad -\mathrm{OH}\\ \qquad -\mathrm{O}\underset{\underset{\displaystyle\mathrm{O}}{\|}}{\mathrm{C}}\mathrm{CH_2CH_2COOH}\end{array} \qquad (1)$$



$$\mathrm{H}\!\left(\begin{array}{l}\mathrm{RCOO}-\\ -\mathrm{O}-\\ \qquad -\mathrm{OCOCH_2CH_2CO}\end{array}\right)_{n}\!-\mathrm{OH} \qquad (2)$$

wherein
the molar ratio of said monomer to said polymer is 90:10 to 1:4;
said ester composition has an acid value of 30 to 120;
said ester composition has a free acid content of 1.5% by weight or less;
R is a $C_{12\text{-}22}$ group derived from a fatty acid; and
n is an integer not less than 2.

5,709,902

METHOD FOR PREPARING A SUGAR COATED R-T-E CEREAL

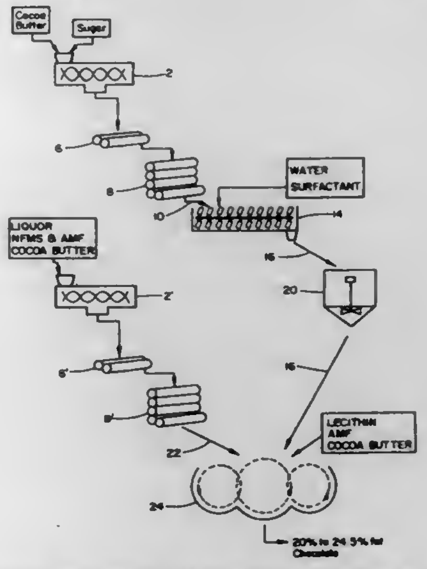
Carla Helou Bartolomel, Edina, and Richard D. Thesing, Monticello, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Dec. 13, 1994, Ser. No. 354,563
Int. Cl.^{6} A23L *1/18*
U.S. Cl. 426—620 **9 Claims**

1. A method for providing a presweetened sugar coating to a cereal base in the form of a sugar coating to provide a finished sugar coated ready-to-eat cereal exhibiting greater crispness and extended bowl life, comprising the steps of:
a. applying a high moisture sugar slurry to a cereal base to form a slurry coated cereal base; wherein the sugar slurry has a moisture content of about 40% to 60% and wherein the ratio of sugar slurry (dry basis) to cereal base ranges from about 0.05:1 to about 0.50:1;
wherein the cereal base comprises a quantity of cereal pieces selected from the group consisting of untoasted flakes, shreds, biscuits, shredded biscuits, pellets in sheet form, filled biscuits, filled shredded biscuits and mixtures thereof,
wherein the cereal base is wet and has a moisture content of about 12% to 20%, and
wherein the sugar slurry additionally includes about 1% to 20% of a reaction flavor ingredient selected from the group consisting of non-fat dry milk solids, malt syrup and mixtures thereof.
b. drying the slurry coated cereal base piece to form the sugar coated R-T-E cereal having a moisture content of 1% to 6%, wherein the pieces obtain a surface temperature of >135° C. during at least a portion of the drying step.

5,709,903

REDUCED FAT CONFECTIONERY PRODUCTS AND PROCESS

James F. St. John, Hummelstown; John G. Fetterhoff, Newville; John R. Carpenter; B. Douglas Brown, both of Hershey; C. Daniel Azzara, Annville; Stanley M. Tarka, Jr., Hershey; Craig Rank, Harrisburg, and George K. Strohmaier, Hummelstown, all of Pa., assignors to Derry, Inc., Newark, Del.
Division of Ser. No. 968,927, Oct. 30, 1992, Pat. No. 5,464,649. This application Jul. 31, 1995, Ser. No. 509,529
Int. Cl.^{6} A23G *1/00;3/00*
U.S. Cl. 426—660 **57 Claims**


Cocoa Butter
Sugar
2
6
8
WATER SURFACTANT
10
14
LIQUOR NFMS & AMF COCOA BUTTER
16
20
2'
16
6'
8'
LECITHIN AMF COCOA BUTTER
22
24
20% to 24.5% fat Chocolate

1. A process for making a reduced fat chocolate of full-fat texture comprising the following steps:
(a) mixing a nutritive carbohydrate sweetener with a fat to form a sweetener/fat mixture;

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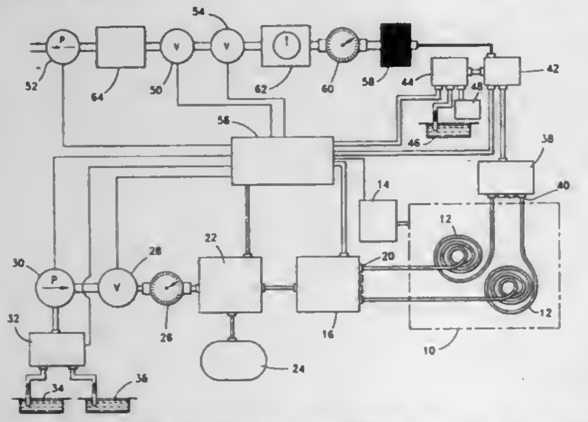
(b) refining said mixture of step (a);
(c) blending the refined mixture obtained in step (b) with water, said water being present in amounts effective to dissolve the particles having a size less than about 10 microns in said sweetener;
(d) adding a surfactant to the mixture of step (c) in amounts effective to prevent agglomeration of the nutritive carbohydrate sweetener;
(e) agitating and drying the mixture of step (d) to obtain a lowfat nutritive carbohydrate sweetener/fat paste;
(f) adding at least one size-reduced ingredient selected from the group consisting of cocoa solids, non-fat milk solids, cocoa powder, chocolate liquor, lactose, milkfat, whole milk powder and mixtures thereof to the paste of step (e), said ingredient being selected to provide the desired type of chocolate;
(g) conching or liquefying the paste of step (f); and
(h) standardizing the paste of step (g) to the specified fat level.

5,709,904
SYSTEM FOR MANUFACTURING CHROMATOGRAPHIC COLUMNS

David W. Coleman, Sr., Wilmington, Del., assignor to C&C Column Technologies, Inc., Oxford, Pa.
Filed Jul. 15, 1996, Ser. No. 680,450
Int. Cl.^{6} B05D *7/22*
U.S. Cl. 427—8 **9 Claims**

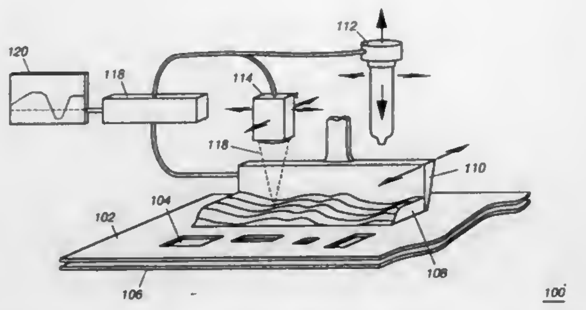


1. An automated method for the manufacture of thin-walled capillary columns for use in a chromatographic device, the steps comprising,
a.) selecting a predetermined length of a thin-walled, open ended capillary tube having an abrasion and moisture resistant external surface,
b.) metering a quantity of a polymer with a crosslinking agent, under pressure, through said tube,
c.) sealing one end of said tube, and evacuating said tube, under vacuum, to deposit a homogeneous film of said polymer along the inner surface thereof, and,
d.) maintaining said vacuum while crosslinking said film, whereby, steps (b) through (d) are sequentially coordinated through a microprocessor.

5,709,905
APPARATUS AND METHOD FOR AUTOMATIC MONITORING AND CONTROL OF STENCIL PRINTING

Michael F. Shaw, Sunrise; Anthony J. Suppelsa, Coral Springs, and Dale R. Adams, Margate, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 28, 1997, Ser. No. 789,252
Int. Cl.^{6} B05D *1/32;* **B05C** *11/02;3/20*
U.S. Cl. 427—8 **8 Claims**

6. A method of printing a viscous material onto a receiving substrate wherein the receiving substrate is loaded onto a printing apparatus, a stencil having appertures therethrough is aligned to the substrate, a volume of viscous material is dispensed on a first surface of the stencil while a second surface of the stencil parallel to the first surface is in contact with a receiving surface of the substrate, and a squeegee is moved across the first surface of the stencil to transfer the viscous material through the apertures of the stencil onto the substrate, the method comprising the following consecutively-performed steps:
(a) rastering a surface portion of said viscous material on said first surface of the stencil adjacent to said squeegee with a laser profiling device;
(b) generating topographical data for the rastered surface portion of said viscous material;
(c) communicating the generated topographical data to a controller coupled to said laser profiling device; and
(d) comparing the topographical data communicated to said controller with predefined height or volume viscous material boundaries, said step of comparing determining whether additional viscous material is to be added to said first surface of the stencil in order to subsequently evenly distribute the viscous material through the apertures of the stencil onto the substrate.



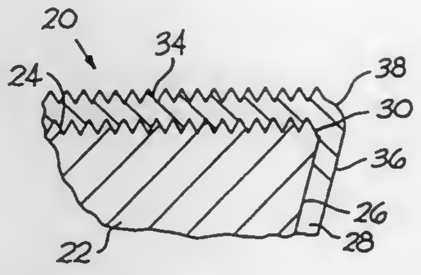
5,709,906
METHOD FOR CONDITIONING HALOGENATED POLYMERIC MATERIALS AND STRUCTURES FABRICATED THEREWITH

Harry Randall Bickford, Ossining; Peter J. Duke, Endwell, both of N.Y.; Elizabeth Foster, Friendsville, Pa.; Martin Goldberg, San Jose, Calif.; Voya Rista Markovich, Endwell, N.Y.; Linda Matthew, Palo Alto, Calif.; Donald G. McBride, Binghamton, N.Y.; Terrence Robert O'Toole, Webster, N.Y.; Stephen Leo Tisdale, Endwell, N.Y., and Alfred Viehbeck, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 340,379, Nov. 14, 1994, abandoned, which is a division of Ser. No. 13,652, Feb. 4, 1993, Pat. No. 5,374,454, which is a continuation of Ser. No. 584,327, Sep. 18, 1990, abandoned. This application Jun. 16, 1995, Ser. No. 490,930
Int. Cl.^{6} B05D *3/04*
U.S. Cl. 427—306 **33 Claims**

1. A method of treating a halogenated polymeric-containing substrate, comprising the steps of:
exposing at least portions of said halogenated polymeric-containing substrate to a composition containing a reducing agent and an aprotic solvent selected from the group consisting of nitriles, nitro compounds, amides, esters, carbonates, oxides, sulfo compounds and mixtures thereof, wherein said solvent is free of ethers, amines, ammonia, and wherein said composition is prepared by reacting a metal with an organic compound selected from the group consisting of polyaryl compounds, aromatic carbonyl containing compounds, aromatic nitriles, and aromatic heterocyclic nitrogen containing compounds in a reaction solvent which does not react with said metal but permits reaction between said metal and said organic compound to thereby provide said reducing agent, isolating said reducing agent from said reaction solvent to obtain a reaction product as a solid, adding said reaction product to said aprotic solvent; and
contacting said treated substrate with a material to promote adhesion of said material to said treated surface.

5,709,907
METHOD OF MAKING COATED CUTTING TOOLS

Frank B. Battaglia, Latrobe; Vincent J. Cackowski, Derry; Aharon Inspektor, Pittsburgh; Edward J. Oles, Ligonier, and John J. Prizzi, Greensburg, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Division of Ser. No. 502,437, Jul. 14, 1995. This application Oct. 10, 1996, Ser. No. 720,905
Int. Cl.^{6} C23C *14/00;16/00*
U.S. Cl. 427—126.1 **19 Claims**



1. A method of producing a coated cutting tool having a rake surface and a flank surface and a cutting edge at a juncture of said rake surface and flank surface, the method comprising the steps of:
resintering a substantially fully dense substrate so as to produce grain growth at the surface of the substrate sufficient to provide a surface roughness between 15 microinches R_a and 125 microinches R_a; and
applying a coating to the substrate wherein said coating comprises a layer which is applied by physical vapor deposition on the rake surface and the flank surface of the substrate.

5,709,908
STRIPPING COMPOSITION AND METHOD FOR STRIPPING A ROAD OR HIGHWAY SURFACE

Richard S. Gurney, Roseville, Minn., assignor to Barbara Ann Gurney, Roseville, Minn.
Continuation of Ser. No. 242,135, May 13, 1994, Pat. No. 5,478,596. This application Oct. 20, 1995, Ser. No. 545,878
Int. Cl.^{6} B05D *5/10*
U.S. Cl. 427—137 **15 Claims**

1. A method for applying a reactive composition to a concrete surface, said method comprising the steps:
(a) combining a first part comprising an isocyanate reactive group containing component and a second part comprising an isocyanate group containing component to form a reactive composition free of essentially volatile solvents having a boiling point below 150° C. at normal atmospheric pressure;
(b) applying said reactive composition to a concrete surface;
(c) allowing said reactive composition to cure and adhere to said concrete surface.

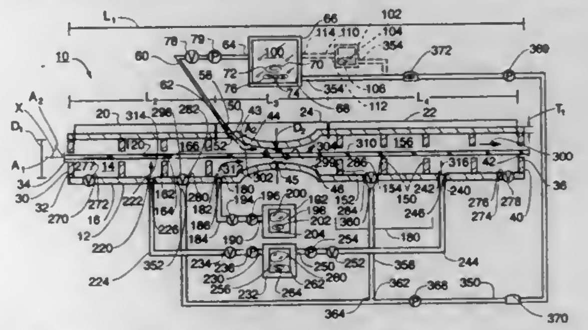
5,709,909
FILLER PASTE FOR USE IN BASECOATS FOR COATING POLYOLFIN SUBSTRATES, BASECOATS, AND PROCESS FOR THE DIRECT COATING OR POLYOLEFIN SUBSTRATES

Frank Leibfarth, Metzingen; Hans Josef Oslowski; Doris Maria Böhm, both of Münster, and Andreas Göbel, Köln, all of Germany, assignors to BASF Lacke & Farben, AG, Muenster-Hiltrup, Germany
PCT No. PCT/EP94/00772, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO94/21730, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 12, 1994, Ser. No. 522,235
Claims priority, application Germany, Mar. 19, 1993, 43 08 859.7
Int. Cl.^{6} B05D *7/04;3/00;* **C08L** *75/04*
U.S. Cl. 427—407.1 **6 Claims**

1. Filler paste A) comprising
a1) from 5 to 50% by weight of a polyurethane resin or a plurality of polyurethane resins,
a2) from 0.5 to 13% by weight of one or more chlorinated polyolefins having a chlorine content of from 10 to 40% by weight, based on the solids content of the chlorinated polyolefins, and having a number-average molecular weight of from 5000 to 150,000,
a3) from 0 to 50% by weight of one or more physically drying binders which are different from a1),
a4) from 5 to 35% by weight of compounds selected from the group consisting of fillers extenders, and mixture thereof
a5) from 0 to 15% by weight of pigments selected from the group consisting of color pigments, special-effect pigments, and mixtures thereof
a6) from 0 to 5% by weight of one or more rheological additives, and
a7) from 20 to 60% by weight of organic solvents,
the sum of components a1) to a7) being in each case 100% by weight.

5,709,910
METHOD AND APPARATUS FOR THE APPLICATION OF TEXTILE TREATMENT COMPOSITIONS TO TEXTILE MATERIALS

Mark D. Argyle, and William Alan Propp, both of Idaho Falls, Id., assignors to Lockheed Idaho Technologies Company, Idaho Falls, Id.
Filed Nov. 6, 1995, Ser. No. 554,127
Int. Cl.^{6} B05D *1/18*
U.S. Cl. 427—434.2 **18 Claims**



1. A method for applying a textile treatment composition to textile materials comprising the steps of:
providing a treatment apparatus comprising a conduit member, said conduit member comprising at least one passageway passing entirely through said conduit member, said passageway being surrounded by a side wall and comprising a first end portion, a second end portion, and a medial portion between said first end portion and said second end portion, said medial portion comprising at least one section thereof in which said side wall extends inwardly to form a constricted region within said passageway;

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passing a yarn strand through said passageway so that said strand moves continuously therethrough; and

introducing a chemical treatment mixture into said constricted region of said passageway during movement of said yarn strand through said passageway, said mixture comprising a textile treatment composition dissolved within a carrier medium, said carrier medium being selected from the group consisting of a supercritical fluid and a liquified gas, said carrier medium rapidly expanding when said mixture is introduced into said constricted region of said passageway so that said textile treatment composition within said mixture is precipitated therefrom and applied onto said yarn strand to produce a treated yarn product.

5,709,911
POLYMERIZABLE COMPOUND AND LIQUID CRYSTAL DISPLAY DEVICE USING THE SAME

Noriaki Onishi, Nara; Nobuaki Yamada, Higashiosaka; Masahiko Yoshida, Soka; Hoyo Mizobe, Soka, and Kenji Suzuki, Soka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Kanto Kabushiki Kaisha, Tokyo, both of Japan

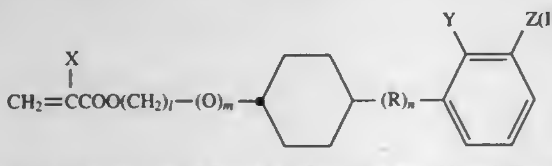
Filed Feb. 21, 1997, Ser. No. 804,753

Claims priority, application Japan, Feb. 23, 1996, 8-036967

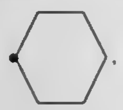
Int. Cl.^{6} C09K ***19/30;*** **G02F** ***1/13***

U.S. Cl. 428—1 **8 Claims**

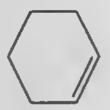
1. A polymerizable compound represented by Formula (I):



where X is a hydrogen atom or a methyl group; Y and Z are independently a hydrogen atom or a fluorine atom; l is an integer of 0 to 14; m and n are independently an integer of 0 or 1; R is represented by Formula (II), (III), or (IV); and when m=1, l≧1;

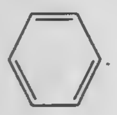


(II)



or

(III)



(IV)

5,709,912
AUTOMOBILE DECORATION MOLDING

Shinichi Goto; Masao Kobayashi; Yasuhisa Kuzuya, and Hidehito Ichikawa, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

Filed Oct. 28, 1994, Ser. No. 331,382

Claims priority, application Japan, Oct. 29, 1993, 5-272046

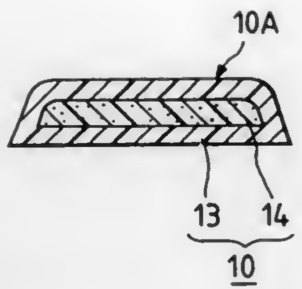
Int. Cl.^{6} B60R ***13/04***

U.S. Cl. 428—31 **8 Claims**

1. An automobile decoration molding, comprising:

a decoration molding body formed by extrusion-molding a synthetic resin material; and

an end part formed from an obliquely cut area of an end portion, remaining on said body, that has been heated and remolded in a die, wherein



at least said end portion of said decoration molding body which is to be formed into said end part is formed from a mixture of said synthetic resin material and an electrically conductive powder.

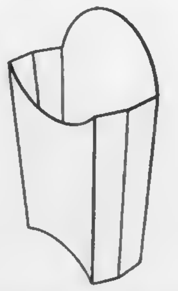
5,709,913
METHOD AND APPARATUS FOR MANUFACTURING ARTICLES OF MANUFACTURE FROM SHEETS HAVING A HIGHLY INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Division of Ser. No. 157,695, Nov. 24, 1993, which is a continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 982,383, Nov. 25, 1992, abandoned, Ser. No. 101,500, Aug. 3, 1993, abandoned, and Ser. No. 152,354, Nov. 19, 1993, Pat. No. 5,508,072, said Ser. No. 95,662, said Ser. No. 982,383, said Ser. No. 101,500, said Ser. No. 152,354, each is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,383

Int. Cl.^{6} B32B ***5/16;9/00;*** **B65D** ***13/00***

U.S. Cl. 428—34.5 **74 Claims**



1. An article of manufacture having an inorganically filled matrix formed by the method comprising the steps of:

providing a substantially dried inorganically filled sheet having a substantially flexible inorganically filled matrix, the matrix formed from an inorganically filled mixture comprising water, a water-dispersible organic binder, an inorganic aggregate material, and a fibrous material, wherein the individual components are substantially homogeneously dispersed throughout the inorganically filled mixture, wherein the inorganically filled sheet is formed without any significant drainage of water in a liquid state from the inorganically filled mixture, wherein the inorganic aggregate material has a concentration in a range from about 40% to about 95% by weight of total solids in the inorganically filled matrix, wherein the inorganically filled matrix has a thickness less than about 1 cm, comprises a substantially homogeneous mixture of organic binder and inorganic aggregate material, and degrades after prolonged exposure to water, wherein the fibrous material is substantially homogeneously dispersed throughout the inorganically filled matrix; and

fashioning at least a portion of the inorganically filled sheet into a predetermined shape of the article by bending, folding or rolling such that the sheet is significantly mechanically deformed without complete rupture of the inorganically filled matrix.

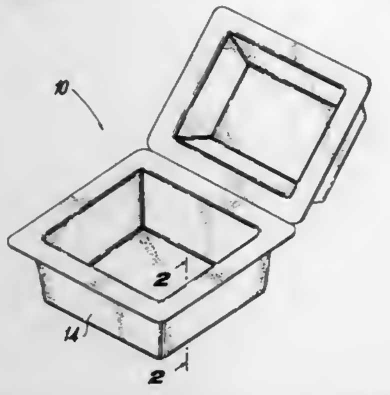
5,709,914
THERMAL STORAGE AND TRANSFER DEVICE

Claude Q. C. Hayes, 3737 Third Ave., #308, San Diego, Calif. 92103

Continuation of Ser. No. 183,199, Jan. 18, 1994, abandoned. This application Mar. 3, 1997, Ser. No. 811,106

Int. Cl.^{6} B65B ***53/00;*** **B29D** ***22/00;*** **B32B** ***1/08***

U.S. Cl. 428—35.1 **20 Claims**



1. A device for maintaining the temperature of a heated body at an elevated level, comprising a rigid shape retaining shell having an open celled fibrous matrix uniformly filling the interior of said shell, said matrix having a selected polymeric endothermic agent dispersed throughout and retained within said matrix, said endothermic agent having a latent heat of fusion of at least 50 cal/gm at a selected heat of reaction and being capable of the controlled sustained absorption of heat when said device is subjected to a temperature above said heat of reaction and the controlled sustained radiation, conduction and convection of heat out of said device when the device is no longer subjected to a temperature above said heat of reaction and the device is in close proximity to the body whose heat is to be maintained, thereby maintaining the temperature of the body whose heat is to be maintained at an elevated level.

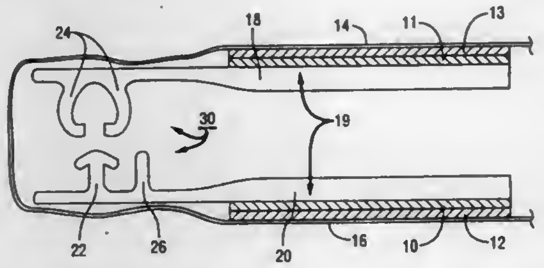
5,709,915
ADHESIVE STRUCTURE FOR HEAT SEALING

Mladomir Tomic, Appleton, and Gregory L. Petkovsek, Menasha, both of Wis., assignors to Reynolds Consumer Products, Inc., Appleton, Wis.

Filed Aug. 4, 1995, Ser. No. 511,214

Int. Cl.^{6} B29C ***47/06;*** **B32B** ***3/10;27/32;27/36***

U.S. Cl. 428—35.2 **31 Claims**



1. A bonded polymer structure, comprising a first polymeric panel, a second polymeric panel having inner and outer sides, and an adhesive structure comprising a tie layer and a sealant layer,

the tie layer and the sealant layer being disposed between the first polymeric panel and the second polymeric panel, the tie layer contacting the first polymeric panel and the sealant layer, and the sealant layer contacting the tie layer and the inner side of the second polymeric panel;

wherein the first polymeric panel consists essentially of polyethylene, polypropylene, copolymers of polyethylene and polypropylene, and physical mixtures thereof,

the second polymeric panel consists essentially of polyester,

the tie layer is selected from the group consisting of ethylene vinyl acetate (EVA), anhydride-modified polyolefin polymers, blends of EVA and anhydride-modified polyolefin polymers, anhydride-modified EVA polymers, acid-modified EVA polymers, acid-modified polyolefin polymers, amorphus polyolefin-modified EVA polymers, blends of any of the above materials with polyester or copolyester, and blends of polyolefins with polyester or copolyester, and

the sealant layer is selected from the group consisting of polyester, copolyester, a polyester blend, and a copolyester blend.

5,709,916
POLYBUTYLENE TEREPHTHALATE HAVING LOW CARBOXYL GROUP CONCENTRATION AND LOOSE TUBE FOR OPTICAL FIBER COMPRISING THE SAME

Noriyuki Akagi, Osaka; Hiroki Nagano; Masami Umeda, both of Matsuyama; Naonobu Tadokoro, Chiba-ken, and Kazumoto Miyajima, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 29, 1996, Ser. No. 688,290

Claims priority, application Japan, Jul. 27, 1995, 7-191773

Int. Cl.^{6} B32B ***1/08***

U.S. Cl. 428—35.7 **10 Claims**

1. A polybutylene terephthalate having a terminal carboxyl group concentration of 10 eq./10^6 g·polymer or less and an intrinsic viscosity [η], measured at 25° C. in orthochlorophenol, of 0.9 to 1.4 dl/g.

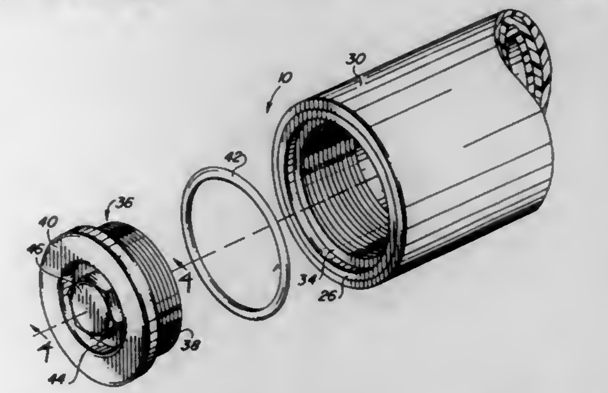
5,709,917
HYDRAULIC SOLID ROD FOR USE IN, FOR EXAMPLE, TRENCH SHIELDS

Joseph Allen Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210

Filed Aug. 2, 1996, Ser. No. 691,347

Int. Cl.^{6} B32B ***1/00***

U.S. Cl. 428—36.3 **22 Claims**



1. A composite rod assembly manufactured in a pultrusion manufacturing process to include a fluid-tight hollow interior space that may be selectively filled with a liquid to transform the rod assembly into an hydraulic solid rod, the composite rod assembly comprising:

an elongate pultruded jacket of fiber-resin material, the fiber-resin jacket having a first end and a second end;

a pair of reinforced cores disposed within the fiber-resin jacket at the first and second ends thereof and forming a fluid-tight seal therebetween, wherein the hollow interior space is defined within the fiber-resin jacket between the reinforced cores; and

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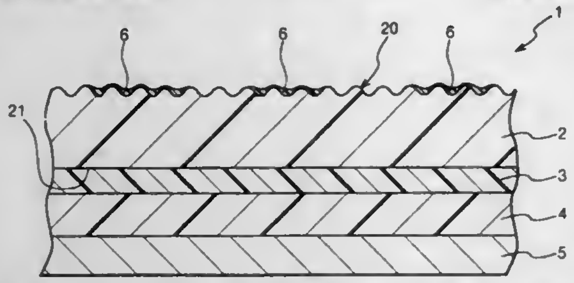
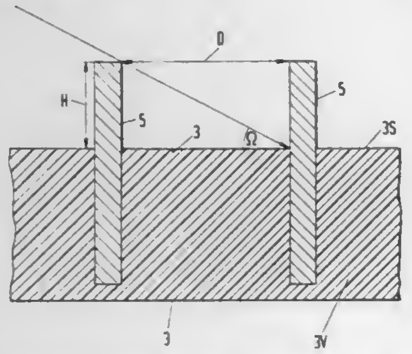
means for accessing the hollow interior space in order to introduce a liquid therein or to drain a liquid therefrom, and for re-sealing the hollow interior space thereafter.

5,709,918
INFORMATION INDICATOR AND INFORMATION INDICATING LABELS
Takao Kimijima, Kodaira, and Hitoshi Sakashita, Misato, both of Japan, assignors to Bridgestone Corporation, and Lintec Corporation, both of Japan
Filed Sep. 25, 1995, Ser. No. 533,372
Claims priority, application Japan, Sep. 26, 1994, 6-257585
Int. Cl.⁶ B32B *7/00*
U.S. Cl. 428—40.1 **10 Claims**



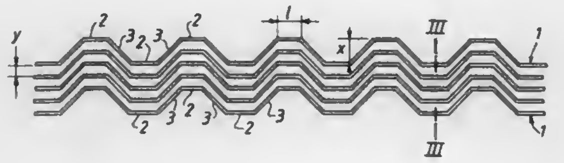
1. An information indicating label for use with unvulcanized rubber from which a rubber molding is formed, consisting essentially of:
- a. a single layer film substrate formed of a non-transparent resin to which pigment has been added, the substrate having a first side and a second side which is on the opposite side to the first side, the first side defining an information indicating surface having a surface roughness with an arithmetical mean value of arithmetical mean roughness between about 0.5 and 5 μm, the information indicating surface having information adhered thereto; and
- b. a pressure sensitive layer provided on said second side of said film substrate.

5,709,919
THERMAL INSULATION
Axel Kranzmann, Stuttgart, and Ludwig Weiler, Heidelberg, both of Germany, assignors to ABB Patent GmbH, Mannheim, Germany
Filed Dec. 19, 1994, Ser. No. 358,771
Claims priority, application Germany, Dec. 17, 1993, 43 43 120.8
Int. Cl.⁶ B44C *1/26*
U.S. Cl. 428—67 **10 Claims**



1. In combustion plants and gas turbines having inner regions through which hot gases flow, a thermal insulation for the inner regions, the thermal insulation comprising:
- a fiber composite having a surface,
- reinforcing elements disposed at said surface for protecting against destruction,
- said reinforcing elements being disposed in rows, and said reinforcing elements of each row being offset relative to said reinforcing elements of two directly adjacent rows, and
- said reinforcing elements being bars and having a given diameter, said given diameter being equal to the smallest spacing between any two adjacent bars of a row, and said given diameter corresponding to a spacing between two adjacent rows of said bars.

5,709,920
STRUCTURE OF SEAT COVERS WHICH IS CAPABLE OF WITHSTANDING LACERATIONS, AND METHOD FOR THE MANUFACTURE THEREOF
Jean-Louis Danton, Boulogne, France, assignor to Etablissements Duret, Brionne, France
Filed Jan. 5, 1996, Ser. No. 583,494
Claims priority, application France, Jan. 6, 1995, 95 00113
Int. Cl.⁶ B32B *1/04*
U.S. Cl. 428—68 **10 Claims**

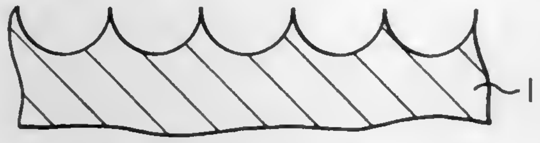


1. Structure for a seat cover adapted to withstand lacerations, including a sheet (**4**) of flexible material which is lined by a reinforcing backing, said backing comprising a plurality of strips (**1**, **7**, **21**, **24**, **27**, **32**) or wires (**10**), which are spaced from one another and being constituted of a material which is capable of providing resistance to the passage therethrough of a sharp object, each said strip or wire having a meandering configuration selectively formed by curved patterns and by patterns consisting of regularly repeated rectilinear segments (**2**, **3**; **21***a*; **21***b*; **8**,**9**), similar patterns of the various strips or wires being disposed in a manner such that they are juxtaposed to fit into one another in imbricating non-intermeshing positions, such that each said strip or wire is spaced from adjacent said strips or wires at a spacing such that a cutting object driven along a rectilinear path will along the path of movement thereof encounter a strip or a wire in every direction, said strips or wires being selectively independent of one another or joined transversely by stays which are integral with said strips or wires, and being firmly joined to the sheet (**4**) of flexible material by at least one coat (**5**, **6**) of an adhesive or a plastic composition into which said strips or wires are at least partially embedded.

5,709,921
CONTROLLED HYSTERESIS NONWOVEN LAMINATES
Susan Elaine Shawver, Roswell, Ga., assignor to Kimberly-Clark Worldwide, Inc., Irving, Tex.
Filed Nov. 13, 1995, Ser. No. 555,471
Int. Cl.⁶ B32B *5/04;5/06;5/26;25/08;25/10*
U.S. Cl. 428—152 **17 Claims**

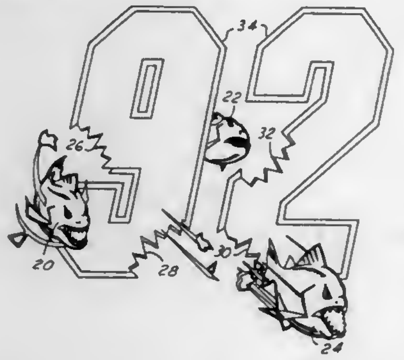
1. A controlled hysteresis composite elastic material comprising a first layer which is an elastomeric polyolefin layer and which is joined to at least one other layer comprised of an elastomeric polymer selected from the group consisting of polyurethanes, copolyether esters, polyamide polyether block copolymers, ethylene vinyl acetates (EVA), and block copolymers having the general formula A-B-A', A-B-A-B or A-B, and which is also joined to a third layer which is a gatherable web.

5,709,922
TRANSPARENT ARTICLE AND PROCESS FOR PRODUCING THE SAME
Masahiko Ono, Ibaraki-ken; Yoshishige Endo, Tsuchiura; Kazunori Kagei, Fukui-ken, and Kenji Sumida, Tochigi-ken, all of Japan, assignors to Hitachi, Ltd., and Washi Kosan Company,Ltd., both of Tokyo, Japan
Filed Dec. 22, 1994, Ser. No. 361,504
Claims priority, application Japan, Dec. 27, 1993, 5-330767
Int. Cl.⁶ B32B *3/30*
U.S. Cl. 428—156 **12 Claims**



1. A transparent article comprising a resin, characterized in that said transparent article has on its surface indentations formed by direct transfer of a configuration of ultrafine particles having a particle size of 40–600 nm, wherein said indentations are semispherical and have a diameter of 40–600 nm and a depth of 20–300 nm.

5,709,923
PAIRED NUMERALS INCORPORATING COMPLEMENTARY DESIGNS
Fred Ciaramitaro, Eastpointe, Mich., assignor to Stahls', Inc., St. Clair Shores, Mich.
Filed Feb. 2, 1996, Ser. No. 594,634
Int. Cl.⁶ B32B *3/00*
U.S. Cl. 428—195 **12 Claims**



1. Numeral pair transfers, with each pair having a left transfer number and a right transfer number and a design theme associated therewith for decorating clothing, fabrics and the like comprising, in combination:
- a left transfer having a number selected from a numeral set from **0–9**, said left transfer having a portion of the design theme associated therewith;
- a right transfer having a number selected from a numeral set from **0–9**, said right transfer having the remaining portion of the design theme associated therewith; and
- said design theme portions and the numbers associated therewith being so configured and arranged that said left transfer with any number from the numeral set, when placed adjacent to the left of any said right transfer with any number from the right numeral set, in a position to exhibit a numeral pair, has its design theme portion complementing the design theme portion of said right transfer to complete the design theme.

5,709,924
Patent Not Issued For This Number

5,709,925
MULTI-LAYERED PANEL HAVING A CORE INCLUDING NATURAL FIBERS AND METHOD OF PRODUCING THE SAME
Ernst Spengler, and Gerbard Spengler, both of Frankfurt, Germany, assignors to R+S Stanztechnik GmbH, Offenbach, Germany
Continuation of Ser. No. 287,197, Aug. 8, 1994, abandoned.
This application May 10, 1996, Ser. No. 644,738
Claims priority, application Germany, Feb. 9, 1994, 44 03 977.8
Int. Cl.⁶ B32B *27/14*
U.S. Cl. 428—198 **25 Claims**

1. A form-stable structural panel including a laminated composite substrate that comprises:
- a first cover layer comprising first synthetic fibers and a first fibrous thermoplastic matrix material that has a melting temperature lower than said first synthetic fibers, and including essentially no natural fibers;
- a core layer comprising natural fibers and a fibrous thermoplastic core matrix material; and
- a second cover layer comprising second synthetic fibers and a second fibrous thermoplastic matrix material that has a melting temperature lower than said second synthetic fibers, and including essentially no natural fibers;
- wherein said first cover layer, said core layer and said second cover layer are laminated together with said core layer between said first and second cover layers.

5,709,926
RECLAIMABLE TRANSPARENCIES FOR PLAIN PAPER COPIERS
Stephen J. Gust, Greenville, S.C., assignor to Hoechst Diafoil Company, Greer, S.C.
Filed Jul. 18, 1996, Ser. No. 683,337
Int. Cl.⁶ G03G *13/20;* **B32B** *3/00*
U.S. Cl. 428—206 **46 Claims**

1. A transparent image-recording sheet which can be reclaimed without substantial yellowing or gel formation comprising a transparent base sheet coated on at least one image-recording surface with a transparent toner-receptive coating, said coating comprising
- a) from about 60% by weight to about 85% by weight of a polymeric antistatic binder composition which does not substantially form a gel or yellow upon heating to reclamation temperatures,
- b) from about 5% by weight to about 20% by weight of a glycidoxy silane,
- c) from about 3% by weight to about 12% by weight of a wax, and
- d) from about 3% by weight to about 15% by weight of a particulate material having a mean particle size of from 4 μm to 15 μm,

the weight percentages of components a) through d) adding up to 100%.

5,709,927
THICK FILM CIRCUIT BOARD
Yoshiyuki Miyase, Okazaki; Tohru Nomura, Kariya; Akihiko Naito, and Takamasa Okumura, both of Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Sumitomo Metal Ceramics Inc., Mine, both of Japan
Filed Mar. 29, 1996, Ser. No. 623,836
Claims priority, application Japan, Mar. 31, 1995, 7-076337
Int. Cl.⁶ B32B *9/00*
U.S. Cl. 428—209 **14 Claims**

1. A thick film circuit board comprising:
- an insulating substrate;
- conductor wiring layers of a conductive material containing an oxide, the conductor wiring layers being formed on the insulating substrate by printing and firing;

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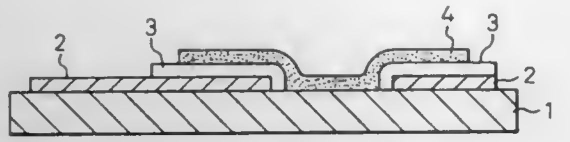


a resistance layer of a resistive material having a selected sheet resistance, being chemically reactive with the oxide, and formed between the conductor wiring layers and bridging the conductor wiring layers by printing and firing; and

a barrier layer interposed between each of the conductor wiring layers and the resistance layer to prevent chemical reaction between the oxide in the conductor wiring layers and the resistive material in the resistance layer.

5,709,928

MULTILAYERED WIRING SUBSTRATE OF ALUMINUM NITRIDE HAVING A HIGH DIELECTRIC LAYER AND METHOD OF MANUFACTURE THEREOF

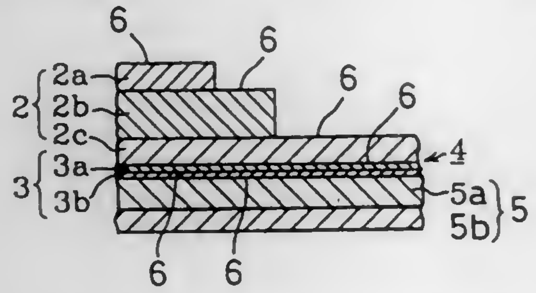
Tatsuya Ikeda, Kasugai, and Atsushi Kanda, Konan, both of Japan, assignors to NGK Spark Plug Co., Ltd, Nagoya, Japan

Filed Aug. 3, 1994, Ser. No. 285,294

Claims priority, application Japan, Aug. 3, 1993, 5-192373

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—212 **5 Claims**



1. A multilayered wiring substrate of aluminum nitride for a capacitor, said substrate comprising:

at least first and second substrate layers with a high dielectric layer sandwiched therebetween, said high dielectric layer comprising:
- a base component of aluminum nitride;
- a sintering aid for said aluminum nitride; and
- at least one constituent for increasing a dielectric constant and for providing a high capacitance of said high dielectric layer, said at least one constituent comprising at least one element selected from the group consisting of a group IVa element, a group Va element, a group VIa element, a nitride of such elements, and a carbide of such elements.

5,709,929

PLASTIC SHEET, A PROCESS FOR THE MANUFACTURE THEREOF AND FORMED ARTICLES CONTAINING THE SHEET

Gertjan Venema, Pittem, Belgium, assignor to Axxis N.V., Tielt, Belgium

Continuation of Ser. No. 141,660, Oct. 26, 1993, abandoned. This application Jul. 27, 1995, Ser. No. 508,336

Claims priority, application Belgium, Oct. 26, 1992, 9200923

Int. Cl.^{6} B32B *27/06;27/18;27/36;31/00*

U.S. Cl. 428—215 **21 Claims**

1. A multi-layered plastic sheet comprising

a first layer having a first and second surface, wherein said first layer comprises a copolymer prepared by the reaction of dimethyl terephthalate or terephthalic acid with a mixture comprising about 99–55 mole % ethylene glycol and about 1–45 mole % 1,4-cyclohexane dimethanol, and

a second layer which covers at least the first surface of said first layer, wherein said second layer comprises said copolymer of said first layer and a UV light-absorbing additive, and said second layer has a thickness between about 2 μm and about 100 μm.

5,709,930

COATED SUBSTRATE

Jean-Michel DePauw, Brussels, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Aug. 22, 1995, Ser. No. 517,768

Claims priority, application United Kingdom, Aug. 24, 1994, 94 17 112.1

Int. Cl.^{6} C07C *17/34*

U.S. Cl. 428—216 **14 Claims**

1. A coated substrate, comprising:

a substrate;

at least one primary coating layer formed on the substrate; and

a sputtered protective layer which is provided by cathode vacuum sputtering on an outermost coating layer of the at least one primary coating layer, which is exposed, which is composed of a material having a refractive index of less than 1.7 and comprising at least one substance selected from the group consisting essentially of oxides of silicon, oxynitrides of silicon, and mixtures of at least one of oxides of silicon, nitrides of silicon, and oxynitrides of silicon, and which has a thickness ranging from 1 to 10 nm, wherein the material of the sputtered protective layer additionally comprises not more than 10% by weight of a further substance which is one of an oxide of a silicon dopant or an oxynitride of a silicon dopant.

5,709,931

RELEASE LINERS FOR PRODUCTION OF MOLDED PRODUCTS

John S. Baumgardner, Aspers, and Merle W. Barclay, Mt. Holly Springs, both of Pa., assignors to Ahlstrom Filtration Inc., Mt. Holly Springs, Pa.

Filed Aug. 9, 1995, Ser. No. 512,780

Int. Cl.^{6} B32B *7/02;21/06;23/04*

U.S. Cl. 428—218 **21 Claims**

1. A heat and pressure mold release liner comprising:

a first dry-laid or wet-laid fiber layer of cellulose or cellulose-derivative fibers, said first layer having a thickness of between 8–250 mils and a basis weight of 25–350 pounds per ream of 500 20 inch by 20 inch sheets;

a second wet-laid fiber layer of cellulose or cellulose-derivative fibers of higher density than said first layer, said second layer having a thickness of between 0.5–10 mils and a basis weight of 4–50 pounds per ream of 500 20 inch by 20 inch sheets; and

said first and second layers in face-to-face engagement with each other.

5,709,932

ULTRA THIN HEAT-SHRINKABLE MONOLAYER POLYETHYLENE FILMS

Jean-François Glez; Jean-Marc Metaix, and Philippe Deleplanque, all of Quimper, France, assignors to Bollore Technologies, Quimper, France

Filed Nov. 21, 1995, Ser. No. 561,004

Claims priority, application France, Nov. 21, 1994, 94 13894

Int. Cl.^{6} B65B *53/02;* **C08L** *23/08*

U.S. Cl. 428—220 **7 Claims**

1. Biaxially oriented heat-shrinkable ultra-thin monolayer film of homogeneous thickness, made of linear low-density polyethylene, made by a flat process in which:

at least one ethylene/alpha-olefin copolymer which comprises an alpha-olefin having 4 to 18 carbons and has a density between 0.89 and 0.94 g/cm^3 optionally mixed with one or more olefinic polymers is heated above the melt temperature and extruded,

the extruded film is poured and cooled at a hardening temperature,

the film is drawn a first time in the machine direction between 3 and 7 times the initial dimension of the non-stretched film,

the film is drawn a second time in the transverse direction between 3 and 15 times the initial dimension of the non-stretched film,

the biaxially oriented film is drawn a third time in the machine direction between 1.01 and 3 times the dimension after the first draw, and

the biaxially oriented film obtained is cooled at room temperature,

characterized in that the film has, in at least one direction, a shrink percentage at 120° C. above 20%, and in that the film has a thickness between 5 and 11 μm.

5,709,933

COMPOSITE FIBER REINFORCED POLYOLEFIN

Daniel W. Evans, 8265 St. Marlo Fairway Dr., Duluth, Ga. 30155

Division of Ser. No. 400,669, Mar. 8, 1995, Pat. No. 5,585,054. This application Nov. 25, 1996, Ser. No. 756,233

Int. Cl.^{6} B32B *27/06;27/18;27/32*

U.S. Cl. 428—297.4 **21 Claims**

1. A composite cellulose fiber reinforced polyolefin derived from a polyolefin treated in a molten state with ozone.

6. A composite fiber reinforced polyolefin produced by a process having the steps of:
- (a) blending a polyolefin in a mixer;
- (b) forming a molten, combined material from step (a);
- (c) feeding the molten, combined material to a low shear kneading extruder;
- (d) mixing the molten combined material in the extruder;
- (e) conveying the molten, combined material through an open port of the extruder;
- (f) conveying fibers through an enclosed screw cram feed;
- (g) pumping ozone into a ozone chamber through a first input of the ozone chamber;
- (h) conveying the molten, combined material into the ozone chamber through a second input of the ozone chamber;
- (i) conveying the fibers through a third input into the ozone chamber;
- (j) mixing the ozone, the molten, combined material and the fibers to form a polyolefin and fiber matrix in the ozone chamber;
- (k) conveying the polyolefin and fiber matrix from the ozone chamber to a feed throat of a twin screw extruder;
- (l) mixing the polyolefin and fiber matrix in the twin screw extruder; and,
- (m) extruding the polyolefin and fiber matrix through the twin screw extruder into a die having a desired shape.

5,709,934

BIPOLYMER FOAMS HAVING EXTRACELLULAR MATRIX PARTICULATES

Eugene Bell, Boston, and Timothy W. Fofonoff, Dedham, both of Mass., assignors to Tissue Engineering, Inc., Boston, Mass.

Filed Nov. 22, 1994, Ser. No. 343,172

Int. Cl.^{6} A61L *27/00;* **B32B** *3/00*

U.S. Cl. 428—305.5 **23 Claims**

1. A sponge, comprising:

a biopolymer foam comprising a biopolymer matrix having interstices surrounded by biocompatible biopolymer; and extracellular matrix particulates.

5,709,935

ORGANIC COMPOUNDS SUITABLE AS REACTIVE DILUENTS, AND BINDER PRECURSOR COMPOSITIONS INCLUDING SAME

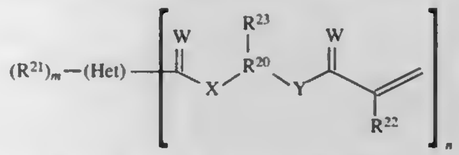
Ernest L. Thurber, St. Paul; Eric G. Larson, Lake Elmo; Alan R. Kirk, Cottage Grove, and Gregg D. Dahlke, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 334,817, Nov. 4, 1994, Pat. No. 5,523,152, which is a continuation-in-part of Ser. No. 143,824, Oct. 27, 1993, abandoned. This application Feb. 23, 1996, Ser. No. 605,987

Int. Cl.^{6} B32B *5/16;* **C07D** *263/32;277/24;277/26*

U.S. Cl. 428—323 **10 Claims**

1. Organic compounds having at least one ethylenically-unsaturated group and being suitable for use as reactive diluents, said compounds being heterocyclic compounds of formula (V):



(V)

R^{20} is selected from the group consisting of —C$_x$H$_{2x}$— and —(C$_y$H$_{2y}$)— O—(C$_{y'}$H$_{2y'}$), wherein x is an integer ranging from 1 to 12 inclusive and y and y' are independently an integer ranging from 1 to 6 inclusive;

R^{21} is selected from the group consisting of amino, halo, alkoxy, and carboxyl;

R^{22} is H;

R^{23} is selected from the group consisting of —H, —(R^{20})$_t$—O—C(=O)—C(R^{22})=CH$_2$, and —(R^{20})$_t$—N(R^{24})—C(=O)—C(R^{22})=CH$_2$;

R^{24} is selected from the group consisting of H, —C$_x$H$_{2x+1}$— wherein x is an integer ranging from 1 to 12 inclusive, —C(=O)—C(R^{22})=CH$_2$; and —R^{20}—O—C(=O)—C(R^{22})=CH$_2$;

W is selected from the group consisting of O, S, NR^{22}; X and Y are independently selected from the group consisting of O, S, NR^{24};

m is an integer ranging from 0 to 2;

n is 1 of 2;

t is 0 of 1; and

Het is a cyclic organic radical having at least one ring heteroatom, Het being selected from the group consisting of thiazole, oxazole, thiophene, and furan, with the proviso that when all W, X, and Y groups are O and n=1, Het cannot be furan.

5,709,936

COMPOSITE COATING FOR LOW FRICTION AND WEAR APPLICATIONS AND METHOD THEREOF

Theodore M. Besmann; Peter J. Blau, both of Oak Ridge; Woo Y. Lee, Knoxville, and Yong W. Bae, Oak Ridge, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 409,580, Mar. 23, 1995, abandoned. This application May 15, 1996, Ser. No. 648,456

Int. Cl.^{6} C10M *125/22*

U.S. Cl. 428—323 **5 Claims**

1. A multiphase composite lubricant coating having a composition consisting essentially of a continuous hard refractory matrix phase dispersed therein with particles of a solid lubricating phase of molybdenum disulfide, said hard refractory matrix phase is

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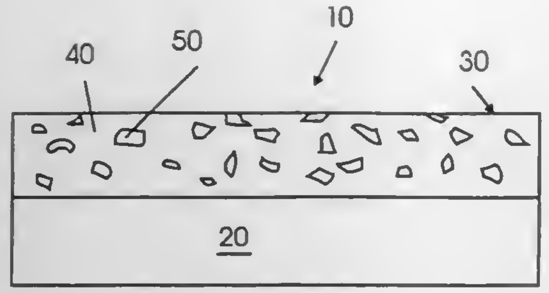


selected from the group consisting of titanium nitride, silicon carbide, titanium carbide, and mixtures thereof.

5,709,937

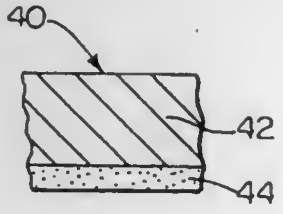
CLEAR CONFORMABLE ORIENTED FILMS AND LABELS

Richard C. Adams, Chardon; Donald F. Kimes, Perry, both of Ohio, and Karl Josephy, Los Angeles, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jan. 13, 1995, Ser. No. 372,299

Int. Cl.^{6} B32B *27/05;* **C08L** *23/00;23/40;3/00*

U.S. Cl. 428—332 **49 Claims**



1. A machine-direction only oriented propylene homopolymer or copolymer film wherein the tensile modulus of the film in the cross-direction is less than about 0.75 times the tensile modulus of the film in the machine-direction, and the copolymer is selected from the group consisting of propylene-ethylene copolymers containing up to about 10% by weight of ethylene and propylene-1-butene copolymers containing up to about 15% by weight of 1-butene wherein the oriented film has an opacity of about 10% or less and the oriented film has a haze of about 10% or less in the machine-direction and in the cross-direction.

5,709,938

CATHODE TARGETS OF SILICON AND TRANSITION METAL

James J. Finley, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 41,015, Mar. 31, 1993, Pat. No. 5,417,827, which is a continuation-in-part of Ser. No. 981,706, Nov. 25, 1992, which is a continuation-in-part of Ser. No. 799,806, Nov. 29, 1991. This application Mar. 6, 1995, Ser. No. 398,932

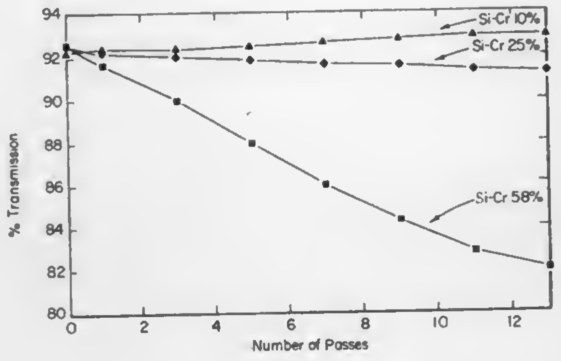
Int. Cl.^{6} C03C *17/34*

U.S. Cl. 428—336 **24 Claims**

1. A coated article comprising:

a nonmetallic substrate;

a sputter coating over a surface of the substrate, the sputter coating including an alloy present in the coating as a compound selected from the group consisting of a sputtered oxide compound, a sputtered nitride compound, a sputtered oxynitride compound and a sputtered metallic film and the alloy



selected from the group consisting of a silicon-chromium alloy, a silicon-chromium-nickel alloy and a silicon-iron alloy.

5,709,939

Patent Not Issued For This Number

5,709,940

WATER-DISPERSIBLE BLOCK COPOLYERSTERS

Scott E. George, and Bobby J. Sublett, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 328,744, Oct. 24, 1994, abandoned. This application May 21, 1996, Ser. No. 651,246

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—364 **29 Claims**

1. A linear, water-dispersible, sulfopolyester having a Tg of −20° C. to 100° C. and an inherent viscosity of 0.1 to 1.1 dl/g comprising:

(A) 85 to 100 mole percent, based on total moles of acid, of a dicarboxylic acid which does not contain a metal sulfonate group, said dicarboxylic acid being selected from the group consisting of aromatic dicarboxylic acids having 8 to 14 carbon atoms, saturated aliphatic dicarboxylic acids having 4 to 12 carbon atoms, and cycloaliphatic dicarboxylic acids having 8 to 12 carbon atoms;

(B) 2.5 to 20 mole percent, based on total moles of acid and glycol, of a difunctional sulfomonomer selected from the group consisting of a dicarboxylic acid or ester thereof containing a metal sulfonate group bonded directly to an aromatic ring, a diol containing a metal sulfonate group bonded directly to an aromatic ring, and a hydroxy acid containing a metal sulfonate group bonded directly to an aromatic ring;

(C) 0.1 to 10 mole percent, based on total moles of glycol, of a high molecular weight polyethylene glycol having the structure:

$$H{-}(OCH_2CH_2)_n{-}OH$$

wherein n is 20 to 500, and the mole percent of the high molecular weight polyethylene glycol within said range is inversely proportional to the quantity of n within said range;

(D) 25 to 99.9 mole percent, based on total moles of glycol, of a low molecular weight polyethylene glycol having the structure:

$$H{-}(OCH_2CH_2)_{n'}{-}OH$$

wherein n' is 2 to 6;

the sulfopolyester containing substantially equal molar proportions of acid equivalents (100 mole percent) and glycol equivalents (100 mole percent).

5,709,941

PROCESS FOR PREPARING A MOLDING COMPOSITION HAVING IMPROVED FLOWBILITY

James P. Mason, McKees Rocks, Pa., assignor to Bayer Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 966,237, Oct. 26, 1992, abandoned. This application Nov. 4, 1996, Ser. No. 743,510

Int. Cl.^{6} B29B *9/06*

U.S. Cl. 428—364 **14 Claims**

1. A process for imparting improved flowability to dried pellets of a thermoplastic molding composition comprising in sequence

(i) extruding said composition to form a strand,

(ii) heating said strand by exposure to infra-red radiation, and

(iii) cutting the strand to form pellets,

said composition comprising a crystallizable resin, said heating being at least to that extent sufficient to impart to said composition in dried, pellet-form, improved flowability.

12. The molding composition prepared by the process of claim 1.

5,709,942

PRODUCT AND PROCESS IMPROVEMENT OF COATED POLYMERIC MONOFILAMENT

Daniel Shawn Leydon, Cedar Knolls, N.J., and Robert Moore Marshall, Chesterfield, Va., assignors to AlliedSignal Inc., Morristownship, N.J.

Continuation of Ser. No. 702,866, May 20, 1991, abandoned. This application Aug. 14, 1996, Ser. No. 698,216

Int. Cl.^{6} D02G *3/00;* **B26B** *13/00;9/00*

U.S. Cl. 428—375 **15 Claims**

1. A coated, flexible monofilament structure comprising:

a) a reprocessed monofilament formed from a polymeric monofilament coated with an amide melamine wax; and

b) a coating on said reprocessed monofilament, said coating comprising an amide melamine wax.

5,709,943

BIOLOGICAL ADSORPTION SUPPORTS

Patrick L. Coleman, Minneapolis; Mark K. Debe, Stillwater, and Julie B. Stahl, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1995, Ser. No. 434,930

Int. Cl.^{6} D02B *3/00*

U.S. Cl. 428—378 **13 Claims**

1. A method of using a biological adsorption support comprising the steps of passing a fluid stream containing a biologically active material over the biological adsorption support and separating the biologically active material from the fluid stream, wherein the biological adsorption support comprises an inert substrate supporting a nanostructured surface comprising metal-coated, discrete nanostructured elements having an areal number density in the range of 1–200 μm^2.

5,709,944

POLYTETRAFLUOROETHYLENE MOLDING POWDER

Masuo Kokumai; Yukinaru Nakamura; Mitsuru Kishine; Tetsuo Kitahaba; Hirokazu Yukawa; Kazuhide Sawada, all of Settsu, Japan; Sang Bong Han, Seoul, Rep. of Korea; Tetsuo Shimizu, and Takahisa Aoyama, both of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

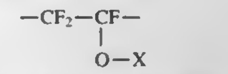
Division of Ser. No. 129,061, Nov. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,652

Claims priority, application Japan, Feb. 5, 1992, 4-19998; May 7, 1992, 4-114443; May 20, 1992, 4-127348; Jun. 25, 1992, 4-167519

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—402 **6 Claims**

1. A pelletized powder for molding made of a polytetrafluoroethylene molding powder that is not melt-processable and that has a specific surface area of 0.5 to 9.0 m^2/g and an average particle size of not more than 100 μm, the polytetrafluoroethylene comprising 0.01 to 1% by weight of a perfluoro(vinyl ether) unit having the general formula (I):



$$-CF_2-\underset{\displaystyle O-X}{\underset{|}{CF}}- \qquad (I)$$

wherein X is a perfluoroalkyl group having 1 to 6 carbon atoms or a perfluoroalkoxyalkyl group having 4 to 9 carbon atoms, and having a heat of crystallization of 18.0 to 25.0 J/g measured by a differential scanning calorimeter,

wherein a molded article made of the powder has

(a) a flex life of not less than 7 million cycles,

(b) a creep resistance (total deformation) of not more than 20% at 200° C. and

(c) a creep resistance (total deformation) of not more than 15% at 25° C., and

wherein the pelletized powder has

(a) an average particle size of 150 to 1000 μm,

(b) an apparent density of 0.5 to 1.0 g/cm^3, and (c) a particle size distribution in which not less than 30% by weight of the powder has a particle size 0.7 to 1.3 times larger than the average particle size, and a molded article made of from the

(d) a flex life of not of less than 5 million cycles, and

(e) a SVI of not more than 50.

5,709,945

SPHERICAL HEAT STORAGE CAPSULE AND PROCESS FOR THE PREPARATION THEREOF

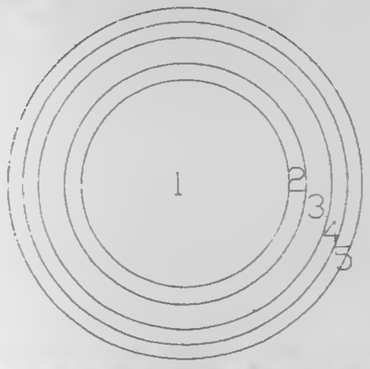
Hyeon Kook Lee; Jung Hwan Park; Oh Ryong Kwon; Joon Kim, and Huk Nyun Kim, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Oct. 7, 1994, Ser. No. 320,704

Claims priority, application Rep. of Korea, Oct. 12, 1993, 1993-21114

Int. Cl.^{6} B32B *1/00;* **C09K** *5/06*

U.S. Cl. 428—403 **8 Claims**



1. A spherical heat storage capsule having a diameter ranging from 0.3 to 11 mm, which comprises a spherical core of a latent heat storage material having a diameter ranging from 0.1 to 10 mm, at least one layer of a hydrophobic wax, and one to three

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layers of polymeric materials, wherein the melting point of the wax is higher than that of the latent heat storage material and higher than any temperature at which the storage capsule operates, wherein at least one layer of polymeric material is exterior to the at least one layer of hydrophobic wax and the heat storage material is selected from the group consisting of sodium sulfate decahydrate, sodium thiosulfate pentahydrate, calcium chloride hexahydrate, magnesium nitrate hexahydrate-ammonium nitrate eutectic mixture, potassium fluoride tetrahydrate, disodium hydrogen phosphate dodecahydrate, sodium acetate trihydrate, sodium acetate trihydrate-urea eutectic mixture, and a mixture thereof.

5,709,946
CHLORINE-FREE, ZERO VOC, WATERBORNE ADHESION PROMOTER FOR POLYOLEFINIC SUBSTRATES

Michael L. Jackson, LaGrange, Ill.; Frank A. Stubbs, Schererville; Joseph M. Mecozzi, Hammond, both of Ind.; David J. Miklos, Berwyn, and Alexander L. Neymark, Chicago, both of Ill., assignors to Bee Chemical Company, Lansing, Ill.

Filed Feb. 1, 1995, Ser. No. 381,810

Int. Cl.^{6} B32B *27/38;27/08*

U.S. Cl. 428—413 **18 Claims**

1. An article having a polyolefin resin surface which is coated with an aqueous composition comprising:
- (a) a halogen-free copolymer of a higher α-olefin and at least one monomer selected from the group consisting of ethylene and propylene, said copolymer having an α,β-unsaturated dicarboxylic acid or anhydride grafted thereon;
- (b) a neutralizing base; and
- (c) a water-dispersible resin containing at least two epoxy groups.

5,709,947
EPOXY RESINS BASED ON DIAMINOBISIMIDE COMPOUNDS

Jonathan Howard Hodgkin, Burwood; Mervyn Benjamin Jackson, Glen Waverley, and John West Loder, South Yarra, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

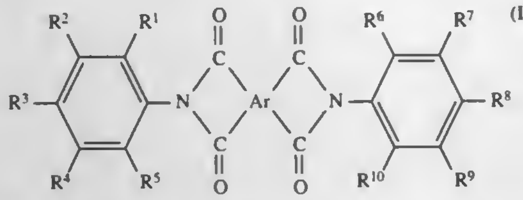
Division of Ser. No. 30,302, Jan. 3, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,388

Claims priority, application Australia, Oct. 3, 1990, PK 2607/90

Int. Cl.^{6} C08G *59/44;59/54*

U.S. Cl. 428—413 **17 Claims**

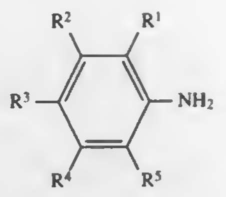
1. A curing agent for use in an epoxy resin formulation, wherein the curing agent is substantially free of oligomers and amide impurities, and comprises a diaminobisimide compound of formula (Ia):



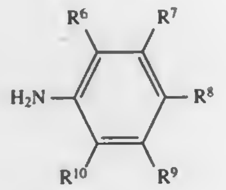
(Ia)

wherein:
- R^1 to R^{10} are the same or different and each is selected from the group consisting of hydrogen, alkyl, alkylthio, alkoxy, dialkylamino, alkylamino and amino; and
- Ar is an optionally substituted aromatic residue, with the proviso that at least one of R^1 to R^5 and R^6 to R^{10} is an alkyl group, and at least one of R^2 to R^4 and R^7 to R^9 is an amino group,

wherein the diaminobisimide compound of formula (la) is produced by heating
- (a) at least about two molar proportions of one or more aromatic diamines selected from the group consisting of



and



with (b) about 1 molar proportion of an aromatic tetracarboxylic acid of the formula III, or its corresponding dianhydride,

$$(HOOC)_2Ar(COOH)_2 \qquad \text{(III)}$$

wherein Ar is as defined above.

5,709,948
SEMI-INTERPENETRATING POLYMER NETWORKS OF EPOXY AND POLYOLEFIN RESINS, METHODS THEREFOR, AND USES THEREOF

Mario A. Perez, Burnsville; David A. Ylitalo, Stillwater; Thomas M. Clausen, Minneapolis; Robert J. DeVoe, Oakdale; Kevin E. Kinzer, Woodbury, and Michael D. Swan, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 522,375, Sep. 20, 1995, abandoned. This application Dec. 21, 1995, Ser. No. 576,706

Int. Cl.^{6} B32B *27/38;* **C08F** *8/00;283/10;* **G08L** *63/10*

U.S. Cl. 428—413 **28 Claims**

1. A curable composition comprising a molten mixture including;
- a) 0.1 to 50 percent by weight of a curable epoxy resin, the weight percent being based on the total resin composition;
- b) an effective amount of a curative for the curable epoxy resin, said curative being stable at temperature of mixing of the components;
- c) 50 to 99.9 weight percent of at least one of a fully prepolymerized uncrosslinked hydrocarbon polyolefin resin and a fully prepolymerized uncrosslinked polyolefin resin functionalized with at least one polar group, the weight percent being based on the total resin composition, wherein said hydrocarbon polyolefin is present in the range of 25 to 99.9 weight percent of the total resin composition and said functionalized polyolefin is present in the range of 0 to 49.9 weight percent of the total resin composition, and at least one polyolefin resin providing a continuous phase,

said composition being free of both epoxidized natural and/or epoxidized synthetic rubber.

5,709,949
COATED FUSER MEMBERS AND METHODS OF MAKING COATED FUSER MEMBERS

Jiann-Hsing Chen, Fairport; Lawrence Paul Demejo, Rochester; Gary Frederick Roberts, Macedon; Richard John Kosakowski; Muhammed Aslam, both of Rochester, and John Euguene Derimiggio, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 164,280, Dec. 9, 1993, Pat. No. 5,547,759. This application Jan. 18, 1996, Ser. No. 588,483

Int. Cl.^{6} B32B *1/08;1/10;15/06;27/08*

U.S. Cl. 428—421 **23 Claims**

1. A method of making fuser member having a support comprising a metal element, comprising the steps of:

- a) applying to said support a fluoroelastomer layer comprising fluoroelastomer polymer, said fluoroelastomer polymer is selected from the group consisting of copolymers of vinylidene fluoride, and hexafluoropropylene; and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene;
- b) coating said fluoroelastomer layer with a primer layer comprising a mixture of a fluoropolymer resin and polyamide-imide, said primer layer adjacent to said fluoroelastomer layer;
- c) applying to said primer layer a fluoropolymer resin layer comprising fluoropolymer resin selected from the group consisting of polytetrafluoroethylene, polyperfluoroalkoxy-tetrafluoroethylene, polyfluorinated ethylene-propylene, and blends thereof, said fluoropolymer resin layer adjacent to said primer layer; and
- d) sintering said fluoropolymer resin layer.

5,709,950
COLOR-PLUS-CLEAR COMPOSITE COATINGS THAT CONTAIN POLYMERS HAVING CARBAMATE FUNCTIONALITY

John W. Burgman, Murrysville; Gina M. Terrago, Wexford, and Christopher A. Verardi, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 586,053, Jan. 16, 1996, which is a continuation-in-part of Ser. No. 236,912, Apr. 29, 1994, abandoned. This application Dec. 19, 1996, Ser. No. 770,196

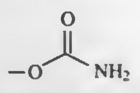
Int. Cl.^{6} C08L *61/32;71/08*

U.S. Cl. 428—423.1 **24 Claims**

1. A multi-component composite coating composition, comprising: (I) a pigmented film-forming composition as a base coat, and (II) a clear film-forming composition as a transparent coat over the base coat

wherein the base coat has: (Ia) pigment; (Ib) a resinous binder selected from the group consisting of acrylic polymers, polyesters including alkyds, and polyurethanes; and (Ic) an aminoplast crosslinking agent containing methylol and/or methylol ether groups; and

wherein the transparent coat is a flexible, curable film-forming composition comprising (IIa) a polyether polymer containing a plurality of carbamate groups of the structure:



Structure I

selected from terminal and pendant and mixtures of these groups present in the film-forming composition in amounts of about 5 to about 40 percent by weight based on the total weight of resin solids in the film-forming composition;

(IIb) a polymer selected from the group consisting of a polyester polymer, a polyurethane polymer, an acrylic polymer, and mixtures thereof wherein each polymer contains a plurality of carbamate groups of the Structure I, and (IIc) an aminoplast crosslinking agent containing methylol groups, methylol ether groups, or mixtures thereof.

5,709,951
COMPOSITE DEPOSITED FILM AND PRODUCTION PROCESS THEREOF

Tomoaki Sato; Hiroyuki Oba; Hideaki Tanaka, and Tomohisa Hasegawa, all of Ibaraki-ken, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Jul. 13, 1995, Ser. No. 502,033

Claims priority, application Japan, Jul. 27, 1994, 6-194942

Int. Cl.^{6} B32B *17/08;23/00*

U.S. Cl. 428—430 **10 Claims**

1. A composite deposited film comprising:

(A) a polymeric film substrate;

(B) a deposit of an inorganic material formed on at least one side of the polymeric film substrate (A); and

(C) a water-resistant film laminated on the deposit (B) and formed from a mixture containing a polycarboxylic acid or a partially neutralized product of the polycarboxylic acid which is obtained by partially neutralizing the carboxyl groups of the polycarboxylic acid with an alkali and a saccharide in a weight ratio of 95:5 to 20:80.

5,709,952
PROCESS FOR JOINING COMPONENTS MADE OF METAL

Jürgen Timm, Steisslingen, and Peter Furrer, Pfungen, both of Switzerland, assignors to Alusuisse Technology & Management Ltd., Switzerland

Continuation of Ser. No. 418,205, Apr. 7, 1995, abandoned, which is a division of Ser. No. 209,709, Mar. 14, 1994, Pat. No. 5,478,424. This application Nov. 25, 1996, Ser. No. 758,169

Claims priority, application Switzerland, Apr. 6, 1993, 01053/93

Int. Cl.^{6} B32B *7/12*

U.S. Cl. 428—457 **14 Claims**

1. Joined components, which comprises: metal components with each component having a close-fitting inner metal surface and an outer metal surface, wherein at least one component is a sheet and wherein said inner surfaces are joined by means of a thermally curable adhesive which is in the cured condition and which is deposited between said close-fitting inner surfaces; wherein said adhesive is in the cured condition by means of infra-red radiation applied to a first outer metal surface; and wherein said first outer surface includes a roughening pattern thereon that roughens the said first outer surface, and reduces the reflectivity of the said first outer surface, and improves the infra-red radiation absorption characteristics of the said first outer surface.

5,709,953
EXTRUDABLE RESIN FOR POLYSTYRENE AND LAMINATE

Sumio Goto, Arlington Heights; Mark S. Pucci, Elk Grove; John Machonis, Jr., Schaumburg, and Mitsu Shida, Barrington, all of Ill., assignors to Morton International, Inc., Chicago, Ill.

Filed Feb. 21, 1996, Ser. No. 604,513

Int. Cl.^{6} B32B *27/08*

U.S. Cl. 428—474.4 **9 Claims**

1. An extrudable adhesive composition useful for bonding a layer of a polystyrene resin to a layer of a second resin, said extrudable adhesive composition comprising
- A) an ethylene polymer fraction at between about 35 and about 65 wt percent relative to the total of A) plus B), the ethylene polymer fraction comprising an ethylene polymer, copolymer or mixture of ethylene polymers and copolymers, each ethylene polymer or copolymer being formed from at least about 60 weight percent ethylene monomers, balance other copolymerizable monomers consisting of α-olefin monomers, and the ethylene polymer fraction A) being formed, in total, of at least about 65 weight percent ethylene monomers, balance, other copolymerizable α-olefin monomers, and
- B) between about 35 and about 65 wt %, relative to total of A) plus B), of a styrene/aliphatic/styrene triblock elastomer, between about 20 and about 60 wt % of said triblock elastomer comprising styrene monomers

the $MI_{2(SB)}{}^2/MI_{2(PE)}$ being about 1.0 or above.

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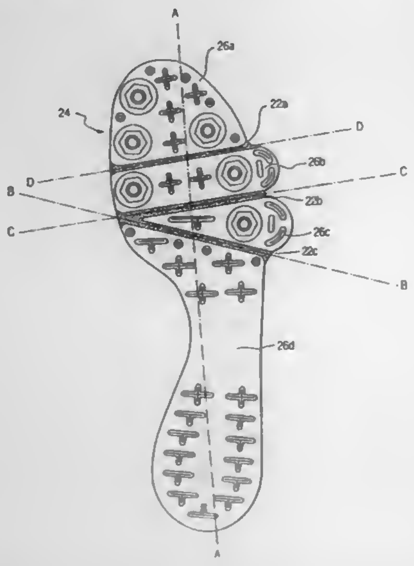
CHEMICAL BONDING OF RUBBER TO PLASTIC IN ARTICLES OF FOOTWEAR

Robert M. Lyden, Beaverton; Ross A. McLaughlin, Lake Oswego; Henry T. Chriss; Calvin M. Buck, IV, both of Beaverton; Daniel R. Potter, Tigard, and Steven M. Vincent, Beaverton, all of Oreg., assignors to Nike, Inc., and Nike International Ltd., both of Beaverton, Oreg.

Division of Ser. No. 986,046, Dec. 10, 1992, abandoned. This application May 15, 1995, Ser. No. 441,698

Int. Cl.^{6} A43B *5/00*

U.S. Cl. 428—500 **20 Claims**



1. An article of footwear comprising an outsole having heel, medial, forefoot and lateral areas, said outsole being a bonded composite of relatively inelastic and relatively elastic materials wherein the relatively inelastic material comprises an outsole plate and the relatively elastic material comprises a plurality of substantially separate, independent segments underlying and chemically bonded to only a portion of said outsole plate, and at least one of said substantially separate, independent segments being positioned along at least a portion of an outer perimeter of the outsole.

5,709,955

ADHESIVE COMPOSITION CURABLE UPON EXPOSURE TO RADIATION AND APPLICATIONS THEREFOR

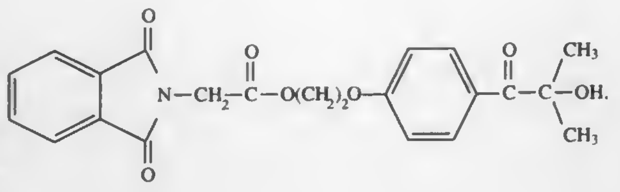
Ronald Sinclair Nohr, Roswell, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 444,780, May 19, 1995, abandoned, which is a division of Ser. No. 327,077, Oct. 21, 1994, abandoned, and a continuation-in-part of Ser. No. 268,685, Jun. 30, 1994, abandoned. This application Oct. 16, 1996, Ser. No. 733,086

Int. Cl.^{6} C08F *2/50;* **C09J** *4/00*

U.S. Cl. 428—507 **12 Claims**

1. An adhesive composition comprising a photoreactor admixed with an unsaturated polymerizable material, wherein the photoreactor comprises a wavelength-specific sensitizer covalently bonded to a reactive species-generating photoinitiator and the photoreactor is ¬-(2-methyllactoyl)phenoxy]ethyl-1,3-dioxo-2-isoindolineacetate, having the following structure:



5,709,956

CO-EXTRUDED MULTILAYER LAMINATE

Ryoichi Yamabe; Tomoyuki Nara, and Toshiyuki Narita, all of Shibukawa, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,611

Claims priority, application Japan, Jul. 25, 1994, 6-172287; Aug. 2, 1994, 6-181524; Aug. 2, 1994, 6-181525

Int. Cl.^{6} B32B *27/28*

U.S. Cl. 428—515 **15 Claims**

1. An extruded product, comprising a rigid portion (1) and a flexible portion (2) which are co-extruded, wherein the rigid portion (1) is a resin composition, comprising:

i) from 90 to 10 wt % of the following component (a),
ii) from 0 to 80 wt % of the following component (b), and
iii) from 10 to 80 wt % of the following component (c);
Component (a) being a chlorinated vinyl chloride resin having a chlorine content of from 60 to 70 wt %,
Component (b) being a vinyl chloride resin, and
Component (c) being a resin or resin composition, comprising from 30 to 100 wt % of the following resin (A) and from 0 to 70 wt % of the following resin (B):
resin (A) being an α-methyl styrene copolymer, comprising from 65 to 85 wt % of α-methyl styrene, from 15 to 35 wt % of a vinyl cyanide compound, and from 0 to 20 wt % of another vinyl compound polymerizable therewith,
resin (B) being a graft copolymer obtained by copolymerizing from 20 to 70 parts by weight of a mixture, comprising from 50 to 80 wt % of an aromatic vinyl compound, from 15 to 35 wt % of a vinyl cyanide compound, and from 0 to 30 wt % of another vinyl compound copolymerizable therewith, in the presence of from 30 to 80 parts by weight of a rubber having a glass transition temperature of not higher than 0° C.;
said resin or resin composition of said rigid portion (1) having a deflection temperature under load of from 80° to 120° C. as measured by JISK7207A-method; and
the flexible portion (2) being made of a resin composition comprising from 5 to 75 wt % of a vinyl chloride resin, from 5 to 70 wt % of a partially crosslinked acrylonitrile-butadiene copolymer, and from 10 to 65 wt % of a plasticizer, said weight percentages being based on the total weight of the flexible portion.

5,709,957

METALLIC BODY WITH VAPOR-DEPOSITED TREATMENT LAYER(S) AND ADHESION-PROMOTING LAYER

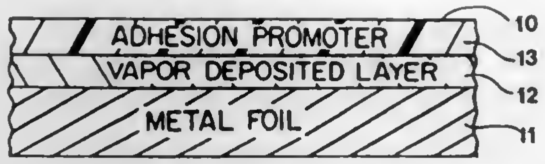
Shiuh-Kao Chiang, Solon; Mary K. Prokop, Cleveland Hts., and Tibor Kalnoki-Kis, Westlake, all of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio

Continuation of Ser. No. 232,820, Apr. 22, 1994, abandoned. This application Sep. 16, 1996, Ser. No. 713,100

Int. Cl.^{6} B32B *15/00*

U.S. Cl. 428—615 **55 Claims**

1. A metal body having at least one vapor-deposited treatment layer overlying and adhered to at least one side of the metal body, and a layer of adhesion-promoting material overlying and adhered to at least one of the at least one treatment layer, provided that when two treatment layers are deposited on one side of the body and the first treatment layer is vapor-deposited zinc, the second treatment layer is not vapor deposited silica or vapor-deposited alumina, said adhesion-promoting material being suitable for enhancing adhesion between said body and a substrate.



5,709,958

ELECTRONIC PARTS

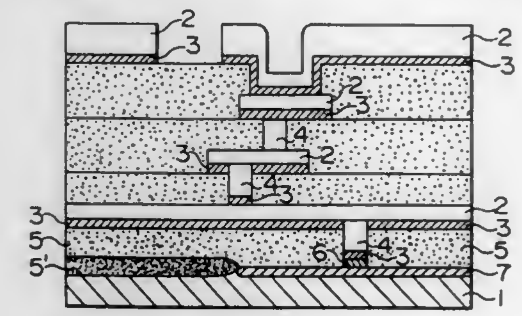
Hiroshi Toyoda, Kokohama; Hisashi Kaneko, Fujisawa; Masahiko Hasunuma; Takashi Kawanoue, both of Yokohama; Hiroshi Tomita, Hadano; Akihiro Kajita, Yokohama; Masami Miyauchi, Yokohama; Takashi Kawakubo, Yokohama, and Sachiyo Ito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 314,493, Sep. 28, 1994, which is a continuation-in-part of Ser. No. 112,210, Aug. 26, 1993, abandoned. This application May 26, 1995, Ser. No. 451,528

Claims priority, application Japan, Aug. 27, 1992, 4-228264; Apr. 15, 1993, 5-0800108

Int. Cl.^{6} H01L *29/43*

U.S. Cl. 428—620 **12 Claims**



1. An electronic part comprising:
a substrate; and
a metal wiring formed on the substrate;
wherein the metal wiring is formed of highly oriented crystals in which at least half of all grain boundaries are small angle grain boundaries, said small angle grain boundaries defined as one of: grain boundaries with a relative misorientation of 10° or less in tilt, rotation, or a combination thereof around orientation axes of neighboring crystal grains; coincidence boundaries having a Σ value of 10 or less; and grain boundaries with a relative misorientation of 3° or less from the coincidence boundaries.

5,709,959

ORGANIC THIN FILM ELECTROLUMINESCENCE DEVICE

Chihaya Adachi; Kazukiyo Nagai, and Nozomu Tamoto, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 18, 1995, Ser. No. 529,580

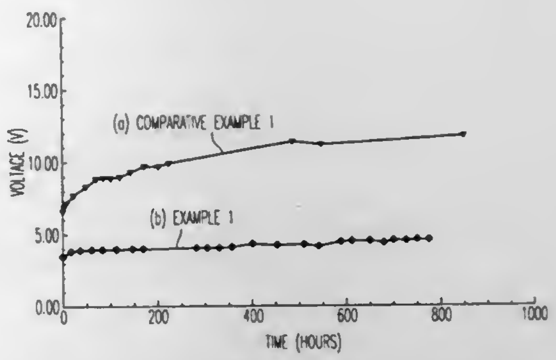
Claims priority, application Japan, Sep. 16, 1994, 6-248421

Int. Cl.^{6} H05B *33/00*

U.S. Cl. 428—690 **11 Claims**

1. An organic thin film electroluminescence device, consisting of:

a) a cathode,
b) an anode facing said cathode, and



c) an organic light emitting layer between said anode and cathode,
wherein the surface of said anode facing said cathode satisfies the inequality Ip>5.0 eV.

5,709,960

MOLD COMPOUND

Lonne L. Mays, Gilbert; Mark D. Mosher, Scottsdale, and Alexandra Hubenko, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1996, Ser. No. 667,563

Int. Cl.^{6} B32B *19/00*

U.S. Cl. 428—698 **20 Claims**

1. An electronic component comprising:
a semiconductor substrate;
a semiconductor device in the semiconductor substrate;
a lead electrically coupled to the semiconductor device; and
an encapsulant overlying the semiconductor device wherein the encapsulant is electrically insulative, the encapsulant comprising:
  a plurality of electrically conductive fibers having a first thermal conductivity;
  a plurality of electrically insulative particles having a second thermal conductivity; and
  a thermoplastic polymer having a third thermal conductivity, the third thermal conductivity less than the first and second thermal conductivities.

5,709,961

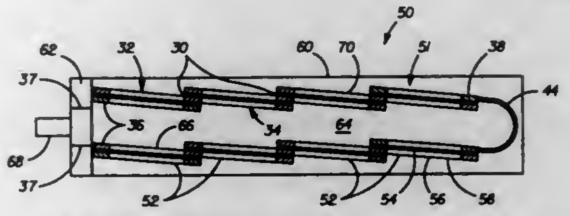
LOW PRESSURE FUEL CELL SYSTEM

Alan J. Cisar, Cypress; Oliver J. Murphy, Bryan, and Stanley F. Simpson, Houston, all of Tex., assignors to Lynntech, Inc., College Station, Tex.

Filed Jun. 6, 1996, Ser. No. 656,968

Int. Cl.^{6} H01M *8/12*

U.S. Cl. 429—32 **27 Claims**



1. An apparatus comprising:
a) an array of monopolar cells, each cell comprising a membrane and electrode assembly and first and second electrically conducting frames contacting opposing faces of the membrane and electrode assembly and electrically connecting the first electrically conducting frame of a first cell to the second electrically conducting frame of an adjacent cell;
b) a fuel gas chamber defined by the array and an electrically insulating member sealed to the edge of the array; and
c) a fuel gas inlet port into the chamber.

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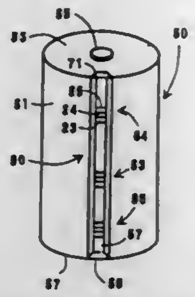
5,709,962
CELL TESTER DEVICE EMPLOYING SPACED APART ELECTROCHROMIC ELECTRODES

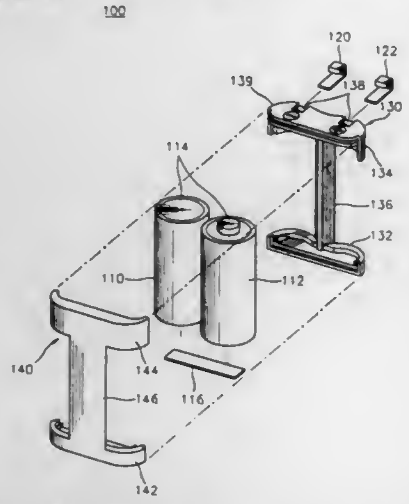
John C. Bailey, Columbia Station, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 246,926, May 20, 1994, Pat. No. 5,458,992, which is a continuation of Ser. No. 648,080, Jan. 31, 1991, abandoned. This application Nov. 8, 1994, Ser. No. 396,505
Int. Cl.^{6} H01M *10/48*
U.S. Cl. 429—93 **21 Claims**



1. A cell tester device for an electrochemical cell having a first terminal and a second terminal of opposite polarity; a substrate; a first electrically conductive electrochromic electrode disposed on said substrate; a second electrically conductive electrochromic electrode disposed on said substrate and spaced from said first electrochromic electrode; an ionically conductive electrolyte extended in contrast with at least a portion of each electrode; said first electrochromic electrode adapted to electrically contact the first terminal of the cell; and said second electrochromic electrode adapted to electrically contact the second terminal of the cell so that when the first electrode makes electrical contact with the first terminal and the second electrode makes electrical contact with the second terminal, both electrodes will undergo a chemical reaction to exhibit a visible contrasting color change.

5,709,963
BATTERY PACK

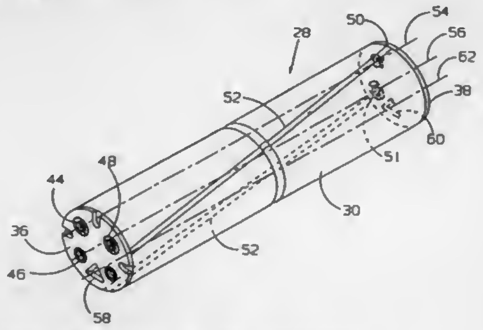
Jae-Hoon Sim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Inc., Seoul, Rep. of Korea
Filed Jul. 25, 1996, Ser. No. 684,885
Int. Cl.^{6} H01M *2/10*
U.S. Cl. 429—99 **6 Claims**



1. A battery pack comprising:
- a first case including a first lid, a first cell receiving portion for receiving and supporting first and second battery cells each having electrodes, and a first connecting portion for connecting the first cell receiving portion with said first lid, said first and second battery cells being physically arranged in parallel and connected electrically in series to each other, said first lid including a pair of first apertures formed on an outer side surface thereof, a pair of second apertures formed at an upper surface thereof, and a pair of terminal member supporting portions shaped like recesses to connect the first apertures and the second apertures to each other, and said first lid, the first cell receiving portion, and the first connecting portion being integrally formed;
- a second case including a second lid engaged with said first lid, a second cell receiving portion for receiving and supporting said first and second battery cells by engagement with the first cell receiving portion, and a second connecting portion for connecting the second cell receiving portion with said second lid, said second lid, the second cell receiving portion, and the second connecting portion being integrally formed; and
- first and second terminal members, each having a connecting end inserted through one of the first apertures of said first case so that each connecting end is fixed to said first case, and a fixing end inserted through one of the second apertures so that each fixing end is electrically connected with one of said electrodes of said first and second battery cells, said first and second terminal members being located on the terminal member supporting portions, and the fixing end of said first and second terminal members being inserted through the second apertures and being bent towards an interior of said first case so that said first and second terminal members are fixed to said first case.

5,709,964
MODULAR BATTERY PACK

Christian J. Christensen, Harahan, and Prabhat Jain, New Orleans, both of La., assignors to The Laitram Corporation, Harahan, La.
Filed Mar. 19, 1996, Ser. No. 618,363
Int. Cl.^{6} H01N *2/30*
U.S. Cl. 429—153 **22 Claims**

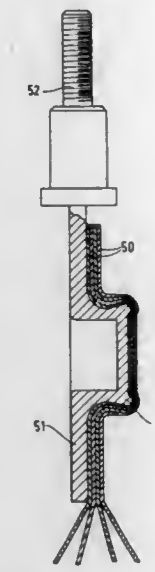


1. A multi-pack battery module comprising:
- at least two battery packs, each battery pack having a first end and a second end;
- a housing in which the battery packs are arranged end to end with the first end of a forward battery pack proximate the second end of an adjacent rearward battery pack;
- each battery pack including:
  - one or more interconnected cells forming a battery having a positive electrode and a negative electrode;
  - a positive terminal at the first end of the battery pack electrically connected to the positive electrode;
  - a negative terminal at the first end of the battery pack electrically connected to the negative electrode;
  - a first auxiliary terminal at the first end of the battery pack and a second auxiliary terminal at the second end of the battery pack; and
  - a conductive element electrically connecting the first auxiliary terminal to the second auxiliary terminal;

the positive terminal at the first end of a forward battery pack mating with the second auxiliary terminal at the second end of an adjacent rearward battery pack and electrically coupling the positive terminal of the forward battery pack to the first auxiliary terminal at the first end of the rearward battery pack, whereby the positive electrodes of the battery packs are electrically connected to individual terminals at the first end of the rearward battery pack.

5,709,965
ELECTRICAL INTERCONNECTION SYSTEM FOR ELECTROCHEMICAL GENERATORS AND BATTERIES

Tristan Grivel, Bordeaux, and Denis Ristord, Martignas, both of France, assignors to Saft, Romainville, France
Filed Apr. 12, 1995, Ser. No. 420,761
Claims priority, application France, Apr. 13, 1994, 94 04395
Int. Cl.^{6} H01M *02/26*
U.S. Cl. 429—158 **10 Claims**

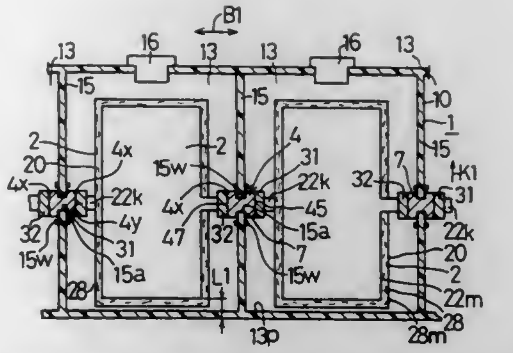


1. Electrical interconnection system for electrochemical generators including electrodes and connection members providing continuity of electrical current flow from the electrodes to an exterior of said generators, said system characterized in that said electrodes are connected to said connection members by means of mechanical and electrical joints, wherein each joint comprises a deformation area in which there is initially a substantially plane contact surface between a connection member and the electrodes to be joined, said connection member and the electrodes joined to it having been plastically deformed together in a common direction in said deformation area to form said joint, and wherein said joint is situated at a sufficient distance from edges of said electrodes and said connection members such that said edges are not deformed, said plastic deformation comprising cold flow of material of said electrodes and said connection members in parallel in said common direction, thereby immobilizing said electrodes and said connection members relative to each other, only said electrodes and said connection members contributing to said joint and being in intimate contact throughout the area subject to deformation.

5,709,966
BATTERY

Kazunobu Sawada, Toyota; Takaki Kamio, Kariya; Katsumi Yamada, Nishio; Muneharu Mizutani, Toyohashi; Yuuki Fujitani, Nagoya, and Masatoshi Miwa, Oobu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 22, 1995, Ser. No. 562,020
Claims priority, application Japan, Nov. 29, 1994, 6-295016
Int. Cl.^{6} H01M *2/24;6/42;6/46*
U.S. Cl. 429—160 **29 Claims**

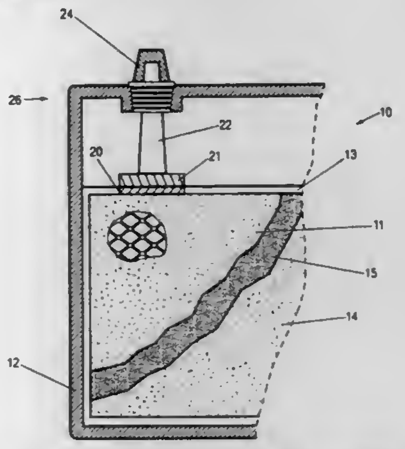
1. A battery, comprising:
- a container having a plurality of cell rooms and a partition wall for separating adjoining cell rooms;
- cells stored respectively in said cell rooms of said container, and respectively comprising an electrode plate assembly having a separator and electrode plates which are laminated to face to each other with said separator sandwiched therebetween;
- a first current collector which is electrically connected to electrode plates in one of two cells adjoining through said partition wall;



- a second current collector which is electrically connected to electrode plates in the other of said two cells adjoining through said partition wall; and
- an intercell electrically connecting member held by said partition wall, formed of a conductive material, and electrically connecting said cells adjoining through said partition wall in series or in parallel,
- said intercell electrically connecting member including,
- a first butting end surface in an approximately flat plane shape disposed along one surface of said partition wall, said first butting end surface facing and connected to said first current collector with a whole face of said first butting end surface and said first current collector butting against each others, and
- a second butting end surface in an approximately flat plane shape disposed opposite said first butting end surface and along another surface of said partition wall, said second butting end surface facing and connected to said second current collector with a whole face of said second butting end surface and said second current collector butting against each other.

5,709,967
SEALANT COMPOSITION, CELL AND BATTERY COVER, AND CELL BATTERY PREPARED THEREWITH

Steven R. Larsen, Oakdale, Minn., assignor to GNB Technologies, Inc., Mendota Heights, Minn.
Filed Nov. 12, 1996, Ser. No. 745,453
Int. Cl.^{6} H01M *2/04*
U.S. Cl. 429—175 **11 Claims**



1. A method for making a cover for a cell or battery, the cover including a nonconductive plastic substrate having an interior surface and an exterior surface and having a first bushing disposed within said substrate for allowing electrical communication between said interior surface and said exterior surface and a second bushing disposed within said substrate for allowing electrical communication between said interior surface and said exterior surface, each of said bushings having an exterior and presenting an interface between said exterior of said bushing and said plastic substrate, the method comprising the steps of:

(a) providing first and second bushings;

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(b) for each of said first and second bushings,
  (1) applying to at least a portion of said exterior of said bushing a curable sealant composition which comprises:
    a terpene solvent; and
    a sealing elastomer dissolved therein; and
  (2) curing said sealant composition; and
(c) insert molding said first bushing and said second bushing into a non-conductive substrate to thereby form a cell cover, whereby said sealing elastomer forms a seal at said interfaces.

5,709,968
NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY

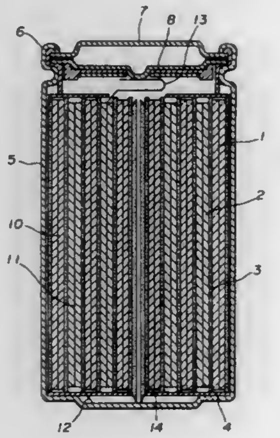
Ryuichi Shimizu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 24, 1996, Ser. No. 653,457

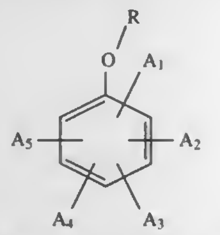
Claims priority, application Japan, May 26, 1995, 7-127805; Oct. 31, 1995, 7-284200

Int. Cl.^{6} H01M *10/40*

U.S. Cl. 429—198 **5 Claims**

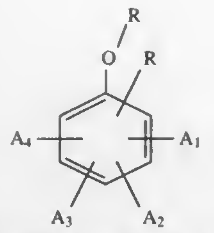


1. A non-aqueous electrolyte secondary battery comprising:
a negative pole made of metal material mainly composed of lithium or carbon material capable doping and removing lithium;
a positive pole made of a composite oxide of lithium and transition metal; and
electrolyte which is non-aqueous electrolyte in which a support salt is dissolved in non-aqueous solvent, wherein
the non-aqueous electrolyte contains a benzene compound having a reversible oxidation-reduction potential at a potential higher than a positive pole potential in a state where said non-aqueous electrolyte secondary battery is fully charged and having p-electron orbital, and the benzene compound is selected from the group consisting of a compound expressed by General Formulas [1] to [V]:



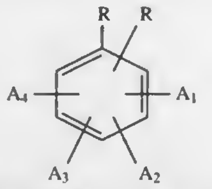
[1]

where R is an alkyl group, A_1, A_2, A_3, A_4 and A_5 are each H or halogen and at least one of A_1, A_2, A_3, A_4 and A_5 is halogen;



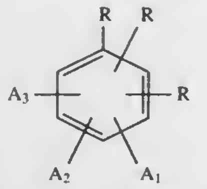
[II]

where R is an alkyl group, A_1, A_2, A_3 and A_4 are each H or halogen and at least any one of A_1, A_2, A_3 and A_4 is halogen;



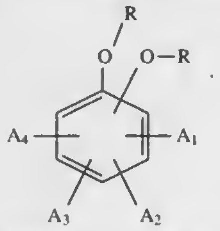
[III]

where R is an alkyl group, A_1, A_2, A_3 and A_4 are each H or halogen and at least any one of A_1, A_2, A_3 and A_4 is halogen;



[IV]

where R is an alkyl group, A_1, A_2 and A_3 are each H or halogen and at least any one of A_1, A_2 and A_3 is halogen;



[V]

where R is an alkyl group, A_1, A_2, A_3 and A_4 are each halogen.

5,709,969
NON-AQUEOUS ELECTROLYTE SECONDARY CELL

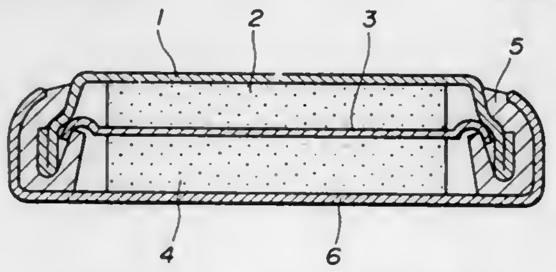
Takayuki Yamahira, Fukushima, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 548,520, Oct. 26, 1995, abandoned. This application Aug. 15, 1997, Ser. No. 911,851

Claims priority, application Japan, Oct. 26, 1994, 6-262243; Jun. 9, 1995, 7-143377

Int. Cl.^{6} H01M *4/48;4/62*

U.S. Cl. 429—218 **6 Claims**



1. A non-aqueous electrolyte secondary cell comprising:
a positive electrode comprising a compression molded and heat-treated mass of a lithium transition metal compound oxide selected from $LiMn_2O_4$ and compound oxides of the formula Li_xMO_2, wherein M is at least one transition metal selected from Co, Ni and Fe and x has a value such that $0.05 \leqq x \leqq 1.10$, said mass having a volumetric density of from 2.0 to 4.3 g/ml, and said positive electrode being free of any added electrically conductive agent;
a negative electrode selected from carbonaceous, lithium metal and lithium alloy materials; and
a non-aqueous electrolyte.

5,709,970
MASK HAVING A PATTERN FOR DETECTING ILLUMINANCE NONUNIFORMITY

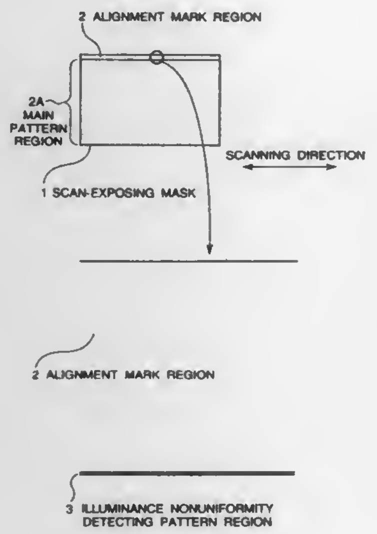
Shuichi Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 14, 1996, Ser. No. 647,705

Claims priority, application Japan, May 15, 1995, 7-139893

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **5 Claims**



1. A mask used in a method for exposing a photosensitive substrate to a mask pattern having an area larger than that of an illuminated region, by scanning the mask and the photosensitive substrate in relation to the illuminated region, the mask having an illuminance nonuniformity detecting pattern formed at an edge region of the mask along a scanning direction, beside a main pattern region of the mask.

5,709,971
DYE IMBIBITION PRINTING BLANKS WITH ANTISTATIC LAYER

Wayne Arthur Bowman, Walworth; Charles Peter Hagmaier, Rochester, and Frank Dean Manioci, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,423

Int. Cl.^{6} G03C *1/85;8/52;* **B41N** *1/00*

U.S. Cl. 430—14 **20 Claims**

1. In a motion picture film dye imbibition printing blank comprising a transparent polymeric film support bearing on one side thereof a dye-receiving layer comprising a cationic mordant, the improvement wherein the printing blank further comprises an antistatic layer substantially free of cationic polymers on the opposite side of the support relative to the dye-receiving layer.

2. A motion picture film dye imbibition printing blank according to claim 1, wherein the dye-receiving layer contains an imagewise-transferred anionic dye image, and the printing blank is rolled such that the dye-receiving layer side of the printing blank is in contact with the antistatic layer side of the printing blank.

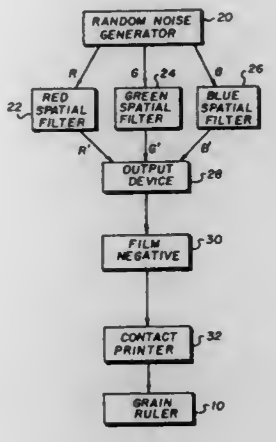
5,709,972
APPARATUS AND METHOD FOR THE MEASUREMENT OF GRAIN IN IMAGES

Robert Everett Cookingham, Webster, and Paul James Kane, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 456,845, Jun. 1, 1995. This application Nov. 19, 1996, Ser. No. 752,366

Int. Cl.^{6} G03C *5/02*

U.S. Cl. 430—30 **2 Claims**



1. A method for producing a grain ruler for the measurement by comparison of grain in multichromatic images produced by a reference photographic system, comprising, the steps of:
a) generating a set of random numbers for each chromatic image component;
b) filtering each set of random numbers to alter the Wiener spectrum to result in a filtered set of random numbers which when rendered by an output device look as if they were generated by the reference photographic system;
c) converting the filtered set of random numbers to film exposure values;
d) forming a film negative from said film exposure values; and
e) forming a print, from said film negative, wherein said print is the produced grain ruler.

5,709,973
PROCESS FOR CONTROLLING GLOSS IN ELECTROSTATIC IMAGES

Jiann Hsing Chen, Fairport; Lawrence Paul Demejo, and Muhammed Aslam, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1996, Ser. No. 673,448

Int. Cl.^{6} G03G *13/01*

U.S. Cl. 430—42 **4 Claims**

1. A process for controlling gloss to fused toner images, comprising the steps of:
A. passing an element bearing an unfused toner image through a fusing zone, a cooling zone and a release zone; and
B. bringing the element bearing the unfused toner image into pressure contact with a fusing belt, thereby fusing the toner image to the element; characterized in that the fusing belt is a metal having
(i) an unmatted powder coated tetrafluoroethylene/hexafluoropropylene (FEP) copolymer to provide a fused toner image having a coating gloss of 54–64;
(ii) an unmatted powder coated polytetrafluoroethylene-co-perfluoropropyl vinylether copolymer (PFA) to provide a fused toner image having a coating gloss of 11–18 and
(iii) an unmatted aqueous spray coated blend of polytetrafluoroethylene (PTFE) and polytetrafluoroethylene-perfluorinated vinyl ether (PFA) to provide a fused toner image having a coating gloss of 5–12.

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5,709,974
HIGH SPEED ELECTROPHOTOGRAPHIC IMAGING MEMBER

Huoy-Jen Yuh; Anthony M. Horgan, both of Pittsford; Damodar M. Pai, Fairport; John S. Chambers, Rochester; Richard L. Schank, Pittsford, and John F. Yanus, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 27, 1996, Ser. No. 722,347

Int. Cl.^{6} G03G *5/47;5/147*

U.S. Cl. 430—59 **12 Claims**

1. An electrophotographic imaging member comprising a supporting substrate, a charge generating layer, a charge transport layer and an overcoating layer, said transport layer comprising a charge transporting molecule in a polystyrene matrix and said overcoating layer comprising a hole transporting hydroxy arylamine compound having at least two hydroxy functional groups and a polyamide film forming binder capable of forming hydrogen bonds with said hydroxy functional groups of said hydroxy arylamine compound.

5,709,975
COATED HARD FERRITE CARRIER PARTICLES

William Edward Yoerger, Rochester, and Wayne Thomas Ferrar, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1996, Ser. No. 685,124

Int. Cl.^{6} G03G *9/113*

U.S. Cl. 430—106.6 **21 Claims**

1. An electrostatographic carrier composition comprising coated hard ferrite cores, said coating comprising silicone resin and colloidal silica.

5,709,976
COATED PAPERS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1996, Ser. No. 656,814

Int. Cl.^{6} B41M *5/00;* **B41J** *2/01*

U.S. Cl. 430—124 **27 Claims**

1. A coated paper which comprises (a) a substrate; (b) a hydrophobic barrier layer comprised of a water insoluble component and a water soluble or alcohol soluble anticurl agent, said hydrophobic barrier layer being present on both sides of the substrate; (c) an image receiving coating situated on the hydrophobic barrier layers, said coating comprising (1) a polymeric binder, (2) a dye fixative, (3) a lightfastness inducing agent, (4) a filler, and (5) a biocide.

5,709,977
POSITIVE WORKING PHOTORESIST COMPOSITION

Shiro Tan, and Yasumasa Kawabe, both of Haibara-gun, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

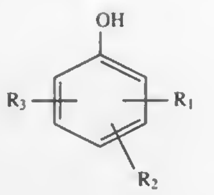
Filed Jul. 9, 1996, Ser. No. 677,143

Claims priority, application Japan, Jul. 13, 1995, 7-177655

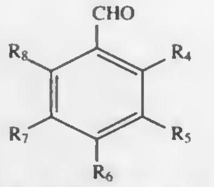
Int. Cl.^{6} G03F *7/023*

U.S. Cl. 430—192 **7 Claims**

1. A positive working photoresist composition comprising an alkali-soluble resin and a 1,2-quinonediazide compound, said alkali-soluble resin being a novolak resin prepared by condensing a phenol compound represented by formula (I), formaldehyde and an aromatic aldehyde compound represented by formula (II);



(I)



(II)

wherein R_1, R_2 and R_3 are the same or different, and each represents a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group, a cycloalkyl group, an alkoxy group, an alkenyl group, an aryl group, an aralkyl group, an alkoxycarbonyl group or an arylcarbonyl group; and R_4 to R_8 are the same or different, and each represents a hydrogen atom, a hydroxyl group, a formyl group, a halogen atom, an alkyl group, a cycloalkyl group, an alkoxy group, an alkenyl group, an aryl group, an aralkyl group or a nitro group; provided that at least one of R_4 to R_8 is a hydroxyl group and at least one of R_4 to R_8 is an alkoxy group.

5,709,978
SUPPERRESOLUTION READOUT THIN FILM AND INFORMATION RECORDING MEDIUM

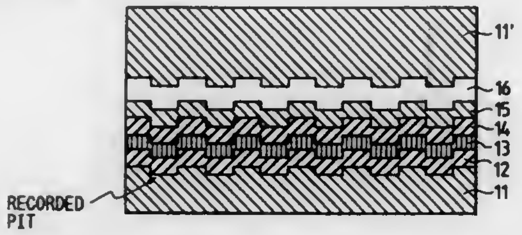
Akemi Hirotsune, Higashimurayama; Motoyasu Terao, Nishitama-gun, and Yasushi Miyauchi, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 261,072

Claims priority, application Japan, Jun. 18, 1993, 5-147843

Int. Cl.^{6} G11B *7/00;7/24*

U.S. Cl. 430—270.13 **21 Claims**



11. An information recording medium comprising a superresolution readout thin film provided on a substrate, said superresolution readout thin film comprising

at least a phase change component and a high melting point component having a higher melting point than the phase change component, wherein a mean composition thereof is given by:

$$L_jH_k,$$

where L is a low melting point component comprising at least one element and H is a high melting point component comprising at least one element, the high melting point component having a higher melting point than the phase change component, and j and k are amounts of L and H, respectively, and wherein

a composition satisfying $20 \leqq k/(j+k) \leqq 40\%$ is a basic composition, and amounts of each element of L and each element of H are within ±10 atm % of a value determined by the basic composition and said superresolution readout thin film contains precipitates having a relatively higher melting point than the remaining component, said precipitates including at least one element of H;

L is a mixture of $GeSb_2Te_4$ and at least one selected from the group consisting of Sn, Pb, Sb, Te, Zn, Cd, Se, In, Ga, S, Tl, Mg, Tl_2Se, TlSe, Tl_2Se_3, Tl_3Te_2, TlTe, InBi, In_2Bi, TeBi, Tl—Se, Tl—Te, PB—Sn, Bi—Sn, Se—Te, S—Se, Bi—Ga, Sn—Zn, Ga—Sn, Ga—In, In_3SeTe_2, $AgInTe_2$, $GeSb_4Te_7$, $Ge_2Sb_2Te_5$, $GeBi_4Te_7$, $GeBi_2Te_4$, $Ge_3Bi_2Te_6$, $Sn_2Sb_6Se_{11}$, $Sn_2Sb_2Se_5$, $SnSb_2Te_4$, $Pb_2Sb_6Te_{11}$, $CuAsSe_2$, Cu_3AsSe_3, $CuSbS_2$, $CuSbSe_2$, InSe, Sb_2Se_3, Sb_2Te_3, Bi_2Te_3, SnSb, FeTe, Fe_2Te_3, $FeTe_2$, ZnSb, Zn_3Sb_2, VTe_2, V_5Te_8, $AgIn_2$, BiSe, InSb, In_2Te, In_2Te_5, Ba_4Tl, $Cd_{11}Nd$, $Ba_{13}Tl$, Cd_6Nd, and Ba_2Tl, and

H is at least one selected from the group consisting of:

$BaPd_2$, $BaPd_5$, NdPd, $NdPd_3$, $NdPd_5$, Nd_7Pt_3, Nd_3Pt_2, NdPt, Nd_3Pt_4, $NdPt_2$, $NdPt_5$, Bi_2Nd, BiNd, Bi_3Nd_4, Bi_3Nd_5, $BiNd_2$, Cd_2Nd, CdNd, Mn_2Nd, $Mn_{23}Nd_6$, $Mn_{12}Nd$, Nd_5Sb_3, Nd_4Sb_3, NdSb, $NdSb_2$, Fe_2Nd, $Fe_{17}Nd_2$, Cs_3Ge_2, CsGe, $CsGe_4$, Nd_5Si_3, Nd_5Si_4, NdSi, Nd_3Si_4, Nd_2Si_3, Nd_5Si_9, Cs_2Te, $NdTe_3$, Nd_2Te_5, $NdTe_2$, Nd_4Te_7, Nd_2Te_3, Nd_3, Te_4, NdTe, Ce_3Ir, Ce_2Ir, $Ce_{55}Ir_{45}$, $CeIr_2$, $CeIr_3$, Ce_2Ir_7, $CeIr_5$, CaPd, $CaPd_2$, CaGe, Ca_2Ge, $GeNa_3$, GeNa, $CaSi_2$, Ca_2Si, CaSi, Se_2Sr, Se_3Sr_2, SeSr, $GeSr_2$, GeSr, Ge_2Sr, SnSr, Sn_3Sr_5, $SnSr_2$, Ce_2Tl, Ce_5Tl_3, $CeTl_3$, Ce_3Tl_5, CeTl, BaTl, $Pd_{13}Tl_9$, Pd_2Tl, Pd_3Tl, Mg_2Si, Mg_2Ge, $BaPd_2$, $BaPd_5$, Ce_4Se_7, Ce_3Se_4, Ce_2Se_3, CeSe, Ce_5Se_3, Ce_4Ge_3, Ce_5Ge_4, CeGe, Ce_3Ge_5, Ce_5Si_3, Ce_3Si_2, Ce_5Si_4, CeSi, Ce_3Si_5, $CeSi_2$, $CeTe_3$, Ce_2Te_5, $CeTe_2$, Ce_4Te_7, Ce_3Te_4, CeTe, La_3Se_7, $LaSe_2$, La_4Se_7, La_2Se_3, La_3Se_4, LaSe, $GeLa_3$, Ge_3La_5, Ge_3La_4, Ge_4La_5, GeLa, Ge_5La_3, $BaSe_2$, Ba_2Se_3, BaSe, PdSe, Mo_3Se_4, $MoSe_2$, Ba_2Ge, $BaGe_2$, BaGe, Ba_2Te_3, BaTe, Ge_2Pd_5, $GePd_2$, Ge_9, Pd_{25}, GePd, Ge_3Pt, Ge_3Pt, Ge_3Pt_2, GePt, Ge_2Pt_3, $GePt_2$, $GePt_3$, Pu_3Sn, Pu_5Sn_3, Pu_5Sn_4, Pu_8Sn_7, Pu_7Sn_8, $PuSn_2$, $PuSn_3$, Pt_5Te_4, Pt_4Te_5, $PtTe_2$, GeNi, Ge_3Ni_5, Ge_2Ni_5, $GeNi_3$, $NiTe_{0.85}$, $NiTe_{0.775}$, $Cr_{11}Ge_{19}$, CrGe, $Cr_{11}Ge_8$, Cr_5Ge_3, Cr_3Ge, $CrSi_2$, Cr_5Si_3, Cr_3Si, Cr_5Te_8, Cr_4Te_5, Cr_3Te_4, Ge_3Mn_5, $GeMn_2$, Mn_6Si, Mn_9Si_2, Mn_3Si, Mn_5Si_2, Mn_5Si_3, MnSi, $Mn_{11}Si_{19}$, Mn_2Sn, $Mn_{3.25}Sn$, MnTe, Te_2W, $FeGe_2$, Fe_5Ge_3, Fe_3Ge, Fe_2Si, Fe_5Si_3, FeSi, $FeSi_2$, Ge_2Mo, $Ge_{41}Mo_{23}$, $Ge_{16}Mo_9$, $Ge_{23}Mo_{13}$, Ge_3Mo_5, $GeMo_3$, Mo_3Si, Mo_5Si_3, $MoSi_2$, MoSn, $MoSn_2$, Mo_3Te_4, $MoTe_2$, Si_2Ti, SiTi, Si_4, Ti_5, Si_3Ti_5, $SiTi_3$, Sn_5Ti_6, Sn_3Ti_5, $SnTi_2$, $SnTi_3$, $CoGe_2$, Co_5Ge_7, CoGe, Co_5Ge_3, Co_4Ge, Co_3Te_4, Ge_7Re_3, Re_5Si_3, ReSi, $ReSi_2$, and Re_2Te.

5,709,979
PRINTED WIRING BOARD WITH PHOTOIMAGEABLE DIELECTRIC BASE SUBSTRATE AND METHOD OF MANUFACTURE THEREFOR

Keith L. Casson; Matthew John Saari; Raphael A. Marsolek, and Marion Tibesar, all of Northfield, Minn., assignors to Sheldahl, Inc., Northfield, Minn.

Filed Oct. 21, 1994, Ser. No. 327,236

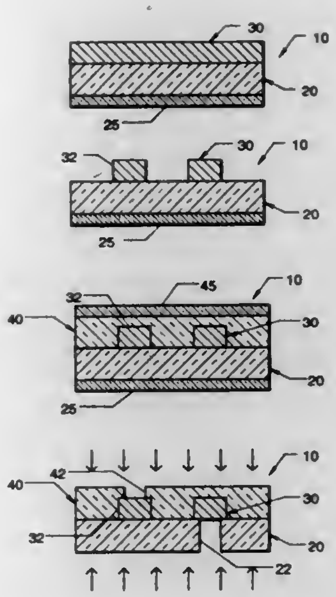
Int. Cl.^{6} G03F *7/00*

U.S. Cl. 430—311 **23 Claims**

1. A method of making a printed wiring board, comprising the steps of:

(a) forming a conductive layer on a first side of a base substrate comprising an unimaged photoimageable dielectric material;

(b) patterning the conductive layer to form a circuit pattern therein after the conductive layer is formed on the base substrate; and



(c) making at least one aperture in a second side of the base substrate by imaging and developing the photoimageable dielectric material.

5,709,980
METHOD FOR MANUFACTURING A CASCADING OPTICAL SPACE SWITCH

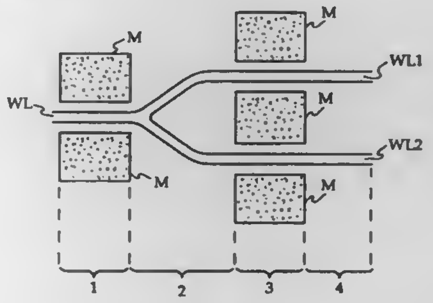
Michael Schilling, Stuttgart, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 18, 1994, Ser. No. 198,830

Claims priority, application Germany, Feb. 18, 1993, 43 04 993.1

Int. Cl.^{6} G03C *5/00*

U.S. Cl. 430—321 **12 Claims**



1. A method for manufacturing an optical space switch having a branched waveguide on a substrate, comprising the steps of:

(a) masking the substrate with a field of dielectric coatings for influencing the speed of growth of at least one combined active and passive layer that forms the branched waveguide; and

(b) growing on the substrate in a single growing step said at least one combined active and passive layer with a varying thickness determined by the field of the dielectric coatings.

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5,709,981
PHOTOGRAPHIC MATERIAL AND PROCESS UTILIZING HIGH CHLORIDE TABULAR GRAIN SILVER HALIDE EMULSIONS WITH (111) CRYSTALLOGRAPHIC FACES

Richard Peter Szajewski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1996, Ser. No. 625,622

Int. Cl.^{6} G03C *7/407;1/035*

U.S. Cl. 430—375 **24 Claims**

1. A light sensitive photographic element comprising a support, and chemically and spectrally sensitized emulsions (A) and (B), wherein:

emulsion (A) comprises a tabular silver halide emulsion population comprised of at least 50 mole percent chloride, based on silver, wherein at least 50 percent of the grain population projected area is accounted for by tabular grains bounded by {111} major faces, each having an aspect ratio of at least 2 and each being comprised of a core and a surrounding band containing a higher level of bromide or iodide ion than is present in said core, said band containing up to about 30 percent of the silver in the tabular grain;

wherein said emulsion (A) has been precipitated in the presence of an organic grain growth modifier or surface stabilizer and wherein said organic grain growth modifier or surface stabilizer has been substantially removed from said emulsion (A) after the formation of said band; and

emulsion (B) comprises at least 50 mole percent chloride, based on silver, and is bounded by {100} major faces.

24. A color image forming process comprising the step of contacting an imagewise exposed light sensitive photographic element with a developing solution:

said element comprising emulsion (A) and emulsion (B) wherein emulsion (A) comprises tabular grains of greater than 50 percent chloride bounded by {111} major faces, and emulsion (B) comprises tabular grains of greater than 50 percent chloride bounded by {100} major faces;

the contact time of said element with said developing solution is between about 10 and 120 seconds; and

said developing solution is characterized in that:

(1) the solution temperature is between about 25° and 65° C.;

(2) the solution comprises bromide ion at a concentration of between about 0.25 and 50 mmol per liter;

(3) the solution comprises a color developing agent at a concentration between about 1 and 200 mmol per liter;

(4) the ratio of developing agent concentration to bromide ion concentration is between about 60:1 and 1:2; and

(5) the solution pH is between about 9 and 12.

5,709,982
PHOTOGRAPHIC COLOR DEVELOPER REACTION MIXTURE

Carl Anthony Marrese, Penfield, and Paul Anthony Zielinski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 570,258, Dec. 11, 1995, Pat. No. 5,620,835, which is a division of Ser. No. 362,282, Dec. 22, 1994, Pat. No. 5,508,155. This application Aug. 16, 1996, Ser. No. 698,609

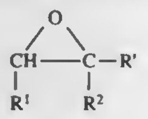
Int. Cl.^{6} G03C *7/413*

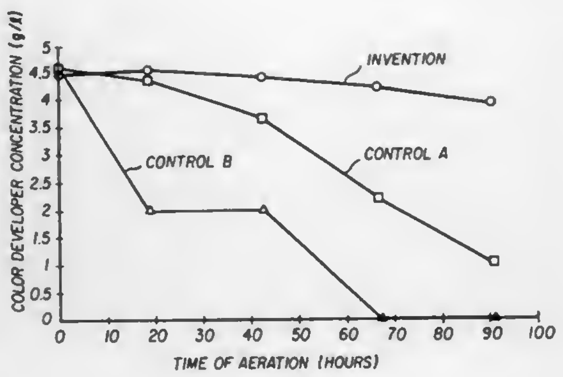
U.S. Cl. 430—490 **9 Claims**

1. An aqueous color developer precursor reaction mixture having a pH of at least 8, and comprising:

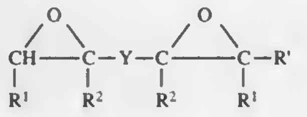
a) hydroxylamine or a mono-substituted hydroxylamine, and

b) an epoxide having either the structure (IV):





or (V):



wherein

R' is an alkyl group of 1 to 10 carbon atoms, a hydroxyalkyl group of 1 to 10 carbon atoms, a cycloalkyl group of 5 to 10 carbon atoms, or an aryl group having 6 to 10 carbon atoms in the aromatic nucleus,

R^1 and R^2 are independently hydrogen, an alkyl group of 1 to 2 carbon atoms, or a hydroxyalkyl group of 1 to 2 carbon atoms, or R^1 and R^2 together represent the carbon atoms necessary to complete a 5- to 8-membered saturated or partially saturated carbocyclic ring structure, and

Y is an alkylene group of at least 4 carbon atoms and has an even number of carbon atoms, or Y is a divalent aliphatic group having an even total number of carbon and oxygen atoms in the chain, provided that said divalent aliphatic group has at least 4 atoms in the chain.

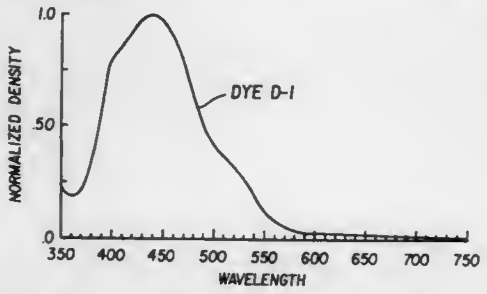
5,709,983
NONAQUEOUS SOLID PARTICLE DYE DISPERSIONS

Mary Christine Brick, Webster; Thomas Michael Smith, Spencerport; Ronda Ellen Factor; Eugene Arthur Armour, both of Rochester, and Wayne Arthur Bowman, Walworth, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 15, 1996, Ser. No. 698,413

Int. Cl.^{6} G03C *1/83*

U.S. Cl. 430—519 **24 Claims**



1. A process for forming a photographic element comprising (a) coating a first layer on a transparent support from a coating composition comprising an organic solvent, an alkaline aqueous insoluble, organic solvent soluble film forming binder, and a solid particle non-aqueous dispersion of a filter dye which is substantially insoluble in the organic solvent and readily soluble or decolorizable in alkaline aqueous photographic processing solutions at pH of 8 or above; and (b) coating a second layer on the opposite side of the support relative to the filter dye containing layer from an aqueous coating composition comprising a silver halide emulsion.

5,709,984
COATING COMPOSITION FOR ELECTRICALLY-CONDUCTIVE LAYER COMPRISING VANADIUM OXIDE GEL

Janglin Chen, Rochester; Richard A. Castle, Webster, and Karen E. Gleasman, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1996, Ser. No. 740,572

Int. Cl.^{6} G03C *1/85;1/89;* **B32B** *9/00;* **H01B** *1/06*

U.S. Cl. 430—527 **20 Claims**

18. An imaging element for use in an image-forming process, comprising a support, an image-forming layer, and an electrically conductive layer, said electrically conductive layer having been formed by applying a coating composition of a liquid medium containing:

a) a vanadium oxide gel,

b) a film-forming binder, and

c) a conductivity-increasing amount of a volatile aromatic compound comprising an aromatic ring substituted with at least one hydroxy group or a hydroxy substituted substituent group, and drying the coating.

5,709,985
PHOTOGRAPHIC ELEMENT COMPRISING ANTISTATIC LAYER

Eric D. Morrison; Paola Puppo; Alberto Valsecchi; Elio Martino; William L. Kausch, and Renzo Torterolo, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1995, Ser. No. 556,471

Claims priority, application European Pat. Off., Nov. 10, 1994, 94117738

Int. Cl.^{6} G03C *1/89*

U.S. Cl. 430—529 **5 Claims**

1. A photographic element comprising

a substrate,

an antistatic layer coated on the substrate wherein the antistatic layer comprises a vinyl addition polymer and vanadium oxide, wherein the weight ratio of vanadium oxide to vinyl addition polymer is in the range from 1:30 to 1:500, and

coated directly on the antistatic layer, a silver halide emulsion layer.

5,709,986
PHOTOGRAPHIC ELEMENTS EMPLOYING POLYMERIC PARTICLES

Dennis Edward Smith; John Leonard Muehlbauer, both of Rochester, and Yongcai Wang, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1996, Ser. No. 594,102

Int. Cl.^{6} G03C *1/76*

U.S. Cl. 430—531 **7 Claims**

1. A photographic element having a support, at least one light-sensitive silver halide layer and a layer containing matte bead particles, the matte bead particles being a copolymer of a styrenic monomer or acrylic acid or methacrylic acid or an acrylic acid ester or a methacrylic acid ester or mixture thereof where the ester group contains up to 6 carbon atoms and an acrylic or methacrylic acid ester where the ester group has from 10 to 22 carbon atoms in an amount of from 0.1 to 20 percent by weight of the copolymer, each matte bead particle being surrounded by colloidal size particles of a suspension stabilizing agent.

5,709,987
PHOTOGRAPHIC ELEMENT CONTAINING A COUPLER CAPABLE OF RELEASING A PHOTOGRAPHICALLY USEFUL GROUP THROUGH A TRIAZOLE GROUP

William James Begley, Webster; Frank D. Coms, and Teh-Hsuan Chen, both of Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 17, 1996, Ser. No. 733,373

Int. Cl.^{6} G03C *1/06;7/26;7/32*

U.S. Cl. 430—544 **29 Claims**

1. A photographic element comprising a support having situated thereon at least one silver halide emulsion layer, the element further comprising a photographic coupler represented by the formula

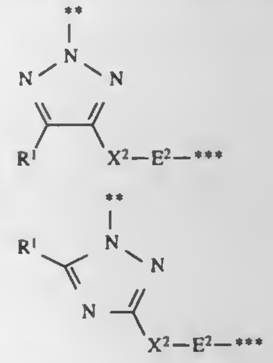
$$\text{COUP-}(T^1)_b\text{-}T^2\text{-}(T^3)_c\text{-PUG}$$

wherein

COUP is a coupler moiety having a coupling site to which T^1 is attached;

T^1 is a timing or linking group which releases from COUP during processing and which functions by electron transfer down a conjugated or unconjugated chain, or by a nucleophilic displacement reaction, to release T^2;

T^2 is a triazole timing or linking group which, after release from T^1, functions by a nucleophilic displacement reaction to release T^3 or PUG and is represented by the formula:



wherein ** denotes the point of attachment to T^1 and *** denotes the point of attachment to T^3 or PUG;

R^1 is a hydrogen or halogen atom, or an aliphatic, carbocyclic, carbamoyl, sulfamoyl, carbonamido, sulfonamido, alkoxycarbonyl, alkyl or arylketo, alkyl or arylsulfo, sulfo, hydroxy, acyl, nitro, cyano, amino, alkoxy, alkoxyalkyl, aryloxy, aryloxyalkyl, thioalkoxy, thioalkoxyalkyl, thioaryloxy, thioaryloxyalkyl or heterocyclic group;

X^2 is a linking group which spatially relates a nitrogen atom of the triazole ring and E^2 so that upon displacement of T^2 from T^1, T^2 undergoes a nucleophilic displacement reaction with the formation of a three to eight membered ring and the cleavage of the bond between E^2 and PUG or T^3;

E^2 is an electrophilic group which is attached to T^3 or PUG and which is displaced therefrom by said nuclophilic displacement reaction after T^2 is displaced from T^1;

T^3 is a timing or linking group attached to E^2 which is released therefrom after T^2 releases from T^1, and which functions by electron transfer down a conjugated or unconjugated chain, or by a nucleophilic displacement reaction, to release PUG;

b and c are independently selected from 0 or 1; and

PUG is a photographically useful group.

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5,709,988
TABULAR GRAIN EMULSIONS EXHIBITING RELATIVELY CONSTANT HIGH SENSITIVITIES

Donald Lee Black, Webster; Roger Anthony Bryant, and Mark Edward Irving, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1995, Ser. No. 399,798

Int. Cl.^{6} G03C *1/005;1/035*

U.S. Cl. 430—567 **7 Claims**

1. A radiation-sensitive emulsion in which greater than 50 percent of total grain projected area is accounted for by tabular grains (i) containing greater than 50 mole percent bromide, based on silver, (ii) having parallel {111} major faces bounded by peripheral edge surfaces and (iii) containing 10 or more dislocations,

WHEREIN

the tabular grains exhibit an average equivalent circular diameter of at least 2.0 μm, an average thickness of less than 0.3 μm, and an average aspect ratio of greater than 8 and are each comprised of a central region formed by starting tabular grains and a peripheral region grown onto edges of the starting tabular grains forming the central region, each of a face centered cubic rock salt crystal lattice structure and extending between the major faces, the peripheral region separating at least a portion of the central region from the peripheral edge surfaces by up to 0.2 μm and containing an iodide concentration at least 2 mole percent, based on silver, higher than the iodide concentration of the central region measured within 50 nm of the peripheral region, and

the dislocations in the central regions are relatively decreased in relation to the dislocations in the peripheral regions to satisfy collectively the relationship

$$(P+F)\times ECD>5.0$$

where

P represents the percentage of the tabular grains containing at least 10 dislocations in the peripheral regions of the tabular grains,

F represents the percentage of the tabular grains containing at least 10 dislocations in the central regions of the tabular grains, and

ECD is the average equivalent circular diameter of the tabular grains in micrometers.

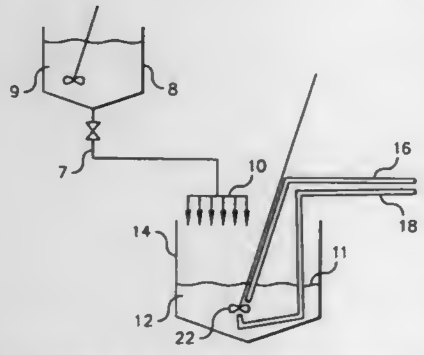
5,709,989
PROCESS FOR MAKING HIGH CHLORIDE TABULAR GRAIN EMULSION USING MULTIPLE STREAM ADDITION OF IODIDE

Rajesh Vinodrai Mehta; Donald Robert Irwin, and Douglas E. Singer, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1996, Ser. No. 708,154

Int. Cl.^{6} G03C *1/015;1/035*

U.S. Cl. 430—569 **20 Claims**



1. A process of producing a photographic emulsion containing a dispersing medium and grains comprised of iodide and at least 50 mole percent chloride with tabular grains having {100} major faces accounting for greater than 50 percent of total projected area, comprised of the steps of

(a) separately introducing soluble silver and halide salts into a reaction vessel containing at least a portion of the dispersing medium so that nucleation occurs while the dispersing medium is maintained at a pCl in the range of from 0.5 and 3.5;

(b) during step (a) iodide ion is withheld from the reaction vessel until after the soluble silver and halide salts have reacted in the reaction vessel to form grain nuclei;

(c) during step (a) iodide ion is introduced into a momentum distribution device located above the surface of the reactor solution after at least 0.01 percent and before 3 percent of total silver forming the grains has been introduced; and solution emerging from the device in multiple streams impinges on the surface of the dispersing medium in the reactor at a momentum range between 1×10^{-6} and $1\times10^{+6}$ g cm/s^2;

(d) following step (a) completing grain growth under conditions that maintain the {100} major faces of the tabular grains.

5,709,990
METHOD FOR PREPARING A PHOTOGRAPHIC EMULSION, AND APPARATUS FOR IMPLEMENTING THE METHOD

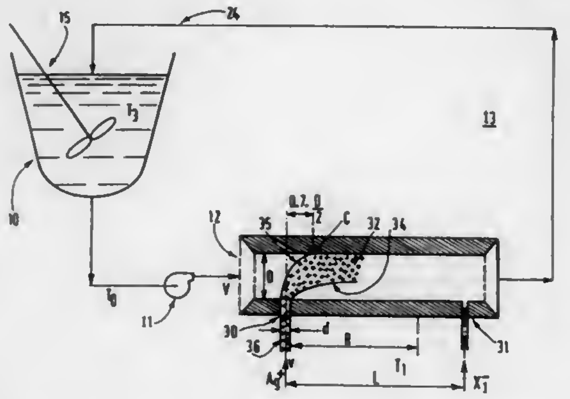
Pierre Henri Jezequel, Givry, and Christian Serge Emile Schmuckle, Chalon sur Saone, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1996, Ser. No. 761,057

Claims priority, application France, Dec. 14, 1995, 95 15009

Int. Cl.^{6} G03C *1/015;* **B01F** *5/10*

U.S. Cl. 430—569 **27 Claims**



1. Method for preparing a silver halide photographic emulsion in which the contents of a vessel containing at least a stirred solution of gelatine is circulated in an external circulation loop including a reactor at which a first solution of a silver salt and second solution of a first halide salt are added thus forming a mixture, the silver salt solution being introduced at a point situated upstream of the point of introduction of the first halide salt solution,

wherein the second solution of said first halide salt is introduced at a point in the loop situated outside a reaction zone within which the silver salt added to the loop produces a precipitation of silver halide grains or causes the silver halide grains to grow, wherein the silver salt solution is introduced into the reactor in the form of a centered jet within said reactor and wherein the Reynolds number at the point of introduction of the silver salt is between about 5000 and about 50,000.

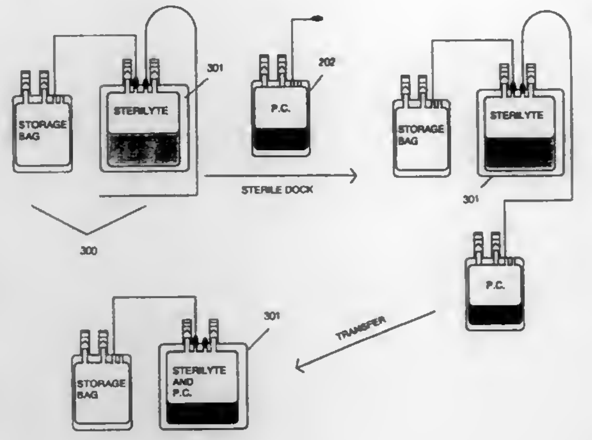
5,709,991
PRORALEN INACTIVATION OF MICROORGANISMS AND PSORALEN REMOVAL

Lily Lin, Berkeley; Laurence Corash, San Francisco; John Tessman, San Leandro; George D. Cimino, Lafayette, and Stephen T. Isaacs, Orinda, all of Calif., assignors to Cerus Corporation, Concord, Calif.

Continuation of Ser. No. 72,485, Jun. 2, 1993, Pat. No. 5,459,030, which is a continuation-in-part of Ser. No. 926,477, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 844,790, Mar. 2, 1992, Pat. No. 5,288,605. This application Jun. 7, 1995, Ser. No. 480,013

Int. Cl.^{6} A01N *1/02;* **A61M** *35/00*

U.S. Cl. 435—2 **14 Claims**



1. A method of inactivating microorganisms in platelet preparations for subsequent transfusion, comprising:

a) providing, in any order; i) 8-methoxypsoralen, ii) photoactivation means, iii) a psoralen-binding polymer that binds 8-methoxypsoralen, and iv) a platelet preparation suspected of being contaminated with microorganisms, comprising platelets and plasma;

b) adding said 8-methoxypsoralen to said platelet preparation to create a solution comprising a psoralen, platelets and plasma;

c) treating said solution with said photoactivation means so as to create a treated platelet preparation wherein said microorganisms are inactivated and wherein at least a portion of said 8-methoxypsoralen is in said solution and free of cellular material; and

d) contacting said treated platelet preparation with said psoralen-binding polymer whereby some 8-methoxypsoralen that is in said solution and free of cellular material is removed from said treated platelet preparation.

5,709,992
METHOD FOR DISINFECTING RED BLOOD CELLS

Alan I. Rubinstein, 100 S. Doheny Dr. #301, Los Angeles, Calif. 90048

Continuation-in-part of Ser. No. 291,442, Aug. 17, 1994, abandoned. This application Jul. 25, 1995, Ser. No. 506,589

Int. Cl.^{6} A01N *1/02*

U.S. Cl. 435—2 **20 Claims**

1. A method to disinfect units of red blood cells (RBCs) consisting of adding a solution of red blood cell reducing enzymes selected from one or more of the following: cytochrome b_5 reductase and glutathione reductase, peroxidase, superoxide desmutase, glutathione peroxidase, and catalase; and an RBC reducing enzyme compound added to a unit of red blood cells and/or to the sterilizing solution or disinfectant.

5,709,993
PROCESS FOR ANTICOAGULATION DURING EXTRACORPOREAL BLOOD CIRCULATION SEQUENTIALLY USING CITRATE OR NAFAMOSTAT AND HEPARIN

Jadranka Buturovic-Ponikvar, Rusjanov trg 8, 1000 Ljubljana, Slovenia

PCT No. PCT/SI95/00016, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO96/02288, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 13, 1995, Ser. No. 605,005

Claims priority, application Slovenia, Jul. 13, 1994, P-9400289

Int. Cl.^{6} A61M *1/14*

U.S. Cl. 435—2 **8 Claims**

1. A process for preventing the activation of coagulation and activation of complement or bradykinin system during extracorporeal blood circulation which comprises:

adding citrate or nafamostat mesylate, in a concentration sufficient to prevent blood clotting, into the blood circulation line at the beginning of the extracorporeal blood circulation process;

stopping the addition of citrate or nafamostat mesylate after 15–30 minutes of the extracorporeal blood circulation process; and

adding heparin, in a concentration sufficient to prevent blood clotting, into the blood circulation line until the end of the extracorporeal blood circulation process.

5,709,994
PHOTOACTIVATABLE CHEMILUMINESCENT MATRICES

John S. Pease, Los Altos; Hrair Kirakossian, San Jose; Daniel B. Wagner, Sunnyvale, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syntex (U. S. A.) Inc., San Jose, Calif.

Continuation of Ser. No. 923,069, Jul. 31, 1992. This application Jun. 6, 1995, Ser. No. 470,862

Int. Cl.^{6} G01N *33/52;* **C12Q** *1/68;1/00;* **C09K** *11/00*

U.S. Cl. 435—4 **74 Claims**

1. A method for determining the presence or absence of an analyte, said method comprising:

irradiating a composition suspected of containing the analyte, said composition comprising a non-particulate solid matrix or a particulate matrix, said matrix having incorporated therein (1) a photosensitizer that upon irradiation generates singlet oxygen and (2) a chemiluminescent compound activatable by the singlet oxygen; and

determining the presence of the analyte.

5,709,995
HEPATITIS C VIRUS-DERIVED PEPTIDES CAPABLE OF INDUCING CYTOTOXIC T LYMPHOCYTE RESPONSES

Francis V. Chisari, Del Mar, and Andreas Cerny, La Jolla, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Mar. 17, 1994, Ser. No. 214,650

Int. Cl.^{6} C12Q *1/70;* **A61K** *38/04;39/29*

U.S. Cl. 435—5 **33 Claims**

23. A method of detecting cytotoxic T cells that respond to a T cell epitope of hepatitis C virus, the method comprising the steps of: (a) preparing HLA class I-restricted cytotoxic T cells; (b) preparing HLA class I-matched and -mismatched target cells; (c) contacting separately matched and mismatched target cells with a composition comprising a peptide having the sequence of ADLMGYIPLV (Core$_{131\text{-}140}$; SEQ ID NO:1), DMLGYIPLV (Core$_{132\text{-}140}$; SEQ ID NO:54); LLALLSCLTV (Core$_{178\text{-}187}$; SEQ ID NO:2), QLRRHIDLLV (E1$_{257\text{-}266}$; SEQ ID NO:3), LLCPAGHAV (NS3$_{1169\text{-}1177}$; SEQ ID NO:26), KLVALGINAV (NS3$_{1406\text{-}1415}$; SEQ ID NO:28), SLMAFTAAV (NS4$_{1789\text{-}1797}$; SEQ NO:34),

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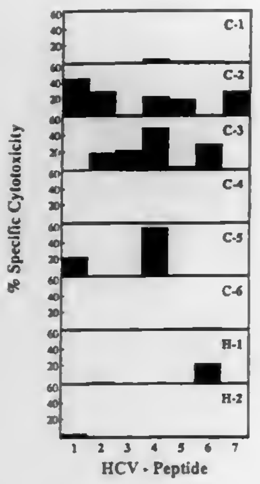


LLFNILGGWV ($NS4_{1807-1816}$; SEQ ID NO:35), or ILDSFDPLV ($NS5_{2252-2260}$; SEQ ID NO:42); (d) combining the cytotoxic T cells separately with the matched and mismatched target cells; and (e) measuring cytolysis.

5,709,996

SELF-ASSEMBLING RECOMBINANT PAPILLOMAVIRUS CAPSID PROTEINS

Douglas R. Lowy, Washington, D.C.; John T. Schiller, Silver Spring, and Reinhard Kirnbauer, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 32,869, Mar. 16, 1993, Pat. No. 5,437,951, which is a continuation-in-part of Ser. No. 941,371, Sep. 3, 1992. This application Jun. 7, 1995, Ser. No. 472,673

Int. Cl.^{6} C12Q *1/70;* C07K *16/08*

U.S. Cl. 435—5 **17 Claims**

1. A method of detecting papillomavirus in a specimen from a mammal comprising the steps of:

(1) providing polyclonal or monoclonal antibodies, directed against at least one L1 conformational epitope, derived from immunizing a mammal with a self-assembled papillomavirus-like particle comprising a L1 polypeptide having the same sequence as the amino acid sequence encoded by SEQ ID NO:2, wherein the self-assembled papillomavirus-like particle comprises at least one papillomavirus L1 conformational epitope, and said self-assembled papillomavirus-like particle is produced by a method comprising the step of permitting a genetic construct, comprising a papillomavirus L1 gene, to direct recombinant expression in a transformed eukaryotic host cell;

(2) contacting said specimen with said antibodies under conditions appropriate for binding; and

(3) detecting binding of said antibodies, where binding indicates the presence of papillomavirus in the specimen.

5,709,997

NUCLEIC ACID DETECTION OF HEPATITIS GB VIRUS

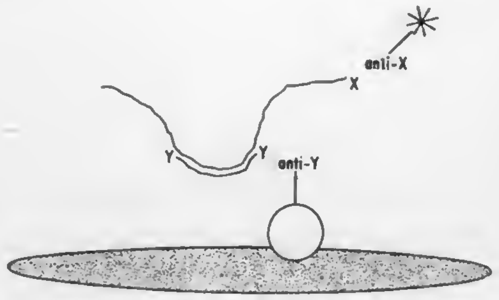
Ronald L. Marshall, Zion; Cynthia Jou, Libertyville; John N. Simons, Grayslake, all of Ill.; Thomas P. Leary; A. Scott Muerhoff, both of Kenosha, Wis.; Suresh M. Desal, Libertyville, and Isa K. Mushahwar, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 19, 1996, Ser. No. 635,309

Int. Cl.^{6} C12Q *1/70;1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—5 **30 Claims**

11. An assay for detecting the presence of HGBV target nucleotides in a test sample, comprising:



a. contacting a test sample suspected of containing a target HGBV nucleotide sequence with an HGBV primer pair selected from the group consisting of the pair of SEQUENCE ID NO 1 and SEQUENCE ID NO 2, the pair of SEQUENCE ID NO 6 and SEQUENCE ID NO 7, the pair of SEQUENCE ID NO 1 and SEQUENCE ID NO 16, the pair of SEQUENCE ID NO 18 and SEQUENCE ID NO 19 and the pair of SEQUENCE ID NO 21 and SEQUENCE ID NO 22 to form a reaction mixture;

b. contacting said reaction mixture with at least one HGBV probe selected from the group consisting of SEQUENCE ID NO 3, SEQUENCE ID NO 4, SEQUENCE ID NO 5, SEQUENCE ID NO 17, SEQUENCE ID NO 20, and SEQUENCE ID NO 23;

c. detecting the presence of the HGBV target nucleotide in the test sample.

5,709,998

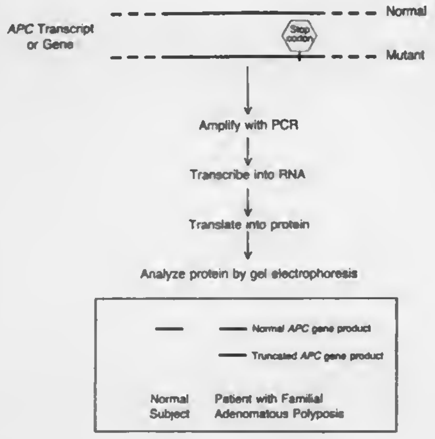
MOLECULAR DIAGNOSIS OF FAMILIAL ADENUMATOUS POLYPOSIS

Kenneth W. Kinzler, and Bert Vogelstein, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Dec. 15, 1993, Ser. No. 169,303

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **29 Claims**



1. A method for detecting mutations in an APC gene, comprising the steps of:

forming APC templates by amplifying some or all portions of APC gene coding sequences in a DNA sample of a human;

making polypeptide products from said APC templates in in vitro transcription and translation reactions;

analyzing said polypeptide products to determine the size of said polypeptide products, a truncated polypeptide product indicating a mutation in an APC gene in said DNA sample.

5,709,999

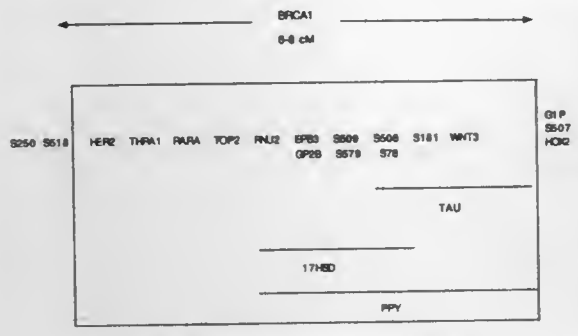
LINKED BREAST AND OVARIAN CANCER SUSCEPTIBILITY GENE

Donna M. Shattuck-Eidens, Salt Lake City, Utah; Jacques Simard, St. Augustin de Desmaures; Francine Durocher, Ste-Foy, both of Canada; Mitsuuru Emi, Tokyo, and Yusuke Nakamura, Yokohama, both of Japan, assignors to Myriad Genetics Inc., Salt Lake City, Utah; Centre de Recherche du Chul, Sainte-Foy, Canada, and Cancer Institute, Tokyo, Japan

Continuation-in-part of Ser. No. 409,305, Mar. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 348,824, Nov. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 308,104, Sep. 16, 1994, which is a continuation-in-part of Ser. No. 300,266, Sep. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 289,221, Aug. 12, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,553

Int. Cl.^{6} C12Q *1/68;* C12P *19/34;* C07H *21/02;21/04*

U.S. Cl. 435—6 **35 Claims**



Map of the early onset breast and ovarian cancer region (BRCA1)

1. A method for detecting a germline alteration in a BRCA1 gene, said alteration selected from the group consisting of the alterations set forth in Tables 12A, 14, 18 or 19 in a human which comprises analyzing a sequence of a BRCA1 gene or BRCA1 RNA from a human sample or analyzing a sequence of BRCA1 cDNA made from mRNA from said human sample with the proviso that said germline alteration is not a deletion of 4 nucleotides corresponding to base numbers 4184–4187 of SEQ ID NO:1.

5,710,000

CAPTURING SEQUENCES ADJACENT TO TYPE-IIS RESTRICTION SITES FOR GENOMIC LIBRARY MAPPING

Ronald J. Sapolsky; Robert J. Lipshutz, both of Palo Alto, and Thomas R. Gingeras, Santa Clara, all of Calif., assignors to Affymetrix, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 307,881, Sep. 16, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 485,606

Int. Cl.^{6} C12Q *1/68;* C12N *15/09;15/10*

U.S. Cl. 435—6 **11 Claims**

1. A method of identifying sequences in a polynucleotide sequence, comprising:

(a) cleaving the polynucleotide sequence with a first type-IIs endonuclease;

(b) ligating a first adapter sequence to the polynucleotide sequence cleaved in step (a), said first adapter having a recognition site for a second type-IIs endonuclease, the recognition site being oriented so that the second type-IIs endonuclease has a cleavage site in the polynucleotide sequence;

(c) cleaving the polynucleotide sequence resulting from step (b), with the second type-IIs endonuclease;

(d) ligating a second adapter sequence to the polynucleotide sequence cleaved in step (c); and

determining the sequence of nucleotides of the polynucleotide sequence between the first and second adapter sequences.

5,710,001

17Q-LINKED BREAST AND OVARIAN CANCER SUSCEPTIBILITY GENE

Mark H. Skolnick; David E. Goldgar; Yoshio Miki; Jeff Swenson; Alexander Kamb; Keith D. Harshman; Donna M. Shattuck-Eidens; Sean V. Tavtigian, all of Salt Lake City, Utah; Roger W. Wiseman, and P. Andrew Futreal, both of Durham, N.C., assignors to Myriad Genetics, Inc.; University of Utah Research Foundation, both of Salt Lake City, Utah, and The United States of America as represented by the Secretary of Health and Human Services, Technology Transfer Office, Washington, D.C.

Continuation-in-part of Ser. No. 409,305, Mar. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 348,824, Nov. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 308,104, Sep. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 300,266, Sep. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 289,221, Aug. 12, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,002

Int. Cl.^{6} C12Q *1/68;* C12P *19/34;* C07H *21/02;21/04*

U.S. Cl. 435—6 **35 Claims**

1. A method for screening a tumor sample from a human subject for a somatic alteration in a BRCA1 gene in said tumor which comprises gene comparing a first sequence selected form the group consisting of a BRCA1 gene from said tumor sample, BRCA1 RNA from said tumor sample and BRCA1 cDNA made from mRNA from said tumor sample with a second sequence selected from the group consisting of BRCA1 gene from a nontumor sample of said subject, BRCA1 RNA from said nontumor sample and BRCA1 cDNA made from mRNA from said nontumor sample, wherein a difference in the sequence of the BRCA1 gene, BRCA1 RNA or BRCA1 cDNA from said tumor sample from the sequence of the BRCA1 gene, BRCA1 RNA or BRCA1 cDNA from said nontumor sample indicates a somatic alteration in the BRCA1 gene in said tumor sample.

5,710,002

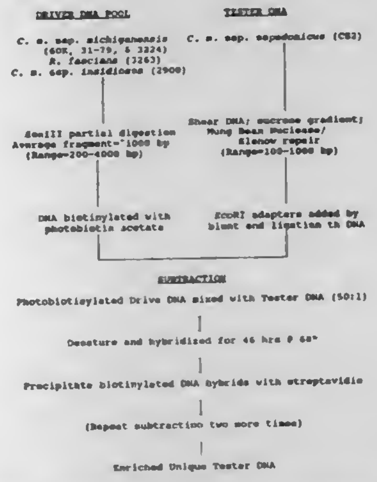
DETECTION OF *CLAVIBACTER MICHIGANENSIS SUBSP. SEPEDONICUS*

Dallice I. Mills, Corvallis, Oreg., assignor to Oregon State University, Corvallis, Oreg.

Filed Jun. 7, 1995, Ser, No. 488,144

Int. Cl.^{6} C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **23 Claims**


DRIVER DNA POOL
TESTER DNA
C. m. ssp. michiganensis (60K, 31-79, & 3224)
R. fascians (3263)
C. m. ssp. insidiosus (2900)
C. m. ssp. sepedonicus (CS3)
Sau3AI partial digestion Average fragment=~1000 bp (Range=200-4000 bp)
Shear DNA; sucrose gradient; Mung Bean Nuclease/ Klenow repair (Range=100-1000 bp)
DNA biotinylated with photobiotin acetate
EcoRI adapters added by blunt end ligation to DNA
SUBTRACTION
Photobiotinylated Drive DNA mixed with Tester DNA (50:1)
Denature and hybridized for 46 hrs @ 68°
Precipitate biotinylated DNA hybrids with streptavidin
(Repeat subtraction two more times)
Enriched Unique Tester DNA

3. An isolated nucleic acid comprising a sequence having 100% similarity or complementarity to a DNA selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:24, and SEQ ID NO:25, wherein the sequence hybridizes under stringent hybridization conditions to DNA from *Clavibacter michiganensis* ssp. sepedonicus

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strains CS3 and P45 and does not hybridize under stringent hybridization conditions to DNA from *Clavibacter michiganensis* ssp. insidiosus, *Clavibacter michiganensis* ssp. rathayi, *Curtobacterium flaccumfaciens* ssp. oortii, *Rhodococcus fascians*, and *Clavibacter michiganensis* ssp. michiganensis.

8. A method for detecting the presence of a *Clavibacter michiganensis* ssp. sepedonicus cell in a biological sample comprising the cell, the method comprising the steps of:

providing the biological sample;

contacting the biological sample with an isolated nucleic acid to according to claim **3** under conditions conducive to hybridization of the isolated nucleic acid to a complementary DNA molecule, thereby forming a hybrid nucleic acid; and

detecting the hybrid nucleic acid, wherein detection of the hybrid nucleic acid is indicative of the presence of the cell in the biological sample.

5,710,003

DIAGNOSTIC TEST TO DETERMINE THE MALIGNANCY OF SMOOTH MUSCLE TUMORS

Kirk M. McHugh, Sicklerville, N.J., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Jan. 18, 1996, Ser. No. 588,113

Int. Cl.^{6} C12Q *1/68;* G01N *33/58;* C12P *19/34*

U.S. Cl. 435—6 **17 Claims**

1. A method of diagnosing the malignancy of smooth muscle tumors comprising obtaining a biopsy from a smooth muscle tumor and detecting the presence or absence of the expression of human γ-smooth muscle isoactin whereby expression of human γ-smooth muscle isoactin indicates that the smooth muscle tumor is benign.

5,710,004

METHODS OF USING NOVEL STEROID HORMONE ORPHAN RECEPTORS

Ronald M. Evans, La Jolla; David J. Mangelsdorf, San Diego; Estelita S. Ong, San Diego; Anthony E. Oro, San Diego, all of Calif.; Uwe K. Borgmeyer, Hamburg, Germany; Vincent Giguere, Etobicoke, Canada, and Tso-Pang Yao, San Diego, Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Division of Ser. No. 333,358, Nov. 2, 1994, Pat. No. 5,571,696, which is a continuation of Ser. No. 761,068, Sep. 17, 1991, abandoned. This application Aug. 7, 1996, Ser. No. 694,501

Int. Cl.^{6} C12Q *1/68;* C12P *21/06;* C07K *14/00*

U.S. Cl. 435—6 **16 Claims**

1. A method of testing a compound for its ability to regulate transcription-activating effects of a receptor polypeptide, said method comprising assaying for the presence or absence of reporter protein upon contacting cells containing a receptor polypeptide and reporter vector with said compound;

wherein said receptor polypeptide is characterized by having a DNA binding domain comprising about 66 amino adds with 9 Cys residues, wherein said DNA binding domain is further characterized by the following amino acid sequence identity, relative to the DNA binding domains of hRAR-alpha, hTR-beta, hGR and hRXR-alpha, respectively;

A.

(i) about 68% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 59% amino acid sequence identity with the DNA binding domain of the hTR-beta;

(iii) about 45% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 65% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

B.

(i) about 55% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 56% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 50% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 52%, amino acid sequence identity with the DNA binding domain of hRXP, alpha; or

C.

(i) about 62% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(i) about 58% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 48% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 62% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

D.

(i) about 59% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 52% amino acid sequence identify with the DNA binding domain of hTR-beta;

(iii) about 44% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 61% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

E.

(i) about 59% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 55% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 50% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 65% amino acid sequence identity with the DNA binding domain of hRXR-alpha; and

wherein said reporter vector comprises:

(a) a promoter that is operable in said cell,

a hormone response element, and

(b) a DNA segment encoding a reporter protein,

wherein said reporter protein-encoding DNA segment is operatively linked to said promoter for transcription of said DNA segment, and

wherein said hormone response element is operatively linked to said promoter for activation thereof.

5,710,005

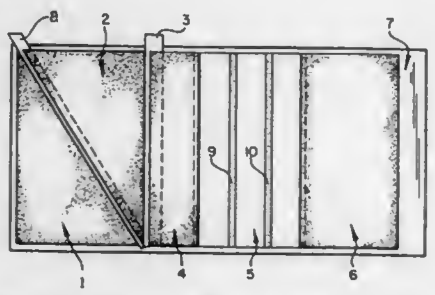
ANALYTE DETECTION WITH A GRADIENT LATERAL FLOW DEVICE

James H. Rittenburg, Perkasie, Pa., assignor to Biocode, Inc., Cambridge, Mass.

Filed Oct. 29, 1996, Ser. No. 741,855

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **37 Claims**



1. A method of determining the concentration of an analyte in a sample, said method comprising:

(a) establishing an analyte gradient in a lateral flow device;

(b) bringing said gradient into liquid contact with an indicator zone containing a mobile binding member conjugated to a signalling substance, wherein said mobile binding member either (i) binds to said analyte or (ii) competes with said analyte for binding to a fixed binding member contained in a test zone; and

(c) bringing said indicator zone into liquid contact with said test zone containing said fixed binding member, wherein said fixed binding member binds to said analyte or said mobile binding member, and a detectable signal that indicates the concentration of said analyte is produced.

5,710,006

REAGENTS FOR SPECIFIC BINDING ASSAYS

David Kiaei, Stoughton; Laurie A. Livshin, and Uri Piran, both of Sharon, all of Mass., assignors to Chiron Diagnostics Corporation, E. Walpole, Mass.

Division of Ser. No. 339,870, Nov. 15, 1994, Pat. No. 5,639,626. This application Mar. 19, 1997, Ser. No. 821,664

Int. Cl.^{6} C12Q *1/68;* G01N *33/53;33/00*

U.S. Cl. 435—6 **17 Claims**

1. A heterogeneous specific binding assay for detecting or measuring an analyte in a sample, the assay comprising:

(1) contacting the sample with (a) a tracer reagent comprising a labeled analyte analogue or a labeled analyte; and (b) a solid-phase reagent comprising a solid-phase having attached thereto a specific binding partner to said analyte or analyte analogue, to form an immobilized specific binding reaction product complex comprising said labeled analyte analogue or said labeled analyte paired with said immobilized specific binding partner;

(2) separating said solid-phase having the immobilized complex thereon from said tracer by a method comprising employing a wash reagent;

(3) directly or indirectly detecting said label on said immobilized complex; and

(4) correlating said detected label with the presence of said analyte in said sample,

wherein said method includes the presence of a surfactant selected from the group consisting of a polyalkylene oxide-modified polydimethylsiloxane block copolymer, a polyalkylene oxide-modified polymethylsiloxane block copolymer, or a mixture thereof, said surfactant present in an effective amount to reduce non-specific binding in said assay wherein said specific binding partner is an oligonucleotide.

5,710,007

METHODS FOR DIAGNOSING PROSTATIC ADENOCARCINOMA

Albert A. Luderer, 28 Catbrier Rd., Weston, Conn. 06883; Grant D. Carlson, 460 Clark La., Orange, Conn. 06477; Ya-Ting Chen, 111 Park St. #7J, New Haven, Conn. 06511; Thomas F. Soriano, 2 Benz St., Ansonia, Conn. 06401, and Robert P. Thiel, 789 Litchfield Turnpike, Bethany, Conn. 06524

Filed Sep. 29, 1995, Ser. No. 536,215

Int. Cl.^{6} G01N *33/53;33/574;33/542;33/537*

U.S. Cl. 435—7.1 **5 Claims**

1. A method for diagnosing prostatic adenocarcinoma (CAP) in a male human patient without requiring a prostate biopsy comprising:

a) measuring the total prostate specific antigen (PSA) level in the blood or serum of the patient;

b) measuring the free PSA level in the blood or serum of a patient only if he has a total PSA level of between 2.5 ng/ml and 20.0 ng/ml;

c) calculating the proportion of free PSA to total PSA; and

d) diagnosing the patient as having CAP if the calculated proportion of free PSA to total PSA is less than about 7%.

5,710,008

METHOD AND DEVICE FOR DIAGNOSING AND DISTINGUISHING CHEST PAIN IN EARLY ONSET THEREOF

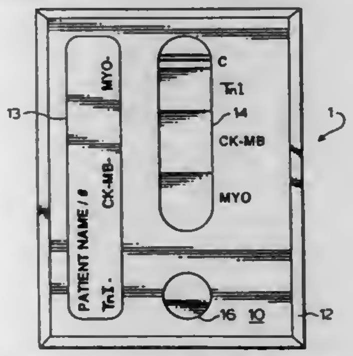
George Jackowski, Inglewood, Canada, assignor to Spectral Diagnostics Inc., Toronto, Canada

Continuation-in-part of Ser. No. 420,298, Apr. 11, 1995, Pat. No. 5,604,105, which is a continuation-in-part of Ser. No. 26,453, Mar. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 695,381, May 3, 1991, Pat. No. 5,290,678. This application Oct. 22, 1996, Ser. No. 735,178

Claims priority, application Canada, Oct. 12, 1990, 2027434

Int. Cl.^{6} G01N *33/573*

U.S. Cl. 435—7.4 **34 Claims**



23. A method for determining if a patient presenting with chest pain is undergoing a cardiac event and, if so, if the cardiac event is an unstable angina or a myocardial infarction, comprising

a) detecting the presence or absence of increased levels of three different markers of cardiac damage present in a blood, serum, or plasma sample from a patient after onset of chest pain, wherein:

i) a first marker is an ischemic marker; and

ii) second and third markers are released only as a result of myocardial infarction; and

iii) at least one of the markers is cardiac specific, and wherein one of the markers to which the antibodies bind is released before about six hours after the onset of chest pain;

by contacting the sample with three antibodies, one of which one is specific for each of the markers, and detecting binding of the antibody to the marker, whereby the presence of increased levels of a marker in the sample is indicated by binding of the marker with the respective antibody; and

b) correlating the presence or absence of increased levels of each of the three markers with the presence or absence of unstable angina or myocardial infarction.

5,710,009

RECEPTOR:RELEASE LIGAND (RELAND) COMPLEXES AND RELEASE ASSAYS USING SAID RELAND AND METHODS AND KITS BASED THEREON

Judith Fitzpatrick, Tenafly, N.J., and Regina Lenda, Wesley Hills, N.Y., assignors to Serex, Inc., Maywood, N.J.

Continuation-in-part of Ser. No. 196,092, Feb. 17, 1994, Pat. No. 5,527,686. This application Jun. 22, 1995, Ser. No. 493,420

Int. Cl.^{6} G01N *33/535*

U.S. Cl. 435—7.9 **23 Claims**

9. A method for assaying for the presence or amount of an analyte in a sample comprising:

a) contacting a receptor-release ligand complex comprising a receptor bound to a monomeric or polymeric release ligand, wherein the receptor is capable of binding to an analyte, wherein the monomeric form of the release ligand binds to the receptor with an association constant of 1% or less of the association constant of the analyte for the receptor, and wherein the release ligand does not detectably compete with analyte for binding to the receptor, with a sample suspected of containing the analyte to be detected; and

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b) detecting the dissociation of release ligand from the receptor complex as a measure of the presence or amount of analyte in the sample.

5,710,010
ASSAYS FOR THE PRESENCE OF A MUTANT EGF RECEPTOR

Bert Vogelstein, Baltimore, Md., and Darell Bigner, Chapel Hill, N.C., assignors to The Johns Hopkins University, Baltimore, Md., and Duke University, Durham, N.C.

Division of Ser. No. 411,567, Mar. 28, 1995, which is a division of Ser. No. 991,286, Dec. 15, 1992, Pat. No. 5,401,828, which is a division of Ser. No. 627,869, Dec. 17, 1990, Pat. No. 5,212,290, which is a division of Ser. No. 531,410, Jun. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 404,226, Sep. 8, 1989, abandoned. This application Jun. 2, 1995, Ser. No. 459,673

Int. Cl.^{6} G01N *33/532;* **C07K** *15/28*

U.S. Cl. 435—7.23 7 Claims

1. A method of diagnosing glioma which comprises:

testing for the presence of an EGFR mutant protein type II, as represented by FIG. 2, employing antibodies immunoreactive with EGFR mutant protein type II but not immunoreactive with intact EGFR protein.

5,710,011
MEDIATORS TO OXIDOREDUCTASE ENZYMES

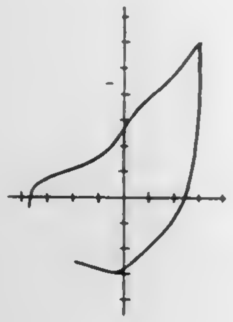
Nigel Forrow, Abingdon, and Stephen Walters, Kirtlington, both of England, assignors to Medisense, Inc., Waltham, Mass.

Continuation of Ser. No. 98,375, Aug. 9, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 400,133

Claims priority, application United Kingdom, Jun. 5, 1992, 9212010

Int. Cl.^{6} C12Q *1/26;1/00;1/32;* **G01N** *33/566*

U.S. Cl. 435—25 36 Claims



1. A process of mediating electron transfer between an electrode and an oxidoreductase enzyme or other electron transfer redox protein using a mediator compound, wherein said mediator compound is a half-sandwich complex of a transition metal, said complex having only a single π-ligand with delocalised π bonding and having the general formula:

$$(\pi\text{-ligand})M(\text{not-}\pi\text{-ligand})_n$$

wherein the complex may be charged or neutral, π-ligand represents the single π-bonded ligand, M represents the transition metal atom, n is the number of ligands which are not π-ligands, and the n not-π-ligands are the same or different, are univalent or multivalent, and serve to satisfy the valency of the transition metal M.

5,710,012
SALT OF 6-CARBOXY-3-METHYLBENZOTHIAZOLONE HYDRAZONE HYDRATE IN COLORIMETRIC DETERMINATION OF HYDROGEN PEROXIDE

Yuri A. Nikolyukin, Donetsk, Ukraine, and David J. Gibboni, Havertown, Pa., assignors to ActiMed Laboratories, Inc., Burlington, N.J.

Continuation-in-part of Ser. No. 111,490, Aug. 25, 1993, Pat. No. 5,518,891. This application May 25, 1994, Ser. No. 450,780

Int. Cl.^{6} C12Q *1/28;* **C07C** *211/00*

U.S. Cl. 435—28 20 Claims

1. Water soluble salts of 6-carboxy-3-methylbenzothiazolone hydrazone hydrate.

5,710,013
TUMOR NECROSIS FACTOR RECEPTOR ASSOCIATED FACTOR 6 (TRAF6)

David V. Goeddel, Hillsborough, and Jessie Xiong, Foster City, both of Calif., assignors to Tularik Inc., South San Francisco, Calif.

Filed Apr. 19, 1996, Ser. No. 639,237

Int. Cl.^{6} C12Q *1/02;1/68;* **C07H** *21/00;* **C12N** *15/12*

U.S. Cl. 435—29 14 Claims

1. An isolated nucleic acid encoding a polypeptide comprising either a tumor necrosis factor receptor associated factor number six (TRAF6) polypeptide as set forth in SEQ ID NO:2 or a deletion mutant of said TRAF6 polypeptide comprising at least one of SEQ ID NO:2, residues 1–114 and SEQ ID NO:2, residues 115–522.

13. A method of identifying an agent which modulates the transcription of a tumor necrosis factor receptor associated factor number six (TRAF6) polypeptide-inducible gene, said method comprising the steps of:

contacting a cell comprising a reporter gene operatively linked to an NF-κB inducible promoter, and a TRAF6 gene comprising a recombinant nucleic acid comprising an open reading frame encoding a polypeptide comprising either a TRAF6 polypeptide as set forth in SEQ ID NO:2 or a deletion mutant of said TRAF6 polypeptide comprising SEQ ID NO:2, residues 115–522, said open reading frame joined directly to a nucleotide other than that which said open reading frame is joined to on a natural chromosome, wherein said recombinant nucleic acid is expressed as said polypeptide, with a candidate agent;

incubating said cell under conditions whereby, but for the presence of said candidate agent, said polypeptide specifically induces said promoter at a reference induction;

detecting the induction of said promoter by said polypeptide by measuring the expression of said reporter gene to determine an agent-biased induction,

wherein a difference between said agent-biased induction and said reference induction indicates that said agent modulates the transcription of a TRAF6 polypeptide-inducible gene.

5,710,014
CLONED CDNA FOR HUMAN PROCATHEPSIN L.

Michael M. Gottesman, Bethesda, Md.; Susannah Gal, Basel, Switzerland, and Spencer Smith, Kensington, Mass., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 904,400, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 154,692, Feb. 11, 1988, abandoned. This application Nov. 24, 1993, Ser. No. 158,075

Int. Cl.^{6} C12N *15/52;15/63;15/65;15/70*

U.S. Cl. 435—68.1 12 Claims

1. An isolated cDNA molecule encoding human procathepsin L wherein said nucleic acid sequence comprises the nucleic acid sequence shown in FIG. 1.

2. An isolated cDNA molecule encoding human procathepsin L wherein said procathepsin L comprises the amino acid sequence shown in FIG. 1.

3. An expression vector comprising the cDNA molecule of claim 1 or 2.

7. A host cell containing said expression vector according to claim 3.

5,710,015
CDNA CLONING OF INOSITOL MONOPHOSPHATASE

George McAllister, Bishops Stortford, and Paul John Whiting, Stansted Mountfitchet, both of United Kingdom, assignors to Merck, Sharp & Dohme, Ltd., Hoddesdon, England

PCT No. PCT/SE93/00457, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO93/25692, PCT Pub. Date Dec. 23, 1993

PCT Filed May 25, 1993, Ser. No. 347,471

Claims priority, application United Kingdom, Jun. 10, 1992, 9212261

Int. Cl.^{6} C12N *15/12;1/21;15/63;9/16*

U.S. Cl. 435—69.1 7 Claims

1. A DNA molecule encoding the human inositol monophosphatase corresponding to the amino acid sequence depicted in SEQ. ID NO. 2 herein.

6. A process for preparing recombinant inositol monophosphatase which comprises inserting the nucleotide sequence as claimed in claim 1 into an expression vector, incorporating the vector into a suitable host cell, and growing the host cell under conditions suitable for the expression of inositol monophosphatase.

5,710,016
ALMOND N-GLYCOSIDASE GENE

Hiroyuki Izu, Kyoto; Masanori Mitta, Kyoto-fu, and Ikunoshin Kato, Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto-fu, Japan

Filed Apr. 7, 1995, Ser. No. 419,009

Claims priority, application Japan, Apr. 7, 1994, 6-069283

Int. Cl.^{6} C12N *15/29;15/52*

U.S. Cl. 435—69.1 14 Claims

1. An isolated almond N-glycosidase gene encoding the amino acid sequence of SEQ ID NO:1.

5,710,017
DNA ENCODING A CONSTITUTIVE ACTIVATOR RETINOIC ACID RESPONSE (CAR) RECEPTOR

David D. Moore, Hingham, and Myriam I. Baes, Belmont, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 843,350, Feb. 26, 1992. This application Jun. 2, 1995, Ser. No. 458,686

Int. Cl.^{6} C12P *21/02;* **C12N** *15/12;15/79;5/16*

U.S. Cl. 435—69.1 13 Claims

1. Substantially pure DNA which encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 10 or a sequence which differs therefrom by one or more conservative amino acid substitutions, wherein said polypeptide comprises identically the DNA binding domain (amino acids 11–75) and the gene activation domain (amino acids 76–348) of SEQ ID NO: 10 and wherein said polypeptide is capable of binding to the DNA sequence of SEQ ID NO: 5 and activating expression of a gene operably linked thereto.

5,710,018
MAMMALIAN INFLUX PEPTIDE TRANSPORTER

Anne H. Dantzig, Crawfordsville; Jo Ann Hoskins, Indianapolis, and Paul L. Skatrud, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 13,462, Feb. 4, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,345

Int. Cl.^{6} C12D *21/06*

U.S. Cl. 435—69.1 36 Claims

1. An isolated DNA compound that comprises a DNA sequence encoding a protein with the amino acid residue sequence of SEQ ID NO:1.

5,710,019
HUMAN POTASSIUM CHANNEL 1 AND 2 PROTEINS

Yi Li, Gaithersburg; Mark D. Adams, North Potomac, and Owen R. White, Gaithersburg, all of Md., assignors to Human Genome Sciences, Inc., Gaithersburg, Md.

Filed Jun. 5, 1995, Ser. No. 464,340

Int. Cl.^{6} C12P *21/02;* **C12N** *15/12;* **C07K** *14/705*

U.S. Cl. 435—69.1 14 Claims

1. An isolated polypetide comprising:

a polypeptide having an amino acid sequence encoded by a polynucleotide which is at least 95% identical to a polynucleotide selected from the group consisting of:

(a) a polynucleotide encoding a polypeptide having the amino acid sequence of SEQ ID No. 2; and

(b) a polynucleotide encoding a polypeptide having the amino acid sequence of SEQ ID NO:4, wherein said polypeptide has substantially the same biologically functional activity of the polypeptide comprising the nucleic acid sequence as forth in (a) or (b).

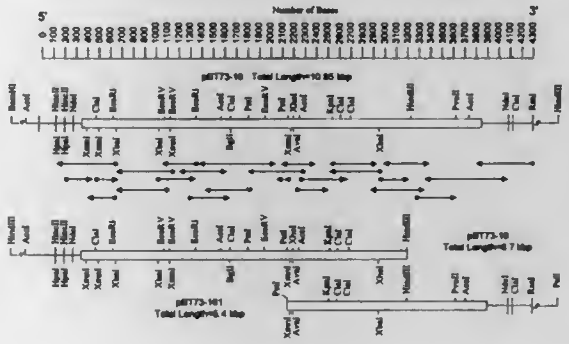
5,710,020
BACILLUS THURINGIENSIS α-ENDOTOXIN FRAGMENTS

Michael J. Adang, Athens, Ga., assignor to Mycogen Plant Science, Inc., San Diego, Calif.

Continuation of Ser. No. 617,321, Jun. 4, 1984. This application Jun. 7, 1995, Ser. No. 477,973

Int. Cl.^{6} C12P *21/00;* **C12N** *1/20;* **C07H** *21/04*

U.S. Cl. 435—69.1 13 Claims



1. A method for producing an insecticidal protein, comprising the steps of:

(a) obtaining a DNA molecule comprising a partial protoxin gene derived from a native *Bacillus thuringiensis* δ-endotoxin protoxin gene, said partial protoxin gene comprising a deletion of all or part of the coding sequence from the 3'-portion of the protoxin gene that does not encode the mature toxin;

(b) transforming a cell to contain said DNA molecule; and

(c) growing said cell under conditions wherein said partial protoxin gene is expressed; whereby an insecticidal protein is produced.

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5,710,021
PRODUCTION OF HETEROLOGOUS PROTEINS IN FILAMENTOUS FUNGI

William E. Hintz, Scarborough, and Peter A. Lagosky, Toronto, both of Canada, assignors to Royal Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 988,778, Dec. 10, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,474

Int. Cl.^{6} C12N *15/00;1/15;15/11*

U.S. Cl. 435—69.1 **29 Claims**

1. A recombinant DNA construct in which protein-encoding DNA is linked operably with a promoter variant of a filamentous fungal promoter wherein said fungal promoter comprises a creA binding site which is at least six contiguous G or C residues and is normally carbon-catabolite repressed, and wherein in said promoter variant one or more of the G or C residues of the creA binding site or a functional portion of said creA binding site has been selectively deleted, whereby said promoter variant mediates expression of said protein-encoding DNA in the presence of glucose.

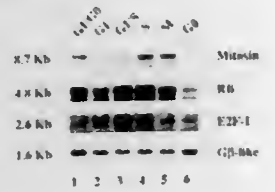
5,710,022
NUCLEAR MITOTIC PHOSPHOPROTEIN

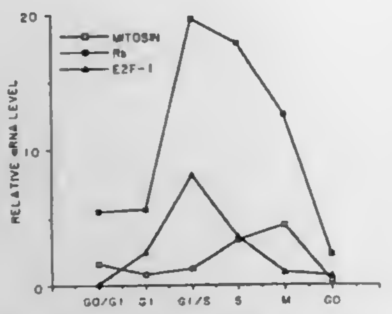
Xueling Zhu, Hefei, China, and Wen-Hwa Lee, San Antonio, Tex., assignors to Board of Regents of the University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 141,239, Oct. 22, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 328,254

Int. Cl.^{6} C07K *14/435;* **C12N** *1/21;15/12;15/63*

U.S. Cl. 435—69.1 **8 Claims**





1. An isolated nucleic acid molecule which encodes a protein comprising the amino acid sequence of SEQ. ID NO. 6.

5,710,023
IL-13 CYTOKINE RECEPTOR CHAIN

Mary Collins, Natick; Debra Donaldson, Medford; Lori Fitz, Arlington; Tamlyn Neben, Acton; Matthew Whitters, Hudson, and Clive Wood, Boston, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Mar. 1, 1996, Ser. No. 609,572

Int. Cl.^{6} C12N *15/12;15/85;* **C07K** *14/52*

U.S. Cl. 435—69.1 **21 Claims**

1. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:

(a) the nucleotide sequence of SEQ ID NO:1 from nucleotide 256 to nucleotide 1404;

(b) the nucleotide sequence of SEQ ID NO:3 from nucleotide 103 to nucleotide 1242;

(c) a nucleotide sequence encoding the IL-13R binding chain varying from the sequence of the nucleotide sequence specified in (a) or (b) as a result of degeneracy of the genetic code;

(d) a nucleotide sequence capable of hybridizing under conditions comprising hybridization at 52° C. in 5×SSC followed by washing at 52° C. in 2×SSC to the nucleotide specified in (a) or (b);

(e) a nucleotide sequence encoding a species homologue of the sequence specified in (a) or (b); and

(f) an allelic variant of the nucleotide sequence specified in (a) or (b).

5,710,024
POLYNUCLEOTIDES THAT ENCODE THE CALCITONIN GENE-RELATED PEPTIDE RECEPTOR COPONENT FACTOR (HOUNDC44)

John E. Adamou, Exton, and Nabil Elshourbagy, West Chester, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jul. 23, 1996, Ser. No. 686,178

Int. Cl.^{6} C12N *15/12;15/63;15/85;1/21*

U.S. Cl. 435—69.1 **13 Claims**

1. An isolated polynucleotide comprising a polynucleotide encoding an amino acid sequence having at least 95% identity to the calcitonin gene-related peptide-receptor component factor (CGRP-RCF) of SEQ ID NO:2, wherein said amino acid sequence confers CGRP responsiveness in Xenopus oocytes expressing the CGRP receptor; or a polynucleotide which is fully complementary to said isolated polynucleotide.

5,710,025
CELL-TYPE SPECIFIC TRANSCRIPTION FACTOR

Rivka Dikstein, Rehovot, Israel, and Robert Tjian, Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 2, 1996, Ser. No. 725,012

Int. Cl.^{6} C12P *21/02;* **C12N** *1/21;5/10;15/12*

U.S. Cl. 435—69.1 **13 Claims**

1. A recombinant nucleic acid encoding a human tata-binding protein associated factor (hTAF$_{II}$105 protein (SEQ ID NO:2), or an hTAF $_{II}$105 protein deletion mutant thereof having at least 20 consecutive amino acids of SEQ ID NO:2 and said deletion mutant specifically binds at least one of hTAF$_{II}$ 250, hTAF$_{II}$150, TFIIA or a hTAF$_{II}$105-specific antibody.

11. A method of making an isolated hTAF$_{II}$105 protein, comprising steps: introducing a nucleic acid according to claim 1 into a host cell or cellular extract, incubating said host cell or extract under conditions whereby said nucleic acid is expressed as a transcript and said transcript is expressed as a translation product comprising said protein, and isolating said translation product.

5,710,026
CYTOPLASMIC ANTIPROTEINASE-2 AND CYTOPLASMIC ANTIPROTEINASE-3 AND CODING SEQUENCES

Cindy A. Sprecher, Seattle, Wash., assignor to Zymogenetics, Inc., Seattle, Wash.

Division of Ser. No. 385,500, Feb. 8, 1995. This application Jun. 5, 1995, Ser. No. 464,148

Int. Cl.^{6} C12N *5/10;15/15;15/63;* **C12P** *21/02*

U.S. Cl. 435—69.2 **12 Claims**

1. An isolated nucleic acid encoding a mammalian CAP-3 protein wherein said protein is at least 80% identical to the amino acid sequence depicted in Seq ID No. 4, and inhibits serine protease activity.

5,710,027
PROCESS AND VECTOR FOR EXPRESSING ALPHA-INTERFERON IN *E. COLI*

Rudolf Hauptmann, Ebreichsdorf; Edgar Falkner; Gerhard Bodo, both of Vienna; Tilman Voss, Mödling, and Ingrid Maurer-Fogy, Vienna, all of Austria, assignors to Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany

Filed May 26, 1994, Ser. No. 249,671

Claims priority, application Germany, May 26, 1993, 43 17 459.0; Sep. 3, 1993, 43 29 756.0

Int. Cl.^{6} C12N *15/70;15/21*

U.S. Cl. 435—69.51 **16 Claims**

1. A method for preparing correctly folded and disulfide bond-linked interferon-α by expression in *E. coli*, comprising the steps of:

(a) expressing interferon-α in *E. coli* transformed with a vector comprising an *E. coli* alkaline phosphatase (phoA) promoter operably linked to a nucleotide sequence encoding the signal peptide for the heat stable enterotoxin II (STII) of *E. coli*, said nucleotide sequence encoding the signal peptide being operably linked to a nucleotide sequence which codes for mature interferon-α; and

(b) isolating the expressed interferon-α.

5,710,028
METHOD OF QUICK SCREENING AND IDENTIFICATION OF SPECIFIC DNA SEQUENCES BY SINGLE NUCLEOTIDE PRIMER EXTENSION AND KITS THEREFOR

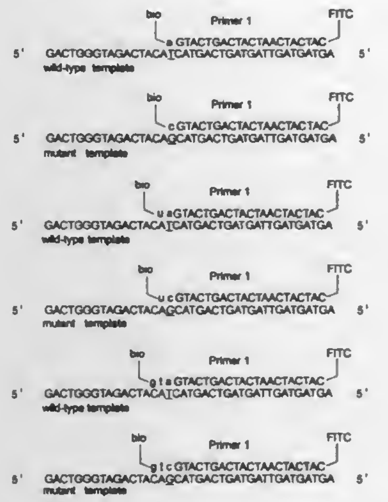
Nurit Eyal, 7 Keren Kayemet, 76345 Rehovot, and Nir Navot, 1 Hapaamon, Neve Afek, 40800 Rosh Haayin, both of Israel

Continuation-in-part of Ser. No. 84,505, Jul. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 919,872, Jul. 27, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,432

Claims priority, application Israel, Jul. 2, 1992, 102382

Int. Cl.^{6} C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04;21/02*

U.S. Cl. 435—91.1 **7 Claims**


bio
Primer 1
FITC
a GTACTGACTACTAACTACTAC
5'
GACTGGGTAGACTACATCATGACTGATGATTGATGATGA
5'
wild-type template
bio
Primer 1
FITC
c GTACTGACTACTAACTACTAC
5'
GACTGGGTAGACTACAGCATGACTGATGATTGATGATGA
5'
mutant template
bio
Primer 1
FITC
u a GTACTGACTACTAACTACTAC
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wild-type template
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Primer 1
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u c GTACTGACTACTAACTACTAC
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GACTGGGTAGACTACAGCATGACTGATGATTGATGATGA
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mutant template
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Primer 1
FITC
g t a GTACTGACTACTAACTACTAC
5'
GACTGGGTAGACTACATCATGACTGATGATTGATGATGA
5'
wild-type template
bio
Primer 1
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g t c GTACTGACTACTAACTACTAC
5'
GACTGGGTAGACTACAGCATGACTGATGATTGATGATGA
5'
mutant template

1. A method of determining the identity of a nucleotide base at a specific position in a nucleic acid of interest, which can be used to detect point mutations, allelism, and the genotype of an examined individual, comprising the steps of:

(a) if the nucleic acid of interest is double stranded, treating said double stranded nucleic acid to obtain single stranded nucleotide bases spanning the specific position, or, if the nucleic acid of interest is single stranded, directly employing step (b);

(b) contacting said single stranded nucleotide bases spanning the specific position with an oligonucleotide primer having a 3'-end, said primer being for hybridizing with single stranded stretches of nucleotide bases present in the nucleic acid of interest adjacent the nucleotide base to be identified, so as to form a duplex between the primer and the nucleic acid of interest;

(c) contacting, in the presence of a template dependent extension enzyme, said duplex with:

(i) a primer extension unit, said primer extension unit including an extension moiety for specifically halting a nucleic acid template dependent primer extension reaction, in a manner which is strictly dependent on the identity of an unpaired nucleotide base of the nucleic acid of interest located within the nucleic acid of interest 5' to the specific position, for permitting base pairing of said extension moiety of said primer extension unit with said unpaired nucleotide base, said oligonucleotide primer and said primer extension unit are selected such that any nucleotide bases of the nucleic acid of interest present between said 3'-end of said oligonucleotide primer and said unpaired nucleotide base are different from said unpaired nucleotide base; and

(ii) one to three additional primer extension units, each of said one to three additional primer extension units having an extension moiety permitting primer extension, said one to three additional primer extension units are selected such that each is complementary to at least one of said nucleotide bases of the nucleic acid of interest present between said 3'-end of said oligonucleotide primer and said unpaired nucleotide base, among which at least the nucleotide base at the specific position being present;

such that said template dependent primer extension reaction is initiated by incorporation of said one to three additional primer extension units and is halted by incorporation of said primer extension unit which has said extension moiety for specifically halting said nucleic acid template dependent primer extension reaction; and

(d) determining the presence of an extended primer.

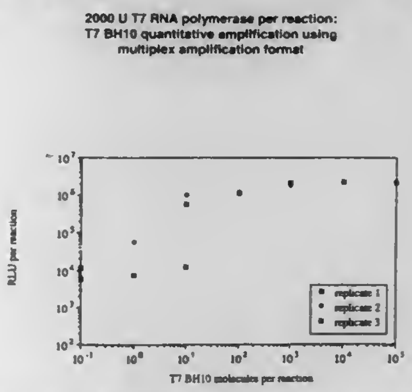
5,710,029
METHODS FOR DETERMINING PRE-AMPLIFICATION LEVELS OF A NUCLEIC ACID TARGET SEQUENCE FROM POST-AMPLIFICATION LEVELS OF PRODUCT

Thomas B. Ryder; Karen W. Shannon, both of Escondido; Daniel Louis Kaclan, San Diego; Richard C. Harvey, San Diego; Sherrol H. McDonough, San Diego; Frank R. Gonzales, San Diego,; Maria R. Castillo, Chula Vista; Elizabeth R. Billyard, San Diego, and Nancy Lau Liu Shen, San Diego, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 486,705

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *19/00;21/02*

U.S. Cl. 435—911 **40 Claims**


2000 U T7 RNA polymerase per reaction:
T7 BH10 quantitative amplification using
multiplex amplification format

1. A method for determining the amount of a target nucleic acid sequence present in a sample, comprising:

a) contacting

i) a sample containing one or more copies of said target sequence, and

ii) known amounts of at least one standard nucleic acid with oligonucleotide primers, reagents, a reverse transcriptase activity and an RNA polymerase activity under conditions

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sufficient to cause a transcription-mediated amplification of said target sequence, if present, under said conditions,

b) amplifying said standard nucleic acid and said target sequence to produce a standard-specific RNA amplicon and a target-specific RNA amplicon,

c) measuring the amount of each said standard-specific amplicons and specific amplicons and said target-specific amplicons produced, and

d) correlating the amount of standard-specific amplicon reaction products with the known pre-amplification amounts of said standard nucleic acid to produce a standard curve, and

e) determining the pre-amplification amount of the target sequence by comparing the measurement of target-specific amplicons made at step c) with said standard curve,

wherein no RNAse H additional to that provided by said reverse transcriptase is used.

5,710,030
PROCESS FOR PREPARING FUELS, FUEL SUBSTITUTES, AND FUEL SUPPLEMENTS FROM RENEWABLE RESOURCES

Kevin W. Anderson, Hamilton, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Sep. 13, 1995, Ser. No. 527,701
Int. Cl.^{6} C12P *7/64;7/62*
U.S. Cl. 435—134 **14 Claims**

1. An integrated process for manufacturing a composition of fatty acid esters, useful as or in a fuel, from oil-containing natural plant material, comprising

(a) removing the oil from said oil-containing plant material, and recovering it, to produce a residue comprising complex polymeric carbohydrates;

(b) saccharifying deoiled plant material comprising complex polymeric carbohydrate to form saccharides;

(c) fermenting the saccharides to form alkanol; and

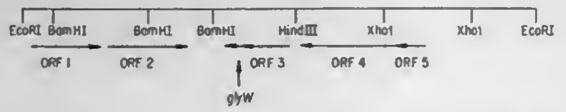
(d) reacting said recovered alkanol with the oil extracted according to step (a) to effect transesterification and to produce fatty acid lower alkyl esters useful as a fuel or fuel additive.

5,710,031
GENOMIC DNA ENCODING A PSEUDOMONAS GLOBAL TRANSCRIPTIONAL ACTIVATION ELEMENT AND ITS USE IN ACTIVATING GENE EXPRESSION

Thomas D. Gaffney, Chapel Hill; Stephen T. Lam, Raleigh, both of N.C.; James M. Ligon, Basel, Sweden; Dwight Steven Hill, Cary, and Jeffrey I. Stein, Hillsborough, both of N.C., assignors to Novartis Finance Corporation, New York,, N.Y.

Division of Ser. No. 287,442, Aug. 8, 1994, Pat. No. 5,670,350, which is a continuation-in-part of Ser. No. 258,261, Jun. 8, 1994, Pat. No. 5,639,949, which is a continuation-in-part of Ser. No. 087,636, Jul. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 908,284, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 570,184, Aug. 20, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,174

Int. Cl.^{6} A01N *63/00;* C12N *15/31;15/67;15/78*
U.S. Cl. 435—172.3 **18 Claims**



9. A method for activating expression in a Pseudomonas host of at least one gene that is latent or natively expressed at low levels, comprising introducing into said Pseudomonas host at least one copy of an isolated gene activating element comprising a nucleotide sequence of a gafA class of transcriptional regulators, wherein said gene activating element induces expression of said gene in said Pseudomonas host.

5,710,032
SECONDARY-METABOLITE BIOSYNTHESIS GENES FROM ACTINOMYCETES, METHOD OF ISOLATING THEM AND THEIR USE

Wolfgang Piepersberg, Wuppertal; Barbara Bräu, Frankfurt am Main, and Petra Sichel, Rüsselsheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 196,218, Aug. 25, 1994, Pat. No. 5,614,619. This application Jul. 30, 1996, Ser. No. 681,953

Claims priority, application Germany, Sep. 18, 1991, 41 30 967.7

Int. Cl.^{6} C12N *9/00;9/92;1/20*
U.S. Cl. 435—183 **1 Claim**

1. The amino acid sequence of (SEQ ID Nos: 32, 33 and 34).

5,710,033
SUPEROXIDE DISMUTASE CLONING AND EXPRESSION IN MICROORGANISMS

Robert A. Hallewell, San Francisco, and Guy T. Mullenbach, Oakland, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 64,737, May 19, 1993, abandoned, Continuation of Ser. No. 750,608, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 121,212, Nov. 16, 1987, Pat. No. 5,066,591, which is a division of Ser. No. 931,920, Nov. 14, 1986, abandoned, which is a continuation of Ser. No. 609,412, May 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 538,607, Oct. 3, 1983, abandoned. This application Apr. 25, 1994, Ser. No. 232,595

Int. Cl.^{6} C12N *9/02;* C12P *21/02*
U.S. Cl. 435—189 **12 Claims**

1. A composition consisting essentially of an isolated, biologically active, recombinant human copper/zinc superoxide dismutase polypeptide, wherein the composition is free of other human polypeptides, and wherein the superoxide dismutase polypeptide is acetylated at its N-terminus, and further wherein the superoxide dismutase polypeptide comprises the amino acid sequence: Ala Thr Lys Ala Val Cys Val Leu Lys Gly Asp Gly Pro Val Gln Gly Ile Ile Asn Phe Glu Gln Lys Glu Ser Asn Gly Pro Val Lys Val Trp Gly Ser Ile Lys Gly Leu Thr Glu Gly Leu His Gly Phe His Val His Glu Phe Gly Asp Asn Thr Ala Gly Cys Thr Ser Ala Gly Pro His Phe Asn Pro Leu Ser Arg Lys His Gly Gly Pro Lys Asp Glu Glu Arg His Val Gly Asp Leu Gly Asn Val Thr Ala Asp Lys Asp Gly Val Ala Asp Val Ser Ile Glu Asp Ser Val Ile Ser Leu Ser Gly Asp His Cys Ile Ile Gly Arg Thr Leu Val Val His Glu Lys Ala Asp Asp Leu Gly Lys Gly Gly Asn Glu Glu Ser Thr Lys Thr Gly Asn Ala Gly Ser Arg Leu Ala Cys Gly Val Ile Gly Ile Ala Gln.

5,710,034

Patent Not Issued For This Number

5,710,035
HUMAN ELASTASE IV

John M. Greene, Gaithersburg, and Mark D. Adams, North Potomac, both of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Jul. 5, 1994, Ser. No. 270,584
Int. Cl.^{6} C12N *1/18;1/20;5/10;9/66;15/57;15/63*
U.S. Cl. 435—218 **36 Claims**

1. An isolated, extrachromosomal polynucleotide comprising a polynucleotide having at least 95% sequence identity with a member selected from the group consisting of:

a) a polynucleotide encoding the polypeptide comprising amino acid −16 to amino acid 252 set forth in SEQ ID NO:2;

b) a polynucleotide encoding the polypeptide comprising amino acid 1 to amino acid 252 set forth in SEQ ID NO:2;

c) a polynucleotide encoding the polypeptide comprising amino acid 14 to amino acid 252 set forth in SEQ ID NO:2; and

d) a polynucleotide complementary to a), b), or c).

5,710,036

Patent Not Issued For This Number

5,710,037
RETROVIRAL VECTOR PARTICLES

Elio F. Vanin, and Arthur W. Nienhuis, both of Memphis, Tenn., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 10, 1994, Ser. No. 258,420
Int. Cl.^{6} C12N *15/86;15/63;15/48;5/10*
U.S. Cl. 435—240.2 **18 Claims**

1. A retroviral vector particle including a nucleic acid sequence encoding a retroviral envelope, said nucleic acid sequence encoding said retroviral envelope having the nucleic acid sequence of (SEQ ID NO:8).

5,710,038
PRIMARY CULTURES OF NORMAL AND TUMORAL HUMAN OVARIAN EPITHELIUM

Anne-Marie Mes-Masson, Dollard-des-Ormeaux, and Diane Provencher, St-Basile Le Grand, both of Canada, assignors to Universite De Montreal, Montreal, Canada

Filed Nov. 25, 1994, Ser. No. 344,960
Int. Cl.^{6} C12N *5/00*
U.S. Cl. 435—240.2 **8 Claims**

1. An established cell line obtained from a clinical sample of human ovarian epithelium, wherein said established cell line behaves in substantially equivalent ways at the morphological, physiological and molecule levels to a cell from said clinical sample from which said established cell line originates, and wherein said cell is a non-cancerous cell and said established cell line has all of the identifying characteristics of a cell line selected from the group consisting of TOV-21G, TOV-112D and OV-90 having a ATCC accession number CRL 11730, CRL 11731 and CRL 11732, respectively.

5,710,039
PORPHYROMONAS GINGIVICANIS STRAIN ATCC 55562

Masatomo Hirasawa, and Kazuko Takada, both of Chiba, Japan, assignors to Nihon University (Educational Foundationn), Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 520,790
Int. Cl.^{6} C12N *1/20*
U.S. Cl. 435—252.1 **1 Claim**

1. A biologically pure culture of *Porphyromonas gingivicanis* ATCC 55562.

5,710,040
STABLE ENZYMATIC AQUEOUS LIQUID COMPOSITION FOR THE PRODUCTION OF LEATHER

Juergen Christner, Seeheim-Jugenheim, and Gertrud Wick, Darmstadt, both of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Feb. 13, 1996, Ser. No. 600,735

Claims priority, application Germany, Feb. 24, 1995, 295 03 135 U

Int. Cl.^{6} C12S *7/00*
U.S. Cl. 435—265 **21 Claims**

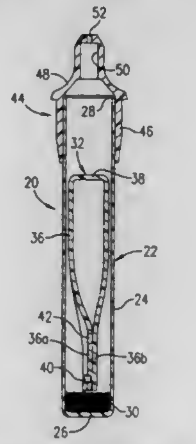
1. An aqueous liquid composition for use in processing of skins and hides in a beamhouse, comprising one or more enzymatic active substances and at least 10 wt % to a maximum of (100−x) wt % molasses, wherein x is the fraction of enzymatic active substances in wt % and wherein x is a value from 0.001 to 90.

20. A method for processing skins and hides in a beamhouse, comprising contacting a skin or hide in need thereof with from 0.1 to 5 wt %, based on skin or hide weight, of an aqueous liquid composition comprising one or more enzymatic active substances and at least 10 wt % to a maximum of (100−x) wt % molasses, wherein x is the fraction of enzymatic active substances in wt %, based on the composition weight, and wherein x is a value from 0.001 to 90.

5,710,041
IN SITU RECONSTITUTABLE LYOPHYLIZED BACTERIA AMPOULE PACKAGE

Dale T. Moorman, Prairie Village, Kans., and Mary Ann Silvius, Kansas City, Mo., assignors to Remel L.P., Lenexa, Kans.

Filed Jun. 3, 1996, Ser. No. 657,159
Int. Cl.^{6} C12M *1/24*
U.S. Cl. 435—287.6 **7 Claims**



1. An in situ reconstitutable biological ampoule package comprising:

a container having a non-frangible, finger pressure deformable side wall of a synthetic resin material and provided with a closed end and an opening at the opposite end thereof;

a quantity of a reconstitutable biological composition within the container;

an ampoule within the container comprising a synthetic resin body provided with a side wall and an end wall portion integral with said side wall of the ampoule,

said ampoule being adapted to store a quantity of a liquid medium for reconstituting the biological composition,

the extremity of the ampoule side wall remote from said end wall portion being crimped with opposed, interengaging surfaces thereof bonded together to present an integral, V-shaped end closure for the ampoule,

said ampoule further being provided with aperture means in the side wall thereof at said crimped portion of the side wall of the ampoule which is normally closed by an opposed side wall portion of the body and located in disposition such that when sufficient finger applied pressure is applied to the side

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wall of the container to force such side wall inwardly and thus effect deformation of the ampoule side wall, liquid medium is forced toward the end closure to an extent that the side wall portion of the ampoule blocking said aperture means is displaced thereby permitting release of the reconstituting medium from the ampoule through said aperture means to effect reconstitution of the biological composition; and

a dropper cap over said opening of the container in closing relationship thereto thus permitting individual drops of the reconstituted biological composition to be selectively delivered from the package.

5,710,042

SOLID ORGANIC WASTE PROCESSING APPARATUS

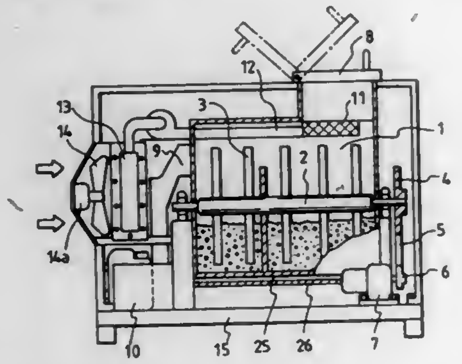
Yasuhiro Shindo, Ohira-machi; Usaburo Yamaguti, Tochigi; Takayuki Fushiki; Hajime Nomura, both of Ohira-machi, and Tosio Suzuki, Tatebayashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,365

Claims priority, application Japan, Aug. 19, 1994, 6-195075; Aug. 19, 1994, 6-195076

Int. Cl.⁶ C12M *3/00*

U.S. Cl. 435—290.1 **17 Claims**



1. A solid organic waste processing apparatus comprising:

a processing tank receiving solid organic waste, fermenting the solid organic waste into a compost and discharging the compost; and

a heat exchanger provided outside the processing tank, for condensing vapor in a gas transferred from the processing tank into a liquid and discharging the liquid,

wherein the heat exchanger is provided via an interval at a side face of the processing tank on a side of discharging the compost.

5,710,043

IN VITRO CELL CULTURE ASSEMBLY

Nicholas George Martin Pay, St Hilaire du Touvet, France, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 25, 1995, Ser. No. 533,983

Int. Cl.⁶ C12M *3/06*

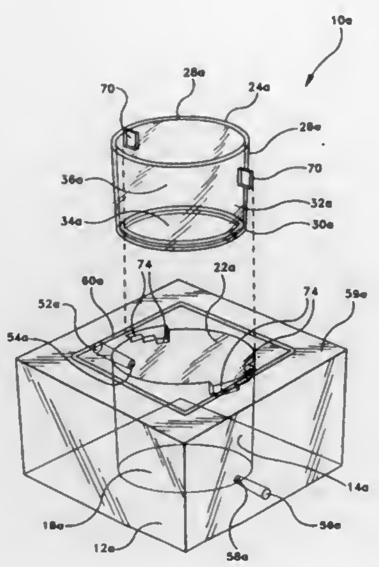
U.S. Cl. 435—297.5 **1 Claim**

1. An assembly for in vitro culture of cells comprising:

a culture vessel having at least one well therein, said well having an open top, a bottom and a wall having an inside surface;

at least one insert sized for placement within said well, said insert having an outside surface, an open end, a closed end, said closed end being closed by a microporous membrane forming a receptacle within said insert;

positioning means for adjustably positioning said insert within said well so that a distance between said closed end of said insert and said bottom of said well is selectively variable, wherein said positioning means comprises at least one outward projection on said outside surface of said insert and a plurality of steps projecting inwardly from said inside surface of said well at increasing distances from said bottom of said well, said projection and said steps disposed in a cam/cam follower relation for adjustably positioning said insert in said well by placing said projection on said steps.



5,710,044

PLASMID FOR EXPRESSING PHOSPHORYLATED RECOMBINANT PROTEINS IN A BACTERIAL SYSTEM

Pradip Mukerji, Gahanna; Jennifer Marie Thurmond, Columbus, both of Ohio; Lennart Hansson, Umeä , Sweden; Jeffrey Harris Baxter, Galena, and Robert George Hards, Delaware, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 395,239, Feb. 27, 1995. This application Nov. 6, 1995, Ser. No. 554,642

Int. Cl.⁶ C12N *15/63;15/72;15/73;9/12*

U.S. Cl. 435—320.1 **6 Claims**

1. A plasmid comprising i) a promoter operably linked to ii) a nucleotide sequence encoding a human protein, wherein said nucleotide sequence encoding said protein is regulated by said promoter, said nucleotide sequence being followed by iii) a nucleotide sequence encoding a kinase which specifically phosphorylates said human protein, wherein said nucleotide sequence encoding said kinase is regulated by said promoter.

5,710,045

Patent Not Issued For This Number

5,710,046

TAGGING HYDROCARBONS FOR SUBSEQUENT IDENTIFICATION

Michael J. Rutledge; Robert T. Roginski, both of Naperville, and George H. Vickers, Aurora, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 4, 1994, Ser. No. 334,274

Int. Cl.⁶ G01N *21/64*

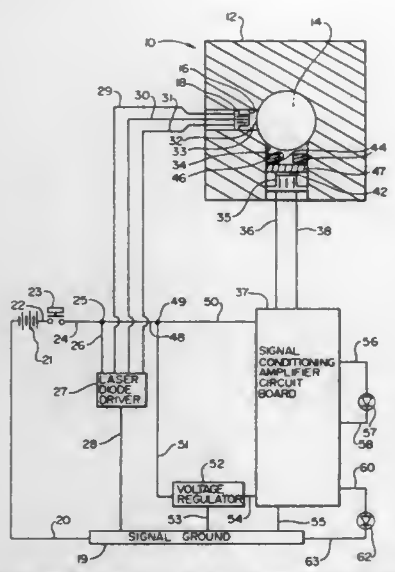
U.S. Cl. 436—56 **10 Claims**

1. A method for identifying a sample containing a tagged gasoline, which comprises:

irradiating a sample in an excitation band consisting of wavelengths of about 600 to about 2500 nanometers, said sample containing a tagged gasoline which includes an essentially metal-free fluorescent dye at a concentration of about 0.01 to about 1000 parts per billion by weight having a base state and an excited state, wherein the dye is selected from the group consisting of naphthalocyanine dye, phthalocyanine dye, cyanine dye, methine dye, croconium dye and squarylium dye, wherein the dye is soluble in gasoline to at least about one percent by weight based on the weight of the gasoline, wherein the dye is inert to water, and wherein the dye is capable of absorbing radiation in an absorption band consisting of wavelengths of about 600 to about 2500 nanometers associated with a transformation to the excited state and emitting radiation in a fluorescent band consisting of wavelengths of about 600 to about 2500 nanometers associated with a return to the base state, the excitation band overlapping the absorption band at an appropriate intensity to transform a significant portion of the dye from the base state to the excited state;

detecting the presence of radiation in the fluorescent band emanating from the sample;

generating a detection signal upon detecting at least a predetermined amount of emanated radiation in the fluorescent band; and identifying said tagged gasoline sample from the generated detection signal.



5,710,047

METHOD FOR MONITORING GROWTH AND DETECTION OF ENVIRONMENTAL STRESS IN PLANTS

Allen K. Murray, Newport Beach, Calif., assignor to Glycozyme, Inc., Irvine, Calif.

Filed Aug. 18, 1995, Ser. No. 516,953

Int. Cl.⁶ G01N *33/68*

U.S. Cl. 436—94 **13 Claims**

13. A method for determining a presence of water stress in cotton plants so that the water stress can be alleviated before cotton fiber yield and quality is impacted, the method comprising the steps of:

extracting a predetermined weight of cotton fibers from bolls of a known age in a predetermined volume of water at ice temperature;

analyzing material extracted from the cotton fibers using high pH artion exchange chromatography to detect characteristics and quantities of glycoconjugate polysaccharides present, said polysaccharides being distinguishable from monosaccharides and disaccharides;

identifying a first group of glycoconjugate peaks that elutes first and a second group of glycoconjugate peaks that elutes later;

comparing the relative abundance of the first group and the second group to levels expected in fibers from control bolls of the known age, thereby determining whether the cotton plant is experiencing water stress.

5,710,048

DETERMINATION OF SURFACTANT CONCENTRATION IN AN AQUEOUS FLUID

Joseph M. Ernst, and Harold J. Noble, Jr., both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc.

Filed Sep. 3, 1996, Ser. No. 706,871

Int. Cl.⁶ G01N *31/16*

U.S. Cl. 436—119 **15 Claims**

1. In a single-phase method for quantitatively measuring the anionic surfactant content of an aqueous based functional fluid comprising water and at least an organic lubricant and an anionic surfactant selected from the group consisting of sulfonate anionic surfactants and fatty acid anionic surfactants the steps comprising:

a) adjusting the pH of the functional fluid to a value within a range selected from the group consisting of pH ranges of from about 1.5 to about 3.0 and from about 9.5 to about 10.6;
b) adding toluidine blue indicator to the functional fluid;
c) adding a known amount of a standardized aqueous solution of 1,3-didecyl-2methylimidazolium halide of known concentration to a known amount of the functional fluid;
d) adding a standardized aqueous solution of polyvinylsulfuric acid alkali metal salt titrant of known concentration in controlled known amounts until a blue to pink toluidine blue indicator color change occurs;
e) observing the total amount of the standardized aqueous solution of polyvinylsulfuric acid alkali metal salt titrant added in step (d);
f) calculating the amount of 1,3-didecyl-2-methylimidazolium halide consumed by the polyvinylsulfuric acid alkali metal salt from the known amounts of the aqueous solution of 1,3-didecyl-2-methylimidazolium halide and the aqueous solution of polyvinylsulfuric acid alkali metal salt employed in steps (c) and (d) and the respective known concentrations thereof;
g) subtracting the amount of 1,3-didecyl-2-methylimidazolium halide of step (f) from the amount of 1,3-didecyl-2-methylimidazolium halide employed in step (c) to obtain a reaction value of 1,3-didecyl-2-methylimidazolium halide;
h) preparing a pH range specific standard curve of reaction value of 1,3-didecyl-2-methylimidazolium halide vs. anionic surfactant concentration for pH ranges of from about 1.5 to about 3.0 and from about 9.5 to about 10.6, and
i) comparing the reaction value of 1,3-didecyl-2-methylimidazolium halide with a pH range specific standard curve for a range of pH corresponding to the range of pH to which the pH of the functional fluid was adjusted to establish the pH range specific anionic surfactant content of the fluid.

5,710,049

SOLID PHASE ASSAY FOR USE WITH A PHYSICAL DEVELOPER

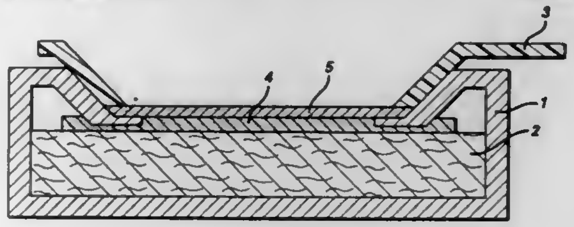
Marcus Joannes Maria Noppe, Kalmthout, and Theo Cesar Garrevoet, Antwerp, both of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Division of Ser. No. 73,961, Jun. 8, 1993, Pat. No. 5,441,896, which is a continuation of Ser. No. 809,030, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 532,702, Jun. 4, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,944

Claims priority, application European Pat. Off., Jun. 5, 1989, 89201429

Int. Cl.⁶ G01N *33/543;33/551;33/553*

U.S. Cl. 436—525 **2 Claims**



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1. A device for use in detecting the presence of an analyte in a fluid sample using a tracer having a metal label and in which the signal of the tracer is enhanced by applying a physical developer, said device comprising:

a) a support having upper and lower surfaces and a test area on its lower surface;

b) a binder specific for the analyte covering the test area in a concentration whereby tracer specifically bound to bound analyte in the test area under assay conditions becomes visible; and

c) an absorptive layer in fluid communication with the lower surface of the support which receives liquids and any analyte and tracer not specifically bound at the test area;

wherein the support whereto the fluid sample, tracer and physical developer are applied has sufficiently small pore size to remove interfering substances present in the fluid sample and the physical developer, and large enough pore sizes to allow passage of liquid and any analyte and tracer, and wherein the support and the absorptive layer can be detached from each other to enable detection of bound tracer at the test area on the lower surface of the support.

5,710,050
METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE

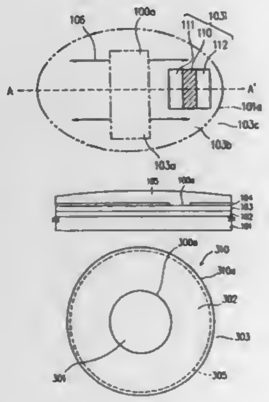
Naoki Makita, Nara, and Tadayoshi Miyamoto, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1995, Ser. No. 506,239

Claims priority, application Japan, Aug. 25, 1994, 6-200603

Int. Cl.^{6} H01L *21/84*

U.S. Cl. 437—7 **14 Claims**



1. A method for fabricating a semiconductor device comprising the steps of:

forming an amorphous silicon film on a substrate;

selectively crystallizing a part of the amorphous silicon film in a first crystallized region and a second crystallized region laterally extending away from the first region to a boundary between a crystalline silicon region formed by the selectively crystallized part of the amorphous silicon film and an amorphous silicon region of the amorphous silicon film which has not been crystallized yet;

performing a mask alignment using the boundary; and

patterning the amorphous silicon film depending upon the mask alignment.

5,710,051
METHOD FOR MANUFACTURING A SINGLE ELECTRON TRANSISTOR BY USING A SCANNING TUNNELING MICROSCOPY

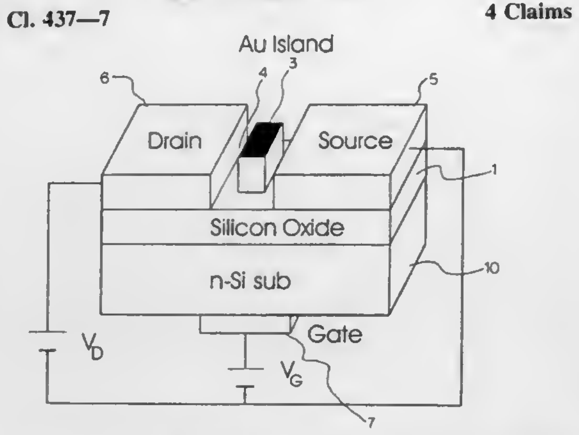
Kang-Ho Park; Jeong-Sook Ha, and El-Hang Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Aug. 8, 1996, Ser. No. 694,316

Claims priority, application Rep. of Korea, Dec. 21, 1995, 95-53661

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 437—7 **4 Claims**



1. A method for the manufacture of a single electron transistor (SET), wherein the SET is capable to operate in a room temperature, the method comprising the steps of:

approaching an Au tip of a scanning tunneling microscopy (STM) on top of a silicon-substrate having a silicon oxide layer on top thereof to maintain a distance from top of the silicon oxide layer to end of the Au tip of the STM;

forming an Au cluster on top of the silicon oxide layer by using a low field evaporation method employing the STM, thereby forming a two dimensional island structure on top of the silicon oxide layer, wherein the low field evaporation method employing the STM generates an electronic pulse between top of the silicon oxide layer and end of the Au tip of the STM by applying a voltage to the Au tip of the STM;

forming a source and a drain to both sides of the Au cluster in the two dimensional island structure, respectively, in such a way that the Au cluster in the two dimensional island structure maintains a gap with the source and the drain, thereby forming an electron tunneling barrier on right and left of the Au cluster in the two dimensional island structure; and

joining a gate on bottom of the silicon-substrate.

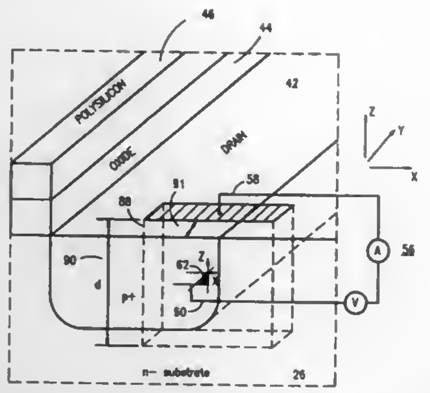
5,710,052
SCANNING SPREADING RESISTANCE PROBE

Roger L. Alvis, Cupertino, and Andrew N. Erickson, Santa Barbara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 17, 1995, Ser. No. 543,979

Int. Cl.^{6} H01L *21/66;* **G01R** *31/26;* **G01N** *23/00*

U.S. Cl. 437—8 **7 Claims**



1. A method of measuring the two-dimensional doping profile in a semiconductor, wherein said semiconductor comprises a structure with a vertical dimension and a horizontal dimension, wherein said method comprises the steps of:

providing a section of a semiconductor to be measured by preparing a horizontal section from said semiconductor by cutting said semiconductor through said area to be measured, providing a first surface;

cutting a trench opposite to said area to be measured;

filling said trench with a conductive material;

attaching a conductive plate to a first side of said horizontal section;

scanning a second side of said horizontal section with a probe; and

measuring an electrical parameter along a path of a dopant iso-concentration.

5,710,053
METHOD FOR MANUFACTURING THIN FILM TRANSISTOR FOR A LIQUID CRYSTAL DISPLAY

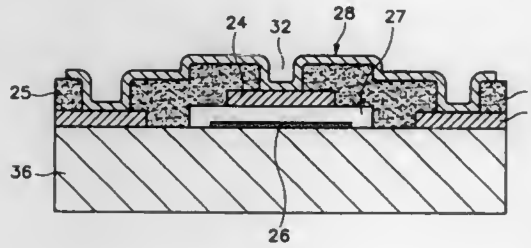
Byung-seong Bae, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 28, 1995, Ser. No. 563,388

Claims priority, application Rep. of Korea, Nov. 28, 1994, 1994-31472

Int. Cl.^{6} H01L *21/84*

U.S. Cl. 437—40 **4 Claims**



1. A method of fabricating a thin-film transistor, comprising the steps of:

forming a silicon pattern on a substrate, said pattern having a perimetrical edge;

forming a gate-insulating layer over the silicon pattern by one of a thermal oxidation process and a deposition process;

forming a gate pattern by depositing a gate electrode-inducing material on the gate-insulating layer at a region spaced within the perimeter of the silicon pattern, so as to avoid depositing gate electrode-inducing material out to the perimetrical edge of said silicon pattern, and forming a gate line-inducing material on the substrate;

implanting ions into the substrate;

forming an interlayer-insulating layer over the gate pattern on the substrate;

activating the implanted ions;

forming a gate contact hole through the interlayer-insulating layer, to the gate electrode-inducing material, and a source-drain contact hole through the interlayer-insulating layer, to the gate line-inducing material; and

forming a wiring pattern on said interlayer-insulating layer, connecting said gate electrode-inducing material with said gate line-inducing material.

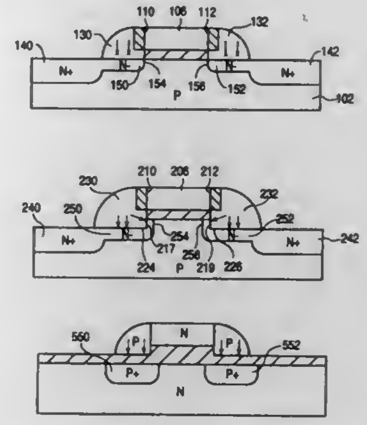
5,710,054
METHOD OF FORMING A SHALLOW JUNCTION BY DIFFUSION FROM A SILICON-BASED SPACER

Mark I. Gardner, Cedar Creek; Robert Dawson, Austin; H. Jim Fulford, Jr., Austin; Frederick N. Hause, Austin; Mark W. Michael, Cedar Park; Bradley T. Moore, and Derick J. Wristers, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 26, 1996, Ser. No. 703,273

Int. Cl.^{6} H01L *21/265;21/225;21/385*

U.S. Cl. 437—44 **57 Claims**



1. A method of forming a shallow junction for an IGFET, comprising the steps of:

forming a gate electrode over a semiconductor substrate;

forming a silicon-based spacer over the substrate and in close lateral relationship to the gate electrode; and

diffusing a dopant from the spacer into the substrate to form a shallow region with a shallow junction substantially aligned with an edge of the gate electrode, wherein the shallow region has a depth in the range of about 0.01 to 0.15 microns.

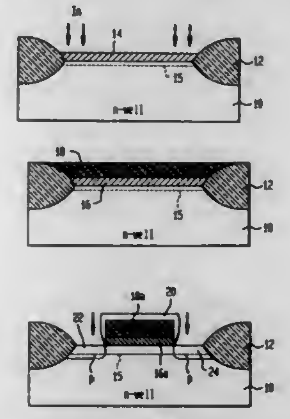
5,710,055
METHOD OF MAKING PMOSFETS HAVING INDIUM OR GALLIUM DOPED BURIED CHANNELS AND N+ POLYSILICON GATES AND CMOS DEVICES FABRICATED THEREFROM

Isik C. Kizilyalli, Orlando, Fla., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 347,980, Dec. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,133

Int. Cl.^{6} H01L *21/265*

U.S. Cl. 437—45 **9 Claims**



1. A process for making a PMOSFET device comprising the steps of:

a) providing a n-type substrate having a principal surface;

b) forming a channel region having a first end and a second end by implanting indium impurity ions into said principal surface of said substrate;

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- c) forming a gate oxide layer on the principal surface of said substrate;
- d) forming a n^+ type polysilicon layer on said gate oxide layer;
- e) patterning and etching said polysilicon layer to form at least one n^+ type polysilicon gate electrode on said gate oxide layer; and
- f) forming a source region adjacent said first end of said channel region and a drain region adjacent said second end of said channel region by introducing impurity ions into said principal surface of said substrate.

5,710,056

DRAM WITH A VERTICAL CHANNEL STRUCTURE AND PROCESS FOR MANUFACTURING THE SAME

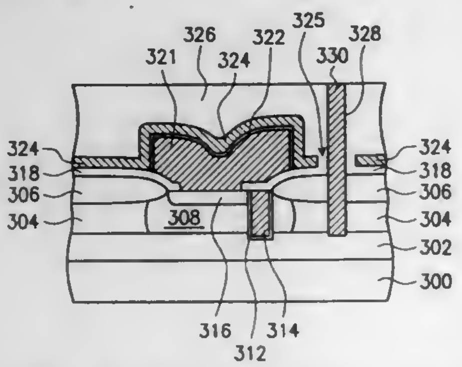
Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Sep. 6, 1996, Ser. No. 706,700

Claims priority, application Taiwan, Jun. 29, 1996, 85107907

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 437—60 **11 Claims**



1. A method of fabricating a DRAM with a vertical channel structure, comprising the steps of:

- (a) forming a source region on top of a silicon substrate;
- (b) forming an epitaxial silicon layer above the source region;
- (c) defining active regions in the epitaxial silicon layer;
- (d) on a surface of the epitaxial silicon layer, forming a field oxide layer having a bird's beak structure, just outside the active area;
- (e) using the field oxide layer as a mask, forming a well such that a bottom of the well is in contact with a top surface of the source region;
- (f) forming a trench passing through at least the well to at least a top surface of the source region;
- (g) forming a first insulating layer on interior sidewalls and a bottom surface of the trench, and forming a gate that almost completely fills a remaining space in the trench;
- (h) in the well, forming a drain region lying between one edge of the gate and a remote edge of the bird's beak structure;
- (i) forming a second insulating layer with a contact window above the drain region; and;
- (j) forming a storage capacitor above the contact window.

5,710,057

SOI FABRICATION METHOD

Donald M. Kenney, 18 Birch Rd., Shelburne, Vt. 05482

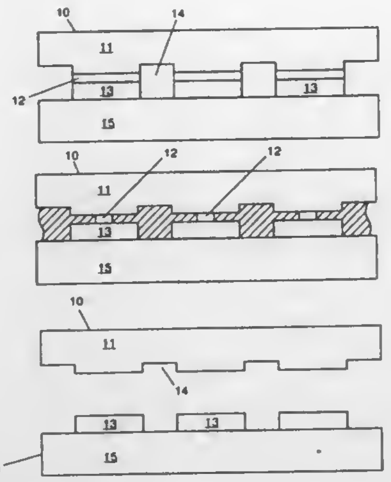
Filed Jul. 12, 1996, Ser. No. 679,021

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 437—62 **20 Claims**

1. A method of forming a bonded structure comprising the steps of:

- (a) providing a seed substrate having first, second, and third regions;
- (b) forming a groove in said seed substrate;
- (c) bonding a handle substrate to said third region;



- (d) removing and/or fracturing said second region, whereby said first region is detached from the third region.

5,710,058

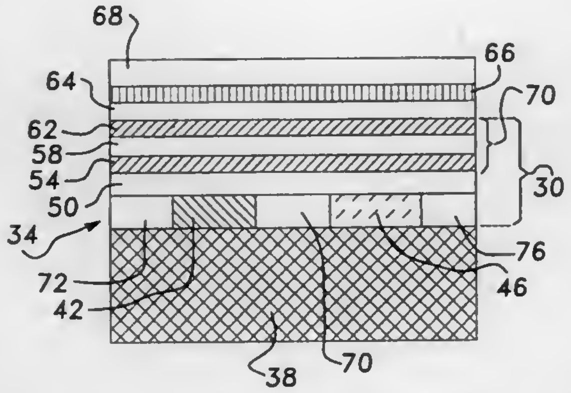
METHOD OF MAKING MULTI-TERMINAL RESONANT TUNNELING TRANSISTOR

Neal Joshua Schneier, Rolling Hills Estates, and John Joseph Berenz, San Pedro, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 227,921, Apr. 15, 1994, Pat. No. 5,514,876. This application Nov. 2, 1995, Ser. No. 552,024

Int. Cl.^{6} H01L *21/203*

U.S. Cl. 437—107 **11 Claims**



1. A method for simultaneously providing a plurality of functions from a single transistor having a base, a collector and an emitter, comprising the steps of:

- (a) growing a first layer using molecular beam epitaxy (MBE), wherein said first layer is initially undoped;
- (b) bombarding a first strip of said first layer with impurity ions using focused ion beam processing to create a first doping characteristic for said first strip;
- (c) bombarding a second strip of said first layer with impurity ions using focused ion beam processing to create a second doping characteristic for said second strip, wherein said second strip is spaced from said first strip; and
- (d) growing a resonant tunneling junction including a plurality of layers on said first layer.

5,710,059

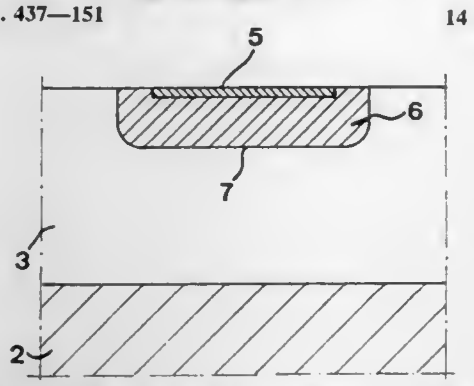
METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE HAVING A SEMICONDUCTOR LAYER OF SIC BY IMPLANTING

Kurt Rottner, Kista, Sweden, assignor to ABB Research Ltd., Zurich, Switzerland

Filed Apr. 24, 1996, Ser. No. 636,942

Int. Cl.^{6} H01L *21/22*

U.S. Cl. 437—151 **14 Claims**



1. A method for producing a semiconductor device having a semiconductor layer of SiC with at least a pn-junction therein, comprising the steps of:

- a) implanting an impurity dopant of a first conductivity type, into said semiconductor layer being doped according to a second opposite conductivity type for forming a first type doped near surface layer in said semiconductor layer and
- b) annealing said semiconductor layer at a high temperature for making the implanted impurity dopants electrically active, wherein in step b) said annealing is carried out at such a high temperature that at least a portion of said dopants diffuses into the non-implanted sub-layer of said semiconductor layer following said near surface layer, and wherein in step a) first conductivity type impurity dopants of at least two different elements are implanted in the semiconductor layer and wherein at least one of said elements is slowly diffusing in SiC at said annealing temperature for retaining a high doping of said near surface layer after annealing to form a good ohmic contact to said semiconductor layer and at least one of said elements is rapidly diffusing in SiC at said annealing temperature for locating a pn junction so created at a considerable distance from said near surface layer.

5,710,060

METHOD OF FORMING WIRING USING SPUTTERED INSULATING MASK

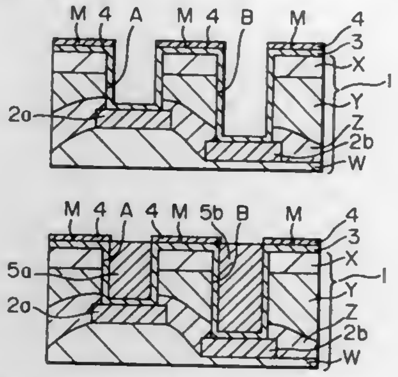
Tomoyuki Uchiyama, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 425,484, Apr. 20, 1995, Pat. No. 5,594,278. This application Oct. 30, 1996, Ser. No. 741,471

Claims priority, application Japan, Apr. 22, 1994, 6-108002

Int. Cl.^{6} H01L *21/28*

U.S. Cl. 437—190 **13 Claims**



1. A method of fabricating a semiconductor device having an inter-level insulating film formed on a semiconductor substrate, said method comprising the steps of:

- forming a wiring layer in said inter-level insulating film;
- forming an open aperture portion in said inter-level insulating film to reach said wiring layer;
- forming a first conductor layer on an inner surface of said open aperture portion and on said inter-level insulating film by chemical vapor deposition;
- forming an insulating film on said first conductor layer other than said first conductor layer formed on the inner surface of said open aperture portion by sputtering;
- forming a second conductor layer inside said open aperture portion by chemical vapor deposition, and
- forming a third conductor layer on said second conductor layer.

5,710,061

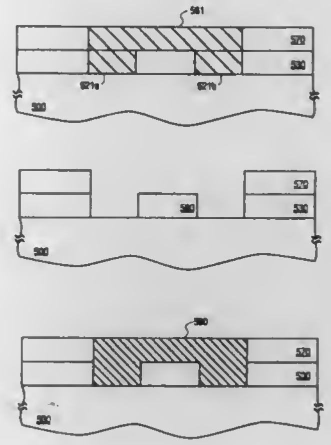
DISPOSABLE POST PROCESSING FOR SEMICONDUCTOR DEVICE FABRICATION

James M. Cleeves, Redwood City, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Division of Ser. No. 179,615, Jan. 10, 1994, abandoned. This application Aug. 17, 1995, Ser. No. 515,675

Int. Cl.^{6} H01L *21/283*

U.S. Cl. 437—195 **20 Claims**



11. A method for disposable post processing over a semiconductor wafer, comprising the steps of:

- (a) forming a first post and a second post of a first material over the semiconductor wafer;
- (b) forming over the semiconductor wafer and around the first and second posts a second layer having an insulative material;
- (c) forming over the second layer a third layer having a third material;
- (d) patterning the third layer to form a third post, wherein the third post overlies at least a portion of the first post and at least a portion of the second post;
- (e) forming over the semiconductor wafer and around the third post a fourth layer having an insulative material;
- (f) removing the first, second, and third posts after the forming step (e) to form an opening in the second and fourth layers; and
- (g) forming a conductive material in the opening.

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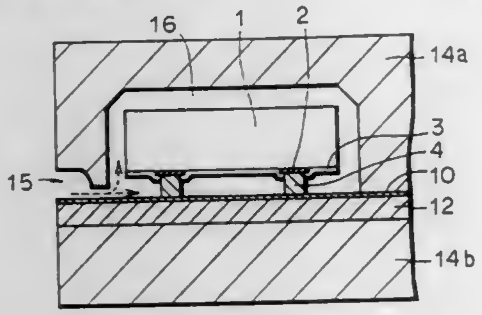
5,710,062
PLASTIC MOLDED SEMICONDUCTOR PACKAGE AND METHOD OF MANUFACTURING THE SAME

Akiyoshi Sawai; Haruo Shimamoto; Toru Tachikawa, and Jun Shibata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 234,808, Apr. 28, 1994. This application Jun. 1, 1995, Ser. No. 456,335
Claims priority, application Japan, Jun. 1, 1993, 5-130802
Int. Cl.^{6} H01L *21/28;21/56*
U.S. Cl. 437—207 **6 Claims**

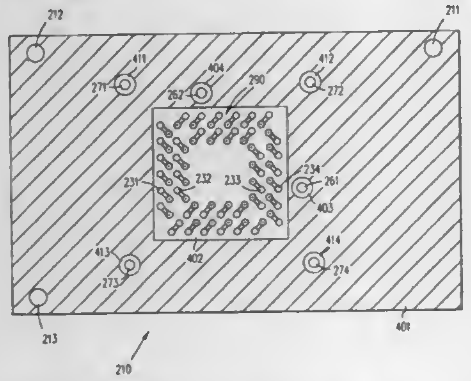


1. A method of manufacturing a plastic molded semiconductor package, which method comprises:
- forming a plurality of internal connection conductors on a continuous metal foil;
- laying a semiconductor chip containing a pad electrode on said metal foil, with the pad electrode in contact with one of said internal connection conductors, without direct contact between the semiconductor chip and metal foil;
- joining said internal connection conductor and said pad electrode together to form an electrical connection therebetween;
- transfer molding said semiconductor chip with molding resin while holding said metal foil in molding dies; and
- selectively etching said metal foil to form an external connection conductor on said internal connection conductor.

5,710,063
METHOD FOR IMPROVING THE ALIGNMENT OF HOLES WITH OTHER ELEMENTS ON A PRINTED CIRCUIT BOARD

Douglas W. Forehand, Mountain View, and Karl A. Sauter, Pleasanton, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 6, 1996, Ser. No. 660,091
Int. Cl.^{6} H05K *3/30;* **H01L** *21/18*
U.S. Cl. 437—208 **16 Claims**

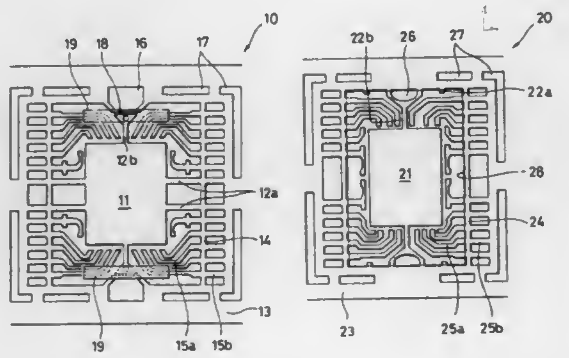


1. A method of locating a socket on a printed circuit board, the method comprising the steps of:
- fabricating a plurality of pads over an upper surface of the printed circuit board;
- fabricating a fiducial over the upper surface of the printed circuit board;
- optically aligning a drill with the fiducial; and then
- drilling a socket hole through the fiducial and the printed circuit board.

5,710,064
METHOD FOR MANUFACTURING A SEMICONDUCTOR PACKAGE

Young Jae Song, Seongnam; Jeong Woo Seo, Suwon, and Wan Gyun Choi, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 10, 1995, Ser. No. 513,309
Claims priority, application Rep. of Korea, Aug. 16, 1994, 1994-20085
Int. Cl.^{6} H01L *21/60*
U.S. Cl. 437—220 **3 Claims**

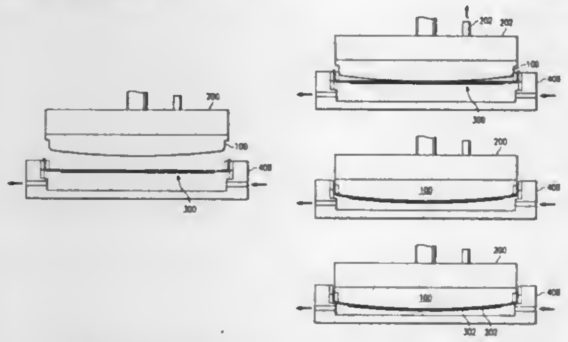


1. A method for manufacturing a semiconductor package, comprising the steps of:
- (a) providing a lead frame having a die pad having one face arranged to have a semiconductor chip mounted thereto and an opposite face, having a plurality of inner leads spaced from one another beyond the outer perimeter of the die pad, having a plurality of outer leads integrally extending from respective ones of the inner leads and further from the die pad, having two dam bars provided so as to be respectively located spaced from a first set of two laterally opposite sides of the die pad so as to form temporary interconnections between leads where respective outer leads integrally extend from respective inner leads, having two side rails respectively spaced from a second set of two longitudinally opposite sides of the die pad, having the two dam bars at longitudinally opposite ends thereof connecting with the respective side rails, so as to define inwardly of a perimeter defined by the dam bars and side rails the outer perimeter of a region to be encapsulated, and having at least two oppositely extending tie bars, each connecting a respective side of the die pad with a respective side rail;
- (b) mounting a semiconductor chip on said one face of said die pad;
- (c) cutting across and thereby severing said tie bars;
- (d) electrically connecting a plurality of wires between the semiconductor chip and respective ones of said inner leads;
- (e) encapsulating with a molding material the semiconductor chip, wires, inner leads, and said one face of said die pad out to said outer perimeter of said region to be encapsulated, while leaving a said opposite face of said die pad exposed, and while providing mechanical support for said die pad relative to said side rails within said outer perimeter of said region;
- (f) cutting said dam bars from extending between respective of said outer leads of said lead frame; and
- (g) electroplating a protective metallic coating onto said outer leads, in an electroplating process in which at least one said side rail is used as a cathode, and during which said exposed opposite face of the die pad, being relatively electrically isolated from the side rails, remains unplated by said metallic coating.

5,710,065
METHOD AND APPARATUS FOR BREAKING AND SEPARATING DIES FROM A WAFER

Rafael C. Alfaro, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1995, Ser. No. 367,970
Int. Cl.^{6} H01L *21/302*
U.S. Cl. 437—226 **17 Claims**

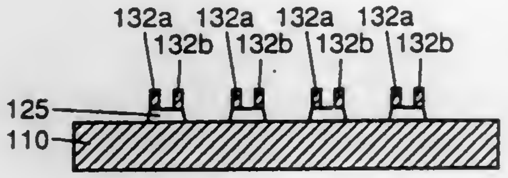


1. A method of separating a wafer into wafer portions, the method comprising:
- mounting a wafer on a flexible membrane;
- deforming the wafer with an anvil to physically separate the wafer into wafer portions, the deforming step comprising:
  - contacting the flexible membrane with the anvil;
  - evacuating an interior region of the anvil to cause the flexible membrane to be pressed against the anvil; and
- stretching the membrane to spatially separate the wafer portions.

5,710,066
METHOD OF FORMING FINE PATTERNS

Chikayuki Okamoto; Tadashi Nishioka, and Satoru Kawazu, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Hyogo, both of Japan

Division of Ser. No. 395,025, Feb. 27, 1995, Pat. No. 5,595,941. This application Oct. 4, 1996, Ser. No. 726,223
Claims priority, application Japan, Jun. 1, 1994, 6-120054
Int. Cl.^{6} H01L *21/302*
U.S. Cl. 437—228 **9 Claims**

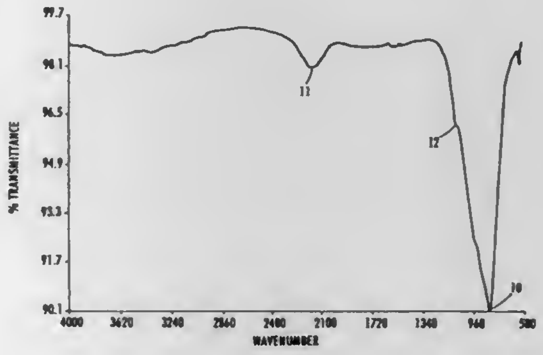


1. A method of forming a fine pattern, comprising the steps of:
- forming an object layer on a support member;
- forming on said object layer patterned resist having opposing side surfaces;
- converting a portion of said patterned resist on each opposing side surface with an agent selected from the group consisting of (a) a carbon trichloride radical, (b) a mixture of silicon ion and oxygen ion, (c) a mixture of carbon ion and carbon monoxide ion, (d) a chlorine radical, (e) aluminum trichloride liquid and (f) dibutyl magnesium liquid, leaving unconverted resist therebetween, wherein said first and second sidewalls exhibit etch characteristics different from said unconverted resist;
- removing the unconverted portion of said patterned resist, thereby leaving said first and second converted sidewalls on said object layer;
- etching the portion of said object layer excluding the portion immediately below said first and second converted sidewalls, using said first converted sidewall and said second converted sidewall as a mask, thereby forming a fine pattern of said object; and
- removing said first and said second converted sidewalls.

5,710,067
SILICON OXIME FILM

David K. Foote, and Subash Gupta, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 479,718
Int. Cl.^{6} H01L *21/316*
U.S. Cl. 437—238 **101 Claims**

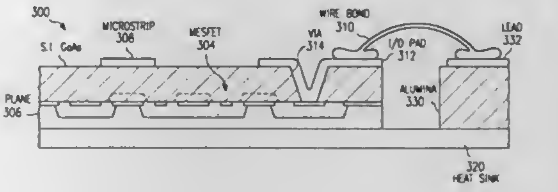


1. A film comprising a layer of silicon oxime having the formula $Si_{(1-x-y-z)}N_xO_y:H_z$, wherein x, y and z represent the atomic percentage of nitrogen, oxygen and hydrogen, respectively, wherein the silicon oxime comprises about 10–20 atom percent hydrogen and has a thickness of about 200 Å to about 600 Å.

5,710,068
LOW THERMAL IMPEDANCE INTEGRATED CIRCUIT

Darrell G. Hill, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 159,648, Nov. 30, 1993. This application Jun. 7, 1995, Ser. No. 476,832
Int. Cl.^{6} H01L *21/265*
U.S. Cl. 437—415 M **12 Claims**



5. A method of fabrication of an integrated circuit comprising the steps of:
- (a) forming a transistor at a frontside surface of a substrate;
- (b) forming a ground plane over and connecting to said frontside surface;
- (c) forming vias through said substrate;
- (d) forming bond pads at a backside surface of said substrate, said backside surface opposite said frontside surface, said bond pads coupling to said transistor through said vias; and
- (e) forming passive components at said backside surface and coupled to said transistor.

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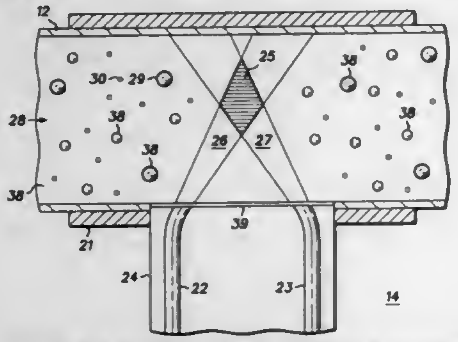
5,710,069
MEASURING SLURRY PARTICLE SIZE DURING SUBSTRATE POLISHING

Janos Farkas, and James Michael Mullins, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 26, 1996, Ser. No. 703,322

Int. Cl.^{6} G01N *15/14*

U.S. Cl. 438—7 **22 Claims**



1. A process for forming a semiconductor device comprising steps of:

providing a semiconductor device substrate within a tool;
setting a particle size limit;
flowing a liquid including particles through a particle analyzer having a detector, wherein only one particle at a time is detected by the detector; and
determining a flow path for the liquid after leaving the particle analyzer, wherein the liquid:
  contacts the semiconductor device substrate within the tool if the only one particle is no larger than the particle size limit; and
  is diverted and does not contact the semiconductor device substrate within the tool if the only one particle is larger than the particle size limit.

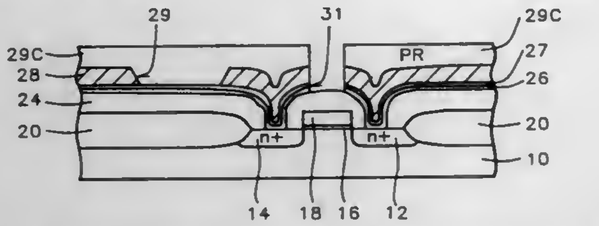
5,710,070
APPLICATION OF TITANIUM NITRIDE AND TUNGSTEN NITRIDE THIN FILM RESISTOR FOR THERMAL INK JET TECHNOLOGY

Lap Chan, SF, Calif., assignor to Chartered Semiconductor Manufacturing PTE Ltd., Singapore, Singapore

Filed Nov. 8, 1996, Ser. No. 745,637

Int. Cl.^{6} B41J *2/05*

U.S. Cl. 438—21 **20 Claims**



1. A method of fabricating a resistor in a semiconductor device comprising:

a) providing a substrate having a field oxide region surrounding an active area; said field oxide region having an ink well region, and providing a transistor in said active area, said transistor comprising a source, drain and gate electrode;
b) forming a dielectric layer over said field oxide region and said transistor, said dielectric layer having contact openings over said source and drain;
c) forming a resistive layer over said dielectric layer and contacting said source and drain, said resistive layer comprised of two layers of material selected from the group consisting of titanium/titanium nitride and titanium/tungsten nitride;
d) forming a first metal layer over said resistive layer;
e) patterning said first metal layer forming an first opening over a portion of said resistive layer over said ink well region;
f) patterning said first metal layer and said resistive layer forming a second opening over said gate electrode and patterning said first metal layer and said resistive layer forming a first interconnect layer;
g) forming a passivation layer over said first metal layer, said resistive layer in said ink well region and said gate electrode.

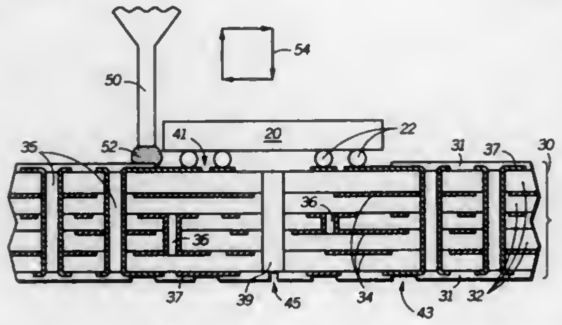
5,710,071
PROCESS FOR UNDERFILLING A FLIP-CHIP SEMICONDUCTOR DEVICE

Stanley C. Beddingfield; Leo M. Higgins, III, and John C. Gentile, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1995, Ser. No. 566,754

Int. Cl.^{6} H01L *21/60*

U.S. Cl. 438—108 **17 Claims**



1. A process for under filling a flip-chip semiconductor device:
providing a wiring substrate having a hole formed therethrough;
providing a semiconductor die having a plurality of bumps formed on an active surface thereof, a perimeter, and a center;
mounting the semiconductor die on the wiring substrate in a flip-chip configuration such that the active surface is adjacent the wiring substrate and the plurality of bumps are connected to the wiring substrate, wherein upon mounting the semiconductor die the hole of the wiring substrate is located near the center of the semiconductor die, and wherein upon mounting a space is created between the active surface of the semiconductor die and the wiring substrate; and
dispensing an under fill encapsulation material around an entirety of the perimeter of the semiconductor die;
wherein after the step of dispensing, the underfill encapsulation material flows inward from the perimeter of the semiconductor die toward the hole in the wiring substrate, allowing air in the space between the semiconductor die and the wiring substrate to be expelled through the hole.

5,710,072
METHOD OF PRODUCING AND ARRANGEMENT CONTAINING SELF-AMPLIFYING DYNAMIC MOS TRANSISTOR MEMORY CELLS

Wolfgang Krautschneider, Hohenthann; Lothar Risch, Neubiberg, and Franz Hofmann, München, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/EP95/01656, § 371 Date Nov. 18, 1996, § 102(e) Date Nov. 18, 1996, PCT Pub. No. WO95/31828, PCT Pub. Date Nov. 23, 1995

PCT Filed May 2, 1995, Ser. No. 737,236

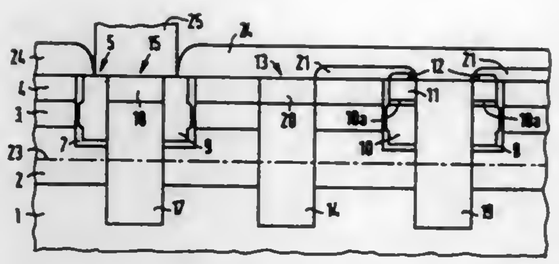
Claims priority, application Germany, May 17, 1994, 44 17 150.1

Int. Cl.^{6} H01L *21/336*

U.S. Cl. 438—197 **10 Claims**

1. A method of producing an arrangement containing self-amplifying dynamic MOS transistor memory cells, comprising the steps of;

providing a silicon substrate with a vertical sequence of doped zones which comprises at least a first doped zone a second doped zone disposed thereon and a third doped zone disposed thereon for a source zone, a channel zone and a drain zone of vertical MOS transistors,



etching a first trench and a second trench down into the first zone and which traverse the second zone and the third zone,
providing a surface of the first trench with a first gate dielectric and a surface of the second trench with a second gate dielectric,
forming a first gate electrode in the first trench and forming a second gate electrode in the second trench,
producing a third trench which cuts through the first doped zone, the second doped zone and the third doped zone between the first trench and the second trench,
providing the third trench with a first isolation structure at least in a region of the first doped zone and of the second doped zone,
electrically interconnecting parts of the third doped zone that are separated by the third trench by an interconnect structure, and
producing a diode structure whose one terminal is connected in an electrically conducting manner to the third doped zone and whose other terminal is connected in an electrically conducting manner to that of the second gate electrode.

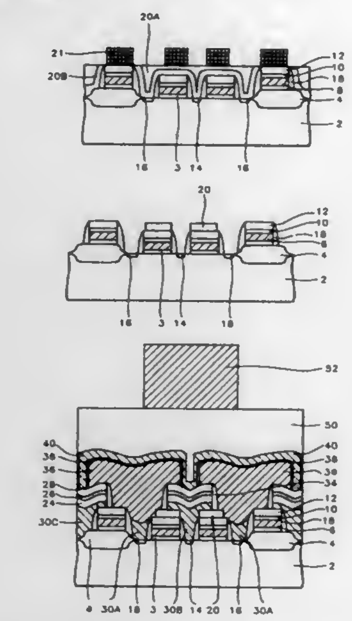
5,710,073
METHOD FOR FORMING INTERCONNECTIONS AND CONDUCTORS FOR HIGH DENSITY INTEGRATED CIRCUITS

Erik S. Jeng, Taipei, and Ing-Ruey Liaw, Hsinchu, both of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-chu, Taiwan

Filed Jan. 16, 1996, Ser. No. 585,614

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—239 **24 Claims**



13. A method of fabricating a capacitor on a semiconductor substrate having a device area and spaced isolation regions formed therein; comprising the steps of:

a) forming a gate oxide layer over said substrate and said isolation regions;
b) forming a first conductive layer over said gate oxide layer;
c) forming a gate dielectric layer over said first conductive layer;
d) forming a first isolation cap layer over said gate dielectric layer; said first isolation cap layer formed of anti-reflective silicon nitride;
e) patterning said gate oxide layer, said first conductive layer, gate dielectric layer, and said first isolation cap layer to form spaced gate electrodes over said device area and conductive structures over said isolation regions;
f) forming first isolation spacers on the sidewalls of said gate electrodes and on the sidewalls of said conductive structures; said first isolation spacers formed of silicon nitride;
g) implanting impurity ions into said substrate surface using said gate electrodes and said isolation spacers as a mask forming sources and drains;
h) forming a top isolation layer covering the first isolation cap layer over said gate electrodes; said top isolation layer composed of silicon oxide;
i) forming sequentially a first polysilicon layer, a dielectric layer, and a second isolation cap layer over the resulting structure; said second isolation cap layer composed of anti reflective silicon nitride;
j) forming a first opening having first sidewalls by masking and selectively etching said second isolation cap layer and said dielectric layer over said source; and etching upper portions of said first polysilicon layer over said source forming a bottom node plug; and forming a drain contact to said drain,
k) forming second isolation spacers on said first sidewalls of said first opening; said second isolation spacers formed of silicon oxide; and
l) forming a top node plug filling said first opening and forming an electrical contact to said bottom node plug thereby forming a interconnect to said source; and
m) forming a capacitor dielectric layer and a top electrode layer over said interconnect thereby forming a capacitor and completing a memory cell.

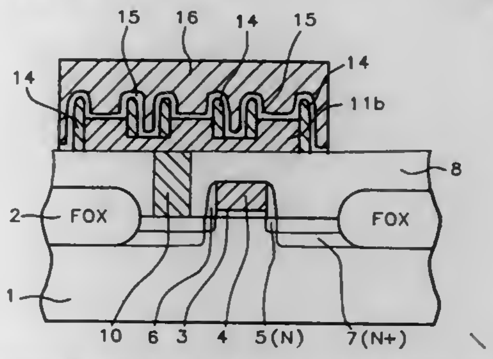
5,710,074
INCREASED SURFACE AREA OF AN STC STRUCTURE VIA THE USE OF A STORAGE NODE ELECTRODE COMPRISED OF POLYSILICON MESAS AND POLYSILICON SIDEWALL SPACERS

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Oct. 18, 1996, Ser. No. 734,062

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—253 **27 Claims**



1. A method of fabricating a DRAM device, on a semiconductor substrate, comprised of an underlying transistor; with a gate insulator, a gate electrode structure, formed from a first polysilicon layer, insulator sidewall spacers, formed from a first insulator layer, and a source and drain region, and an overlying STC structure; with a lower electrode, a dielectric layer, and an overlying upper electrode, and with said lower electrode, of said STC structure, containing multiple polysilicon mesas, and polysilicon

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spacers, on the sides of the polysiticon mesas, and electrically contacting said source and drain region, of said transistor, comprising the steps of:

- depositing a second insulator layer on said underlying transistor of said DRAM device;
- opening a contact hole, in said second insulator layer, to expose top surface of said source and drain region, of said underlying transistor;
- forming a conductive contact plug, in said contact hole, contacting top surface of said source and drain region;
- depositing a second polysilicon layer on top surface of said second insulator layer, and on top surface of said conductive contact plug, exposed in said contact hole;
- depositing a third insulator layer on said second polysilicon layer;
- a first patterning of said third insulator layer, and of said second potysilicon layer, to form initial phase of said lower electrode structure, of said STC structure;
- a second patterning of said lower electrode structure, to form a second phase of said lower electrode structure, via RIE of said third insulator layer, and via RIE of only a topportion of said second polysilicon layer, creating composite, first mesa structures, of said third insulator layer, and of said top portion of said second polysilicon layer, overlying said second polysilicon layer;
- depositing a third polysilicon layer on said composite first mesa structures, and on said top surface of said second polysilicon layer, between said composite, first mesa structures;
- anisotropic etching of said third polysilicon layer, to form said polysilicon spacers on the sides of said composite, first mesa structures;
- removal of said third insulator layer, from said composite first mesa structures, converting said composite, first mesa structures to second mesa structures, comprised of only said top portion of said second polysilicon, with said polysilicon spacers, on the sides of said second mesa structures, protruding above the top surface of said second mesa structures;
- forming said dielectric layer on said second phase of lower electrode, comprised of said second mesa structures, and said polysilicon spacers, on sides of said second mesa structures;
- depositing a fourth polysilicon layer on said dielectric layer; and
- patterning of said fourth polysilicon layer to form said upper electrode, of said STC structure.

5,710,075

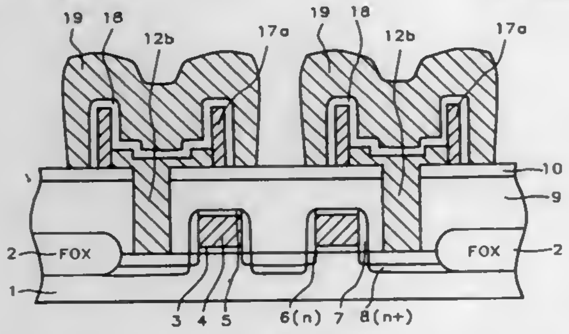
METHOD TO INCREASE SURFACE AREA OF A STORAGE NODE ELECTRODE, OF AN STC STRUCTURE, FOR DRAM DEVICES

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-chu, Taiwan

Filed Nov. 6, 1996, Ser. No. 746,030

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—254 **31 Claims**



1. A method of fabricating a DRAM device, on a semiconductor substrate, comprised of underlying transistors; with gate insulators, gate electrode structures, formed from a first silicon oxide, and a first polysilicon layer, insulator sidewall spacers, formed from a second silicon oxide layer, and source and drain regions, and an overlying STC structure; with a storage node electrode, a dielectric layer, and an overlying plate electrode, and with said storage node electrode, comprised of a lower polysilicon shape, contacting said source and drain regions of said underlying transistor, and with polysilicon spacers, protruding above the top surface of said lower polysilicon shape, comprising the steps of:

- depositing third silicon oxide layer, on said underlying transistor of said DRAM device;
- depositing a first silicon nitride layer on said third silicon oxide layer;
- opening a contact hole, in said first silicon nitride layer, and in said third silicon oxide layer, to expose top surface of said source and drain regions, of said underlying transistor;
- depositing a second polysilicon layer on top surface of said first silicon nitride layer, and on top surface of said source and drain regions, exposed in said contact hole;
- depositing a second silicon nitride layer on said second polysilicon layer;
- patterning to create a electrode opening in said second silicon nitride layer, and in a top portion of said second polysilicon layer;
- depositing a fourth silicon oxide layer on the top surface of said second silicon nitride layer, and on the exposed surfaces of said electrode opening;
- anisotropic etching of said fourth silicon oxide layer, to form silicon oxide spacers on the sides of said second polysilicon layer, exposed in said electrode opening;
- growing a silicon oxide plug, on surface of said second polysilicon layer, exposed between silicon oxide spacers, in said electrode opening;
- removal of said second silicon nitride layer from the top surface of said second polysilicon layer, exposing said second polysilicon layer in regions not covered by said silicon oxide spacers, or by said silicon oxide plugs;
- anisotropic etching of said second polysilicon layer, in regions not covered by said silicon oxide spacers, or silicon oxide plugs, creating said lower polysilicon shape, of said storage node electrode, with said silicon oxide spacers, and said silicon oxide plug, between said silicon oxide spacers, on said lower polysilicon shape;
- depositing a third polysilicon layer on said silicon oxide spacers, on said silicon oxide plug, between said silicon oxide spacers, and on second silicon nitride layer between said lower polysilicon shapes;
- anisotropic etching of said third polysilicon layer, to form said polysilicon spacers, overlying said first silicon nitride layer, on the exterior sides of said silicon oxide spacers, and forming polysilicon spacers, overlying said silicon oxide plug, on the interior sides of said silicon oxide spacers;
- isotropic removal of said silicon oxide spacers, and of said silicon oxide plugs, also lifting off said polysilicon spacers that overlaid said silicon oxide plug, forming said storage node electrode, comprised of said lower polysilicon shape, and said polysilicon spacers, on the sides of said lower polysilicon shape, and protruding above, said lower polysilicon shape;
- forming said dielectric layer on said storage node electrode;
- depositing a fourth polysilicon layer on said dielectric layer; and
- patterning of said fourth polysilicon layer to form said plate electrode, of said STC structure.

5,710,076

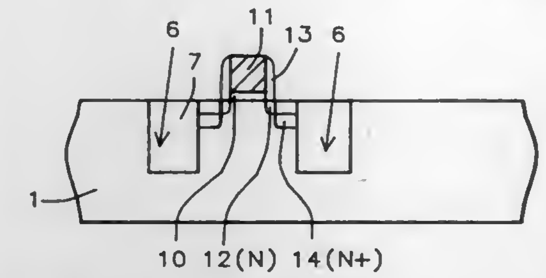
METHOD FOR FABRICATING A SUB-HALF MICRON MOSFET DEVICE WITH GLOBAL PLANARIZATION OF INSULATOR FILLED SHALLOW TRENCHES, VIA THE USE OF A BOTTOM ANTI-REFLECTIVE COATING

Chang-Ming Dai; Horng-Chang Dai, both of Hsinchu, and Chin-Lung Lin, Kaoshiung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 3, 1996, Ser. No. 707,038

Int. Cl.^{6} H01L *21/336*

U.S. Cl. 438—305 **26 Claims**



1. A method of fabricating a MOSFET device, on a semiconductor substrate, with silicon oxide filled shallow trenches, comprising the steps of:

- growing a first silicon oxide layer on said semiconductor substrate;
- depositing a silicon nitride layer on said first silicon oxide layer;
- applying a first positive photoresist layer on said silicon nitride layer;
- developing narrow and wide features in said first positive photoresist layer using a shallow trench pattern exposure mask;
- anisotropic dry etching, using said narrow and said wide features, in said first photoresist layer as a mask, to create said narrow and wide features in said silicon nitride layer, in said first silicon oxide layer, and continuing said anisotropic dry etching to create narrow and wide shallow trenches in said semiconductor substrate;
- removal of said first positive photoresist layer;
- depositing a second silicon oxide layer, completely filling said narrow shallow trenches, and completely filling said wide shallow trenches, creating an uneven topography, comprised of a thick layer of said second silicon oxide, overlying silicon oxide filled, narrow shallow trenches, and overlying spaces between said silicon oxide filled, narrow shallow trenches, and of a thin layer of said second silicon oxide in wide shallow trenches;
- applying an anti-reflective coating on said second silicon oxide layer;
- baking of said anti-reflective coating;
- applying a second positive photoresist layer on said anti-reflective coating, creating a two layer planarization composite, comprised of said second positive photoresist layer, overlying said anti-reflective coating;
- baking of said second positive photoresist layer, creating a level surface topography of said two layer planarization composite, with a thicker layer of said two layer planarization composite overlying said thin second silicon oxide layer, in said wide shallow trenches, and a thinner layer of said two layer planarization composite overlying said thick second silicon oxide layer, which overlies said silicon oxide filled, narrow, shallow trenches, and the spaces between said silicon oxide filled, narrow shallow trenches;
- a first planarization procedure, via dry etching, to completely remove said thinner layer, of said two layer planarization composite, from regions overlying said thick second silicon oxide layer, exposing the top surface of said thick second silicon oxide layer, while leaving some of said thicker layer, of said two layer planarization composite, in regions overlying said thin second silicon oxide layer, in said wide, shallow trenches;
- a second planarization procedure, using dry etching, to completely remove said thick second silicon oxide layer, from the top surface of the spaces between said silicon oxide filled, narrow shallow trenches, exposing said silicon nitride layer, and removing said thick second silicon oxide layer, overlying said silicon oxide filled, narrow shallow trenches, creating a level topography between: said silicon oxide filled narrow trenches; the spaces between said silicon oxide filled, narrow shallow trenches; and said thin second silicon oxide layer, in said wide, shallow trenches, still covered with portion of said thick layer of two layer planarization composite;
- a buffered hydrofluoric acid procedure;
- removal of remaining said thick layer of two layer planarization composite;
- removal of said silicon nitride layer;
- removal of said first silicon oxide layer;
- growing a third silicon oxide layer, to be used as the gate insulator layer;
- depositing a polysilicon layer;
- patterning of said polysilicon layer to create a polysilicon gate structure, on said gate insulator layer, in the space between said silicon oxide filled, narrow shallow trenches;
- ion implanting a first conductivity imparting dopant into said semiconductor substrate, in the space between said silicon oxide filled, narrow shallow trenches, and not covered by said polysilicon gate structure, to create lightly doped source and drain region;
- depositing a fourth silicon oxide layer;
- anisotropic dry etching of said fourth silicon oxide layer, to create an insulator spacer on the sides of said polysilicon gate structure; and
- ion implanting a second conductivity imparting dopant into said semiconductor substrate, in the space between said silicon oxide filled, narrow shallow trenches, and not covered by said polysilicon gate structure, and not covered by said insulator spacer, to create heavily doped source and drain regions.

5,710,077

METHOD FOR THE GENERATION OF STACKING-FAULT-INDUCED DAMAGE ON THE BACK OF SEMICONDUCTOR WAFERS

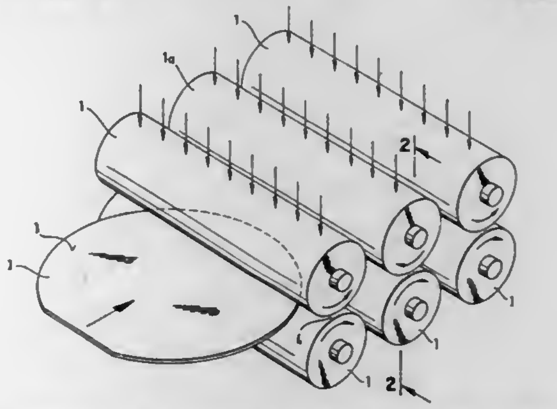
Gerbard Brehm, Haiming, Germany; Rudolf Mayrhuber, Ostermeithing, Austria, and Johann Niedermeier, Burgkirchen, Germany, assignors to Wacker Siltronic Gesellschaft für Halbleitermaterialien AG, Burghausen, Germany

Filed Jul. 9, 1996, Ser. No. 677,916

Claims priority, application Germany, Sep. 14, 1995, 195 34 080.9

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 438—472 **5 Claims**



1. A method for the generation of stacking-fault-induced damage on the back of a semiconductor wafer, which method comprises:

- propelling a semiconductor wafer in a first direction, using at least one rotating roll;
- bringing the back of the semiconductor wafer into contact with loose hard-material particles which are suspended in a liquid: and

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simultaneously propelling the hard-material particles by means of at least one second rotating roll in a direction opposite to said first direction and tangentially to said back of the semiconductor wafer; under which circumstances said hard-material particles exert on said back of the semiconductor wafer forces which have tangentially directed components.

5,710,078

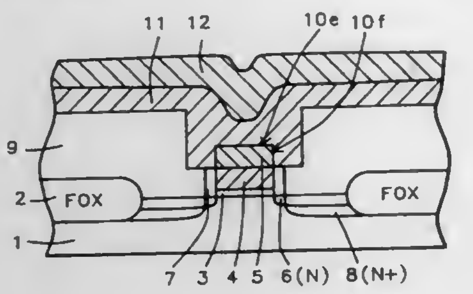
METHOD TO IMPROVE THE CONTACT RESISTANCE OF BIT LINE METAL STRUCTURES TO UNDERLYING POLYCIDE STRUCTURES

Horng-Huei Tseng, 123, Park Ave-3rd, Science-Based Industrial Park, Hsinchu, Taiwan

Filed Jun. 3, 1996, Ser. No. 657,133

Int. Cl.^{6} H01L *21/4763*

U.S. Cl. 438—620 **22 Claims**



1. A method of fabricating a device, on a semiconductor substrate, in which the contact resistance between an overlying metal structure, and an underlying gate structure, is reduced, comprising the steps of:

growing a gate dielectric layer on said semiconductor substrate;

deposition of a first polysilicon layer on said gate dielectric layer;

deposition of a first metal silicide layer on said first polysilicon layer;

patterning of said first metal silicide layer, and of said first polysilicon layer, to create a polycide gate structure;

ion implanting a first conductivity imparting dopant into said semiconductor substrate, in regions not covered by said polycide gate structure;

deposition of a first insulator layer;

anisotropic etching of said first insulator layer, to create an insulator spacer on sidewalls of said polycide gate structure;

ion implantation of a second conductivity imparting dopant into said semiconductor substrate, in regions not covered by said polycide gate structure, and not covered by said insulator spacer;

deposition of a second insulator layer;

opening a contact hole in said second insulator layer, to expose top surface of said polycide gate structure, with the width of said contact hole, greater than the width of said polycide gate structure, so that top surface of said insulator spacer, and surface of remaining said second insulator layer, are also exposed in said contact hole, in regions surrounding said polycide gate structure;

removal of a portion of said insulator spacer, and of a portion of said remaining second insulator layer, in said contact hole, exposing a portion of the sides of said polycide gate structure, in said contact hole;

deposition of a second polysilicon layer;

deposition of a second metal silicide layer; and

patterning of said second metal silicide layer, and of said second polysilicon layer, to create said metal structure, contacting top surface of said polycide gate structure, as well as portion of sides, of said polycide gate structure, in said contact hole.

5,710,079

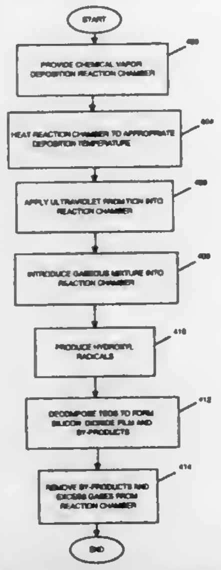
METHOD AND APPARATUS FOR FORMING DIELECTRIC FILMS

Valeriy K. Sukharev, Cupertino, Calif., assignor to LSI Logic Corporation, Milpltas, Calif.

Filed May 24, 1996, Ser. No. 653,264

Int. Cl.^{6} H01L *21/316*

U.S. Cl. 438—778 **18 Claims**


START
PROVIDE CHEMICAL VAPOR DEPOSITION REACTION CHAMBER
HEAT REACTION CHAMBER TO APPROPRIATE DEPOSITION TEMPERATURE
APPLY ULTRAVIOLET RADIATION INTO REACTION CHAMBER
INTRODUCE GASEOUS MIXTURE INTO REACTION CHAMBER
410
PRODUCE HYDROXYL RADICALS
412
DECOMPOSE TEOS TO FORM SILICON DIOXIDE FILM AND BY-PRODUCTS
414
REMOVE BY-PRODUCTS AND EXCESS GASES FROM REACTION CHAMBER
END

1. A method of facilitating decomposition of an organometallic compound during a chemical vapor deposition reaction conducted with ozone, the method comprising the following steps:

introducing said organometallic compound, water vapor, and ozone molecules to a chemical vapor deposition reactor;

directing ultraviolet radiation into said chemical vapor deposition reactor and thereby increasing a rate of forming oxygen atoms from said ozone; and

decomposing the organometallic compound to form a deposition layer, wherein decomposition of said organometallic compound is facilitated by hydroxyl radicals produced from said oxygen atoms and moisture.

5,710,080

THERMALLY INSULATING MATERIAL, SPECIFICALLY DESIGNED FOR GARMENTS, QUILTS, SLEEPING BAGS AND THE LIKE

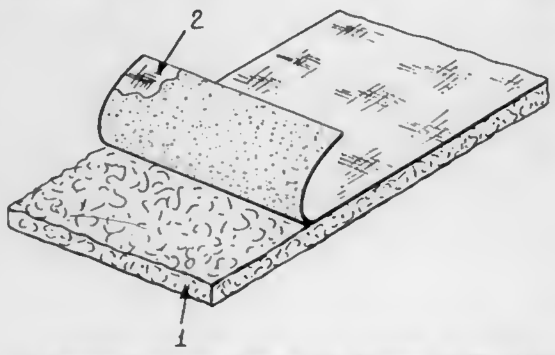
Antonio Pellegrini, and Marciano Siniscalchi, both of Robbiate, Italy, assignors to Thermore (Far East) Ltd., Kowloon, Hong Kong

Filed Sep. 19, 1995, Ser. No. 530,084

Claims priority, application Italy, Sep. 23, 1994, MI94A1943

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 442—304 **25 Claims**



1. A thermally insulating material for garments, quilts, sleeping-bags and the like, comprising a lap of staple synthetic fibres, bound by low-melting synthetic fibres and/or spray-applied aqueous emulsion resins, wherein said low-melting synthetic fibers have a melting point less than that of said synthetic fibres, wherein said staple synthetic fibres have a count from 1.7 to 6.6 dtex and a length from 38 to 120 mm, wherein said lap comprises from 50 to 95% by weight of synthetic fibres and from 5 to 50% by weight of low-melting fibres and/or resins, and wherein to said lap is bonded at least a not sticking low friction coefficient textile support layer, said textile support layer having at least a surface thereof on which is applied an aqueous dispersion of a synthetic resin in an amount from 50 to 80 g/m^2 of a surface of said textile support layer, said textile support layer having an air permeability less than that of said lap.

5,710,081

BLACK GLASS FRIT, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

Gerhard Tünker, Offenbach, Germany, assignor to Cerdec Aktiengesellschaft Keramische Farben, Frankfurt, Germany

Filed Feb. 12, 1997, Ser. No. 798,925

Claims priority, application Germany, Feb. 15, 1996, 196 05 617.9

Int. Cl.^{6} C03C *8/02*

U.S. Cl. 501—21 **18 Claims**

1. A black glass frit containing in the glass composition

K_2O	10–17	mol. %
B_2O_3	10–25	mol. %
TiO_2	15–30	mol. %
SiO_2	30–55	mol. %
Al_2O_3	0–5	mol. %
Bi_2O_3	0–5	mol. %
Fe_2O_3	0.05–3	(total iron) mol. %
S	0.1–3	(total sulphur) mol. %

and oxides from the group of PbO, CdO, ZnO, Li_2O, Na_2O, MgO, CaO, SrO, BaO and P_2O_5, each in a quantity of less than 0.5 wt. %.

5,710,082

GLASS COMPOSITION HAVING A LOW DIELECTRIC CONSTANT FOR HIGH-FREQUENCY CIRCUITS

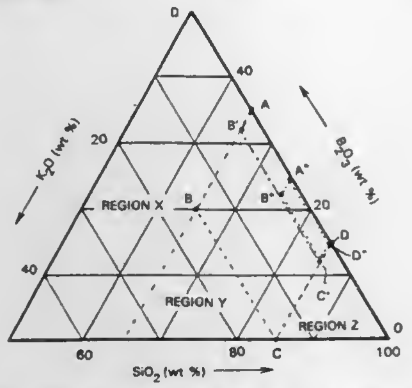
Hiromichi Kawakami, Moriyama, and Hiroji Tani, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Sep. 20, 1996, Ser. No. 717,174

Claims priority, application Japan, Sep. 22, 1995, 7-244023

Int. Cl.^{6} C03C *3/089*

U.S. Cl. 501—65 **15 Claims**



1. A glass composition consisting of SiO_2, at least one of B_2O_3 or K_2O and at least one of refining agent, wherein the ratio of said SiO_2, B_2O_3 and K_2O falls within the region enclosed by lines passing through point A (65, 35, 0), point B (65, 20, 15), point C (85, 0, 15) and point D (85, 15, 0) in a composition diagram for the ternary system of SiO_2, B_2O_3 and K_2O aligned along the x, y and z axes, respectively, and based on weight percentage, and wherein said refining agent is selected from the group consisting of As_2O_3, As_2O_5, Sb_2O_3 and Na_2SO_4 in an amount less than 2 wt % of the total amount of SiO_2, B_2O_3 and K_2O.

5,710,083

PROCESS TO REJUVENATE SPENT ZINC OXIDE SORBENTS

Gyanesh P. Khare, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1996, Ser. No. 702,426

Int. Cl.^{6} B01J *20/34*

U.S. Cl. 502—25 **10 Claims**

1. A process to rejuvenate a spent zinc oxide sorbent to produce a rejuvenated sorbent said process comprising:

(a) contacting said spent sorbent with a zinc composition that comprises zinc oxide, or a precursor to zinc oxide, to form a contacted composition;

(b) drying said contacted composition at a temperature in the range of about 25° C. to about 375° C. for a time period in the range of about 1 minute to about 24 hours, to form a dried, contacted composition; and

(c) calcining said dried, contacted composition at a temperature in the range of about 400° C. to about 800° C. for a time period in the range of about 1 minute to about 24 hours, to form said rejuvenated sorbent.

5,710,084

CATALYSTS FOR CLEANING EXHAUST GASES

Shigeru Nojima, and Kouzo Iida, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1995, Ser. No. 514,415

Claims priority, application Japan, Aug. 12, 1994, 6-190488

Int. Cl.^{6} B01J *29/06*

U.S. Cl. 502—66 **1 Claim**

1. A catalyst for cleaning exhaust gases comprising a first catalyst layer having as an active metal on a support at least one noble metal selected from the group consisting of platinum, rhodium and palladium and a second catalyst layer consisting essentially of iridium as an active metal is provided as an overlayer on the first catalyst layer, wherein

the iridium in the second catalyst layer is in a carrier, said carrier is a crystalline silicate which is represented by the following formula by molar ratio as dehydrated:

$$(1\pm0.8)R_2O.[aM_2O_3.bM'O.cAl_2O_3].ySiO_2$$

wherein, R denotes an alkali metal ion, a hydrogen ion, or a mixture of an alkali metal ion and a hydrogen ion, M denotes at least one elemental ion selected from the group consisting of VIII group elements, rare earth elements, titanium vanadium, chromium, niobium, antimony or gallium, M' denotes an alkaline earth metal ion of magnesium, calcium, strontium or barium, $a>0$, $20>b>0$, $a+c=1$, and $3000>y>11$.

5,710,085

MANUFACTURE OF IMPROVED ZEOLITE BETA CATALYST

Robert P. L. Absil, and George H. Hatzikos, both of Mantua, N.J., assignors to Mobil Oil Corporation, Wairfax, Va.

Continuation of Ser. No. 158,325, Nov. 29, 1993, Pat. No. 5,457,078. This application Jun. 5, 1995, Ser. No. 463,143

Int. Cl.^{6} B01J *29/06*

U.S. Cl. 502—68 **18 Claims**

1. A method for manufacturing a catalyst composition that is substantially free of crystalline aluminum phosphate comprising the steps of:

(a) combining zeolite Beta with a matrix precursor comprising an acid-soluble source of aluminum to produce a mixture;

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(b) forming particles from the mixture;
(c) calcining the formed particles;
(d) modifying the calcined particles by treating the calcined particles with an aqueous solution of a phosphorus containing compound; and
(e) recovering the catalyst composition by calcining the phosphorus modified particles.

5,710,086
TITANATE CATALYSTS

Daniel Joseph Brunelle, Burnt Hills; Tohru Takekoshi, Scotia, and Judith Ann Serth-Guzzo, Slingerlands, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

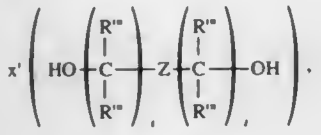
Filed Mar. 20, 1996, Ser. No. 618,738

Int. Cl.^{6} B01J *31/00;* **C07F** *7/00;7/28*

U.S. Cl. 502—171 **5 Claims**

1. A mixture of reaction products of

$y(Ti-(OR)_4) + (2y\text{-}x')(HO-(R')-OH) +$



$$x'\left(HO-\left(\overset{R'''}{\underset{R'''}{\overset{|}{\underset{|}{C}}}}\right)_i-Z-\left(\overset{R'''}{\underset{R'''}{\overset{|}{\underset{|}{C}}}}\right)_i-OH \right),$$

said mixture being substantially free of monofunctional alcohols and titanium alkoxides corresponding thereto; wherein
each R is independently C_1–C_{10} alkyl,
each R' is independently C_2–C_6 alkylene,
each R''' is independently hydrogen or C_1–C_4 alkyl,
Z is oxygen, sulfur, a nitrogen-containing group or a phosphorus-containing group,
each of x' and y has a value greater than 0, and
each i is independently an integer from 2 to 4.

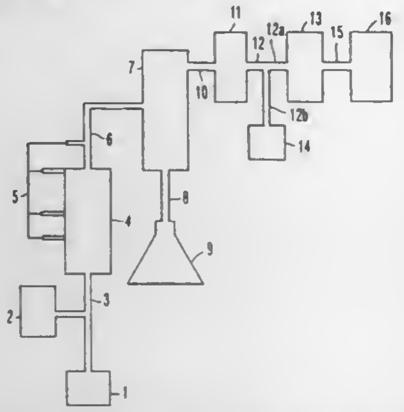
5,710,087
PROCESS FOR CATALYTIC CONVERSION OF WATER AND CARBON DIOXIDE TO LOW COST ENERGY, HYDROGEN, CARBON MONOXIDE, OXYGEN AND HYDROCARBONS

Rollin C. Swanson, 83 Sands Point Rd., Manorhaven, N.Y. 11050

Continuation-in-part of Ser. No. 313,433, Sep. 27, 1994, Pat. No. 5,516,742. This application Jun. 7, 1995, Ser. No. 476,199

Int. Cl.^{6} B01J *23/02;* **C10G** *1/00;* **C01B** *31/18;13/02*

U.S. Cl. 502—340 **14 Claims**



1. A method for producing combustible compounds comprised of reacting a catalyst complex, carbon dioxide, and water at 370° C. to 908° C., said catalyst complex being formed from a mixture including a magnesium carbonate/hydroxide complex, carbon dioxide and water mixed at 200 psig to 780 psig and −1° C. to 4° C.

5,710,088
LEAN-NO_X CATALYSTS CONTAINING SILVER SUPPORTED ON ALUMINA

Hung-Wen Jen, Troy, and Haren Sakarlal Gandhi, Farmington Hills, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jun. 30, 1995, Ser. No. 497,583

Int. Cl.^{6} B01J *23/50*

U.S. Cl. 502—348 **7 Claims**

1. A catalyst for reducing the nitrogen oxide emissions from the exhaust stream of an internal combustion engine operated in an oxygen rich environment, said catalyst consisting essentially of:
silver loaded onto aluminum oxide in a range of 1 to 20% of the overall weight, said aluminum oxide (i) having a high surface area of at least 150 m^2/g, (ii) a small average pore diameter between 15 to 100 angstroms wherein at least 65% of the pore diameters are in the range of 15 and 100 angstroms, and (iii) pore diameters distributed in a narrow range such that at least 55% of the pore diameters are distributed in a 50 angstrom range.

5,710,089
SORBENT COMPOSITIONS

Gyanesh P. Khare, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1995, Ser. No. 482,696

Int. Cl.^{6} P01J *20/06;20/12;20/30*

U.S. Cl. 502—407 **102 Claims**

1. A process to make a sorbent composition said process comprising:
(a) contacting
  (i) at least one zinc component, where said zinc component consists essentially of zinc oxide, or a compound convertible to zinc oxide,
  (ii) at least one silica component, where said silica component consists essentially of silica, or a compound convertible to silica,
  (iii) at least one colloidal oxide component, where said colloidal oxide component consists essentially of particles of a metal oxide where said metal oxide is selected from the group consisting of alumina silica, titania, zirconia, tin oxide ,antimony oxide, cerium oxide, yttrium oxide, copper oxide, iron oxide, manganese oxide, molybdenum oxide, tungsten oxide, chromium oxide, and mixtures thereof,
  (iv) at least one pore generator component, wherein the amount of pore generator is from 1 to about 15 weight percent based on the total weight of said sorbent composition, and
  wherein said sorbent composition consists essentially of components(a)(i) through (a)(iv) to form a moist composition, where said moist composition has a moisture content from about 22 to about 31 weight percent based on the weight of said moist composition;
(b) extruding said moist composition to form an extruded, moist composition where said extruded, moist composition has a moisture content from about 22 to about 31 weight percent based on the weight of said extruded, moist composition; and
(c) sphering said extruded, moist composition to form a sphered, extruded, moist composition that has a particle size from about 0.5 to about 15 millimeters.

5,710,090
CONTROLLEDLY PERMEABLE/CRISTOBALITE-FREE DIATOMACEOUS FILTERING AGENTS

Pascal Dufour, Asnieres/Seine, France, assignor to Ceca S.A., Puteaux, France

Filed Nov. 18, 1994, Ser. No. 343,979

Claims priority, application France, Nov. 19, 1993, 93 13862

Int. Cl.^{6} B01J *20/10;* **C01B** *33/20*

U.S. Cl. 502—412 **7 Claims**

1. A process for the preparation of diatomite agglomerates, with a silicic acid binder, having a cristobalite content of less than 1.5% by weight of the agglomerates, a permeability ranging from 20 to 500 millidarcys and a cake density of less than 0.400 g/cm^3, comprising homogeneously intimately admixing a diatomite with a binder solution of silicic acid and calcining the agglomerates thus formed at a temperature no greater than 850° C.

5,710,091
SORBENT COMPOSITIONS

Gyanesh P. Khare, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1995, Ser. No. 479,059

Int. Cl.^{6} B01J *20/06;20/08;20/30*

U.S. Cl. 502—414 **44 Claims**

1. A process to produce a sorbent composition that comprises zinc aluminate and zinc oxide, where said sorbent composition comprises particles that have a size from about 30 to about 1000 microns, said process comprising:
(a) contacting
  (1) a zinc component,
  (2) an alumina component, and
  (3) a dispersant component, to form a mixture, where said mixture is capable of being spray dried; and then
(b) spray drying said mixture to form particles; and then
(c) calcining said particles to combine said zinc component and said alumina component to produce particles that comprise zinc aluminate where said particles have a size from about 30 to about 1000 microns and where said calcining is conducted at a temperature in the range of about 300° C. to about 1200° C. for a time in the range of about 0.5 to about 12 hours; and then
(d) contacting said particles with a zinc compound, wherein said zinc compound is zinc oxide, or any other zinc compound convertible to zinc oxide, to form a sorbent composition;

wherein said zinc component is zinc oxide, or any other zinc compound, which can combine with said alumina component to form zinc aluminate during step (c), and wherein said alumina component comprises alumina, or aluminosilicate, where said alumina component can combine with said zinc component to form zinc aluminate during step
(c), and wherein said dispersant component promotes the spray drying ability of said mixture.

5,710,092
HIGHLY MICROPOROUS CARBON

Frederick S. Baker, Wando, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 143,551, Oct. 25, 1993, Pat. No. 5,416,056. This application Mar. 14, 1995, Ser. No. 403,390

Int. Cl.^{6} B01J *20/02;* **B01D** *53/02*

U.S. Cl. 502—416 **5 Claims**

1. A microporous activated carbon comprising an amount greater than 50% total pore volume of pores in the range of greater than 8 Å up to 20 Å in width and an amount greater than 95% of the total pore volume of pores up to 50 Å in width, wherein the carbon is derived from lignocellulose material.

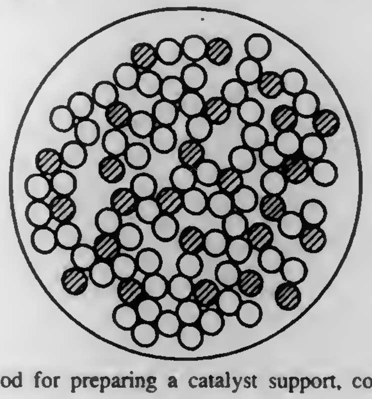
5,710,093
HYDROGENATION CATALYST WITH IMPROVED ATTRITION RESISTANCE AND HEAT DISSIPATION

Luis A. Rivas; Enzo Peluso, both of Miranda; Daisy Rojas, and Juan Jose Garcia, both of Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 399,239, Mar. 6, 1995, Pat. No. 5,648,312, which is a continuation-in-part of Ser. No. 366,265, Dec. 29, 1994, abandoned. This application Sep. 20, 1996, Ser. No. 718,020

Int. Cl.^{6} C11D *21/06;21/08;27/224*

U.S. Cl. 502—439 **22 Claims**



1. A method for preparing a catalyst support, comprising the steps of:
forming a suspension consisting of silicon carbide and silica in a basic aqueous solution;
adding a pore size controlling agent to the suspension;
forming droplets of the suspension;
passing the droplets through an inert organic liquid phase so as to form the droplets into spheres;
passing the spheres through an aqueous acidic solution so as to provide at least partially solidified spheres of said catalyst support containing a substantially homogeneous mixture of said silicon carbide and silica.

5,710,094
REVERSIBLE MULTI-COLOR THERMAL RECORDING MEDIUM

Toshiaki Minami; Tomoaki Nagai; Kaoru Hamada, and Akio Sekine, all of Tokyo, Japan, assignors to Nippon Paper Industries Co. Ltd., Tokyo, Japan

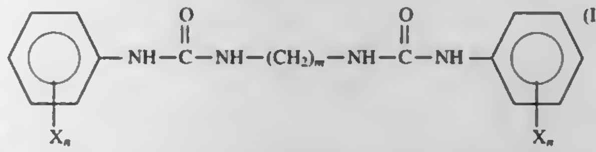
Filed Oct. 27, 1995, Ser. No. 549,240

Claims priority, application Japan, Oct. 27, 1994, 6-262998; Nov. 29, 1994, 6-294142

Int. Cl.^{6} B41M *5/30;5/34;5/36*

U.S. Cl. 503—204 **27 Claims**

1. A reversible multi-color thermal recording medium comprising
an irreversible thermal composition recording layer containing a colorless or pale basic achromatic dye and an organic irreversible heat-resistant color developer as main components and
a reversible multi-color thermal composition recording layer containing a colorless or pale basic achromatic dye and an organic reversible heat-resistant color developer as main components laminated on a support,
wherein the reversible heat-resistant color developer is represented by the following formula (I):



(I)

wherein X is selected from the group consisting of a hydrogen atom, alkyl group having 1 to 12 carbon atoms, halogenated alkyl group having 1 to 3 carbon atoms, alkoxy group having 1 to 12 carbon atoms, alkoxycarbonyl group having 1 to 12

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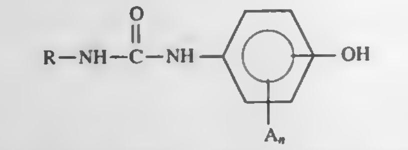
carbon atoms, acyl group having 1 to 12 carbon atoms, dialkylamino group having 1 to 12 carbon atoms, nitro group, cyano group and halogen atom, m is an integer of 1 to 12, and n is an integer of 1 to 3, or

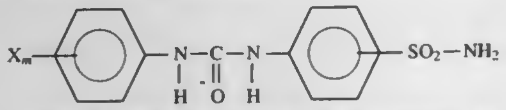
the following formula (I'):



(I')

wherein R is an alkyl group having 12 to 22 carbon atoms, A is selected from the group consisting of a lower alkyl group, lower alkoxy group, lower alkoxycarbonyl group, nitro group, halogen atom and hydrogen atom, and n is an integer of 1 to 3, and

the irreversible heat-resistant color developer is represented by the following formula (II):



(II)

wherein X is selected from the group consisting of a lower alkyl group having 1 to 4 carbon atoms, alkoxy group having 1 to 3 carbon atoms, hydrogen atom, nitro group, cyano group and halogen atom, and m is an integer of 1 to 3.

5,710,095

DIRECT THERMAL IMAGING METHOD USING A PROTECTED HEAT-SENSITIVE RECORDING MATERIAL

Bartholomeus Cyriel Horsten, Rumst; Guy Denis Jansen, Borsbeek; Ronald Schuerwegen, Schelle; Marc Irene Van Damme, Heverlee, and Luc Herwig Leenders, Herentals, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

PCT No. PCT/EP93/03121, § 371 Date May 2, 1996, § 102(e) Date May 2, 1996, PCT Pub. No. WO95/12495, PCT Pub. Date May 11, 1995

PCT Filed Nov. 6, 1993, Ser. No. 637,750

Int. Cl.^{6} B41M *5/28*

U.S. Cl. 503—210 **14 Claims**

1. A method of recording an image by image-wise heating a recording material, said recording material comprising on the same side of a support, called the heat-sensitive side, (1) one or more layers comprising an imaging composition consisting essentially of (i) a substantially light-insensitive organic silver salt being in thermal working relationship with (ii) a reducing agent, and (2) at same said side covering said imaging composition a protective layer, characterized in that the image-wise heating proceeds with a thermal head contacting said heat-sensitive side and through said protective layer mainly comprising an organic thermosetting or moisture-hardened polymer or an organic thermosetting or moisture-hardened polymer composition.

5,710,096

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Jiro Ohnishi, and Masayasu Yamazaki, both of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Apr. 19, 1995, Ser. No. 424,071

Claims priority, application Japan, Apr. 22, 1994, 6-107541

Int. Cl.^{6} B41M *5/035;5/38*

U.S. Cl. 503—227 **6 Claims**

1. A thermal transfer image-receiving sheet comprising:

a substrate sheet having a surface resistivity of not more than 1×10^{12} Ω/□ as measured under environmental conditions of 20° C. and 50% humidity;

a first conductive layer provided on one surface of said substrate sheet;

a receptive layer provided on said first conductive layer; and

a second conductive layer containing a conductive material, said second conductive layer being provided on both the surface of said receptive layer and the other surface of said substrate sheet.

5,710,097

PROCESS AND MATERIALS FOR IMAGEWISE PLACEMENT OF UNIFORM SPACERS IN FLAT PANEL DISPLAYS

John S. Staral, Woodbury; Claire A. Jalbert, Cottage Grove; William A. Tolbert; Martin B. Wolk, both of Woodbury; Allan R. Martens, Lake Elmo, and Thomas A. Isberg, Apple Valley, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 27, 1996, Ser. No. 671,283

Int. Cl.^{6} B41M *5/035;5/38*

U.S. Cl. 503—227 **14 Claims**

1. A process for selectively placing spacers on a receptor for use in a flat panel display comprising the steps of:

(i) providing a receptor and a thermal transfer donor sheet, said donor sheet comprising in order,
(a) a support,
(b) a transferable spacer layer, and
(c) an optional adhesive layer,

wherein at least one of said receptor, said support, said spacer layer or said optional adhesive layer comprises a radiation absorber;

(ii) placing in intimate contact said receptor with said transferable spacer layer of said thermal transfer donor sheet;

(iii) irradiating at least one of said thermal transfer donor sheet or said receptor in an imagewise pattern with imaging radiation, said imaging radiation being absorbed by said radiation absorber and converted to sufficient heat to transfer irradiated areas of said transferable spacer layer of said thermal transfer donor sheet to said receptor;

(iv) transferring said transferable spacer layer in said irradiated areas to said receptor; and

(v) removing said thermal transfer donor sheet to form spacer elements corresponding to said irradiated areas on said receptor.

5,710,098

THERMAL TRANSFER IMAGE-RECEIVING SHEET

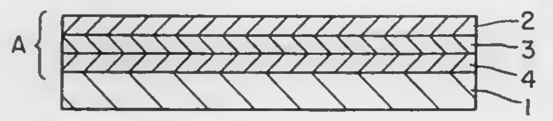
Mikio Asajima; Takeshi Ueno; Katsuyuki Oshima; Hidetake Takahara, and Mineo Yamauchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 378,570, Jan. 26, 1995, Pat. No. 5,563,110, which is a division of Ser. No. 983,168, Nov. 30, 1992, Pat. No. 5,418,207. This application Jun. 26, 1996, Ser. No. 672,066

Claims priority, application Japan, Nov. 29, 1991, 3-339444; Feb. 20, 1992, 4-69403; Mar. 13, 1992, 4-88267; Apr. 6, 1992, 4-112461

Int. Cl.^{6} B41M *5/035;5/38*

U.S. Cl. 503—227 **14 Claims**



1. A receiving layer transfer sheet comprising:

a substrate sheet; and

a transferable resin laminate provided on one surface of said substrate sheet, said transferable resin laminate comprising (i) a dye-receiving layer positioned to face said substrate sheet and (ii) a foaming-agent-containing layer comprising at least two foaming agents that have different foaming temperatures.

5,710,099

BIOACTIVE COMPOUNDS

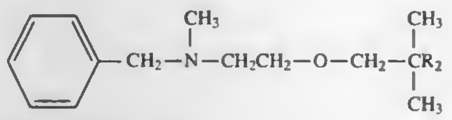
Henry Yokoyama, Pasadena, Calif., and Harold W. Gausman, Amarillo, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 27, 1996, Ser. No. 606,791

Int. Cl.^{6} A01N *33/04;* **C07C** *217/10*

U.S. Cl. 504—326 **14 Claims**

1. A compound selected from the group having the structure



(a)

wherein R_2 is methyl; and

(b) an acid addition salt thereof.

5,710,100

SAFENING IMIDAZOLINONE HERBICIDES

Brett Hayden Bussler, St. Louis Park, Minn., and Ronald Joseph Brinker, Ellisville, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 81,711, Jun. 25, 1993, abandoned, which is a division of Ser. No. 459,393, Dec. 29, 1989, Pat. No. 5,256,625, which is a continuation-in-part of Ser. No. 212,621, Jul. 1, 1988, Pat. No. 5,225,570, which is a continuation-in-part of Ser. No. 84,786, Aug. 13, 1987, abandoned. This application Dec. 29, 1994, Ser. No. 366,393

Int. Cl.^{6} A01N *25/32*

U.S. Cl. 504—103 **6 Claims**

1. Composition comprising a herbicidally effective amount of imazethapyr and an antidotally effective amount of

Acetamide, N,N-bis(2-propenyl)-a,a-dichloro-;
Oxazolidine, 3-(dichloroacetyl)-2,2-spirocyclohexyl-;
5-Thiazolecarboxylic acid, 2-chloro-4-(trifluoromethyl)-, (phenylmethyl) ester;
Oxazolidine, 3-(dichloroacetyl)-2,2-dimethyl-5-(2-thienyl)-;
Pyrrolo[1,2-a]pyrimidin-6(2H)-one,
1-(dichloroacetyl)hexahydro-3,3,8a-trimethyl-;
Pyridine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxazolidinyl]-;
para-Chlorophenylthioacetonitrile;
Piperazine, 1,4-bis(dichloroacetyl)-;
1H,3H-naphtho[1,8-cd]pyran-1,3-dione;
5-Oxazolecarboxylic acid, 2-[(1,1-dimethylethyl)amino]-4-(trifluoromethyl)-, ethyl ester;
Quinoline, 1-(dichloroacetyl)-1,2-dihydro-2,2,4-trimethyl-;
Thiazolidine, 3-(dichloroacetyl)-;
Acetamide, 2,2-dichloro-N-[2-[2-[(dichloroacetyl)amino]phenyl]phenyl]-;
1-Azaspiro[4.4]nonane, 1-bromochloroacetyl;
Acetamide, 2,2-dichloro-N-[(3-methoxyphenyl]methyl]-N-(2-propenyl)-;
Isoquinoline, 2-(dichloroacetyl)-2,3-dihydro;
Acetamide, 2,2-dichloro-N-[1-(2,4,6-trimethylphenyl)ethenyl]-;
Acetamide, 2,2-dichloro-N-2-propenyl-N-[3-trifluoromethyl)phenyl]-;
Acetamide, N,N'-1,2-ethandiylbis[2,2-dichloro-N-(2-methyl-1-propenyl)];
1H-1,4-Diazonine, 1,4-bis(dichloroacetyl)octahydro-;
1H-1,5-Diazonine, 1,5-bis(bromochloroacetyl)octahydro-;
1H-1,5-Diazonine, 1,5-bis(dibromoacetyl)octahydro-;
1H-1,5-Diazonine, 1,5-bis(dichloroacetyl)octahydro-3-methyl;
Isoquinoline, 2-(dichloroacetyl)-1,2,3,4-tetrahydro-1-(trifluoromethyl)-;
Acetamide, 2,2-dichloro-N-ethyl-N-(2-phenylethyl)-;
Isoquinoline, 2-(dichloroacetyl)-1,2,3,4-tetrahydro-1,3-dimethyl-;
Isoquinoline, 2-(dichloroacetyl)-1-ethyl-1,2,3,4-tetrahydro-3-methyl-;
Isoquinoline, 2-(dichloroacetyl)-1,2,3,4-tetrahydro-1,7-dimethyl-; or
Oxazolidine, 3-(dichloroacetyl)-5-(3-furanyl)-2,2-dimethyl-.

5,710,101

COMPOSITION FOR TREATMENT OF PLANT MATERIAL COMPRISING AN AMINOPURINE AND A SULFONATED POLYESTER OR SULFONAMIDE

Margaret Louise Carstairs, Anstruther, and Laurence William Irvine Jennings, Pittenweem, both of Scotland, assignors to British Technology Group Ltd., London, England

PCT No. PCT/GB94/00924, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO94/24856, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 29, 1994, Ser. No. 545,680

Claims priority, application United Kingdom, May 1, 1993, 9309095; Aug. 17, 1993, 9317063

Int. Cl.^{6} A01N *3/02*

U.S. Cl. 504—115 **12 Claims**

1. A composition for sustaining plant material comprising an aminopurine or a derivative or salt thereof and a water-soluble compound containing a sulphonyl group selected from the group consisting of a sulphonated polyester and a sulphonamide.

5,710,102

DIFLUOROVINYLSILANE INSECTICIDAL AND ACARICIDAL AGENTS

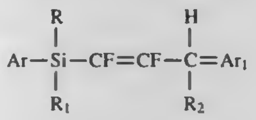
Keith Douglas Barnes, Newtown, Pa., and Yulin Hu, Plainsboro, N.J., assignors to American Cyanamid Company, Madison, N.J.

Filed Feb. 24, 1997, Ser. No. 805,104

Int. Cl.^{6} A01N *55/10;* **C07F** *7/12*

U.S. Cl. 504—193 **17 Claims**

1. A compound having the structural formula



$$\mathrm{Ar{-}\overset{\displaystyle R}{\underset{\displaystyle R_1}{Si}}{-}CF{=}CF{-}\overset{\displaystyle H}{\underset{\displaystyle R_2}{C}}{=}Ar_1}$$

wherein

Ar is phenyl optionally substituted with any combination of from one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_3, $C(O)R_4$, $S(O)_nR_5$ or NR_6R_7 groups,
1- or 2-naphthyl optionally substituted with any combination of from one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_3, $C(O)R_4$, $S(O)_nR_5$ or NR_6R_7 groups, or
a 5- or 6-membered heteroaromatic ring optionally substituted with any combination of from one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_3, $C(O)R_4$, $S(O)_nR_5$ or NR_6R_7 groups;

R and R_1 are each independently hydrogen, C_1–C_4alkyl or C_3–C_5cycloalkyl;

R_2 is hydrogen, cyano, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or halogen;

Ar_1 is phenoxyphenyl optionally substituted with any combination of from one to five halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups,
phenyl optionally substituted with any combination of from one to five halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups,
biphenyl optionally substituted with any combination of from one to five halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups,
phenoxypyridyl optionally substituted with any combination of from one to five halogen, C_1–C_4alkyl, C_1–C_4haloalkyl,

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C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups,
benzylpyridyl optionally substituted with any combination of from one to five halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups,
benzylphenyl optionally substituted with any combination of one to five halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups,
1- or 2-naphthyl optionally substituted with any combination of from one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups, or
a 5- or 6-membered heteroaromatic ring optionally substituted with any combination of from one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro, CO_2R_8, $C(O)R_9$, $S(O)_mR_{10}$ or $NR_{11}R_{12}$ groups;
m and n are each independently an integer of 0, 1 or 2;
R_3 and R_8 are each independently hydrogen, C_1–C_4alkyl, benzyl, phenyl or an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver or nickel cation;
R_4 and R_9 are each independently hydrogen, C_1–C_4alkyl, benzyl or phenyl;
R_5 and R_{10} are each independently C_1–C_4alkyl or C_1–C_4haloalkyl; and
R_6, R_7, R_{11} and R_{12} are each independently hydrogen, C_1–C_4alkyl, phenyl or benzyl, and
the optical isomers thereof, and
the cis and trans isomers thereof.

5,710,103

GLYPHOSATE COMPOSITIONS COMPRISING HYDROCARBYL DIMETHYL AMINE OXIDE AND QUATERNARY AMMONIUM HALIDE

Ralph W. Magin; Joe D. Sauer; Dru L. DeLaet, all of Baton Rouge, and Deborah A. Quebedeaux, Thibodaux, all of La., assignors to Albemarle Corporation, Richmond, Va.

Filed Apr. 3, 1996, Ser. No. 627,170
Int. Cl.^{6} A01N *25/30;57/02*

U.S. Cl. 504—206 **47 Claims**

1. A method of controlling vegetation which comprises applying to plant foliage a herbicidal or growth regulant amount of a composition formed by intimately mixing the following components with water:

a) at least one agriculturally acceptable amine, alkali metal, alkylsulfonium, alkylphosphonium, sulfonylamine, and/or aminoguanidine salt of glyphosate;
b) at least one water-soluble long chain aliphatic hydrocarbyl dimethyl amine oxide in which the hydrocarbyl group is a linear or substantially linear saturated or olefinically unsaturated aliphatic group having in the range of about 8 to about 22 carbon atoms; and
c) at least one water-soluble quaternary ammonium halide having in the range of about 8 to about 40 carbon atoms in the molecule.

5,710,104

GLYPHOSATE COMPOSITIONS COMPRISING POLYETHOXYLATED MONOHYDRIC PRIMARY ALCOHOLS

Ralph W. Magin; Joe D. Sauer, and John R. Maloney, all of Baton Rouge, La., assignors to Albermarle Corporation, Richmond, Va.

Filed Apr. 3, 1996, Ser. No. 628,567
Int. Cl.^{6} A01N *25/30;57/02*

U.S. Cl. 504—206 **33 Claims**

1. A method of controlling vegetation which comprises applying to plant foliage an effective herbicidal or growth regulant amount of a composition formed by intimately mixing the following components with water:

a) at least one agriculturally acceptable amine, alkali metal, alkylsulfonium, alkylphosphonium, sulfonylamine, and/or aminoguanidine salt of glyphosate; and
b) at least one water-soluble polyethoxylated monohydric primary alcohol having a β-branched alkyl group which has a total of at least about 10 carbon atoms and at least about 3 carbon atoms in the branch on the β-carbon atom or agriculturally acceptable salt or ester thereof.

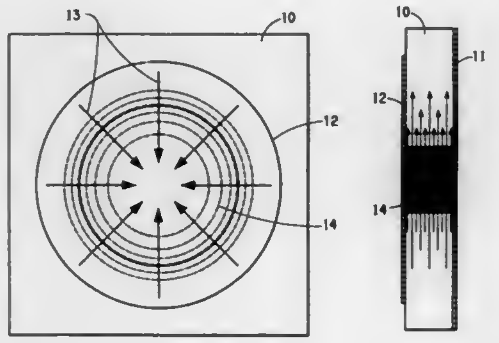
5,710,105

TM_{0i0} MODE HIGH POWER HIGH TEMPERATURE SUPERCONDUCTING FILTERS

Zhi-Yuan Shen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 11, 1995, Ser. No. 439,402
Int. Cl.^{6} H01P *7/10;* **H01B** *12/02*

U.S. Cl. 505—210 **6 Claims**



1. A high temperature superconducting filter operating in the TM_{0i0} mode, where i is an integer of at least one, comprising:

a) at least two resonators, each resonator having azimuthal symmetry and an open circuit at a perimeter of the resonator, each resonator comprising a respective high temperature superconductor film pattern disposed on one side of a substrate,
b) a ground plane comprising a high temperature superconducting film disposed on a side of the substrate opposite the at least two resonators, and
c) a coupling circuit comprising
   1) an input coupling circuit for coupling an input signal to a first one of the at least two resonators,
   2) an output coupling circuit for coupling a last one of the at least two resonators to an output signal; and
   3) an inter-resonator coupling circuit for coupling one resonator of said at least two resonators to a next adjacent resonator of said at least two resonators;

wherein the filter, when a signal is applied to the filter, generates a magnetic field and wherein said magnetic field is substantially confined between the at least two resonators and the ground plane when operating in a TM_{0i0} mode, where i is an integer of at least 1.

5,710,106

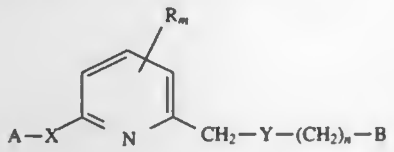
SUBSTITUTED PYRIDINE HERBICIDAL AGENTS

Axel Kleemann, Hanau, and Helmut Siegfried Baltruschat, Schweppenhausen, both of Germany, assignors to American Cyanamid Company, Madison, N.J.

Filed Feb. 13, 1997, Ser. No. 801,595
Int. Cl.^{6} A01N *43/40;* **C07D** *401/12*

U.S. Cl. 504—251 **10 Claims**

1. A compound having the structural formula



wherein
one of the groups A and B represents
a pyridyl group optionally substituted with one or more halogen atoms, nitro groups, cyano groups, amino groups, hydroxyl groups, C_1–C_4alkyl groups, C_1–C_4haloalkyl groups, C_1–C_4alkoxy groups, C_1–C_4haloalkoxy groups or C_1–C_4haloalkylsulfonyl groups,
the other group of A and B represents
a phenyl group optionally substituted with one or more halogen atoms, nitro groups, cyano groups, amino groups, hydroxyl groups, C_1–C_4alkyl groups, C_1–C_4haloalkyl groups, C_1–C_4alkoxy groups, C_1–C_4haloalkoxy groups or C_1–C_4haloalkylsulfonyl groups,
X and Y are each independently O or S;
R is C_1–C_6alkyl, C_1–C_6haloalkyl, C_1–C_6alkoxy, C_1–C_6haloalkoxy, C_1–C_6alkylthio or di(C_1–C_6alkyl)amino;
m is an integer of 0, 1 or 2; and
n is an integer of 0 or 1.

5,710,107

ENVIRONMENTALLY SAFE DRILLING FLUID

Thad O. Walker, Kingwood, Tex., assignor to O'Brien-Goins-Simpson & Associates, Houston, Tex.

PCT No. PCT/US93/10809, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/14919, PCT Pub. Date Jul. 7, 1994

PCT Filed Nov. 9, 1993, Ser. No. 492,075
Int. Cl.^{6} C09K *7/00*

U.S. Cl. 507—110 **26 Claims**

1. A method of increasing the yield point or gel strength of an aqueous base drilling fluid having incorporated therein one or more functional materials selected from the group consisting of weighting agents and fluid loss reducing additives which comprises adding to the drilling fluid at least 3% by weight of a water soluble alkyl glucoside, wherein said alkyl radical contains from one to four carbon atoms.

5,710,108

BIOPOLYMER/OIL SUSPENSION COMPOSITIONS UTILIZED IN AQUEOUS-BASED FLUIDS USED IN THE OIL SERVICE INDUSTRY INCLUDING COMPLETION AND DRILLING FLUIDS

Keith McNally, Bedminster, N.J.; James Gambino, Yardley, Pa.; Charles Cody, Robbinsville, N.J., and Wilbur Mardis, Southampton, Pa., assignors to Rheox, Inc., Hightstown, N.J.

Filed Apr. 5, 1996, Ser. No. 628,368
Int. Cl.^{6} C09K *7/02*

U.S. Cl. 507—110 **12 Claims**

1. A liquid biopolymer/oil suspension composition for use in aqueous-based fluids used in the oil service industry comprising:

a) one or more hydrocarbon oils,
b) one or more biopolymers selected from the group consisting of cellulose ethers, starches, gums, vinyl polymers, acrylic polymers and biopolysaccharides, and
c) an anti-settling agent comprising:
   i) one or more polyamides, and
   ii) hydrogenated castor oil.

5,710,109

METHOD FOR ACIDIZING FORMATION HAVING HIGH PERMEABILITY WATER ZONES

Billy Wayne Surles, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 12, 1995, Ser. No. 489,647
Int. Cl.^{6} C09K *7/00;* **E21B** *43/04*

U.S. Cl. 507—114 **11 Claims**

1. In a method of stimulation of an oil producing subterranean formation, having a water zone of relatively high permeability and an oil bearing zone of lower permeability, penetrated by a wellbore, by injecting a stimulation material into the formation, allowing it to react in the formation and retrieving the stimulation material through the wellbore, the improvement which comprises the steps of:

injecting into the formation, into the aqueous zone of high permeability, prior to the injection of the stimulation fluid, a viscosifying aqueous solution of from about 0.15 to about 1 percent by weight of hydroxyethylcellulose, from about 0.08 to about 0.5% by weight of a fluorescent dye and an amount of an acid anhydride or mixtures thereof effective to reduce the pH of the aqueous solution to about 6.0 or less in a predetermined period of time, to form a temporary viscosity block between the aqueous zone of high permeability and the oil zone of lower permeability, by mixing with connate water in the water zone raising the pH, causing solution to viscosify;
injecting the stimulation fluid through the wellbore into the oil producing formation, allowing such stimulation fluid to react in the formation; and
retrieving the stimulation fluid, including the viscosifying solution, in a water solution through the wellbore.

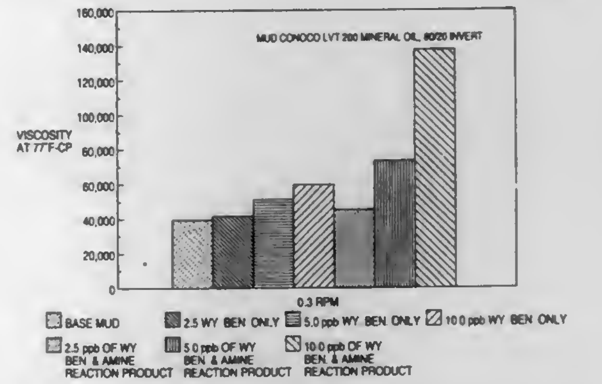
5,710,110

OIL WELL DRILLING FLUIDS, OIL WELL DRILLING FLUID ANTI-SETTLING AND METHOD OF PROVIDING ANTI-SETTING PROPERTIES TO OIL WELL DRILLING FLUIDS

Murray Cooperman, Woodbridge; Keith R. McNally, Bedminster, both of N.J.; Will Mardis, Southampton, and James Gambino, Yardley, both of Pa., assignors to Rheox, Inc., Hightsown, N.J.

Filed May 15, 1995, Ser. No. 440,961
Int. Cl.^{6} C09K *7/00;7/02*

U.S. Cl. 507—131 **14 Claims**



1. An oil well fluid anti-settling additive comprising a mixture of:

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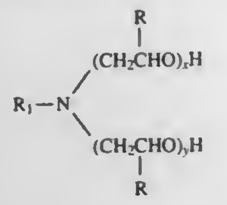
a) one or more reaction products of one or more tertiary polyalkoxylated aliphatic amino compounds having a chemical structure represented by the following formula:



wherein R_1 is a straight chain alkyl group derived from fatty sources having 12 to 18 carbon atoms, R is selected from the group consisting of hydrogen, methyl and ethyl, both x and y are at least 1, and the sum of x+y is from 2 to 15; and one or more organic compounds selected from the group consisting of maleic anhydride, phthalic anhydride and mixtures thereof and;

b) one or more rheologically active clay-based materials.

5,710,111

SOLIDS-FREE WELLBORE FLUID

Donald C. Van Slyke, Brea, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

Continuation-in-part of Ser. No. 55,510, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 948,509, Sep. 21, 1992, Pat. No. 5,556,832. This application May 31, 1994, Ser. No. 251,568

Int. Cl.^{6} C09K *7/06*

U.S. Cl. 507—137 **17 Claims**

1. A method for the drilling or completion or workover of a well in a subterranean formation, the method being characterized by the step of injecting into the well a non-aqueous, unhalogenated organic fluid having a density at about 15.6° C. (60° F.) of at least about 0.9 g/ml (7.5 pounds per gallon (ppg)), where (a) at least about 90 weight percent of the non-aqueous unhalogenated organic fluid is an aromatic solvent that has been filtered through a filter having a mesh size of about 10 micron or less to remove particulate matter from the aromatic solvent and (b) the aromatic solvent has a density at about 15.6° C. (60° F.) of at least about 0.9 g/ml (7.5 pounds per gallon (ppg)), a flash point of greater than about 54.4° C. (130° F.), a solubility in water at about 25° C. (77° F.) of less than about 1 weight percent, a solubility in benzene at about 25° C. (77° F.) of at least about 80 weight percent, a viscosity at about 37.8° C. (100° F.) of less than about 0.2 newton second/meter^2 (200 cps), and a pour point of less than about 15.6° C. (60° F.).

5,710,112

LUBRICANT COMPOSITION

Ko Yaegashi; Yoshiaki Oikawa; Hiroshi Kamiyashiki, and Hiroshi Kimura, all of Fujisawa, Japan, assignors to Kyodo Yushi Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,509

Int. Cl.^{6} C10M *125/24;125/28;115/12*

U.S. Cl. 508—159 **6 Claims**

1. A lubricant composition comprising a lubricating oil or lubricating grease, and from 0.1 to 10% by weight of a phosphate glass on the basis of the total weight of the lubricant composition, said phosphate glass comprising from 45 to 75 mole % of P_2O_5, from 10 to 35 mole % of M_2O wherein M is an alkali metal, and from 0 to 45 mole % of B_2O_3.

5,710,113

HAIR CONDITIONING COMPOSITIONS WITH SILICONE CONDITIONING AGENT CONTAINING SILICONE RESIN

Robert Lee Wells, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 237,951, May 2, 1994, abandoned, which is a continuation of Ser. No. 64,724, May 9, 1993, abandoned, which is a continuation of Ser. No. 622,696, Dec. 5, 1990, abandoned. This application Feb. 22, 1995, Ser. No. 392,304

Int. Cl.^{6} C11D *1/82;1/76;1/12*

U.S. Cl. 510—122 **28 Claims**

1. A hair conditioning shampoo composition comprising:

(a) from about 5% to about 50% of a detersive surfactant component;

(b) from about 0.1% to about 10%, by weight, of a dispersed silicone hair conditioning component, said hair conditioning component having a viscosity of up to about 2,000,000 centistokes at 25° C. and comprising:

(i) a nonvolatile, insoluble, silicone fluid component; and

(ii) silicone resin, said silicone resin being soluble in said silicone polymer fluid component and insoluble in water and in said shampoo composition and selected from the group consisting of MO resins, MT resins, MDT resins, MDO resins, MTO resins, and MDTO resins, and mixtures thereof, said resin component having at least about 1.1 oxygen atoms per silicone atom and being free of silane linkages;

wherein the weight ratio of (i):(ii) is from about 9:1 to about 200:1; and

(c) an aqueous carrier.

5,710,114

STABLE CONDITIONING SHAMPOO CONTAINING AN ANIONIC SURFACTANT, A FATTY ALCOHOL, AND POLYETHYLENEIMINE

Daniel Raymond Pyles, Chicago, Ill., assignor to Helene Curtis, Inc., Chicago, Ill.

Continuation of Ser. No. 538,249, Oct. 3, 1995, Pat. No. 5,576,279, which is a continuation-in-part of Ser. No. 305,069, Sep. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 63,015, May 17, 1993, abandoned. This application May 29, 1996, Ser. No. 654,864

Int. Cl.^{6} A61K *7/075;* **C11D** *1/62;1/65;3/37*

U.S. Cl. 510—123 **15 Claims**

1. A hair conditioning shampoo composition comprising an emulsion of water; about 5 to about 65 percent by weight of an anionic cleaning surfactant; about 0.01 to about 4 weight percent of a cationic polyethyleneimine, and from about 0.5 to about 10 weight percent of a long-chain fatty alcohol having predominantly about 14 to about 16 carbons in a long chain, wherein the fatty alcohol is included in the composition in an amount of at least about 2.67 times the weight of the polyethyleneimine in the composition; said composition having a pH of about 4 to about 8.

9. In a hair conditioning shampoo composition containing water; an anionic cleaning surfactant; a long chain fatty alcohol; and a cationic polyethyleneimine; the improvement comprising said fatty alcohol having predominantly about 14 to about 16 carbons in said long chain and being present in the composition in a weight ratio of fatty alcohol to polyethyleneimine of at least 2.67:1.

5,710,115

AUTOMATIC DISHWASHING COMPOSITION CONTAINING PARTICLES OF DIACYL PEROXIDES

Rashesh Naresh Patel, West Chester; Edward Paul Fitch V, Cincinnati; Jeffrey Donald Painter, Loveland, and Alan Scott Goldstein, Blue Ash, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 352,468, Dec. 9, 1994, abandoned. This application Sep. 11, 1996, Ser. No. 713,043

Int. Cl.^{6} C11D *3/395*

U.S. Cl. 510—224 **8 Claims**

1. An automatic dishwashing detergent composition in granular or powder form, which composition comprises:

I) from about 1% to about 15% by weight of compositon of diacyl peroxide-containing particles which consist essentially of an admixture of:

A) from about 1% to about 80% by weight of particle of a water-insoluble diacyl peroxide selected from the group consisting of dibenzoyl peroxide, benzoyl glutaryl peroxide, benzoyl succinyl peroxide, di-(2-methybenzoyl) peroxide, diphthaloyl peroxide and mixtures thereof, and

B) from about 0.1% to 95% by weight of particle of .a watersoluble stabilizing additive in which the diacyl peroxide does not dissolve and which is selected from the group consisting of alkali metal sulfates and citrates, ethoxylated C_{16-20} alcohols, polyethylene glycols melting above 100° F., maltodextrins, polyacrylate polymers and copolymers of molecular weight between 1000 and 80,000, ethylene diamine tetra-acetates, ethylene diamine disuccinates and mixtures of these stabilizing additives;

II) from about 0.1% to 10% by weight of the composition of a low foaming nonionic surfactant;

III) from about 5% to 70% by weight of the composition of a pH adjusting agent or builder component selected from the group consisting of alkali metal, ammonium and substituted ammonium phosphates, polyphosphates, phosphonates, polyphosphonates, carbonates, bicarbonates, borates, hydroxides, polyacetates, carboxylates, polycarboxylates, silicates, aluminosilicates and mixtures of these pH adjusting agent or builder components;

IV) from about 0.1% to 5.0% by weight of the composition of a chlorine bleach or additional peroxygen bleach; and

V) from about 0.001% to 5% by weight of the composition of a detersive enzyme;

said composition providing a wash solution pH of from about 9 to 12.

5,710,116

COLOR-SAFE BLEACH BOOSTERS, COMPOSITIONS AND LAUNDRY METHODS EMPLOYING SAME

Gregory Scot Miracle; Michael Eugene Burns, both of Hamilton; Patti Jean Kellett, and James Charles Theophile Roger Burckett-St. Laurent, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 526,623, Sep. 11, 1995, Pat. No. 5,576,282. This application Aug. 29, 1996, Ser. No. 697,748

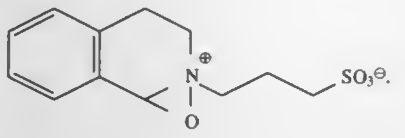
Int. Cl.^{6} C11D *3/28;3/395;* **D06L** *3/02*

U.S. Cl. 510—276 **4 Claims**

1. A bleaching composition comprising:

from about 0.01% to about 60% by weight of a peroxygen source and

from about 0.01% to about 10% by weight of a bleaching solution having an oxaziridinium compound represented by the formula:



5,710,117

DETERGENT FORMULATION WITH ANTI SOILING PROPERTIES FOR WASHING LAUNDRY

Claire David, Paris, and Etienne Fleury, Irigny, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Apr. 4, 1996, Ser. No. 627,517

Claims priority, application France, Apr. 5, 1995, 95 04015

Int. Cl.^{6} C11D *3/37*

U.S. Cl. 510—299 **26 Claims**

1. Detergent formulation for washing laundry which comprises:

from about 10 to 80% of its weight of at least one hydrated zeolite (z) of formula

$$xNa_2O.yAl_2O_3.zSiO_2.wH_2O$$

in which, if y=1, x is from about 0.7 to 1.1, z is from about 1.3 to 3.3 and w is from about 10 to 264

from about 0.005 to 5%, of its weight of a least one polyalkylene terephthalate-polyoxyalkylenebisurethane (PET-UPOEU) copolymeric nonionic or anionic anti-soiling agent, said copolymer being obtained by reaction of a polyalkylene terephthalate (PET) and a polyoxyalkylne-bisurethane (UPOEU), the molar ratio of the NCO functions to all of the OH functions or OH function equivalents being from about 0.5 to 1

from about 3 to 40%, of its weight of a least one saturated C_5–C_{24}, aliphatic or hydroxyaliphatic alkyl sulphate anionic surfactant (FAS) optionally condensed with approximately 0.5 to 30 mol of ethylene oxide and/or propylene oxide, and

optionally, up to 15% of its weight of a nonionic surfactant (NI), with the proviso that not more than 5% by weight of the said detergent formulation to consist of an anionic surfactant other than the alkyl sulphates (FAS).

5,710,118

DETERGENT COMPOSTIONS INHIBITING DYE TRANSFER COMPRISING COPOLYMERS OF N-VINYLIMIDAZOLE AND N-VINYLPYRROLIDONE

Alfred Busch, Londerzeel; Andre Christian Convents, Diegem, and Petrus Johannes Leeuwen, Mechelen, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/06950, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/03388, PCT Pub. Date Feb. 2, 1995

PCT Filed Jun. 20, 1994, Ser. No. 583,106

Claims priority, application European Pat. Off., Jul. 23, 1993, 93870154

Int. Cl.^{6} C11D *3/37;3/12*

U.S. Cl. 510—360 **15 Claims**

1. A detergent composition comprising:

clay;

a metallo catalyst;

greater than 1% by weight of the detergent composition of a surfactant system; and

from 0.01% to 10% by weight of the detergent composition of a copolymer of N-vinylimidazole and N-vinylpyrrolidone, the copolymer having a molar ratio of N-vinylimidazole to N-vinylpyrrolidone of from 1:1 to 1:0.2 and an average molecular weight of from 5,000 to 50,000.

15. A detergent composition comprising clay, greater than 1% by weight of the detergent composition of a surfactant system, and from 0.01% to 10% by weight of the detergent composition of a copolymer of N-vinylimidazole and N-vinylpyrrolidone, the copolymer having a molar ratio of N-vinylimidazole to N-vinylpyzrrolidone of from 1:0.8 to 1:0.3 and an average molecular weight of from 10,000 to 20,000.

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DETERGENT COMPOSITIONS INHIBITING DYE TRANSFER COMPRISING COPOLYMERS OF N-VINYLIMIDAZOLE AND N-VINYLPYRROLIDONE

Alfred Busch, Londerzeel, and Andre Christian Convents, Diegem, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/06951, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/03382, PCT Pub. Date Feb. 2, 1995

PCT Filed Jun. 20, 1994, Ser. No. 583,109

Claims priority, application European Pat. Off., Jul. 23, 1993, 93870155

Int. Cl.^{6} C11D *3/37*

U.S. Cl. 510—360 **18 Claims**

1. A detergent composition comprising:

greater than 1% by weight of the detergent composition of a surfactant system essentially free of linear alkyl benzene sulfonate; and

from 0.01% to 10% by weight of the detergent composition of a copolymer of N-vinylimidazole and N-vinylpyrrolidone, the copolymer having a molar ratio of N-vinylimidazole to N-vinylpyrrolidone in the range of from 1:1 to 1:0.2 and an average molecular weight in the range of from 5,000 to 1,000,000.

5,710,120
NONSILICATED SOFT METAL SAFE PRODUCT

Ratana Kanluen, Canton, Mich.; Henry Scrivens, Herts, and Angela Brett, London, both of England, assignors to Diversey Lever, Inc., Plymouth, Mich.

Continuation of Ser. No. 266,175, Jun. 27, 1994, abandoned. This application May 9, 1996, Ser. No. 647,194

Int. Cl.^{6} C11D *1/72;1/94;3/20*

U.S. Cl. 510—421 **26 Claims**

1. A stable, alkaline cleaner composition comprising;

a) from about 0.1% to about 0.5% by weight calcium ion;

b) from about 1.0% to about 10.0% by weight surfactant containing carboxylic acid, hydroxyl groups, and combinations thereof, wherein the total of the two functionalities in the surfactant is greater than or equal to 2, and wherein the surfactant is selected from the group consisting of alkylpolyglucoside surfactant, amphoteric surfactant, polycarboxyl surfactant, polyhydroxyl surfactant and combinations thereof;

c) from about 0.5% to about 7% by weight alpha-hydroxy carboxylic acid; and

d) from about 4% to about 25% by weight sodium hydroxide or potassium hydroxide.

5,710,121
ANIONIC SURFACTANTS HAVING MULTIPLE HYDROPHOBIC AND HYDROPHILIC GROUPS

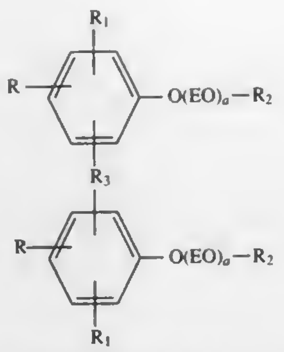
David James Tracy; Ruoxin Li, both of Plainsboro, N.J., and Jean-Marc Ricca, Paris, France, assignors to Rhone-Poulenc Inc., Cranbury, N.J.

Filed Dec. 20, 1996, Ser. No. 777,706

Int. Cl.^{6} C11D *3/38*

U.S. Cl. 510—467 **22 Claims**

1. A composition of matter comprising a bis-alkylphenol gemini surfactant characterized as mild and environmentally benign comprising a compound of the formula:



I.

wherein R independently represents alkyl of from about 4 to about 20 carbon atoms, R_1 independently represents hydrogen and alkyl of from 4 to about 20 carbon atom; R_2 independently represents $—SO_3M$ or $—P(O)(OM)_2$, wherein M represents hydrogen, alkyl or alkaline earth metal, ammonium or an organic base salt; R_3 represents methylene, and wherein "a" is number of from 0 to about 100, and another surfactant selected from the group consisting of an anionic, nonionic, cationic and amphoteric surfactant.

5,710,122
SULFONATE DERIVATIZED PERFUMES

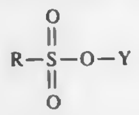
Mark Robert Sivik, Fairfield, and Frederick Anthony Hartman, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 20, 1995, Ser. No. 575,418

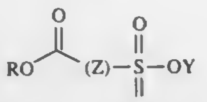
Int. Cl.^{6} A61K *7/46*

U.S. Cl. 512—7 **17 Claims**

1. A sulfonate derivatized perfume compound, selected from the group consisting of sulfonates having the formula (1), and (II):



$$R-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-O-Y \qquad (1)$$



(II)

wherein R and Z are independently selected from the group consisting of nonionic or anionic, substituted or unsubstituted C_1–C_{30} straight, branched or cyclic alkyl, alkenyl, alkynyl, alkylaryl or aryl group; Y is a radical that, upon hydrolysis of said sulfonate, forms an alcohol with a boiling point at 760 mm Hg of less than about 300 ° C. which are perfumes, and excluding geranyl and neryl methanesulfonate.

5,710,123
PEPTIDE INHIBITORS OF SELECTIN BINDING

George A. Heavner, Malvern, and Marian Kruszynski, King of Prussia, both of Pa., assignors to Centocor, Inc., Malvern, Pa.

PCT No. PCT/US93/12110, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO94/14836, PCT Pub. Date Jul. 7, 1994

Continuation-in-part of Ser. No. 997,771, Dec. 18, 1992, abandoned. This PCT application Dec. 13, 1993, Ser. No. 454,207

Int. Cl.^{6} A01N *37/18;* **A61K** *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—2 **23 Claims**

1. A peptide capable of inhibiting selectin binding having the formula:

$$R^1\text{-X'-A' B'-C'-D'-E'-F-G'-H'-I'-J'-X''-}R^2 \qquad (1)$$

wherein:

X' is an N-terminus amino acid linear sequence of from zero to 10 amino acids, and R^1 is a moiety attached to the terminal α amino group of X', or the terminal α-amino group of the adjacent amino acid if X is zero;

X" is a C-terminus amino acid linear sequence of from zero to 10 amino acids, and R^2 is a moiety attached to the carboxyl carbon of X" or the carboxyl carbon of the adjacent amino acid if X" is zero;

A' is selected from the group consisting of null (signifying no amino acid) and L-cysteine;

B' is selected from the group consisting of L-histidine, L-serine, L-leucine, L-phenylalanine, L-asparagine, L-proline, and L-glutamine;

C' is selected from the group consisting of L-lysine, L-histidine, L-arginine, and L-serine;

D' is selected from the group consisting of L-lysine, L-leucine, L-alanine, L-phenylalanine, L-histidine, L-arginine, and L-serine;

E' is selected from the group consisting of L-lysine, L-phenylalanine, L-glutamine, and L-arginine;

F is selected from the group consisting of L-histidine, L-leucine, L-alanine, L-isoleucine, L-threonine, and L-arginine;

G' is selected from the group consisting of L-alanine, L-phenylalanine, L-histidine, L-isoleucine, and L-glutamine;

H' is selected from the group consisting of L-leucine, L-phenylalanine, L-isoleucine, L-proline, and L-alanine;

I' is selected from the group consisting of L-cysteine, L-phenylalanine, L-isoleucine, L-histidine, L-leucine, L-valine, L-threonine, and L-serine;

J' is selected from the group consisting of L-tyrosine, L-phenylalanine, L-isoleucine, and L-valine;

R^1 is selected from the group consisting of hydrogen (signifying a free N-terminal group), lower alkyl, aryl, formyl, alkanoyl, aroyl, alkyloxycarbonyl or aryloxycarbonyl;

R^2 is selected from the group consisting of ON (signifying a free C-terminal carboxylic acid), OR^3, signifying ester, where R^3 is selected from the group consisting of lower alkyl and aryl; and NR^5R^6 where R^5 and R^6 are each selected independently from hydrogen, lower alkyl, aryl or cyclic alkyl;

and pharmaceutically acceptable salts thereof.

5,710,124
METHOD FOR COMBATTING BOVINE MASTITIS

John Edmondson Peel, Lully, and Bruno Suri, Bubendorf, both of Switzerland, assignors to Novartis Corporation, Summit, N.J.

PCT No. PCT/EP94/02567, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO95/05844, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 3, 1994, Ser. No. 596,203

Claims priority, application European Pat. Off., Aug. 20, 1993, 93810588

Int. Cl.^{6} A61K *38/00*

U.S. Cl. 514—2 **8 Claims**

1. A method for combatting bacterial mammary mastitis in a mammal which method permits milk obtained from the mammal to be used in the production of cheese or yogurt, said method comprising administering to said mammal a composition comprising from about 20 μg/kg to 200 μg/kg of gallidermin, or a pharmaceutically acceptable acid salt thereof.

5,710,125

Patent Not Issued For This Number

5,710,126
T CELL EPITOPES OF RYEGRASS POLLEN ALLERGEN

Irwin J. Griffith, North Reading; Mei-chang Kuo, Winchester, and Mohammad Luqman, Waltham, all of Mass., assignors to ImmuLogic Pharmaceutical Corporation, Waltham, Mass.

Division of Ser. No. 106,016, Aug. 13, 1993, which is a continuation-in-part of Ser. No. 31,001, Mar. 12, 1993. This application May 15, 1995, Ser. No. 440,861

Int. Cl.^{6} A61K *38/10;38/16;39/36*

U.S. Cl. 514—12 **11 Claims**

1. A preparation of at least two isolated peptides, comprising:

a first isolated peptide, said first isolated peptide consisting of an amino acid sequence selected from the group consisting of LPIX-4 (SEQ ID NO:6), LPIX-5 (SEQ ID NO:7), LPIX-6 (SEQ ID NO:8), LPIX-11 (SEQ ID NO:13), LPIX-16 (SEQ ID NO:18), LPIX-17 (SEQ ID NO:19), and LPIX-20 (SEQ ID NO:22); and

a second isolated Lol p I peptide capable of stimulating T cell proliferation, said peptide consisting of 6–30 amino acid residues.

5,710,127
USE OF GROWTH FACTOR IGF-I AND/OR IGF-II

Peter David Gluckman, Auckland, and David James Mellor, Palmerston North, both of New Zealand, assignors to Pharmacia & Upjohn Aktiebolag, Stockholm, Sweden

Division of Ser. No. 193,017, Feb. 17, 1994, Pat. No. 5,534,493. This application Mar. 7, 1996, Ser. No. 612,177

Claims priority, application New Zealand, Jun. 8, 1992, 243070; WIPO, Jun. 7, 1993, SE93/00502

Int. Cl.^{6} C07K *7/10;* **A61K** *38/00;37/36*

U.S. Cl. 514—12 **6 Claims**

1. Composition comprising exogenous human or animal IGF-I or IGF-II or both or effective analogs thereof and foodstuff for oral administration wherein the foodstuff is selected from the group consisting of artificial milk, natural milk and colostrum.

5,710,128
PHARMACEUTICAL COMPOSITIONS OF LIPOPOLYSACCHARIDE-BINDING POLYPEPTIDES

Nobutaka Fujii, 10-13-504, Nakamiya Kita Machi Hirakata-Shi, Osaka; Naoki Yamamoto, Haramachi Jutaku 3-11, Ebisuminami, Shibuya-ku, Tokyo; Akiyoshi Matsumoto, 2-12, Tamadaira 5-chome, Hino-shi, Tokyo, and Michinori Waki, 1-77, Tamakocho 1-chome, Higashimurayama-shi, Tokyo, all of Japan

Continuation of Ser. No. 876,883, Apr. 29, 1992, Pat. No. 5,449,752. This application Apr. 21, 1995, Ser. No. 426,550

Claims priority, application Japan, May 2, 1991, 3-130410

Int. Cl.^{6} A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—13 **9 Claims**

1. A pharmaceutical composition comprising a polypeptide represented by the following formula (SEQ ID NO:6)

$$\begin{array}{cccccccccccccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 & 12 & 13 & 14 & 15 & 16 & 17 & 18 \\ A_1\text{-} & A_2\text{-} & \text{Cys-} & A_2\text{-} & A_3\text{-} & A_3\text{-} & \text{Cys-} & A_2\text{-} & A_3\text{-} & \text{Gly-} & A_2\text{-} & \text{Cys-} & A_2\text{-} & A_3\text{-} & A_3\text{-} & \text{Cys-} & A_4\text{-} & A_5 \end{array}$$

or salt thereof in which

A_1 is a hydrogen or at least one and no more than two amino acids selected from the group consisting of lysine and arginine,

A_2 is a tyrosine, phenylalanine or tryptophan residue,

A_3 is an arginine or lysine residue,

A_4 is at least one and no more than two amino acids selected from the group consisting of lysine and arginine,

A_5 is an —OH or an NH_2,

Cys is a cysteine residue, and

Gly is a glycine residue; and

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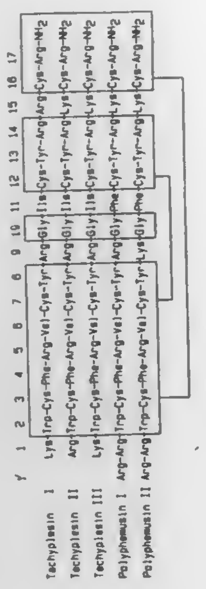

Y 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Tachyplesin I Lys-Trp-Cys-Phe-Arg-Val-Cys-Tyr-Arg-Gly-Ile-Cys-Tyr-Arg-Arg-Cys-Arg-NH2
Tachyplesin II Arg-Trp-Cys-Phe-Arg-Val-Cys-Tyr-Arg-Gly-Ile-Cys-Tyr-Arg-Lys-Cys-Arg-NH2
Tachyplesin III Lys-Trp-Cys-Phe-Arg-Val-Cys-Tyr-Arg-Gly-Ile-Cys-Tyr-Arg-Lys-Cys-Arg-NH2
Polyphemusin I Arg-Arg-Trp-Cys-Phe-Arg-Val-Cys-Tyr-Arg-Gly-Phe-Cys-Tyr-Arg-Lys-Cys-Arg-NH2
Polyphemusin II Arg-Arg-Trp-Cys-Phe-Arg-Val-Cys-Tyr-Lys-Gly-Phe-Cys-Tyr-Arg-Lys-Cys-Arg-NH2

a pharmaceutically acceptable carrier.

5,710,129
INHIBITORS OF SH2-MEDIATED PROCESSES

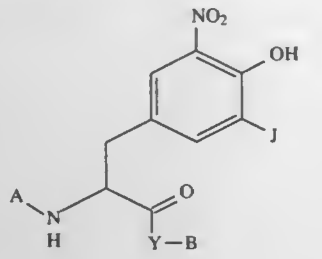
Berkley A. Lynch, and Manfred Weigele, both of Cambridge, Mass., assignors to Ariad Pharmaceuticals, Inc., Cambridge, Mass.

Filed Feb. 23, 1995, Ser. No. 392,646

Int. Cl.^{6} A61K *38/04;* **C07K** *5/10*

U.S. Cl. 514—18 **8 Claims**

1. A compound of the formula:



wherein

A is H, R^1, —CO—R^1 or —CO—OR^1 where R^1 is alkyl, heteroalkyl, aryl or heteroaryl;

Y is —CH$_2$—, —O—, or —NH—;

J is H or —NO$_2$; and

B is alkyl or aryl, which may be linear, branched or cyclic, and is optionally substituted, with the provisos that where J is —NO$_2$ and A is tBOC or triflouroacetyl, YB is not —OEt; where J is —NO$_2$ and A is acetyl, YB is not —OEt, —OMe, or L-Phe; and where J is —NO$_2$ and A is H, L-phenylalanyl- or N-cbz-L-phenylalanyl-, YB is not —OMe, and where J is H and A is —COOR^1 and R^1 is a branched alkyl or arylalkyl moiety, YB is a moiety other than an amino acid ester or an ester of a terapeptide, and where J is H and A is —COR^1 and R^1 is a straight chain aliphatic moiety, YB is a moiety other than ethoxy.

5,710,130
ANTITHROMBOTIC AGENTS

Aaron L. Schacht; Gerald F. Smith, and Michael R. Wiley, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 398,187, Mar. 2, 1995, abandoned. This application Sep. 1, 1995, Ser. No. 523,727

Claims priority, application South Africa, Feb. 27, 1995, 95/1617

Int. Cl.^{6} C07F *9/02;9/28;* **C07C** *229/00;214/00;* **A61K** *38/00;* **C07K** *5/00;7/00;17/00*

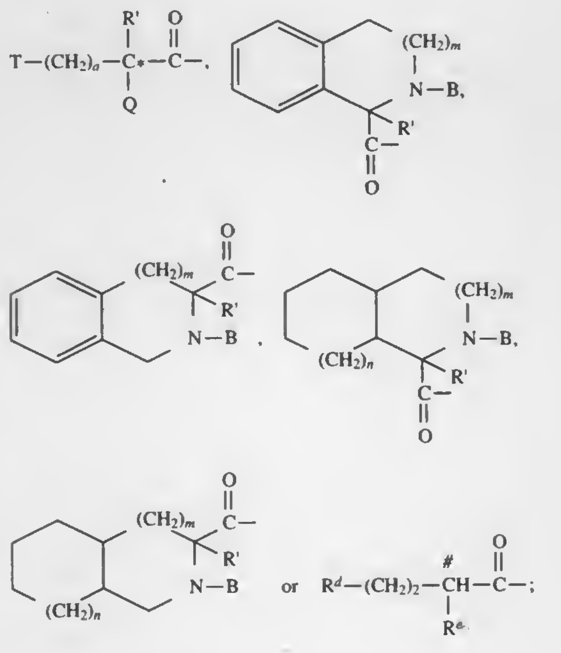
U.S. Cl. 514—19 **54 Claims**

1. A compound having the Formula I

$$X—Y—NH—(CH_2)_r—G \qquad I$$

wherein

X is prolinyl, homoprolinyl, R^m—(CH$_2$)$_g$—NH—CH$_2$—C(O)—,



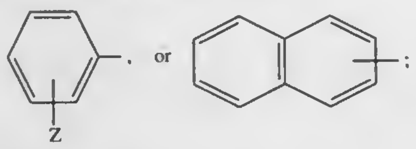
in which

R^d is carboxy or methylsulfonyl;

R^e is NHR^c, NHCOR^c or NHCOOR^c; in which

R^c is C$_1$–C$_{10}$ alkyl, C$_3$–C$_8$ cycloalkyl or a (C$_3$–C$_8$) cycloalkyl (C$_1$–C$_6$) alkyl radical of 4–10 carbons;

T is C$_3$–C$_8$ cycloalkyl, C$_1$–C$_8$ alkyl,



a is 0, 1 or 2; and

Q is —OH, C$_1$–C$_4$ alkoxy, or —NH—A;

A is hydrogen, C$_1$–C$_4$ alkyl, R"SO$_2$—, R"OC(O)—, R"C(O)—, R"C(O)— or (CH$_2$)$_g$—R^m;

g is 1, 2, or 3;

B is hydrogen or C$_1$–C$_4$ alkyl;

R' is hydrogen or C$_1$–C$_4$ alkyl;

R" is C$_1$–C$_4$ alkyl, C$_1$–C$_4$ perfluoroalkyl, —(CH$_2$)$_d$—R^m, or unsubstituted or substituted aryl, where aryl is phenyl, naphthyl, a 5- or 6-membered unsubstituted or substituted aromatic heterocyclic ring, having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen, or a 9- or 10-membered unsubstituted or substituted fused bicyclic aromatic heterocyclic group having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen;

R^m is —COOR^b, —SO$_2$(C$_1$–C$_4$ alkyl), —SO$_3$H, —P(O)(OR^b)$_2$ or tetrazol-5-yl;

R^n is —COOR^b or tetrazol-5-yl;

each R^b is independently hydrogen or C$_1$–C$_4$ alkyl;

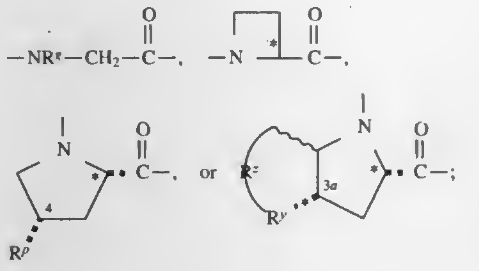
d is 1, 2, or 3;

m is 0, 1, or 2;

n is 0, 1, or 2; and

Z is hydrogen, C$_1$–C$_4$ alkyl, C$_1$–C$_4$ alkoxy, hydroxy, halo or RaSO$_2$NH—, where R$_a$ is C$_1$–C$_4$ alkyl;

Y is



in which

R^g is C$_1$–C$_6$ alkyl, C$_3$–C$_8$ cycloalkyl, or —(CH$_2$)$_p$—L—(CH$_2$)$_q$—T';

R^p is hydrogen, C$_1$–C$_6$ alkyl, C$_3$–C$_8$ cycloalkyl, or —(CH$_2$)$_p$—L—(CH$_2$)$_q$—T';

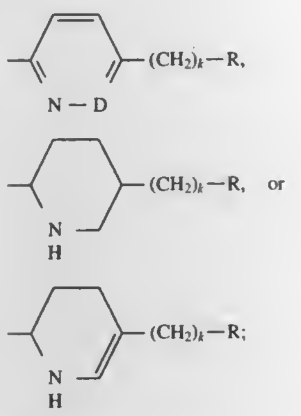
where p is 0, 1, 2, 3, or 4; L is a bond, —O—, —S—, or —NH—; q is 0, 1, 2 or 3; and T' is hydrogen, C$_1$–C$_4$ alkyl, C$_3$–C$_8$ cycloalkyl, —COOH, —CONH$_2$, or Ar, where Ar is unsubstituted or substituted aryl, where aryl is phenyl, naphthyl, a 5- or 6-membered unsubstituted or substituted aromatic heterocyclic ring, having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen, or a 9- or 10-membered unsubstituted or substituted fused bicyclic aromatic heterocyclic group having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen;

R^y is —CH$_2$—, —O—, —S—, or —NH—; and

R^z is a bond or, when taken with R^y and the three adjoining carbon atoms, forms a saturated carbocyclic ring of 5–8 atoms, one atom of which may be —O—, —S—, or —NH—;

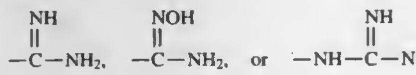
r is 1, 2 or 3; and

G is



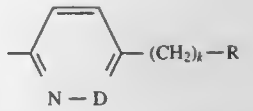
where D and E are each independently N or CH;

k is 0 or 1; and



$$\overset{NH}{\overset{\|}{—C}}—NH_2,\quad \overset{NOH}{\overset{\|}{—C}}—NH_2,\quad \text{or}\quad —NH—\overset{NH}{\overset{\|}{C}}—NH_2;$$

and wherein one to all of the otherwise unsubstituted carbon atoms of the heteroaromatic ring of



may bear a fluoro substituent;

or a pharmaceutically acceptable salt thereof; or a pharmaceutically acceptable solvate of said compound or salt thereof.

5,710,131
INHIBITOR OF COLLAGEN-STIMULATED PLATELET AGGREGATION

Jürgen Hemberger, Aschaffenburg, and Guido Melzer, Hofheim/Ts., both of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP94/02087, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO95/01375, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 28, 1994, Ser. No. 392,970

Claims priority, application Germany, Jul. 1, 1993, 93110528.2

Int. Cl.^{6} A61K *38/00;* **C07K** *1/00*

U.S. Cl. 514—21 **9 Claims**

1. A substantially pure protein which inhibits collagen-stimulated platelet aggregation and to prevent interactions between collagen and von Willebrand's factor (vWF), obtainable from the saliva of the medicinal leech *Hirudo medicinalis.*

5,710,132
USE OF BOVINE COLOSTRAL MILK AS A PREPARATION FOR THE PROTECTION OF THE LIVER

Wolfgang Moller, Oberursel; Reinhard Lissner, Gonz-Weilbach, and Dietrich Nitsche, Kiel, all of Germany, assignors to Biotest Pharma GmbH, Dreieich, Germany

Continuation of Ser. No. 331,310, Oct. 28, 1994, abandoned. This application May 22, 1996, Ser. No. 651,406

Claims priority, application Germany, Nov. 4, 1993, 43 37 654.1

Int. Cl.^{6} A61K *38/00;* **C07K** *14/00*

U.S. Cl. 514—21 **11 Claims**

1. A method for the improvement of liver function by reducing toxic effects on liver combined with a desirable protein-rich nutrition in patients suffering from at least one liver disorder selected from the group consisting of inflammation of the liver, virus hepatitis, toxic liver cell damage, fibrosis of the liver, cirrhosis of the liver, liver congestion, liver dystrophy, fatty degeneration of liver cells, fatty liver, disturbances of the detoxification function, disturbances of the excretory function of the liver, disturbances of the conjugational function of the liver, disturbances of the synthesizing function of the layer portal hypertension due to a liver disease, or a liver failure coma, and intoxication by protein degradation products of ammonia, which comprises administering to such patient an amount effective therefor of a bovine colostral milk.

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5,710,133

ALPHA-GLYCOSYL DERIVATIVE OF CATECHOLAMINE OR ITS SALT, AND ITS PREPARATION AND USES

Tetsuya Nakada, Okayama, and Michio Kubota, Osaka, both of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 297,527, Aug. 26, 1994, Pat. No. 5,656,460, which is a division of Ser. No. 057,915, May 7, 1993, Pat. No. 5,380,837. This application Jun. 7, 1995, Ser. No. 483,263

Int. Cl.⁶ A61K *31/70;* **C07H** *15/20;* **C12P** *19/44*

U.S. Cl. 514—25 **7 Claims**

1. An α-glycosyl derivative of a catecholamine or its salt, wherein the a-glycosyl is attached in α-fashion to either of the C-3 and C-4 hydroxyl moieties of the catecholamine, which does not exhibit a reducing activity and turns green on the anthrone-sulfuric acid method, said catecholamine being epinephrine.

5,710,134

COMBINATION OF NECROSIS-INDUCING SUBSTANCES WITH SUBSTANCES WHICH ARE ACTIVATED BY NECROSES FOR THE SELECTIVE THERAPY OF TUMORS AND INFLAMMATORY DISORDERS

Klaus Bosslet; Jörg Czech, both of Marburg, and Dieter Hoffmann, Marburg-Elnhausen, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed May 19, 1995, Ser. No. 446,211

Claims priority, application Germany, May 20, 1994, 44 17 865.4

Int. Cl.⁶ A61K *31/70*

U.S. Cl. 514—34 **14 Claims**

1. A pharmaceutical composition for use in cytostatic or immunotherapy, comprising a component I and a component II, wherein said component I comprises at least one compound that produces necroses a in tumor or in an inflammatory process, said necroses resulting in the release of at least one enzyme, and component II comprises one or more compounds that are converted by said at least one enzyme released by said necroses into a cytotoxic drug.

5,710,135

ANTHRACYCLINE PRODRUGS, METHOD FOR PREPARATION AS WELL AS THEIR USE IN SELECTIVE CHEMOTHERAPY

Ruben G. G. Leenders, Nijmegen; Eric W. P. Damen, Huissen; Johan Wilhelm Scheeren, Nijmegen; Hidde J. Haisma, Hoevelaken; Pieter H. J. Houba, Utrecht, and Dick De Vos, Oegstgeest, all of Netherlands, assignors to Pharmachemie B.V., Haarlem, Netherlands

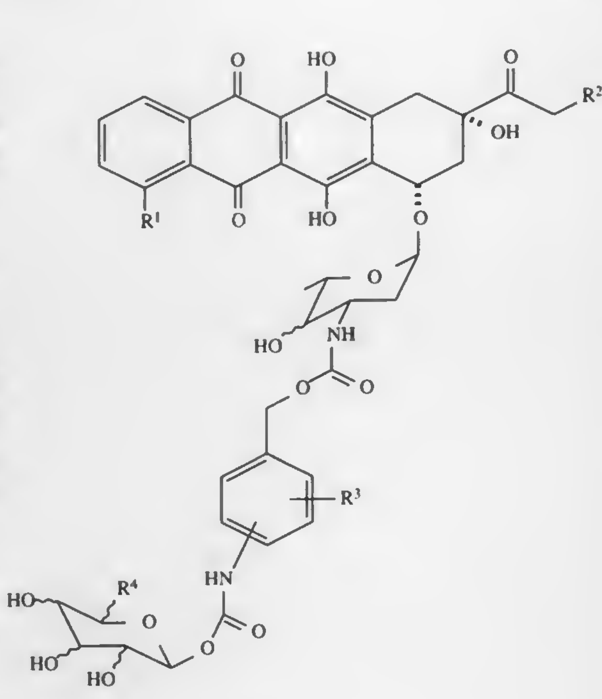
Filed May 24, 1996, Ser. No. 652,940

Claims priority, application European Pat. Off., Jun. 27, 1995, 95201747

Int. Cl.⁶ A61K *31/70;* **C07H** *15/24*

U.S. Cl. 514—34 **9 Claims**

1. An anthracycline derivative coupled to an enzymatically clearable N-phenyl-O-glycosyl carbamate space group, said anthracycline derivative having formula 1



1

wherein

R^1=—H, —OH or —OMe

R^2=—H or —OH

R^3=—H, —CX_3, —NO_2, —CN, —X, —Y, —OY, —NHY —$S(O_2)Y$, C(O)Y or C(O)OY

R^4=CH_2OH or C(O)O—Z^+

X=halogen

Y=C_1—C_3 alkyl or aryl

Z=H, Li, Na or K

or an acid addition salt thereof.

8. In a method for the treatment of tumors comprising administering an antibody directed enzyme prodrug to a patient in need of said therapy, wherein an antibody targets an enzyme to a tumor site, the improvement wherein

said antibody directed enzyme prodrug is an antharcycline compound of formula 1 according to claim **1**, wherein said prodrug passes to the tumor site and said prodrug is converted at the tumor site by an enzyme to a cytotoxic compound, said compound of formula 1 being administered in an amount sufficient to be converted at said tumor site to an anti-tumor-effective amount of said cytotoxic compound.

5,710,136

INHIBITION OF NEOVASCULARIZATION USING VEGF-SPECIFIC OLIGONUCLEOTIDES

Gregory S. Robinson, Acton, and Lois Elaine Hodgson Smith, West Newton, both of Mass., assignors to Hybridon, Inc., Cambridge, Mass.

Divisiun of Ser. No. 378,860, Jan. 26, 1995, which is a continuation-in-part of Ser. No. 98,942, Jul. 27, 1993. This application Jul. 12, 1995, Ser. No. 501,713

Int. Cl.⁶ A61K *48/00;* **C12N** *5/10;* **C07H** *21/02;21/04*

U.S. Cl. 514—44 **8 Claims**

1. A method of treating retinopathy of prematurity comprising the step of administering intravitreally to an eye of a subject afflicted with retinopathy of prematurity a therapeutic amount of an oligonucleotide having a nucleotide sequence selected from the group consisting SEQ ID NOs: 1, 2, 6, 14, 15, 18, 21, 28, 30, 31, and 32, with the result that retinal VEGF gene expression and neovascularization are inhibited.

5,710,137

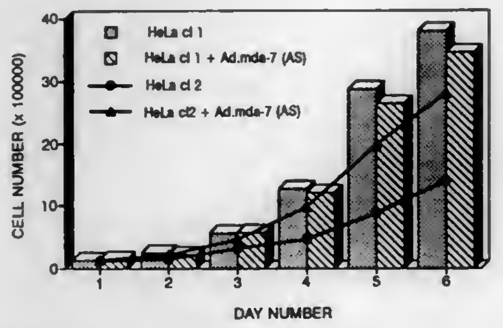
USE OF A MELANOMA DIFFERENTIATION ASSOCIATED GENE (MDA 7) FOR REVERSING A CANCEROUS PHENOTYPE

Paul B. Fisher, Scarsdale, N.Y., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Aug. 16, 1996, Ser. No. 696,573

Int. Cl.⁶ A61K *48/00*

U.S. Cl. 514—44 **16 Claims**



1. A method for reversing the cancerous phenotype of a cancer cell which comprises introducing a nucleic acid comprising a melanoma differentiation associated gene (mda-7) into the cell under conditions permitting the expression of the gene so as to thereby reverse the cancerous phenotype of the cell.

5,710,138

BENZO[F]QUINOXALINEDIONE DERIVATIVES, THEIR PRODUCTION AND USE IN PHARMACEUTICAL AGENTS

Peter Hölscher, and Lechoslaw Turski, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/DE94/00495, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO94/25470, PCT Pub. Date Nov. 10, 1994

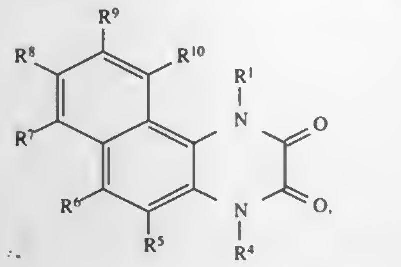
PCT Filed Apr. 28, 1994, Ser. No. 537,895

Claims priority, application Germany, Apr. 28, 1993, 43 14 592.2

Int. Cl.⁶ C07D *413/02;241/36;* **A61K** *31/535;31/495*

U.S. Cl. 514—80 **10 Claims**

1. A benzo[f]quinoxalinedione compound of formula I



(I)

in which

R^1 and R^4 are the same or different and mean hydrogen, C_{1-12} alkyl substituted with R^2, C_{2-12} alkenyl substituted with R^2, C_{2-12} alkynyl substituted with R^2, C_{3-7} cycloalkyl substituted with R^2, —$(CH_2)_n$—C_{6-12} aryl, which is substituted with R^2 in the aryl or in the alkyl radical or —$(CH_2)_n$-hetaryl, which is substituted with R^2 in the hetaryl or alkyl radical, and R^1 and R^4 do not mean hydrogen at the same time,

R^5, R^6, R^7, R^8, R^9 and R^{10} are the same or different and mean hydrogen, halogen, nitro, $NR^{16}R^{17}$, $NHCOR^{11}$, $SO_{0-3}R^{12}$, C_{3-7} cycloalkyloxy, COR^{13}, cyano, CF_3, OCH_2CF_3, C_{1-6} alkyl or C_{1-6} alkoxy, and

R^2 is —CN, -tetrazole, —C(NOH)NH2, —CO—R^3 or —PO-XY and R^2 is the same or different in one to two places, and

n is 0, 1, 2, 3, 4 or 5,

R^3 means hydroxy, C_{1-6} alkoxy or $NR^{14}R^{15}$,

X and Y are the same or different and mean hydroxy, C_{1-6} alkoxy, —O—$(CH_2)_p$—O—, C_{1-4} alkyl or $NR^{14}R^{15}$ and p is 1, 2 or 3 and

R^{11} means C_{1-6} alkyl or phenyl, which can be substituted with halogen,

R^{12} means hydrogen, C_{1-4} alkyl, NH_2, $N(C_{1-4}\ alkyl)_2$, —$NH(C_{1-4}$ alkyl), —NH—CH_2CONH_2, —CH_2CONH_2, CF_3 or —NH—$(CH_2)_n$—R^2 and

R^{13} means hydroxy, C_{1-6} alkoxy, C_{1-6} alkyl or $NR^{14}R^{15}$,

R^{14} and R^{15}, R^{16} and R^{17} are the same or different and mean hydrogen, —CO—C_{1-6} alkyl, phenyl or C_{1-6} alkyl, which can be optionally substituted with C_{1-4} alkoxy or with an amino group optionally mono- or disubstituted with C_{1-4} alkyl or together with the nitrogen atom can form a 5- to 7-membered saturated heterocycle, which can contain another N, S or O atom and can be substituted or can form an unsaturated 5-membered heterocycle, which can contain 1–3N atoms and can be substituted,

as well as their isomers or salts, and, if R^5–R^{10} is hydrogen, R^1 or R^4 does not mean methanephosphonic acid or ethane-1-phosphonic acid.

5,710,139

HETEROCYCLIC COMPOUNDS

Britt-Marie Swahn, Södertälje, Sweden, assignor to Astra AB, Sweden

PCT No. PCT/SE94/01211, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO95/17410, PCT Pub. Date Jun. 29, 1995

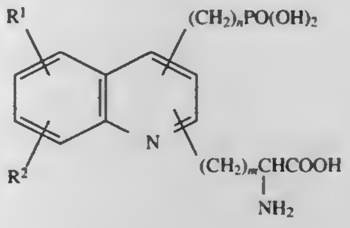
PCT Filed Dec. 16, 1994, Ser. No. 381,868

Claims priority, application Sweden, Dec. 22, 1993, 9304269; Mar. 23, 1994, 9400968; Jun. 16, 1994, 9402122

Int. Cl.⁶ A61K *31/695;* **C07F** *9/60*

U.S. Cl. 814—82 **43 Claims**

1. A compound of formula (I)



(I)

in which

m is 0, 1 or 2;

n is 1, 2 or 3;

R^1 and R^2 are, independently and being the same or different, hydrogen, C_1–C_7 alkyl, C_2–C_7 alkenyl, C_4–C_7 alkadienyl, C_6 aryl, C_6 aryl-C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 alkanoyl, C_1–C_7 alkanoyloxy, C_6 aroyl, C_6 aroyloxy, C_6 aryl-C_1–C_7 alkanoyl, C_1–C_7 alkoxycarbonyl, C_6 aryl-C_1–C_7 alkoxycarbonyl, C_1–C_7 alkylthio, trifluoromethyl, trifluoromethoxy, C_1–C_7 alkylsulfonylamino, C_1–C_7 alkylamino, C_1–C_7 alkanoylamino, nitro, halogen, or R^1 and R^2 are, taken together, C_1–C_7 alkylene, C_2–C_7 alkenylene or C_4–C_7 alkadienylene, and pharmaceutically acceptable esters and salts, including hydrates, thereof.

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5,710,140

PHENYL HETEROCYCLES AS COX-2 INHIBITORS

Yves Ducharme, Montreal; Jacques Yves Gauthier, Laval; Petpiboon Prasit; Yves Leblanc, both of Kirkland; Zhaoyin Wang, Pierrefond; Serge Leger, Dollard Des Ormeaux, and Michel Therien, Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

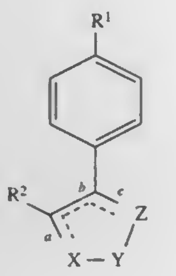
Continuation of Ser. No. 436,758, May 8, 1995, abandoned, which is a division of Ser. No. 179,467, Jan. 10, 1994, Pat. No. 5,474,995, which is a continuation-in-part of Ser. No. 82,196, Jun. 24, 1993, abandoned. This application Aug. 16, 1996, Ser. No. 699,142

Int. Cl.^{6} A61K *31/675;* C07F *9/02*

U.S. Cl. 514—91 **17 Claims**

1. A compound of formula I

I



or a pharmaceutically acceptable salt thereof wherein:

X—Y—Z— is selected from the group consisting of:

(a) —CH_2—NR^3—CH_2—,

(b) —$CR^5(R^{5'})$—NR^3—C(O)—,

(c) —N═CR^4—NH—,

(d) —C(O)—NR^3—$CR^5(R^{5'})$—,

(e) —NR^3—CH═CH— provided R^1 is other than —$S(O)_2Me$, and

(f) —CH═CH—NR^3— provided R^1 is other than —$S(O)_2Me$,

wherein side b is a double bond, and sides a and c are single bonds; and

X—Y—Z— is ═CH—NR^3—CH═,

wherein sides a and c are double bonds and side b is a single bond;

R^1 is selected from the group consisting of

(a) $S(O)_2CH_3$,

(b) $S(O)_2NH_2$,

(c) $S(O)_2NHC(O)CF_3$,

(d) $S(O)(NH)CH_3$,

(e) $S(O)(NH)NH_2$,

(f) $S(O)(NH)NHC(O)CF_3$,

(g) $P(O)(CH_3)OH$, and

(h) $P(O)(CH_3)NH_2$,

R^2 is selected from the group consisting of

(a) C_{1-6} alkyl,

(b) C_3, C_4, C_5, C_6, and C_7, cycloalkyl,

(c) mono-, di- or tri-substituted phenyl wherein the substituent is selected from the group consisting of

(1) hydrogen,

(2) halo,

(3) C_{1-6} alkoxy,

(4) C_{1-6} alkylthio,

(5) CN,

(6) CF_3,

(7) C_{1-6} alkyl,

(8) N_3,

(9) —CO_2H,

(10) —CO_2—C_{1-4} alkyl,

(11) —$C(R^5)(R^6)$—OH,

(12) —$C(R^5)(R^6)$—O—C_{1-4} alkyl, and

(13) —C_{1-6} alkyl-CO_2—R^5; and

(d) mono-, di- or tri-substituted heteroaryl wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one hetero atom which is S, O, or N, and optionally 1, 2, or 3 additional N atoms; or

the heteroaryl is a monocyclic ring of 6 atoms, said ring having one hetero atom which is N, and optionally 1, 2 or 3 additional N atoms; said substituents are selected from the group consisting of

(1) halo, including fluoro, chloro, bromo and iodo,

(2) C_{1-6} alkyl,

(3) C_{1-6} alkoxy,

(4) C_{1-6} alkylthio,

(5) CN,

(6) CF_3,

(7) N_3,

(8) —$C(R^5)(R^6)$—OH, and

(9) —$C(R^5)(R^6)$—O—C_{1-4} alkyl;

R^3 is selected from the group consisting of

(a) hydrogen,

(b) CF_3,

(c) CN,

(d) C_{1-6} alkyl,

(e) hydroxy C_{1-6} alkyl, and

(f) —C(O)—C_{1-6} alkyl,

(g) optionally substituted

(1) —C_{1-5} alkyl-Q,

(2) —C_{1-3} alkyl-O—C_{1-3} alkyl-Q,

(3) —C_{1-3} alkyl-S—C_{1-3} alkyl-Q,

(4) —C_{1-5} alkyl-O—Q, or

(5)—C_{1-5} alkyl-S—Q,

wherein the substituent resides on the alkyl and the substituent is C_{1-3}alkyl; and

(h) —Q;

R^4 is selected from the group consisting of

(a) hydrogen,

(b) CF_3,

(c) CN,

(d) C_{1-6} alkyl,

(c) —Q,

(f) —O—Q;

(g) —S—Q, and

(h) optionally substituted

(1) —C_{1-5} alkyl-Q,

(2)—O—C_{1-5} alkyl-Q,

(3)—S—C_{1-5} alkyl-Q,

(4) —C_{1-3} alkyl-O-C_{13} alkyl-Q,

(5) —C_{1-3} alkyl-S—C_{1-3} alkyl-Q,

(6) —C_{1-5} alkyl-O—Q, or

(7) —C_{1-5} alkyl-S—Q,

wherein the substituent resides on the alkyl and the substituent is C_{1-3} alkyl, and

R^5 and R^6, R^7 and R^8 are each independently selected from the group consisting of

(a) hydrogen,

(b) C_{1-6} alkyl,

or R^5 and R^6 or R^7 and R^8 together with the carbon to which they are attached form a monocyclic saturated carbon ring of 3, 4, 5, 6 or 7 atoms;

Q is CO_2H, CO_2-C_{1-4} alkyl, tetrazolyl-5-yl, $C(R^7)(R^8)(OH)$, or $C(R^7)(R^8)(O$—C_{1-4} alkyl).

5,710,141

METHOD FOR TREATING SKIN WRINKLES

Spencer Guang Lin, and Kathleen Grieshop Baier, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 422,012, Apr. 12, 1995, Pat. No. 5,612,324, which is a continuation of Ser. No. 287,047, Aug. 8, 1994, abandoned, which is a continuation of Ser. No. 141,434, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 878,650, May 5, 1992, abandoned. This application Sep. 30, 1996, Ser. No. 724,721

Int. Cl.^{6} A61K *31/615;31/655*

U.S. Cl. 514—162 **2 Claims**

1. A method of regulating wrinkles or skin atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

(a) from about 0.01% to about 20% salicylic acid;

(b) from about 0.1% to about 10% dexpanthenol; and

(c) a pharmaceutically acceptable carrier

wherein said carrier has a pH of from about 2 to about 6.5.

5,710,142

VITAMIN D ANALOGUES

Martin John Calverley, Herlev, and Henrik Pedersen, Bagsværd, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Bovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

PCT No. PCT/DK93/00351, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO94/10139, PCT Pub. Date May 11, 1994

PCT Filed Nov. 1, 1993, Ser. No. 428,187

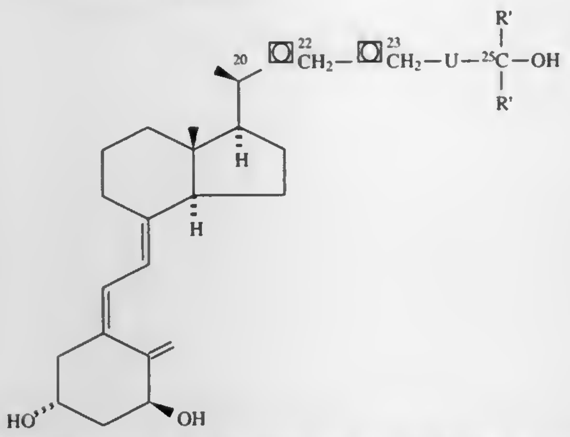
Claims priority, application United Kingdom, Nov. 4, 1992, 9223061

Int. Cl.^{6} A61K *31/59;* C07C *401/00*

U.S. Cl. 514—167 **7 Claims**

1. A compound of formula I

I



in which formula the "¤" indicates that this carbon may be modified, and the moiety U replaces the 24-methylene of 1α,25-dihydroxy-20-epi-vitamin D_3 and stands for $(CH_2)_n$—Y—$(CH_2)_m$, where n is 0, 1 or 2, m is 1 or 2, and Y is oxygen or sulphur; and derivatives formed by replacing either the 22-methylene or the 23-methylene by an oxygen or by replacing 22- and 23-methylene with —CH═CH—; R' is methyl or ethyl; and in which one or more carbon atoms directly bonded to C-25 may optionally be substituted with one or more fluorine atoms; and derivatives of I in which one or more of the hydroxy groups are masked as groups which can be reconverted to hydroxy groups in vivo.

5,710,143

ANTI-OBESITY AGENTS

Kunio Suzuki; Tadashi Nakata; Takeshi Shimizu, and Kotaro Enomoto, all of Saitama, Japan, assignors to Institute of Physical and Chemical Research, Saitama, Japan

PCT No. PCT/JP94/01631, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/08995, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 30, 1994, Ser. No. 615,299

Claims priority, application Japan, Sep. 30, 1993, 5-245459; Sep. 29, 1994, 6-235742

Int. Cl.^{6} A61K *31/575;* C07J *9/00*

U.S. Cl. 514—177 **10 Claims**

1. An anti-obesity agent which comprises at least one compound selected from the group consisting of 5-cholesten-3-one, 5,β-cholestan-3-one, cholesta-4,6-dien-3-one, 6,β-bromo-4-cholesten-3-one, 6-hydroxy-4-cholesten-3 -one and 4-cholestene-3,6-dione as an active ingredient.

5,710,144

C-11 SUBSTITUTED STEROIDS FOR TREATING MENOPAUSAL COMPLAINTS

Hubert Jan Jozef Loozen, Uden; Lodewijk Pieter Cornelis Schot, SC Oss, and Jane Margretha Lena van der Werf-Pieters, RR Oss, all of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

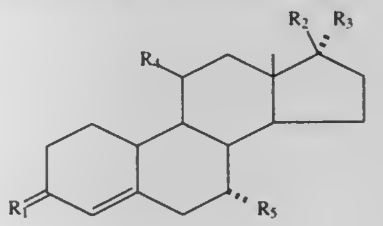
Continuation of Ser. No. 464,845, Sep. 26, 1995, abandoned. This application Jan. 29, 1997, Ser. No. 791,084

Claims priority, application European Pat. Off., Feb. 8, 1993, 93200332

Int. Cl.^{6} C07J *1/00;* A61K *31/565*

U.S. Cl. 514—179 **6 Claims**

1. A method for treating, osteoporosis comprising administering an effective amount of a steroid having the formula:



wherein

R_1 is O, (H,OH), or two hydrogen atoms;

R_2 is hydroxy, an ether or an ester;

R_3 is (2–6 C) alkynyl or (2–6 C) alkynyl substituted with hydroxy;

R_4 is CN or selected from the group consisting of (1–6 C) alkyl, (1–6 C) alkoxy, (2–6 C) alkenyl, (2–16 C) alkynyl, and (2–6 C) alkylidene, said group being unsubstituted or substituted with halogen, hydroxy or (1–6 C) alkoxy, with the proviso that R_4 is not difluoro methyl; and

R_5 is hydrogen or (1–6 C) alkyl.

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5,710,145

PROTEIN KINASE C INHIBITOR

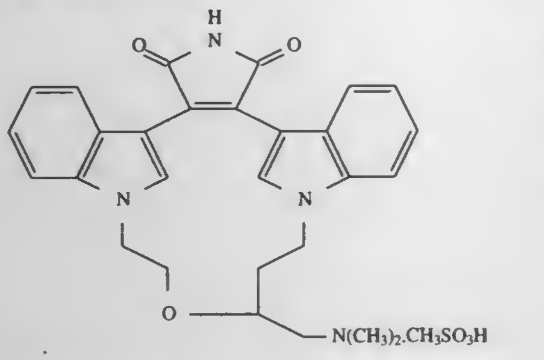
Gary Lowell Engel, Greenwood; Nagy Alphonse Farid, Lebanon; Margaret Mary Faul, Zionsville; Michael Robert Jirousek; Lori Ann Richardson, both of Indianapolis, and Leonard Larry Winneroski, Jr., Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 18, 1996, Ser. No. 749,607

Int. Cl.^{6} A61K *31/395;* C07D *419/00*

U.S. Cl. 514—183 **18 Claims**

1. A salt of the Formula:



and solyates thereof.

5,710,146

CEPHEM DERIVATIVES AND PROCESSES FOR THEIR MANUFACTURE

Walter Dürckheimer, Hattersheim am Main; Dieter Bormann, Kelkheim; Eberhard Ehlers, Hofheim am Taunus; Elmar Schrinner, Wiesbaden, all of Germany, and René Heymes, Romainville, France, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

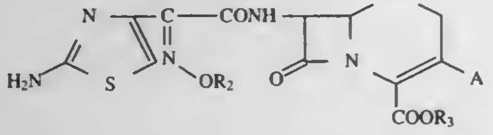
Continuation of Ser. No. 187,833, Apr. 29, 1988, abandoned, which is a division of Ser. No. 891,850, Mar. 30, 1978, Pat. No. 4,758,556. This application Jul. 22, 1994, Ser. No. 279,097

Claims priority, application Germany, Apr. 2, 1977, 27 14 880.7; Apr. 15, 1977, 27 16 707.3

Int. Cl.^{6} C07D *501/46;* A61K *31/545*

U.S. Cl. 514—202 **6 Claims**

1. A cephem compound of the formula



wherein

- R_2 is hydrogen or alkyl with 1–4 C atoms, substituted by alkyl with 1–4 C atoms, cycloalkyl with 3–8 C atoms, alkoxycarbonyl with 1–4 alkyl C atoms, carboxyl, cyano, or carbamoyl;
- R_3 is hydrogen, a physiologically acceptable ester group wherein said ester group is selected from the group consisting of substituted or unsubstituted C_{1-12} straight-chain or branched alkyl ester, substituted or unsubstituted C_{2-12} straight-chain branched alkenyl ester or substituted or unsubstituted C_{3-12} straight-chain alkynyl ester, or a physiologically acceptable cation; and
- A is hydrogen, alkoxy with 1–4 C atoms, alkoxycarbonyl with 1–4 alkyl C atoms, alkenyloxy with 3–6 C atoms, halogen, or —CH_2Y; and

wherein

- Y is hydrogen, halogen or the radical of a nucleophilic compound, the nucleophilic compound being selected from the group consisting of acyloxy; hydroxyl; alkyloxy; amino; alkylamino; dialkylamino; mercapto; a pyrdinium; quinolinium; isoquinolinium; carbamoyloxy; carbamoylthio; azido; —SR_5 wherein R_5 denotes an aliphatic acyl, alkyl or optionally substituted phenyl radical or optionally substituted 5-membered heterocyclic ring with (a) a sulfur or oxygen atom and 1–4 nitrogen atoms or (b) 2 to 4 nitrogen atoms or a 5-membered heterocyclic ring which is a furanyl or an optionally substituted 6-membered ring with 1–3 nitrogen atoms.

5,710,147

7-BENZYLOXYIMINO-CEPHALOSPORINS

Jozsef Aszodi, Pontault Combault, and Patrick Fauveau, Livry Gargan, both of France, assignors to Roussel Uclaf, France

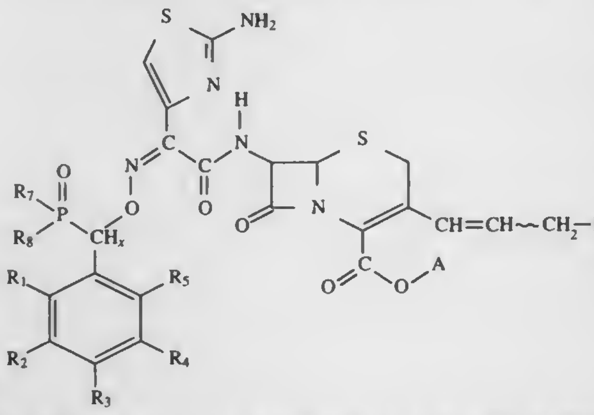
Filed Jul. 7, 1995, Ser. No. 499,168

Claims priority, application France, Jul. 19, 1994, 94 08912

Int. Cl.^{6} A61K *31/545;* C07D *501/24*

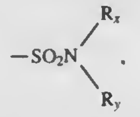
U.S. Cl. 514—202 **20 Claims**

1. A syn isomer of a compound of the formula



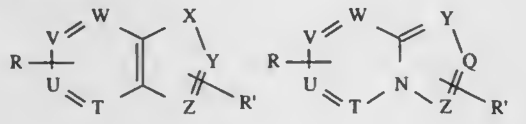
I

in (R) or (S) form or an (R,S) mixture or in the form of internal salts or salts with non-toxic, pharmaceutically acceptable acids or bases wherein R_1, R_2, R_3 and R_5 are individually selected from the group consisting of hydrogen, halogen, —OH, alkyl of 1 to 4 carbon atoms optionally substituted with at least one halogen, alkoxy of 1 to 4 carbon atoms, —SH, —NO_2, —CN, alkylthio of 1 to 4 carbon atoms, amino, alkylamino of 1 to 4 carbon atoms, dialkylamino of 2 to 8 carbon atoms, carbamoyl, alkylaminocarbonyl of 2 to 5 carbon atoms, dialkylaminocarbonyl of 3 to 9 carbon atoms, —COOH, alkoxycarbonyl of 2 to 5 carbon atoms, acyloxy of 1 to 8 carbon atoms, and



$$-SO_2N\begin{matrix}R_x\\R_y\end{matrix}\,.$$

R_x and R_y are individually hydrogen or alkyl of 1 to 4 carbon atoms, R_4 is hydroxy or acyloxy of 1 to 8 carbon atoms, R_7 is selected from the group consisting of alkyl of 1 to 4 carbon atoms, —OH, alkoxy of 1 to 4 carbon atoms and phenyl, R_8 is —OH or alkoxy of 1 to 4 carbon atoms or R_7 and R_8 together are an alkylenedioxy of 2 to 8 carbon atoms, A is selected from the group consisting of hydrogen, an equivalent of an alkali metal, alkaline earth-metal, magnesium, ammonium and an amino organic base and the remainder of an easily cleavable ester or —COOA is —COO^-, the wavy line indicates —CH_2R_6 is in the E or Z position, R_6 in its quaternary ammonium form is selected from the group consisting of



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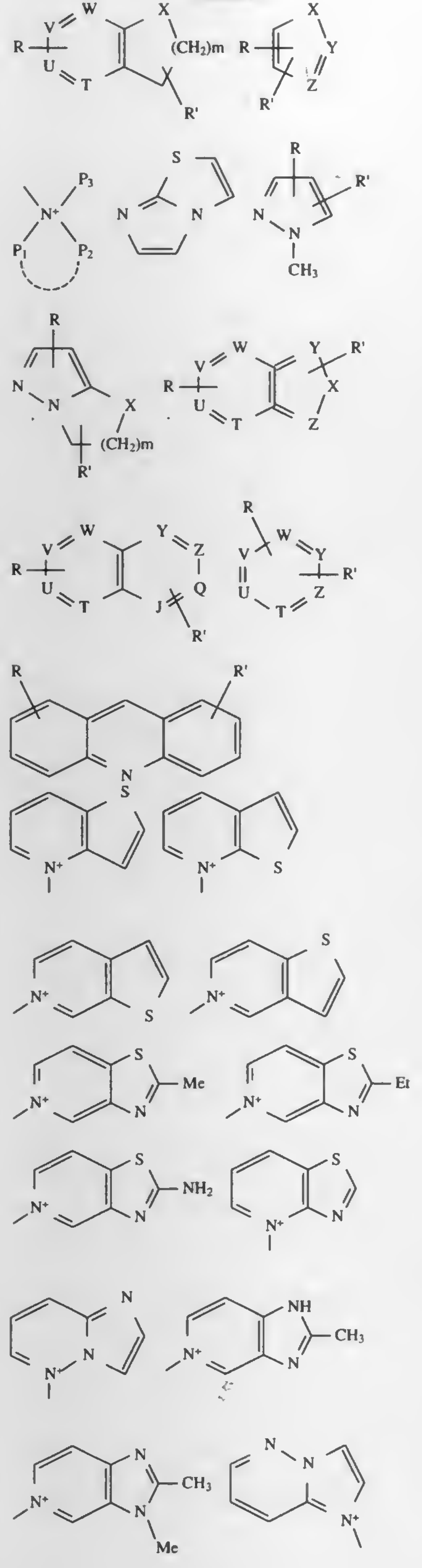

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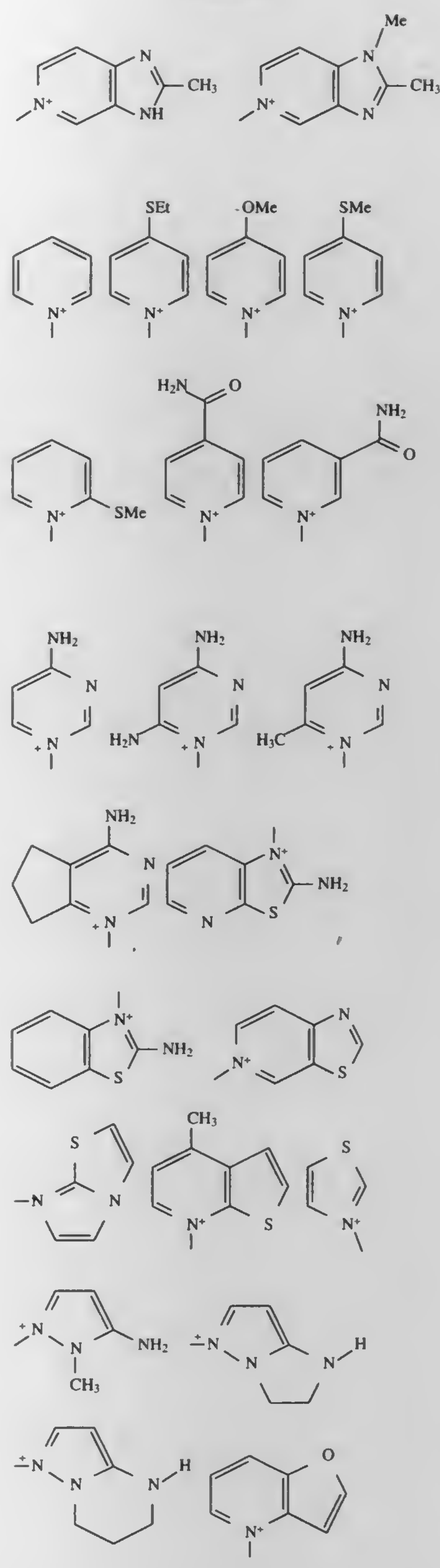

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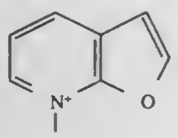
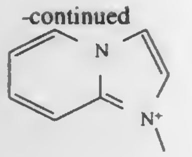
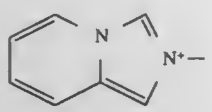
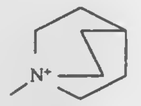
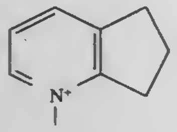
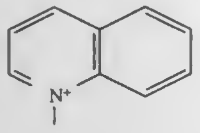
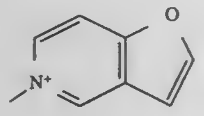
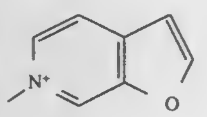
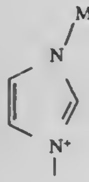
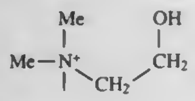
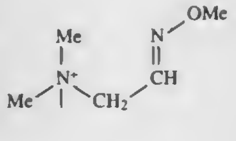
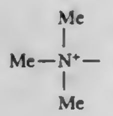
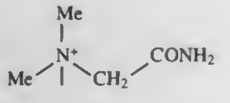
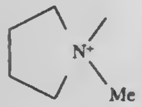
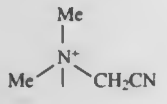
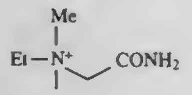
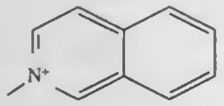
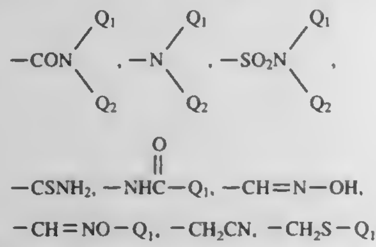


















X is selected from the group consisting of —CH₂—, —NH—, —O— and —S—, Q, J, Y, T, U, V, W and Z are individually —CH— or —N— with each cyclic ring containing 1 to 5 heteroatoms with at least one being nitrogen and optionally substituted with at least one R or R', R and R' are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, —CN, —COOQ$_1$,



$$-\mathrm{CON}\begin{matrix}Q_1\\ Q_2\end{matrix},\ -\mathrm{N}\begin{matrix}Q_1\\ Q_2\end{matrix},\ -\mathrm{SO_2N}\begin{matrix}Q_1\\ Q_2\end{matrix},$$

$$-\mathrm{CSNH_2},\ -\mathrm{NH}\overset{\overset{\mathrm{O}}{\|}}{\mathrm{C}}-Q_1,\ -\mathrm{CH{=}N{-}OH},$$

$$-\mathrm{CH{=}NO}-Q_1,\ -\mathrm{CH_2CN},\ -\mathrm{CH_2S}-Q_1 \text{ and } -\mathrm{SQ}_1,$$

Q$_1$ and Q$_2$ are individually hydrogen or alkyl of 1 to 4 carbon atoms K$_1$, K$_2$ and K$_3$ are individually alkyl of 1 to 4 carbon atoms optionally substituted by R or R' and one may be —OH or P$_1$ and P$_2$ together with the nitrogen atom to which they are attached form a 5- or 6- member heterocyclic and m is 1, 2 or 3.

5,710,148
CORNEAL OPACIFICATION INHIBITORY COMPOSITION

Katsuichi Sudo, Osaka; Yasuko Umegaki, and Yasushi Okumura, both of Hyogo, all of Japan, assignors to Senju Pharmaceuticals Co., Ltd., Osaka, Japan

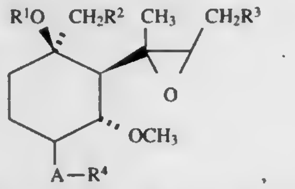
Filed Mar. 4, 1996, Ser. No. 611,465

Claims priority, application Japan, Mar. 6, 1995, 7-045808; Jan. 10, 1996, 8-002444

Int. Cl.^{6} A61K *31/395;31/38;31/335*

U.S. Cl. 514—210 **4 Claims**

1. A method of treating corneal opacification which comprises administering a corneal opacification inhibitory amount of a fumagillol derivative of the formula (I):


(I)

wherein R^1 is hydrogen; R^2 is a halogen, N(O)$_m$R^{5}R^6, N$^+$R^{5}R^{6}R^7·X$^-$, S(O)$_n$R^5 or S$^+$R^{5}R^6·X$^-$ wherein R^5 R^6 and R^7 represent independently a substituted or unsubstituted hydrocarbon group or a substituted or unsubstituted heterocyclic group; X$^-$ represents a counter anion; m represents 0 or 1; n represents an integer from 0 to 2; or R^5 and R^6 together with the adjacent nitrogen or sulfur atom may form a substituted or unsubstituted nitrogen- or sulfur-containing heterocyclic group which may form a condensed ring; or R^1 and R^2 are combined to represent a chemical bond; R^3 is a substituted or unsubstituted 2-methyl-1-propenyl group or a substituted or unsubstituted isobutyl group; A is oxygen or NR^8, wherein R^8 represents hydrogen, a substituted or unsubstituted lower alkyl group or a substituted or unsubstituted aryl group; and R^4 is hydrogen, a substituted or unsubstituted hydrocarbon group or a substituted or unsubstituted acyl group or a salt thereof, to a subject undergoing ophthalmic surger.

5,710,149
PIPERAZINE DERIVATIVES AS 5-HT ANTAGONISTS

Ian Anthony Cliffe, Slough, England, assignor to John Wyeth & Brother, Ltd., Maidenhead, England

Continuation of Ser. No. 244,604, Jun. 3, 1994, abandoned.

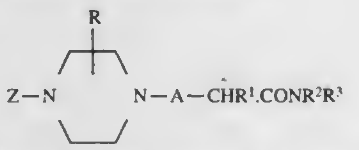
This application Oct. 23, 1996, Ser. No. 731,953

Claims priority, application United Kingdom, Dec. 5, 1991, 9125900

Int. Cl.^{6} A61K *31/55;31/495;* **C07D** *405/14;405/10*

U.S. Cl. 514—212 **7 Claims**

1. A compound of the formula

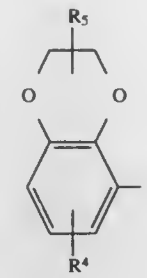

(I)

or a pharmaceutically acceptable acid addition salt thereof wherein

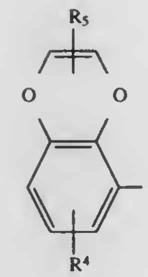
A is an alkylene chain of 1 or 2 carbon atoms optionally substituted by one or more lower alkyl groups,

Z is a bicyclic oxygen-containing aryl radical of the formula

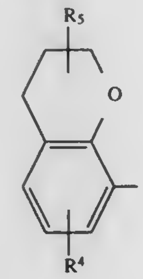
(a)



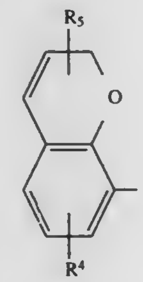
(b)



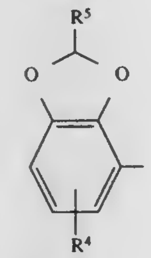
(c)



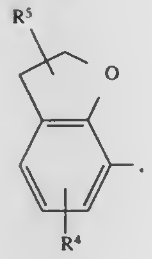
(d)



(e)



(f)



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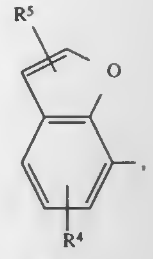
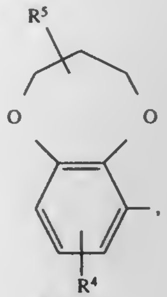
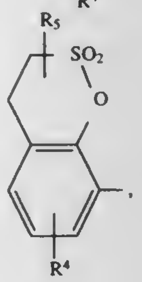
(g)



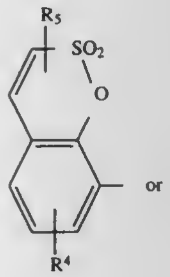
(h)



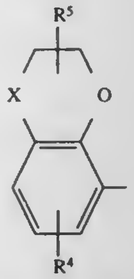
(i)



(j)



(k)



wherein R^4 and R^5 are, independently, hydrogen or one or more substituents selected from lower alkyl, hydrogen, halo(lower)alkyl, nitro, nitrile, oxo, hydroxy, (lower)alkoxy, hydroxy(lower)alkyl, (lower)alkoxy(lower alkyl), lower alkanoyloxy(lower alkyl), (lower)alkylcarbonyl, (lower)alkylcarbonyl(lower)alkyl, carboxamido, amino, loweralkanoylamino, (lower)alkylamino or di(lower)alkylamino and X is —S—, —NR^2, where R^2 is hydrogen, lower alkyl or —CO—;

R is hydrogen or one or two same or different lower alkyl groups;

R^1 is an aryl radical or an aryl(lower)alkyl radical;

R^2 is hydrogen or lower alkyl; and

R^3 is hydrogen, an alkyl group of 1 to 10 carbon atoms, cycloalkyl of 3 to 12 carbon atoms, cycloalkyl(lower)alkyl, aryl or aryl(lower)alkyl or R^2 and R^3 together with the nitrogen atom to which they are both attached represent an azetidino, pyrrolidino, piperidino, hexahydroazepino, heptamethyl-

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eneimine, morpholino or piperazino ring which may be optionally substituted by lower alkyl, aryl or aryl(lower)alkyl, in which aryl is phenyl or naphthyl optionally substituted by one or more substituents selected from lower alkyl, lower alkoxy, loweralkylthio, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino and di(lower)alkylamino.

5,710,150
BENZAZEPINE DERIVATIVE, PHARMACEUTICAL COMPOSITION THEREOF, AND INTERMEDIATE THEREOF

Nobuaki Taniguchi; Akihiro Tanaka; Akira Matsuhisa; Kenichiro Sakamoto; Hiroyuki Koshio, and Takeyuki Yatsu, all of Ibaraki, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

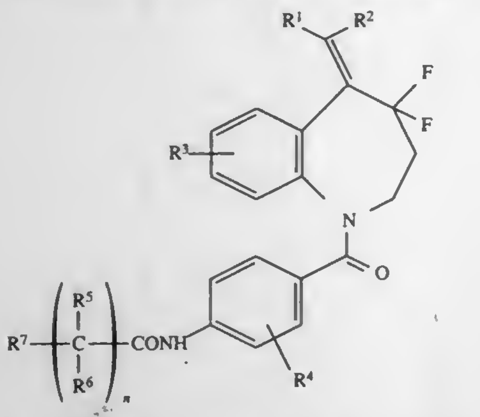
Filed Feb. 26, 1996, Ser. No. 607,217

Claims priority, application Japan, Aug. 26, 1993, 5-211589; Jan. 14, 1994, 6-002341

Int. Cl.^{6} C07D *223/16;* **A61K** *31/55*

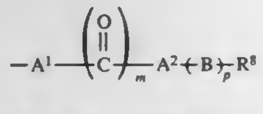
U.S. Cl. 514—213 **13 Claims**

1. A benzazepine derivative represented by the following formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein the symbols in the formula have the following meanings; R^1 and R^2: one of them represents a hydrogen atom and the other represents a group represented by



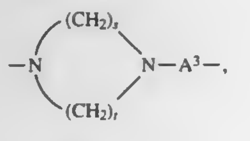
$$-A^{1}-\left(\overset{\overset{O}{\|}}{C}\right)_{m}-A^{2}-(B)_{p}-R^{8}$$

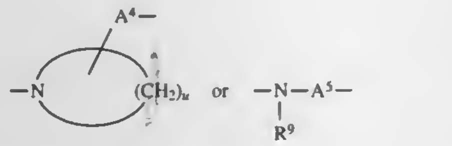
with the proviso that R^1 and R^2 cannot simultaneously be hydrogen atoms,

A^1 and A^2: these may be the same or different from each other and each represents a single bond, a lower alkylene group or a lower alkenylene group,

m: 0 or 1,

B: a group represented by

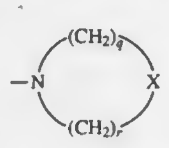




where the nitrogen atoms in these formulae may be oxidized,

p: 0 or an integer of from 1 to 3, provided that when p is 2 or 3 the groups defined by B may be the same or different,

R^8: a hydrogen atom; a lower alkyl group; a lower alkenyl group; a cycloalkyl group; a hydroxyl group; a lower alkoxy group; a carboxyl group; a lower alkoxycarbonyl group; a cyano group; an aryl group which may be substituted; a nitrogen-containing aromatic five- or six-membered heterocyclic group which may be substituted; a nitrogen-containing saturated five- to eight-membered heterocyclic group which may have a bridge and which may be substituted with a lower alkyl group on the nitrogen atom of the ring; or a group represented by



where the nitrogen atom in the formula may be oxidized,

s and t: these may be the same or different from each other and each is an integer of 1 to 3, provided that the total number of s and t is an integer of from 3 to 5,

u: an integer of from 2 to 7,

A^3, A^4 and A^5: these may be the same or different from one another and each represents a single bond, a lower alkylene group or a lower alkenylene group, provided that when the adjacent group is linked to A^3 or A^5 via a nitrogen atom or an oxygen atom, A^3 or A^5 is a group other than a single bond,

R^9: a hydrogen atom or a lower alkyl group,

q and r: these may be the same or different from each other and each is an integer of from 1 to 3, provided that the total number of q and r is an integer of from 3 to 5,

X: a group represented by —o— or —S(o)$_w$—,

w: 0, 1 or 2,

R^3 and R^4: these may be same or different from each other and each represents a hydrogen atom; a halogen atom; a lower alkyl group; a lower alkoxy group; or an amino group which may be substituted with a lower alkyl group,

R^5 and R^6: these may be the same or different from each other and each represents a hydrogen atom or a lower alkyl group, where R^5 and R^6 may be combined as a lower alkylene group to form a saturated carbon ring with adjacent carbon atoms,

n: 0 or 1, and

R^7: an aryl group which may be substituted or an aromatic five- or six-membered heterocyclic group which may be substituted.

5,710,151
METHOD OF TREATING URINARY BLADDER DYSFUNCITONS

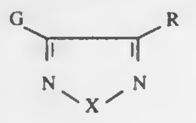
Mark A. Muhlhauser, 4811 Basil Ct., Indianapolis, Ind. 46237; Harlan E. Shannon, 4229 Rolling Springs Dr., Carmel, Ind. 46234, and Karl B. Thor, 4959 Jennings Dr., Carmel, Ind. 46033

Division of Ser. No. 336,357, Nov. 8, 1994, Pat. No. 5,612,351. This application Oct. 3, 1996, Ser. No. 725,524

Int. Cl.^{6} A61K *31/44;31/55;31/41;31/415*

U.S. Cl. 514—214 **11 Claims**

1. A method of treating a urinary bladder dysfunction in a subject in need thereof comprising administering to said subject an effective amount of a compound of formula I



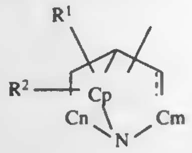
(I)

wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, —NO$_2$, —R^4, —Y, —NHCO—R^4, —OR^4, —SR^4, —SOR^4,—SO$_2R^4$, $C_{3\text{-}10}$-cycloalkyl, $C_{4\text{-}10}$-cycloalkenyl,$C_{4\text{-}10}$-(cycloalkylalkyl),—Z^1—$C_{3\text{-}10}$-cycloalkyl, —Z^1—$C_{4\text{-}10}$-cycloalkenyl, —Z^1—$C_{4\text{-}10}$-(cycloalkylalkyl), —Z^1—$C_{4\text{-}10}$-(cycloalkenylalkyl), —Z^1—$C_{4\text{-}10}$-(methylenecycloalkylalkyl), —NH—R^4, —NR^4R^5, —NH—OR^4, —CH═NOR ^{4}, or an aromatic ring selected from the group consisting of phenyl, benzyloxycarbonyl, phenoxy, benzoyl, tetrahydronaphthyl, naphtyl, and indenyl, wherein each aromatic ring is optionally substituted with halogen, —NO$_2$, —CN, $C_{1\text{-}4}$-alkyl, $C_{1\text{-}4}$-alkoxy, —OCF$_3$, —CONH$_2$, —CSNH$_2$, phenoxy or phenyl; or R is —Z^1—R^6—Z^2—R^5, —Z^1—R^6—Z^2—R^7—Z^3—R^5, —Z^1—CO—R^5, —Z^1—R^6—CO$_2$—R^5, —Z^1—R^6—CO$_2$—R^5, —Z^1—R^6—O$_2$C—R^5, —Z^1—R^6—CONH—R^5, —Z^1—R^6—NHCO—R^5, —Z^1—R^6—Y, —Z^1—R^6—Z^2—Y, wherein Z^1 and Z^2 independently are oxygen or sulphur, and R^4 and R^5 independently are straight or branched $C_{1\text{-}15}$-alkyl, straight or branched $C_{2\text{-}15}$-alkenyl, straight or branched $C_{2\text{-}15}$-alkynyl, each of which is optionally substituted with one or more halogen(s), $C_{1\text{-}6}$-alkoxy, —CF$_3$, —CN, —COOH, —OH, —NH$_2$, $C_{1\text{-}6}$-alkyl ester, —SH, —NHR^4, —NR^4R^5, or a phenyl or phenoxy group, wherein the phenyl or phenoxy group is optionally substituted with halogen, —NO$_2$, —CN, $C_{1\text{-}4}$-alkyl, $C_{1\text{-}4}$-alkoxy, —OCF$_3$, —CONH$_2$, —CSNH$_2$, phenyl or phenoxy, and wherein R^6 and R^7 independently are straight or branched $C_{1\text{-}10}$-alkylene, straight or branched $C_{2\text{-}10}$-alkenylene, straight or branched $C_{2\text{-}10}$-alkynylene, each of which is optionally substituted with one or more halogen(s), —CF$_3$, —CN, —COOH, —OH, —NH$_2$, $C_{1\text{-}6}$-alkyl ester, —SH, —NHR^4, —NR^4R ^{5}, phenyl or phenoxy, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched $C_{1\text{-}6}$-alkyl, phenyl or benzyl, or a carbon atom of the heterocyclic group together with an oxygen atom form a carbonyl group, or wherein the heterocyclic group is optionally fused with a phenyl group; and

G is an azabicyclic ring of formula II



(II)

wherein

the thiadiazole or oxadiazole ring is attached to any carbon atom of the azabicyclic ring;

R^1 and R^2 may be present at any appropriate position of the thiadiazole or oxadiazole ring and independently are hydrogen, straight or branched $C_{1\text{-}5}$-alkyl, straight or branched $C_{2\text{-}5}$-alkenyl, straight or branched $C_{2\text{-}5}$-alkynyl, straight or branched $C_{1\text{-}10}$-alkoxy, —OH, halogen, —NH$_2$, carboxy or straight or branched $C_{1\text{-}5}$-alkyl substituted with —OH; m is 1; n is 2; p is 1; and fheight..... is a single or double bond; or a pharmaceutically acceptable salt thereof.

5,710,152
BENZOAZINE DERIVATIVE OR SALT THEREOF AND PHARMACEUTICAL COMPOSTION COMPRISING THE SAME

Yoshihiro Nagao; Yoshikuni Ito, both of Narita; Jiro Kotake, Ichikawa; Tadayuki Kouda, Narita; Haruyoshi Honda, Tomisato-machi; Susumu Sato, Narita, and Hideaki Matsuda, Abiko, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

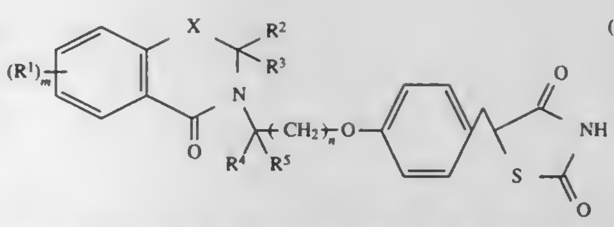
Filed Jan. 30, 1997, Ser. No. 791,269

Claims priority, application Japan, Jan. 31, 1996, 8-014898

Int. Cl.^{6} C07D *417/12;* **A61K** *31/54;31/535;31/505*

U.S. Cl. 514—225.2 **4 Claims**

1. A benzoazine derivative represented by the following formula (1),



(1)

wherein R^1 represents an alkyl group, alkoxy group, halogen atom, halogenoalkyl group, amino group, hydroxy group, benzyloxy group which may have a substituent, cyano group, carbamoyl group, acyl group, nitro group, carboxy group, or sulfonamide group; R^2 and R^3 may be the same or different and each individually represents a hydrogen atom or an alkyl group, or R^2 and R^3 indicate in combination an alkylene group having 2–7 carbon atoms; R^4 and R^5 may be the same or different and each individually represents a hydrogen atom or an alkyl group; X denotes O, S, or N—R^6 (wherein R^6 represents a hydrogen atom, an alkyl group, or an aryl group or pyridyl group which may have a substituent); m is an integer from 0 to 4; and n is an integer from 1 to 3, or a salt of the benzoazine derivative.

5,710,153
TETRAZOLE COMPOUND

Kazuyuki Ohmoto; Makoto Tanaka; Tohru Miyazaki, and Hiroyuki Ohno, all of Osaka, Japan, assignors to Ono Phramaceutical Co., Ltd., Osaka, Japan

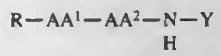
Filed Sep. 11, 1996, Ser. No. 712,393

Claims priority, application Japan, Sep. 12, 1995, 7-259277

Int. Cl.^{6} A61K *31/535;* **C07D** *413/06*

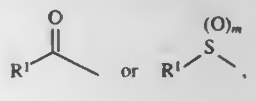
U.S. Cl. 514—236.2 **12 Claims**

1. A tetrazole compound of formula (I):



$$R-AA^{1}-AA^{2}-\underset{H}{N}-Y \qquad (I)$$

wherein R is a hydrogen atom,



R^1 is

1) C1–8 alkyl,
2) C1–8 alkoxy,
3) C1–8 alkylamino,
4) C1–8 alkylthio,
5) Cyc^1, wherein Cyc^1 is a carbocyclic ring or hetero ring, and Cyc^1 is optionally substituted by 1 to 5 substituents selected from a hydrogen atom, C1–4 alkyl, phenyl, C1–4 alkyl substituted by phenyl, a halogen atom, nitro, trifluoromethyl, nitrile, tetrazole, —OR^2, —NR^2R^3, —SR^2, —COOR^2 or —COR^2, wherein R^2 and R^3 each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl, or
6) C1–8 alkyl, C1–8 alkoxy, C1–8 alkylamino or C1–8 alkylthio substituted by Cyc^1, m is 0–2,

with the proviso that,

(1) when m is O, R^1 is C1–8 alkyl or C1–8 alkoxy, each optionally substituted by Cyc^1, and
(2) when m is 1, R^1 is C1–8 alkyl, C1–8 alkoxy or C1–8 alkylamino, each optionally substituted by Cyc^1,

AA^1 is

1) a bond

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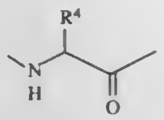
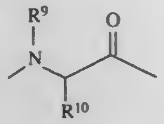
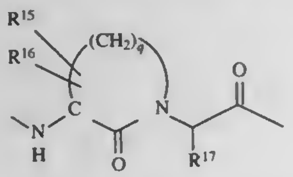
2)



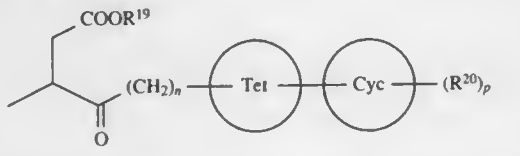
or 3) an amino acid,
wherein R^4 is
(1) a hydrogen atom,
(2) C1–8 alkyl,
(3) Cyc^2, wherein Cyc^2 is a carbocyclic ring or hetero ring, and Cyc^2 is optionally substituted by 1 to 5 substituents selected from a hydrogen atom, C1–4 alkyl, phenyl, C1–4 alkyl substituted by phenyl, a halogen atom, nitro, trifluoromethyl, nitrile, tetrazole, $—OR^5$, $—NR^5R^6$, $—SR^5$, $—COOR^5$ or $—COR^5$, wherein R^5 and R^6 each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl, or
(4) C1–8 alkyl substituted by a substituent selected from $—OR^7$, $—NR^7R^8$, $—SR^7$, $—COOR^7$, $—COR^7$, $—CONH_2$, $—NR^7—CO—NR^7R^8$, guanidino or Cyc^2, wherein R^7 and R^8 each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl,
AA^2 is
1) a bond
2)



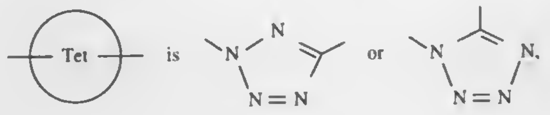
or 3) an amino acid,
wherein R^9 and R^{10} each, independently, is
(1) a hydrogen atom,
(2) C1–8 alkyl,
(3) Cyc^3, wherein Cyc^3 is a carbocyclic ring or hetero ring, and Cyc^3 is optionally substituted by 1 to 5 substituents selected from a hydrogen atom, C1–4 alkyl, phenyl, C1–4 alkyl substituted by phenyl, a halogen atom, nitro, trifluoromethyl, nitrile, tetrazole, $—OR^{11}$, $—NR^{11}R^{12}$, $—SR^{11}$, $—COOR^{11}$ or $—COR^{11}$, wherein R^{11} and R^{12} each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl,
(4) C1–8 alkyl substituted by a substituent selected from $—OR^{13}$, $—NR^{13}R^{14}$, $—SR^{13}$, $—COOR^{13}$, $—COR^{13}$, $—CONH_2$, $—NR^{13}—CO—NR^{13}R^{14}$, guanidino or Cyc^3, wherein R^{13} and R^{14} each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl, or
(5) R^9 and R^{10}, together, is a C1–6 alkylene or C2–6 alkenylene,
AA^1 and AA^2, together, may have the formula:

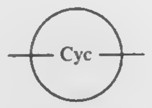


in which R^{15} and R^{16} each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl, with the proviso that, C1–4 alkyl or phenyl is optionally substituted by C1–4 alkyl, C1–4 alkoxy, a halogen atom, trifluoromethyl or phenyl,
$R^7$is
(1) a hydrogen atom,
(2) C1–8 alkyl,
(3) Cyc^3, wherein Cyc^3 has the same meaning as hereinbefore defined, or
(4) C1–8 alkyl substituted by a substituent selected from $—OR^{13}$, $—NR^{13}R^{14}$, $—SR^{13}$, $—COOR^{13}$, $—COR^{13}$, $—CONH_2$, $—NR^{13}—CO—NR^{13}R^{14}$, guanidino or Cyc^3, wherein R^{13} and R^{14} have the same meaning as hereinbefore defined,
q is 2–12,
with the proviso that, a carbon atom in $—(CH_2)_q—$ is optionally replaced by an oxygen atom, sulfur atom or $—NR^{18}—$, wherein R^{18} is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl, or
two hydrogen atom at ortho positions are replaced by a double bond and Y is

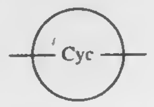


in which R^{19} is a hydrogen atom, C1–8 alkyl, phenyl or C1–4 alkyl substituted by phenyl,
n is 1–4,



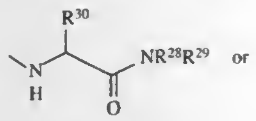


is a carbocyclic ring or hetero ring,
with the proviso that,

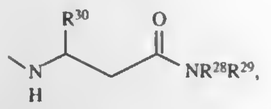


is bonded directly to the carbon atom on a tetrazole ring,
R^{20} is
1) a hydrogen atom,
2) C1–4 alkyl,
3) a halogen atom,
4) nitro,
5) trifluoromethyl,
6) nitrile,
7) $—OR^{22}$,
8) $—NR^{22}R^{23}$,
9) $—SR^{22}$,
10) Cyc^4, wherein Cyc^4 is a carbocyclic ring or hetero ring, and Cyc^4 is optionally substituted by 1 to 5 substituents selected from a hydrogen atom, C1–4 alkyl, phenyl, C1–4 alkyl substituted by phenyl, a halogen atom, nitro, trifluoromethyl, nitrile, tetrazole, $—OR^{24}$, $—NR^{24}R^{25}$, $—SR^{24}$, $—COOR^{24}$ or $—COR^{24}$, wherein R^{24} and R^{25} each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl,
11)$—COOR^{26}$ or
12)$—COR^{27}$,
R^{22} and R^{23} each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl,
R^{26} is a hydrogen atom, C1–4 alkyl, trihalomethyl, C1–4 alkyl substituted by trihalomethyl, Cyc^4, wherein Cyc^4 has the same meaning as hereinbefore defined, C 1–4 alkyl substituted by Cyc^4,
R^{27} is
(1) a hydrogen atom,
(2) C1–4 alkyl,
(3) $—NR^{28}R^{29}$,
(4) phenyl,

(5) C1–4 alkyl substituted by phenyl,
(6)



or
(7)



wherein R^{28} and R^{29} each, independently, is a hydrogen atom, C1–4 alkyl, phenyl or C1–4 alkyl substituted by phenyl, or
R^{28} and R^{29}, together, is a hetero ring,
$R^{3'}$ is a hydrogen atom, C1–8 alkyl, Cyc^2, wherein Cyc^2 has the same meaning as hereinbefore defined, or C1–8 alkyl substituted by a substituent selected from $—OR^7$, $—NR^7R^8$, $—SR^7$, $—COOR^7$, $—COR^7$, $—CONH_2$, $—NR^7—CO—NR^7R^8$, guanidino or Cyc^2, wherein Cyc^2, R^7 and R^8 have the same meaning as hereinbefore defined, or
R^{30} and one of R^{28} or R^{29}, together, is $—(CH_2)_q—$, wherein $—(CH_2)_q—$ has the same meaning as hereinbefore defined, and
p is 1–5;
or a non-toxic salt thereof, an acid addition salt thereof or a hydrate thereof.

5,710,154
TETRAHYDROFURAN ANTIFUNGALS

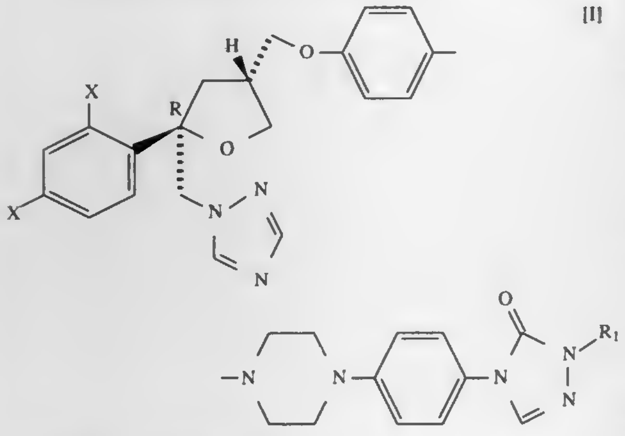
Anil K. Saksena, Upper Montclair; Viyyoor M. Girijavallabhan, Parsippany; Raymond G. Lovey, West Caldwell; Russell E. Pike, Stanhope; Haiyan Wang, Dayton; Yi-Tsung Liu, Morris Township; Ashit K. Ganguly, Upper Montclair, and Frank Bennett, Piscataway, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 171,083, Dec. 21, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,225

Int. Cl.^{6} A61K *31/495;* **C07D** *405/14;413/14;* **C07F** *9/6518*

U.S. Cl. 514—252 **20 Claims**

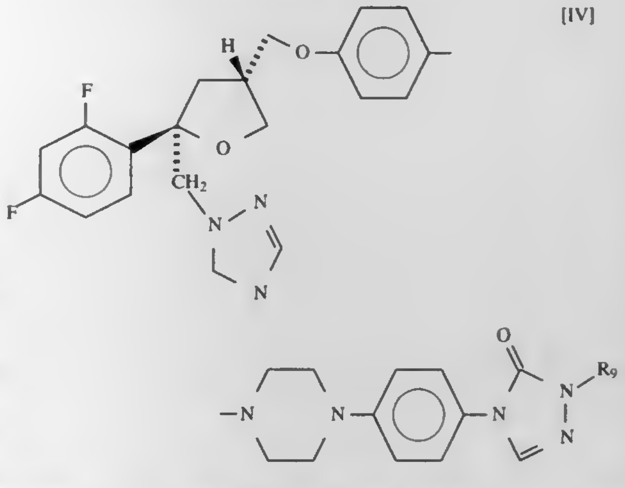
1. A compound represented by the formula I



[I]

wherein X is independently both F or both Cl or one X is independently F and the other is independently Cl;
R_1 is a straight or branched chain (C_4–C_5) alkyl group substituted by a group convertible in vivo into a hydroxy moiety;
or a pharmaceutically acceptable salt thereof.

4. A compound represented by the formula IV



[IV]

wherein R_9=$—C^*H(C_2H_5)CH(R_6)CH_3$ or $—C^*H(CH_3)CH(R_6)CH_3$
wherein R_6 is a group convertible in vivo into OH or a pharmaceutically acceptable salt thereof.

5,710,155
ARYLGLYCINAMIDE DERIVATIVES, PROCESSES FOR THE MANUFACTURE THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Gerd Schnorrenberg, Gau-Algesheim; Horst Dollinger; Franz Esser, both of Ingelheim am Rhein; Hans Briem, Budenheim; Birgit Jung, Bingen/Rhein, and Georg Speck, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim KG, Ingleheim am Rhein, Germany

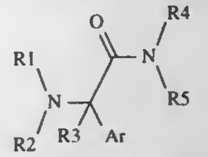
Continuation of Ser. No. 473,470, Jun. 7, 1995, abandoned. This application Jul. 30, 1996, Ser. No. 688,478

Claims priority, application Germany, Apr. 14, 1995, 195 14 112.1; May 25, 1995, 195 19 245.1

Int. Cl.^{6} A61K *31/495;* **C07D** *295/15*

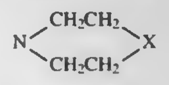
U.S. Cl. 514—255 **10 Claims**

1. An arylglycinamide derivative of the formula I



t

or the pharmaceutically acceptable salts thereof, wherein
Ar denotes unsubstituted or mono- to penta-substituted phenyl, or unsubstituted or mono- or di-substituted naphthyl, in which the substituents of the phenyl and naphthyl independently of each other denote halogen (F, Cl, Br, I), (C_{1-4})alkyl, O-(C_{1-4})alkyl, CF_3, OCF_3 or NR^9R^{10} (wherein R^9 and R^{10} independently of each other denote H, methyl or acetyl);
R^1 and R^2 together with the N to which they are bound form a 6-membered ring of the formula



$N<^{CH_2CH_2}_{CH_2CH_2}>X$

wherein
X denotes $N(CH_2)_nR^6$;
N is 0, 1 or 2,
R^6 is (C_{3-7})cycloalkyl, phenyl or naphthyl, wherein the phenyl may be mono- to tri-substituted by halogen (F, Cl, Br, I), (C_{1-4})alkyl, O-(C_{1-4})alkyl, CF_3, OCF_3 or NR^9R^{10} (wherein R^9 and R^{10} independently of each other denote H, methyl or acetyl);

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R^3 denotes H, (C_{1-4})alkyl, unsubstituted or mono- to tri-substituted phenyl, wherein the substituents independently of one another represent halogen (F, Cl, Br, I), (C_{1-4})alkyl, O-(C_{1-4})alkyl, CF_3, OCF_3 or NR^9R^{10} (wherein R^9 and R^{10} independently of one another denote H, methyl or acetyl);

R^4 denotes $(CH_2)_m$ phenyl or $(CH_2)_m$ naphthyl, wherein m is 1, 2 or 3 and phenyl may be substituted by 1 to 3 substituents, wherein the substituents independently of one another are halogen (F, Cl, Br, I), (C_{1-4})alkyl, O-(C_{1-4})alkyl, CF_3, OCF_3 or NR^9R^{10} (wherein R^9 and R^{10} independently of one another denote H, methyl or acetyl);

R^5 denotes H, (C_{1-4})alkyl, (C_{3-6})cycloalkyl or CH_2COOH.

5,710,156

ESTER AND CARBAMATE DERIVATIVES OF AZOLONES

Jan Heeres, Vosselaar; Joseph Hector Mostmans, Antwerpen; Robert Jozef Maria Hendrickx, Beerse; Louis Jozef Elisabeth Van der Veken, Vosselaar; Raymond Antoine Stokbroekx, Beerse, and Marcel Jozef Maria Van de Aa, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

PCT No. PCT/EP95/01184, § 371 Date Sep. 20, 1996, § 102(e) Date Sep. 20, 1996, PCT Pub. No. WO95/27704, PCT Pub. Date Oct. 19, 1995

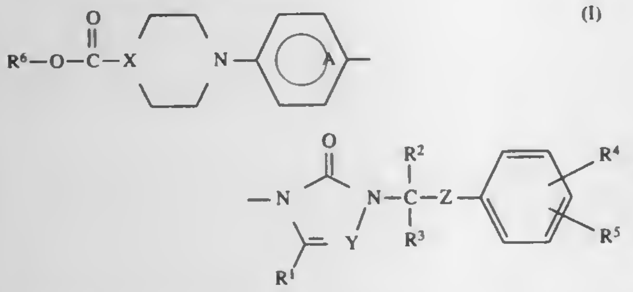
PCT Filed Mar. 29, 1995, Ser. No. 716,397

Claims priority, application European Pat. Off., Apr. 6, 1994, 94200938

Int. Cl.^{6} C07D *403/10;407/14;* **A61K** *31/495*

U.S. Cl. 514—255 **14 Claims**

1. A compound of the formula:



a pharmaceutically acceptable acid addition salt or a stereochemically isomeric form thereof, wherein:

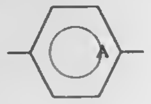
Y is CH or N;

R^1, R^2 and R^3 each independently are hydrogen or C_{1-4}alkyl;

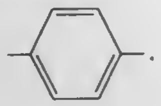
$R^4$and R^5 each independently are hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkyloxy, hydroxy, trifluoromethyl, trifluoromethyloxy or difluoromethyloxy;

R^6 is C_{1-6}alkyl, hydroxyC_{1-6}alkyl, C_{1-4}alkyloxyC_{1-6}alkyl, phenyl or phenyl C_{1-4}alkyl;

Z is CO or CHOH; and



is a radical of the formula:



(a-1)

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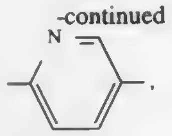
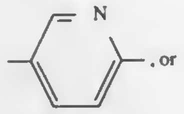
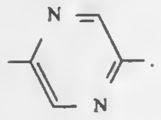


(a-2)



(a-3)



(a-7)

5,710,157

2,4-DIAMINO-5,6-DISUBSTITUTED-AND 5,6,7-TRISUBSTITUTED-5-DEAZAPTERIDINES AS INSECTICIDES

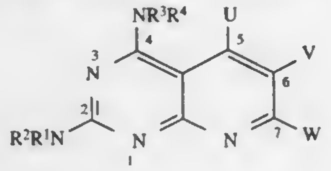
Robert N. Henrie, II, East Windsor; Clinton J. Peake, Trenton; Thomas G. Cullen, Milltown; Munirathnam Krishnappa Chaguturu, Lawrenceville, all of N.J.; Partha Sarathi Ray, Memphis, Tenn., and Brian D. Bennett, Lake Hopatcong, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 249,586, May 26, 1994, Pat. No. 5,547,954. This application Jan. 2, 1996, Ser. No. 581,858

Int. Cl.^{6} A01N *43/54;* **A61K** *31/535*

U.S. Cl. 514—258 **6 Claims**

1. An insecticidal composition comprising, in admixture with an agriculturally acceptable carrier, and a surface-active agent, an insecticidally effective amount of a compound of the formula:



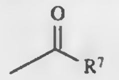
(I)

wherein

R^1 is hydrogen, lower alkyl or arylalkyl;

R^3 is hydrogen, lower alkyl or arylalkyl;

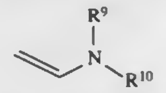
R^2 and R^4 are independently hydrogen, lower alkyl, arylalkyl, or



wherein R^7 is straight or branched chain alkyl, lower haloalkyl, lower alkynyl, straight or branched chain alkoxy, alkylsulfonylalkyl, aryl, arylalkyloxy, or ethers or polyethers of two to twelve carbon atoms in length containing one to four ether linkages; or

R^1 and R^2 taken together, form the group —R^8—O—R^8, wherein R^8 is lower alkylene; or

R^1 and R^2, taken together, and R^3 and R^4 taken together, each form the group



wherein

R^9 and R^{10} are independently straight or branched chain lower alkyl; or

R^9 and R^{10} taken together with two to five methylene groups form an alkylene ring;

W is hydrogen, halogen, lower alkyl, or hydroxy;

U is hydrogen, halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, lower dialkylamino, aryl, arylalkyl, substituted arylthio, substituted arylsulfinyl, or substituted arylalkylthio;

V is hydrogen, lower haloalkyl, aryl or substituted aryl, arylalkyl or substituted arylalkyl, aryloxy or substituted aryloxy, arylthio or substituted arylthio, arylsulfinyl or substituted arylsulfinyl, arylsulfonyl or substituted arylsulfonyl, substituted arylalkylamino, (aryl)(halo)alkenyl or substituted (aryl)(halo) alkenyl, aroyl or substituted aroyl, substituted arylalkylcarbonylamino, substituted (aryl)(alkyl)aminoalkyl; and

agriculturally acceptable salts thereof, and

wherein aryl is optionally-substituted phenyl or naphthyl, and aroyl is optionally-substituted benzoyl or naphthoyl, the substituents of the substituted aryl and aroyl groups of the V moiety being selected from one or more hydrogen, alkyl, halo, alkoxy, haloalkyl, haloarylalkoxy, haloaryloxy, alkoxycarbonyl, alkoxyalkyl, haloalkoxy, alkylthio, alkylsulfonyl, cyano, alkylamino, aryl, and haloaryl groups; the substituents of the substituted arylthio, arylsulfinyl, and aryalkylthio of the U moiety being one or more halogens; and

wherein each alkyl group is a lower alkyl group containing from 1 to 6 carbon atoms.

5,710,158

ARYL AND HETEROARYL QUINAZOLINE COMPOUNDS WHICH INHIBIT EGF AND/OR PDGF RECEPTOR TYROSINE KINASE

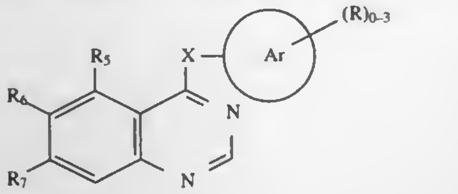
Michael R. Myers, Reading; Alfred P. Spada, Lansdale; Martin P. Maguire, Mont Clare, and Paul E. Persons, King of Prussia, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 166,199, Dec. 23, 1993, Pat. No. 5,480,883, which is a continuation-in-part of Ser. No. 988,515, Dec. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 698,420, May 10, 1991, abandoned. This application Apr. 19, 1994, Ser. No. 229,886

Int. Cl.^{6} A61K *31/505;* **C07D** *239/88;239/93;239/94*

U.S. Cl. 514—259 **14 Claims**

1. A method of inhibiting cell proliferation in a patient suffering from a disorder characterized by such proliferation comprising administering to a patient a compound of the formula:



wherein

Ar is selected from substituted or unsubstituted phenyl, α-naphthyl, β-naphthyl, indazolyl, indanyl, pyrazolyl, pyridinyl, indol-3-yl, benzodioxan-6-yl, 1,2,3,4-tetrahydroquinolin-1-yl, or 2,3-dihydroindol-1-yl where the substituents may be located at any appropriate position of the ring system and are described by R;

X is a bond, O, S, $NHCH_2$ or NR_4;

R independently includes hydrogen, alkyl, hydroxy, alkoxy, phenyl, aralkyl, alkylsulphonyl, haloalkyl or halo;

R_5 is hydrogen or alkoxy;

R_6 and R_7 are alkoxy; and

R_4 is hydrogen, methyl, ethyl or benzyl; or a pharmaceutically acceptable salt thereof.

5,710,159

INTEGRIN RECEPTOR ANTAGONISTS

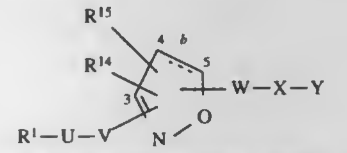
Matthew Ernst Voss, Lincoln University, Pa.; Prabhakar Kondaji Jadhav, Wilmington, Del.; Joanne Marie Smallheer, Landenberg, Pa.; Douglas Guy Batt, Wilmington, Del.; William John Pitts, Conshohocken, and John Wityak, West Grove, both of Pa., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Filed May 9, 1996, Ser. No. 647,132

Int. Cl.^{6} A61K *31/505;* **C07D** *413/06*

U.S. Cl. 514—275 **21 Claims**

1. A compound of Formula I:

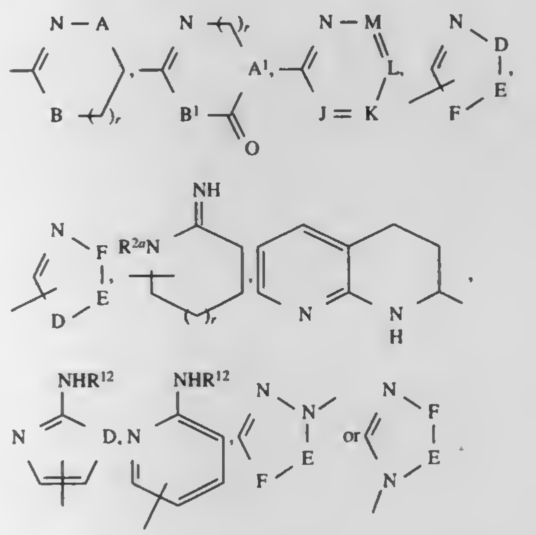


(I)

including stereoisomeric forms thereof, or mixtures of stereoisomeric forms thereof, or a pharmaceutically acceptable salt thereof wherein:

b, the bond between carbon atoms numbered 4 and 5, is a carbon-carbon single or double bond;

R^1 is selected from:



A and B are independently —CH_2—, —O—, —$N(R^{12})$—, or —C(=O)—;

A^1 and B^1 are independently —CH_2— or —$N(R^{10})$—;

D is —$N(R^{2a})$—, —O—, —S—, —C(=O)— or —SO_2—;

E—F is —$C(R^2)$=$C(R^3)$—, —N=$C(R^2)$—, —$C(R^2)$=N—, —N=N—, or —$C(R^2)_2C(R^3)_2$—;

J, K, L and M are independently selected from —$C(R^2)$— or —N—, provided that at least one of J, K, L and M is —$C(R^2)$—;

R^2 and R^3 are independently selected from: H, C_1–C_4 alkoxy, $NR^{11}R^{12}$, =NR^{12}, halogen, NO_2, CN, CF_3, C_1–C_6 alkyl, C_3–C_6 alkenyl, C_3–C_7 cycloalkyl, C_4–C_{11} cycloalkylalkyl, C_6–C_{10} aryl, C_7–C_{11} arylalkyl, C_2–C_7 alkylcarbonyl, C_6–C_{10} carbonyl or C_7–C_{11} arylcarbonyl;

alternatively, R^2 and R^3, when substituents on adjacent atoms, are taken together with the carbon atoms to which they are attached to form a 5–7 membered carbocyclic or 5–7 membered heterocyclic aromatic or nonaromatic ring system, said carbocyclic or heterocyclic ring being optionally substituted with 0–2 R^7;

R^{2a} is absent or R^{12};

U is selected from:

—$(CH_2)_n$—,
—$(CH_2)_nO(CH_2)_m$—,
—$(CH_2)_nN(R^{12})(CH_2)_m$—,
—$(CH_2)_nC(=O)(CH_2)_m$—,
—$(CH_2)_nS(O)_p(CH_2)_m$—.

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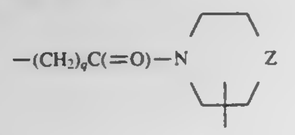
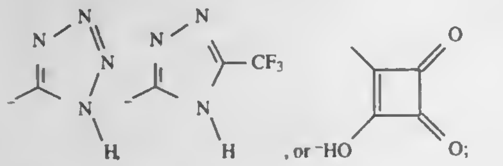
—$(CH_2)_nNHNH(CH_2)_m$—,
—$N(R^{10})C(=O)$—, or
—$C(=O)N(R^{10})$—;
—$N(R^{10})S(O)_p$—, or
V is selected from:
—$(CH_2)_n$—,
—(C_1–C_6 alkylene)-Q—, substituted with 0–3 groups independently selected from R^{13},
—(C_2–C_7 alkenylene)-Q—, substituted with 0–3 groups independently selected from R^{13},
—(C_2–C_7 alkynylene)-Q—, substituted with 0–3 groups independently selected from R^{13},
-(phenyl)-Q—, said phenyl substituted with 0–2 groups independently selected from R^{13},
-(pyridyl)-Q—, said pyridyl substituted with 0–2 groups independently selected from R^{13}, or
-(pyridazinyl)-Q—, said pyridazinyl substituted with 0–2 groups independently selected from R^{13};
Q is selected from:
—$(CH_2)_n$—,
—$(CH_2)_nO(CH_2)_m$—,
—$(CH_2)_nN(R^{12})(CH_2)_m$—,
—$(CH_2)_nC(=O)(CH_2)_m$—,
—$(CH_2)_nS(O)_p(CH_2)_m$—,
—$(CH_2)_nNHNH(CH_2)_m$—,
—$N(R^{10})C(=O)$—, or
—$C(=O)N(R^{10})$—;
W is selected from:
—$(C(R^4)_2)_qC(=O)N(R^{10})$—,
—$C(=O)$—$N(R^{10})$—$(C(R^4)_2)_q$—;
X is selected from:
a single bond,
—$(C(R^4)_2)_q$—$[C(R^4)(R^8)]_s$—$C(R^4)(R^9)$—;
alternatively, W is



and X is absent or —CH_2—
Y is selected from:
—COR^{20}—, —SO_3H, —PO_3H, —$CONHNHSO_2CF_3$, —$CONHSO_2R^{18a}$, —$CONHSO_2NHR^{18b}$, —$NHCOCF_3$, —$NHCONHSO_2R^{18a}$, —$NHSO_2R^{18a}$, —OPO_3H_2, —OSO_3H, —PO_3H_2, —SO_3H, —SO_2NHCOR^{18a}, —$SO_2NHCO_2R^{18a}$, or



Z is selected from —$CH(R^9)$—, or —$N(R^{16})$—;
R^4 is selected from H, C_1–C_{10} alkyl, C_1–C_{10} alkylcarbonyl, aryl, arylalkyl, cycloalkyl, or cycloalkylalkyl;
alternatively, two R^4 groups on adjacent carbon atoms join to form a bond, thereby forming a carbon-carbon double or triple bond between the adjacent carbon atoms;
R^5 is selected from H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2– C_6 alkynyl, C_3–C_7 cycloalkyl, C_7–C_{14} bicycloalkyl, hydroxy, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, nitro, C_1–C_6 alkylcarbonyl, C_6–C_{10} aryl, —$N(R^{11})R^{12}$, halo, CF_3, CN, C_1–C_6 alkoxycarbonyl, carboxy, piperidinyl, morpholinyl or pyridinyl;
R^6 is selected from:
H, C_1–C_{10} alkyl, hydroxy, C_1–C_{10} alkoxy, nitro, C_1–C_{10} alkylcarbonyl, —$N(R^{11})R^{12}$, cyano, halo, CF_3, CHO, CO_2R^{18b}, $C(=O)R^{18b}$, $CONR^{17}R^{18b}$, $OC(=O)R^{10}$, $OC(=O)OR^{21}$, OR^{10}, $OC(=O)NR^{10}R^{11}$, $OCH_2CO_2R^{10}$, $CO_2CH_2CO_2R^{10}$, NO_2, $NR^{10}C(=O)R^{10}$, $NR^{10}C(=O)OR^{21}$, $NR^{10}C(=O)NR^{10}R^{11}$, $NR^{10}SO_2NR^{10}R^{11}$, $NR^{10}SO_2R^{21}$, $S(O)_pR^{11}$, $SO_2NR^{10}R^{11}$, $SiMe_3$, C_2 to C_6 alkenyl, C_3 to C_{11} cycloalkyl, C_4 to C_{11} cycloalkylmethyl,
C_6 to C_{10} aryl optionally substituted with 1–3 groups selected from halogen, C_1–C_6 alkoxy, C_1– C_6 alkyl, CF_3, $S(O)_mMe$, or —NMe_2;
C_7 to C_{11} arylalkyl, said aryl being optionally substituted with 1–3 groups selected from halogen, C_1–C_6 alkoxy, C_1–C_6 alkyl, CF_3, $S(O)_pMe$, or —NMe_2,
methylenedioxy when R^6 is a substituent on aryl, or
a 5–10 membered heterocyclic ring containing 1–3 N, O, or S heteroatoms, wherein said heterocyclic ring is saturated, partially saturated, or fully unsaturated, said heterocyclic ring being substituted with 0–2 R^7;
R^7 is selected from:
H, C_1–C_{10} alkyl, hydroxy, C_1–C_{10} alkoxy, nitro, C_1–C_{10} alkylcarbonyl, —$N(R^{11})$ R^{12}, cyano, halo, CF_3, CHO, CO_2R^{10}, $C(=O)R^{10}$, $CONR^{10}R^{11}$, $OC(=O)R^{10}$, $OC(=O)OR^{21}$, OR^{10}, $OC(=O)NR^{10}R^{11}$, $OCH_2CO_2R^{10}$, $CO_2CH_2CO_2R^{10}$, NO_2, $NR^{10}C(=O)R^{10}$, $NR^{10}C(=O)OR^{21}$, $NR^{10}C(=O)NR^{10}R^{11}$, $NR^{10}SO_2NR^{10}R^{11}$, $NR^{10}SO_2R^{21}$, $S(O)_pR^{11}$, $SO_2NR^{10}R^{11}$, $SiMe_3$, C_2 to C_6 alkenyl, C_3 to C_{11} cycloalkyl, C_4 to C_{11} cycloalkylmethyl, C_6 to C_{10} aryl, or C_7 to C_{11} arylalkyl;
R^8 is selected from:
H, R^6,
C_1–C_{10} alkyl, substituted with 0–3 R^6,
C_2–C_{10} alkenyl, substituted with 0–3 R^6,
C_2–C_{10} alkynyl, substituted with 0–3 R^6,
C_3–C_8 cycloalkyl, substituted with 0–3 R^6,
C_5–C_6 cycloalkenyl, substituted with 0–3 R^6,
aryl, substituted with 0–3 R^6, or
5–10 membered heterocyclic ring containing 1–3 N, O, or S heteroatoms, wherein said heterocyclic ring is saturated, partially saturated, or fully unsaturated, said heterocyclic ring being substituted with 0–2 R^7;
R^9 is selected from H, hydroxy, C_1–C_{10} alkoxy, nitro, $N(R^{10})R^{11}$, —$N(R^{16})R^{17}$, OR^{22}, C_1–C_{10} alkyl substituted with 0–3 R^7, aryl substituted with 0–3 R^7, heteroaryl substituted with 0–3 R^7, C_1–C_{10} alkylcarbonyl; aryl(C_0–C_6 alkyl)carbonyl, C_1–C_{10} alkenyl, C_1–C_{10} alkynyl, C_3–C_{10} cycloalkyl, C_3–C_{10} cycloalkylalkyl, aryl(C_1–C_6 alkyl)-, heteroaryl(C_1–C_6 alkyl)-, CO_2R^{18a}, $C(=O)R^{18a}$, $CONR^{18a}R^{20}$, SO_2R^{18a}, or $SO_2NR^{18a}R^{20}$, provided that any of the above alkyl, cycloalkyl, aryl or heteroaryl groups are unsubstituted or substituted independently with 0–2 R^7;
R^{10} is selected from H, C_1–C_8 alkyl, C_3–C_6 alkenyl, C_3–C_{11} cycloalkyl, C_4–C_{11} cycloalkylmethyl, C_6–C_{10} aryl, C_7–C_{11} arylalkyl, or C_1–C_{10} alkyl substituted with 0–2 R^4;
R^{11} is selected from hydrogen, hydroxy, C_1 to C_8 alkyl, C_3–C_6 alkenyl, C_3 to C_{11} cycloalkyl, C_4 to C_{11} cycloalkylmethyl, C_1–C_6 alkoxy, benzyloxy, C_6 to C_{10} aryl, heteroaryl, heteroarylalkyl, C_7 to C_{11} arylalkyl, adamantylmethyl, or C_1–C_{10} alkyl substituted with 0–2 R^4;
alternatively, R^{10} and R^{11} when both are substituents on the same nitrogen atom are taken together with the nitrogen atom to which they are attached to form a heterocycle selected from: 3-azabicyclononyl, 1,2,3,4-tetrahydro-1 -quinolinyl, 1,2,3,4-tetrahydro-2-isoquinolinyl, 1 -piperidinyl, 1-morpholinyl, 1-pyrrolidinyl, thiamorpholinyl, thiazolidinyl or 1-piperazinyl; said heterocycle being optionally substituted with 0–3 groups selected from: C_1–C_6 alkyl, C_6–C_{10} aryl, heteroaryl, C_7–C_{11} arylalkyl, C_1–C_6 alkylcarbonyl, C_3–C_7 cycloalkylcarbonyl, C_1–C_6 alkoxycarbonyl, C_7– C_{11} arylalkoxycarbonyl, C_1–C_6 alkylsulfonyl or C_6– C_{10} arylsulfonyl;
R^{12} is selected from:
H, C_1–C_{10} alkyl, triphenylmethyl, methoxyphenyldiphenylmethyl, trimethylsilylethoxymethyoxy, C_1–C_{10} alkoxycarbonyl, C_1–C_{10} alkylcarbonyl, C_1–C_{10} alkylsulfonyl, aryl(C_1–C_{10} alkyl)sulfonyl, arylsulfonyl, aryl(C_2–C_{10} alkenyl)sulfonyl, heteroarylsulfonyl, aryl, C_2–C_6 alkenyl, C_3–C_{11} cycloalkyl, C_4–C_{11} cycloalkylalkyl, C_7–C_{11} arylalkyl, C_7–C_{11} arylcarbonyl, C_4–C_{11} cycloalkoxycarbonyl, C_7–C_{11} bicycloalkoxycarbonyl, C_7–C_{11} aryloxycarbonyl, heteroarylcarbonyl, heteroarylalkylcarbonyl, or aryl(C_1–C_{10} alkoxy)carbonyl; wherein said aryl groups are optionally substituted with 0–3 substituents selected from the group consisting of: C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, and NO_2;

R^{13} is selected from: H, hydroxy, C_1–C_{10} alkoxy, nitro, $N(R^{10})R^{11}$, —$N(R^{16})R^{17}$, C_1–C_{10} alkyl substituted with 0–3 R^7, aryl substituted with 0–3 R^7, heteroaryl substituted with 0–3 R^7, or C_1–C_{10} alkylcarbonyl;
R^{14} is selected from H, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl, C_1–C_{10} alkoxy, aryl, heteroaryl or C_1–C_{10} alkoxycarbonyl, CO_2R^{10} or —$C(=O)N(R^{10})R^{11}$;
R^{15} is selected from:
H, R^6, —CO_2R^{10}, —$C(=O)N(R^{10})R^{11}$;
C_1–C_{10} alkoxycarbonyl substituted with 0–2 R^6;
C_1–C_{10} alkyl, substituted with 0–3 R^6;
C_2–C_{10} alkenyl, substituted with 0–3 R^6;
C_1–C_{10} alkoxy, substituted with 0–3 R^6;
aryl, substituted with 0–3 R^6; or
5–10 membered heterocyclic ring containing 1–3 N, O, or S heteroatoms, wherein said heterocyclic ring is saturated, partially saturated, or fully unsaturated, said heterocyclic ring being substituted with 0–2 R^7;
R^{16} is selected from:
—$C(=O)$—O—R^{18a},
—$C(=O)$—R^{18b},
—$C(=O)N(R^{18b})_2$,
—$C(=O)NHSO_2R^{18a}$,
—$C(=O)NHC(=O)R^{18b}$,
—$C(=O)NHC(=O)OR^{18a}$,
—$C(=O)NHSO_2NHR^{18b}$,
—$C(=S)$—NH—R^{18b},
—NH—$C(=O)$—O—R^{18a},
—NH—$C(=O)$—R^{18b},
—NH—$C(=O)$—NH—R^{18b},
—SO_2—O—R^{18a},
—SO_2—R^{18a},
—SO_2—$N(R^{18b})_2$,
—SO_2—$NHC(=O)OR^{18b}$;
R^{17} is selected from: H, C_1–C_{10} alkyl, C_2–C_6 alkenyl, C_3– C_{11} cycloalkyl, C_4–C_{15} cycloalkylalkyl, aryl, aryl(C_1–C_{10} alkyl)-;
R^{18a} is selected from:
C_1–C_8 alkyl substituted with 0–2 R^{19},
C_2–C_8 alkenyl substituted with 0–2 R^{19},
C_2–C_8 alkynyl substituted with 0–2 R^{19},
C_3–C_8 cycloalkyl substituted with 0–2 R^{19},
aryl substituted with 0–4 R^{19},
aryl(C_1–C_6 alkyl)- substituted with 0–4 R^{19},
a 5–10 membered heterocyclic ring system having 1–3 heteroatoms selected independently from O, S, and N, said heterocyclic ring being substituted with 0–4 R^{19},
C_1–C_6 alkyl substituted with a 5–10 membered heterocyclic ring system having 1–3 heteroatoms selected independently from O, S, and N, said heterocyclic ring being substituted with 0–4 R^{19};
R^{18b} is selected from R^{18a} or H;
R^{19} is selected from H, halogen, CF_3, CO_2H, CN, NO_2, $NR^{11}R^{12}$, C_1–C_8 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_{11} cycloalkyl, C_4–C_{11} cycloalkylalkyl, aryl(C_1–C_6 alkyl)-, C_1–C_6 alkoxy, OCF_3, or C_1–C_4 alkoxycarbonyl, aryl, —O-aryl, —SO_2-aryl, heteroaryl, or —SO_2-heteroaryl, wherein said aryl and heteroaryl groups are substituted with 0–4 groups selected from hydrogen, halogen, CF_3, C_1–C_3 alkyl, or C_1–C_3 alkoxy;
R^{20} is selected from hydroxy, C_1 to C_{10} alkyloxy, C_3 to C_{11} cycloalkyloxy, C_6 to C_{10} aryloxy, C_7 to C_{11} arylalkyloxy, C_3 to C_{10} alkylcarbonyloxyalkyloxy, C_3 to C_{10} alkoxycarbonyloxyalkyloxy, C_2 to C_{10} alkoxycarbonylalkyloxy, C_5 to C_{10} cycloalkylcarbonylomyalkyloxy, C_5 to C_{10} cycloalkoxycarbonyloxyalkyloxy, C_5 to C_{10} cycloalkoxycarbonylalkyloxy, C_7 to C_{11} aryloxycarbonylalkyloxy, C_8 to C_{12} aryloxycarbonyloxyalkyloxy, C_8 to C_{12} arylcarbonyloxyalkyloxy, C_5 to C_{10} alkoxyalkylcarbonyloxyalkyloxy, C_5 to C_{10} (5-alkyl- 1,3-dioxa-cyclopenten-2-one-yl)methyloxy, C_{10} to C_{14} (5-aryl-1,3-dioxa-cyclopenten-2-one-yl)methyloxy, $(R^{11})(R^{12})N$—(C_1–C_{10} alkoxy)-;
R^{21} is selected from: C_1–C_8 alkyl, C_2–C_6 alkenyl, C_3–C_{11} cycloalkyl, C_4–C_{11} cycloalkylmethyl, C_6–C_{10} aryl, C_7–C_{11} arylalkyl, or C_1–C_{10} alkyl substituted with 0–2 R^5;
R^{22} is selected from:
—$C(=O)$—R^{18b},
—$C(=O)N(R^{18b})_2$,
—$C(=O)NHSO_2R^{18a}$,
—$C(=O)NHC(=O)R^{18b}$,
—$C(=O)NHC(=O)OR^{18a}$,
—$C(=O)NHSO_2NHR^{18b}$,
—$C(=S)$—NH—R^{18b},
—SO_2—R^{18a},
—SO_2—$N(R^{18b})_2$,
—SO_2—$NHC(=O)OR^{18b}$;
m is 0–2;
n is 0–4;
p is 0–2;
q is 0–4;
r is 0–2;
s is 0–1;
with the following provisos:
(1) when b is a double bond, only one of R^{14} or R^{15} is present and Q and U are not —(CH_2)—; and
(2) n, m and q are chosen such that the number of atoms connecting R^1 and Y is in the range of 8–14; and
(3) when V is -(phenyl)-Q—, then either: U is not a direct bond or Q is not a direct bond.

5,710,160

DIPHENYL PYRIDYL ETHANE DERIVATIVES AS PDE IV INHIBITORS

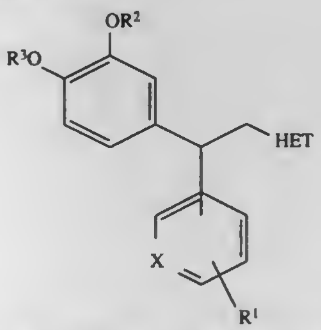
Daniel Guay, Ille Perrot; Yves Girard, Ille Bizard, and Yves Ducharme, Montreal, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Dec. 10, 1996, Ser. No. 763,565

Int. Cl.^{6} A61K *31/44;31/40;* **C07D** *213/53;235/04*

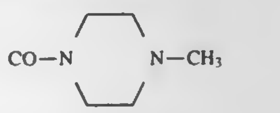
U.S. Cl. 514—277 **9 Claims**

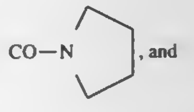
1. A compound of formula I



I

or a pharmaceutically acceptable salt thereof wherein:
R^1 is selected from
(a) —CH=NOH,

(b)


(c)


(d) —5—tetrazolyl;
R^2 and R^3 are independently selected from
(a) C_{1-7}alkyl wherein said alkyl is selected from a linear, branched and cyclic alkyl,
(b) substituted C_{1-7} alkyl, wherein the substituent is F, Cl, Br or I,

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- (c) 2-phenethyl or 2-indanyl, optionally mono or di-substituted on the benzene ring, wherein the substituents are independently selected from the group consisting of
  - (1) halo,
  - (2) C_{1-6}alkoxy,
  - (3) C_{1-6}alkylthio,
  - (4) CN,
  - (5) CF_3,
  - (6) C_{1-6}alkyl,
  - (7) N_3,
  - (8) —CO_2H,

R^4 is selected from
- (a) hydrogen,
- (b) C_{1-6}alkyl,
- (c) phenyl, benzyl or 2-phenethyl, optionally mono or di-substituted on the benzene ring, wherein the substituents are independently selected from the group consisting of
  - (1) halo,
  - (2) C_{1-6}alkoxy,
  - (3) C_{1-6}alkylthio,
  - (4) CN.
  - (5) CF_3,
  - (6) C_{1-6}alkyl,
  - (7) N_3,
  - (8) —CO_2H.

R^5 and R^8 are each independently selected from
- (a) —CF_3.
- (b) C_{1-6}alkyl,
- (c) phenyl, benzyl or 2-phenethyl, optionally mono or di-substituted on the benzene ring, wherein the substituents are independently selected from the group consisting of
  - (1) halo,
  - (2) C_{1-6}alkoxy,
  - (3) C_{1-6}alkylthio,
  - (4) CN,
  - (5) CF_3,
  - (6) C_{1-6}alkyl,
  - (7) N_3,
  - (8) —CO_2H,

R^6 and R^7 are independently selected from
- (a) hydrogen, and
- (b) C_{1-6}alkyl, or

R^6 and R^7 may be joined to form a saturated 5, 6 or 7 membered heterocycle, said heterocycle containing a heteroatom which is nitrogen and optionally containing an additional hetero atom which is O or S atom or NR^4, and optionally containing a carbonyl group;

HET is selected from
- pyridyl or imidazolyl, optionally mono or di-substituted with substituents selected from the group consisting of halo, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkylthio, benzyl, 2-phenethyl, $NHCOR^5$, NR^6R^7, $NHS(O)_2R^8$, OH, CN, or CF_3, and the N-oxides thereof;

X is selected from N, N→O or CH.

5,710,161
TRIAZOLE DERIVATIVES AND THEIR USE AS THERAPEUTIC AGENTS

Tamara Ladduwahetty, London, and Angus Murray MacLeod, Bishops Stortford, both of United Kingdom, assignors to Merck, Sharp & Dohme, Ltd., Hoddesdon, England

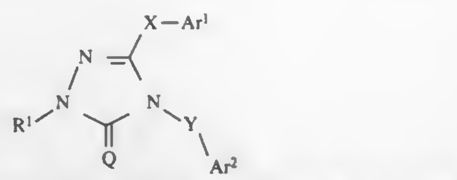
Filed Sep. 12, 1995, Ser. No. 527,280

Claims priority, application United Kingdom, Sep. 15, 1994, 9418545

Int. Cl.^{6} A61K *31/445;* **C07D** *401/06;401/14*

U.S. Cl. 514—278 **12 Claims**

1. A compound of the formula (I) or a pharmaceutically acceptable salt thereof:



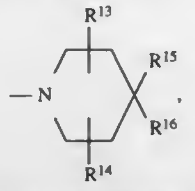
(I)

wherein Ar^1 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^a or —$CONR^aR^b$, where and R^a and R^b each independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl;

Ar^2 represents aryl selected from phenyl and naphthyl; heteroaryl selected from indolyl, indazolyl, thienyl, furyl, pyridyl, thiazolyl, triazolyl, tetrazolyl and quinolyl; benzhydryl; or benzyl; wherein each aryl and heteroaryl and each phenyl moiety of benzyl and benzhydryl may be substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{1-6}alkoxy, CO_2C_{1-4}alkyl, cyano, halo and trifluoromethyl;

R^1 represents a group of the formula Z-R^2;

R^2 represents a group of the formula (iv):



(iv)

R^3, R^4, R^5 and R^6 each independently represent H or C_{1-4}alkyl;

R^7 and R^8 each independently represent H, C_{1-6}alkyl, trifluoromethyl, phenyl or benzyl;

R^{13} and R^{14} each independently represent H or C_{1-6}alkyl;

R^{15} and R^{16} together form an indane or indene ring or an indoline ring which is substituted on the nitrogen atom by R^{18}, any of which rings can be substituted on the phenyl moiety by 1 or 2 groups selected from halo, C_{1-6}alkyl, C_{1-6}alkenyl, C_{1-6}alkoxy, CO_2C_{1-4}alkyl, trifluoromethyl and cyano;

R^{18} represents H, CO_2R^{19}, $CONR^7R^8$, $SONR^7R^8$ or SO_2R^{19};

R^{19} represents C_{1-6}alkyl, phenyl or benzyl;

Q represents O or S;

X represents a group selected from —$CR^3R^4CR^5R^6$-, —CR^3=CR^4—, —$C(OH)R^3CR^4R^5$-, —$CR^3R^4C(OH)R^5$-, —$C(O)CR^3R^4$- and —$CR^3R^4C(O)$—;

Y represents a C_{1-4}alkylene chain; and

Z represents a straight or branched C_{1-6}alkylene or C_{3-6}alkenylene chain with the proviso that the alkenylene double bond does not terminate at a carbon atom attached to a nitrogen atom.

5,710,162
CONDENSED-INDAN DERIVATIVES AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shinji Okazaki, Tokyo; Tetsuji Asao, Tokorozawa; Motoji Wakida, Hidaka; Keisuke Ishida; Masato Washinosu, both of Hanno; Teruhiro Utsugi, Tokyo, and Yuji Yamada, Tokorozawa, all of Japan, assignors to Taiho Pharmaceutical Co., Ltd., Tokyo, Japan

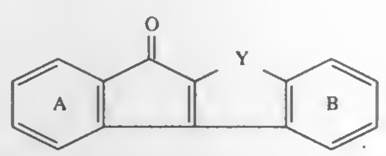
Division of Ser. No. 578,542, Jan. 19, 1996. This application Sep. 12, 1996, Ser. No. 713,224

Claims priority, application Japan, May 20, 1994, 6-107190

Int. Cl.^{6} C07D *471/00;* **A61K** *31/435*

U.S. Cl. 514—280 **13 Claims**

1. A condensed-indan derivative represented by formula (1) or a pharmaceutically acceptable salt thereof:



(1)

wherein
- ring A represents an optionally substituted naphthalene ring,
- ring B represents an optionally substituted benzene ring or a benzene ring having a lower alkylenedioxy group,
- Y represents —N=CR— or —CR=N—,
- R represents a —NR_1R_2 group, an optionally substituted nitrogen-containing heterocyclic group or a —OR_3 group,
  - wherein R_1 and R_2 are the same or different and each is a hydrogen atom; a phenyl group; an optionally substituted nitrogen-containing heterocyclic group; or a lower alkyl group which may be substituted by at least one selected from the group consisting of an optionally substituted amino group, a lower alkoxy group, a phenyl group, a nitrogen-containing heterocyclic group, an amine oxide group substituted by a lower alkyl group or a hydroxyl group(s) and R_3 represents a lower alkyl group optionally substituted by a substituted amino group.

5,710,163
BENZO[F]QUINOLINONES

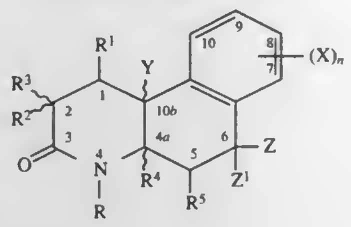
James E. Audia, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 633,990, Apr. 17, 1996, which is a continuation of Ser. No. 445,806, May 22, 1995, Pat. No. 5,541,190, which is a division of Ser. No. 223,884, Apr. 6, 1994, Pat. No. 5,495,021, which is a division of Ser. No. 52,960, Apr. 23, 1993, Pat. No. 5,334,767, which is a division of Ser. No. 927,710, Aug. 10, 1992, Pat. No. 5,239,075, which is a continuation-in-part of Ser. No. 781,039, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 748,116, Aug. 21, 1991, abandoned. This application Jul. 17, 1996, Ser. No. 683,750

Int. Cl.^{6} C07D *215/227;215/12;* **A61K** *31/435*

U.S. Cl. 514—290 **1 Claim**

1. A compound having the formula



where:
- R is methyl
- Z and Z^1 are hydrogen;
- Y is methyl and is in a trans configuration in relation to the 4a position hydrogen;
- R^1, R^2, R^3, R^4 and R^5 are hydrogen;
- n is 1; and
- X is halogen,

or a pharmaceutically acceptable salt thereof.

5,710,164
DIHETEROCYCLIC STYRYL NITRILES

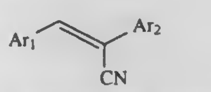
Hassan M. Elokdah, Fairless Hills, Pa.; Sie-Yearl Chai, Lawrenceville, N.J., and Theodore S. Sulkowski, Wayne, Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Jun. 6, 1995, Ser. No. 470,603

Int. Cl.^{6} A61K *31/44;31/47;* **C07D** *213/04;215/12*

U.S. Cl. 514—300 **14 Claims**

1. A compound of the formula:



I

where Ar_1 and Ar_2 are, independently, pyridinyl, quinolinyl, 1,4-benzodioxanyl, 2,3-dihydro- 1,4-benzodioxanyl, pyrrolyl, azaindolyl, carbazolyl or 9-ethylcarbazolyl or a pharmaceutically acceptable salt thereof, with the proviso that Ar_1 and Ar_2 are not both 2-pyridinyl and at least one of Ar_1 and Ar_2 is a 3-pyridinyl.

5,710,165
USE OF POLYAMINE ANTAGONISTS FOR THE TREATMENT OF GLAUCOMA

Michael A. Kapin, Arlington; Louis Desantis, Jr., Fort Worth, both of Tex., and Salomon Langer, Paris, France, assignors to Synthelabo, Cedex, France

Filed Jul. 6, 1994, Ser. No. 271,290

Int. Cl.^{6} A01N *43/40;* **A61K** *31/445*

U.S. Cl. 514—317 **3 Claims**

1. A method for treating glaucoma, comprising administering to an affected person an amount of eliprodil effective to reduce visual field loss.

5,710,166
N-ACYL BETA AMINO ACID DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

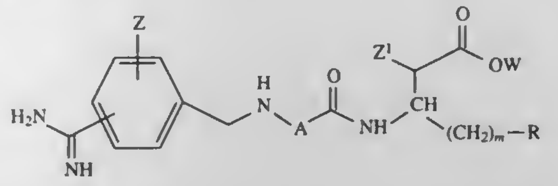
Foe S. Tjoeng, Manchester, and Mihaly V. Toth, St. Louis, both of Mo., assignors to The Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 24,977, Mar. 2, 1993, abandoned. This application Aug. 24, 1995, Ser. No. 518,660

Int. Cl.^{6} A61K *31/445;* **C07D** *401/12;211/56*

U.S. Cl. 514—318 **6 Claims**

1. A compound or a pharmaceutically acceptable salt thereof having the formula



wherein R is independently selected from the group consisting of hydrogen, lower alkyl radicals of 1 to about 6 carbon atoms and monocyclic aromatic radicals;

A is a monocyclic aromatic hydrocarbon radical;

W is selected from the group consisting of hydrogen and lower alkyl radicals;

Z and Z' are independently selected from the group consisting of hydrogen, lower alkyl radicals, halogen, alkoxy, cyano, sulfonyl, carboxyl and hydroxyl radicals; and

m is an integer from 0 to about 3.

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5,710,167
HYDROXAMIC ACID DERIVATIVES WITH TRICYCLIC SUBSTITUTION FOR TREATING DEGENERATIVE JOINT DISEASES

Michael John Broadhurst, Royston; Paul Anthony Brown, and William Henry Johnson, both of Hitchin, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

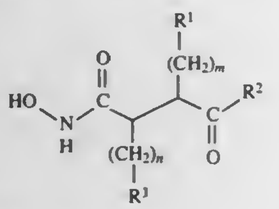
Division of Ser. No. 417,317, Apr. 5, 1995, Pat. No. 5,614,625. This application Oct. 29, 1996, Ser. No. 741,153

Claims priority, application United Kingdom, Apr. 25, 1994, 9408183; Jan. 30, 1995, 9501737

Int. Cl.^{6} **A61K** *31/445;* **C07D** *401/08*

U.S. Cl. 514—326 **3 Claims**

1. The method of treating or controlling degenerative joint diseases comprising administering to a patient in need thereof a collagenase inhibitory effective amount of a compound of the formula



(I)

wherein

- R^1 represents cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl;
- R^2 represents a saturated 5- to 8-membered monocyclic or bridged N-heterocyclic ring, which N-heterocyclic ring is attached via the N atom and when it is monocyclic, optionally contains NR^4, O, S, SO or SO_2 as a ring member and/or is optionally substituted on one or more C atoms by hydroxy, lower alkyl, lower alkoxy, oxo, ketalized oxo, amino, mono(lower alkyl)amino, di(lower alkyl)amino, carboxy, lower alkoxycarbonyl, hydroxymethyl, lower alkoxymethyl, carbamoyl, mono(lower alkyl)-carbamoyl, di(lower alkyl)carbamoyl or hydroxyimino;
- R^3 represents a 5- or 6-membered N-heterocyclic ring which (a) is attached via the N atom, (b) optionally contains N, O and/or S, SO or SO_2 as an additional ring member, (c) is substituted by oxo on one or both C atoms adjacent to the linking N atom and (d) is optionally benz-fused or optionally substituted on one or more other C atoms by lower alkyl or oxo and/or on any additional N atom(s) by lower alkyl or aryl;
- R^4 represents hydrogen, lower alkyl, aryl, aralkyl or a protecting group selected from benzyloxycarbonyl, tert.butoxycarbonyl and acetyl;
- m stands for 1 or 2; and
- n stands for an integer from 1 to 4;

and pharmaceutically acceptable salts thereof.

5,710,168
2-PIPERIDINO-1-ALKANOL DERIVATIVES AS NEUROPROTECTIVE AGENTS

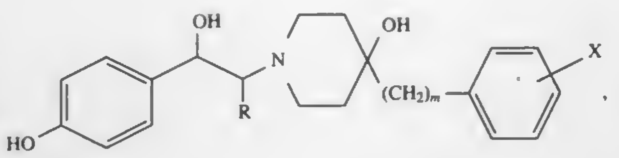
Bertrand L. Chenard, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 228,466, Apr. 15, 1994, Pat. No. 5,391,742, which is a division of Ser. No. 96,913, Jul. 23, 1994, Pat. No. 5,338,754, which is a division of Ser. No. 932,844, Aug. 20, 1992, Pat. No. 5,272,160, which is a division of Ser. No. 784,446, Oct. 23, 1991, Pat. No. 5,185,343. This application Nov. 9, 1994, Ser. No. 336,639

Int. Cl.^{6} **A61K** *31/445;31/46;31/40*

U.S. Cl. 514—327 **18 Claims**

1. A method of blocking NMDA receptor sites in a mammal in need of said blocking comprising administering to said mammal an effective amount of a compound of the formula



wherein:

- R is H, $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl or $(C_2–C_6)$alkynyl;
- X is H, $(C_1–C_3)$alkyl, halo, OR^1, $OCOR^1$, CO_2R^1, SR^1, NHR^1, $NHCOR^1$, $CONH_2$ or CN;
- m is 0, 1, 2, 3 or 4; and
- R^1 is H or $(C_1–C_3)$alkyl; or a pharmaceutically acceptable acid addition salt thereof, provided that said need is not caused by NMDA-mediated stroke or NMDA-mediated CNS degenerative disease.

5,710,169
THERAPEUTIC HETEROCYCLES

Keith Russell, Newark, Del., assignor to Zeneca Limited, London, United Kingdom

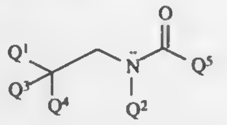
Filed Oct. 24, 1995, Ser. No. 547,512

Claims priority, application United Kingdom, Oct. 25, 1994, 9421411; Jun. 17, 1995, 9512367

Int. Cl.^{6} **A61K** *31/445;* **C07D** *211/52*

U.S. Cl. 514—327 **5 Claims**

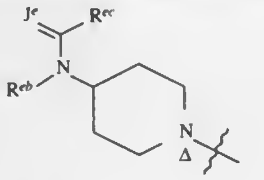
1. A compound of formula I:



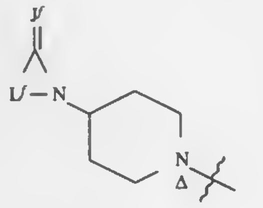
(I)

wherein

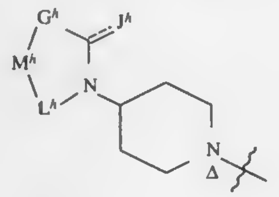
Q^1 is selected from radicals of formulae Ic, If, Ib, Ij, and Ik,



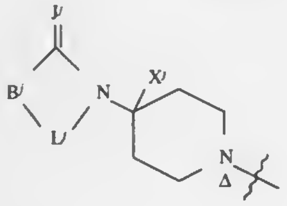
(Ic)



(If)

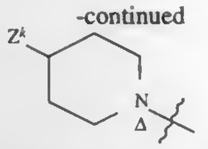


(Ih)



(Ij)

-continued



(Ik)

for a radical of formula Ie, J^c is oxygen, sulfur or NR^{ca} in which R^{ca} is hydrogen or (1–3C)alkyl; R^{cb} is hydrogen, (1–6C)alkyl which may bear a hydroxy substituent and/or one to three fluoro substituents, (3–6C)alkenyl (in which a vinyl carbon is not bound to nitrogen), 2-hydroxyethyl, (3–7C)cycloalkyl, Ar or Het; R^{cc} is hydrogen, (1–6C)alkyl which may bear a hydroxy substituent and/or one to three fluoro substituents, (3–6C)cycloalkyl, (1–5C)alkoxy (only when J^e is oxygen), (3–6C)cycloalkoxy (only when J^e is oxygen), or an amino group of formula $NR^{cd}R^{cc}$ containing zero to seven carbon atoms in which each of R^{ed} and R^{ee} is independently hydrogen, (1–5C)alkyl or (3–6C)cycloalkyl, or the radical $NR^{ed}R^{ee}$ is pyrrolidino, piperidino, morpholino, thiomorpholino (or its S-oxide) or piperazinyl (which piperazinyl group may hear a (1–3C)alkyl substituent at the 4-position);

for a radical of formula If, J^f is oxygen, sulfur or NR^{fa} in which R^{fa} is hydrogen or (1–3C)alkyl; L^f is a divalent hydrocarbon group in which the 1-position is bound to the carbon bearing the group J^f, the divalent group L^f being selected from trimethylene, cis-propenylene, tetramethylene, cis-butenylene, cis-but-3-enylene, cis,cis-butadienylene, pentamethylene and cis-pentenylene which divalent group L^f itself may bear one or two methyl substituents;

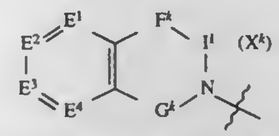
for a radical of formula Ih, G^h denotes a single bond, a double bond or a divalent hydrocarbon radical; J^h denotes a radical joined to the ring by a single bond if G^h denotes a double bond or, otherwise, a radical joined by a double bond; M^h denotes a heteroatom, a substituted heteroatom, or a single bond; and L^h denotes a hydrocarbon radical in which the 1-position is attached to M^h; wherein the values of G^h, J^h, M^h and L^h are selected from

- (a) G^h is a single bond; J^h is oxo or thioxo; M^h is oxy, thio or NR^{ha}; and L^h is L^{ha};
- (b) G^h is a single bond; J^h is NR^{hb}; M^h is NR^{ha}; and L^h is L^{ha};
- (c) G^h is a double bond, J^h is OR^{ha}, SR^{ha} or $NR^{hc}R^{hd}$, M^h is nitrogen; and L^h is L^{ha};
- (d) G^h is methylene which may hear one or two methyl substituent; J^h is oxo, thioxo or NR^{hc}; M^h is oxy, thio, sulfinyl, sulfonyl or NR^{ha}; and L^h is L^{hb};
- (e) G^h is a single bond; J^h is oxo, thioxo or NR^{he}; M^h is nitrogen; and L^h is L^{hc};
- (f) G^h is methine, which may bear a (1–3C)alkyl substituent: J^h is oxo. thioxo or NR^{hc}; M^h is nitrogen; and L^h is L^{hd};
- (g) G^h is cis-vinylene, which may bear one or two methyl substituents; J^h is oxo, thioxo, or NR^{hc}; M^h is nitrogen; and L^h is L^{he}; and
- (h) G^h is a single bond; J^h is oxo or thioxo; M^h is a single bond; and L^h is L^{hf}; wherein

R^{ha} is hydrogen or (1–3C)alkyl; R^{hb} is hydrogen, (1–3C)alkyl, cyano, (1–3C)alkylsulfonyl or nitro; R^{hc} and R^{hd} are independently hydrogen or (1–3C)alkyl or the radical $NR^{hc}R^{hd}$ is pyrrolidino, piperidino, morpholino, thiomorpholino for its S-oxide) or piperazinyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position); R^{hc} is hydrogen or (1–3C)alkyl; L^{ha} is ethylene, cis-vinylene, trimethylene or tetramethylene which radical L^{ha} itself may bear one or two methyl substituents; L^{hb} is ethylene or trimethylene which radical L^{hb} itself may bear one or two methyl substituents; L^{hc} is prop-2-en-1-yliden-3-yl, which radical L^{hc} itself may bear one or two methyl substituents; L^{hd} is cis-vinylene, which radical L^{hd} itself may hear one or two methyl substituents; L^{he} is methine, which radical L^{hc} itself may bear a (1–3C)alkyl substituent; and L^{hf} is 4-oxabutan-1,4-diyl;

for a radical of formula Ij, X^j is (1–6C)alkyl, $—CH_2OR^{ja}$, $—CH_2SR^{ja}$, $—CH_2S(O)R^{jg}$, $—CH_2S(O)_2R^{jg}$, $—COR^{ja}$, $—COOR^{ja}$, $—C(=J^{ja})NR^{ja}R^{jc}$, $—C(R^{ja})(OR^{jd})(OR^{jc})$, $—CH_2N(R^{ja})C(=J^{ja})R^{jf}$. $—CH_2N(R^{ja})COOR^{jg}$ or $—CH_2N(R^{ja})C(=J^{ja})NR^{jb}R^{jc}$, B^j is a direct bond and L^j is a hydrocarbon chain in which the 1-position is bound to B^j and L^j is selected from trimethylene, tetramethylene, cis-1-butenylene and cis,cis-butadienylene; or B^j is $N(R^{jh})$ and L^j is a hydrocarbon chain selected from ethylene, trimethylene and cis-vinylene; B^j is N and L^j is a hydrocarbon chain in which the 1-position is bound to B^j and L^j is cis,cis-prop-2-en-1-ylidin- 3-yl; J^j and J^{ja} are independently oxygen or sulfur; R^{ja}, R^{jf} and R^{jh} are independently hydrogen or (1–6C)alkyl; R^{jb} and R^{jc} are independently hydrogen or (1–6C)alkyl: or the radical $NR^{jb}R^{jc}$ is pyrrolidino, piperidino, morpholino, thiomorpholino (or its S-oxide) or piperazinyl independently (1–3C)alkyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position); R^{jd} and R^{je} are independently (1–3C)alkyl; or together form a divalent hydrocarbon chain selected from ethylene and trimethylene; R^{jg} is (1–6C)alkyl;

for a radical of formula Ik, Z^k is a nitrogen linked radical of formula II:



(II)

wherein E^1, E^2, E^3 and E^4 form a divalent four membered chain $(—E^1=E^2—E^3=E^4—)$ in which each of E^1, E^2, E^3 and E^4 a is methine; or in which one or two of E^1, E^2, E^3 and E^4 is nitrogen and the remaining E^1, E^2, E^3 and E^4 are methine; and further wherein one or more of E^1, E^2, E^3 and E^4 which is methine may bear a halo, (1–3C)alkyl, hydroxy, (1–3C)alkoxy, (1–3C)alkylthio, (1–3C)alkylsulfinyl or (1–3C)alkylsulfonyl substituent; and wherein the radicals F^k G^k, and $I^k(X^k)$ are selected from

- (a) G^k is a direct bond, $I^k(X^k)$ is a radical having the formula $=C(Z^k)—$ and F^k is a radical selected from $—CH=$ and $—N=$;
- (b) G^k is a direct bond, $I^k(X^k)$ is a radical having the formula $—C(=J^k)—$ and F^k is a radical selected from $—N(R^{kf})—$, $—CH_2—CH_2—$, $—CH=CH—$, $—CH_2—N(R^{kf})—$ and $—CH=N—$;
- (c) G^k is a radical having the formula $—CH_2—$, $I^k(X^k)$ is a radical having formula $—C(=J^k)—$ and F^k is selected from $—CH_2—$ and $—N(R^{kf})—$; and
- (d) G^k is selected from $—CH_2—$, $—CH_2—CH_2—$, $—CH=CH—$ and $—N=CH—$, $I^k(X^k)$ is a radical having the formula $—C(=J^k)—$ and F^k is a direct bond; wherein

J^k is oxygen or sulfur; Z^k is $—OR^{ka}$, $—SR^{ka}$, $—COR^{ka}$, $—COOR^{ka}$, $—C(=J^{ka})NR^{kb}R^{kc}$ or $—C(R^{ka})(OR^{kd})(OR^{kc})$; J^{ka} is oxygen or sulfur; R^{ka} and R^{kf} are independently hydrogen or (1–6C)alkyl; R^{kb} and R^{kc} are independently hydrogen or (1–6C)alkyl; or the radical $NR^{kb}R^{kc}$ is pyrrolidino, piperidino, morpholino, thiomorpholino (or its S-oxide) or piperazinyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position); R^{kd} and R^{kc} are independently (1–3C)alkyl or R^{kd} and R^{ke} together form ethylene or trimethylene; or Z^k is an imido radical selected from phthalimido, succinimido, maleimido, glutarimido, and 3-oxa-, 3-thio- and 3-azaglutarimido, in which the imido radical may bear one or more (1–3C)alkyl substituents and, in addition, the aromatic portion of the phthalimido may bear one or more halo, hydroxy or (1–3C)alkoxy substituents;

for a radical Q^1, Ar is a phenyl radical or an ortho-fused bicyclic carbocyclic radical of nine of ten ring atoms in which at least one ring is aromatic, which radical Ar may be unsubstituted or may bear one or more substituents selected from halo, cyano, trifluoromethyl, (1–4C)alkyl, (14C)alkoxy, methylenedioxy, hydroxy, mercapto, $—S(O)_nR^{xa}$, (1–5C)alkanoyl, (1–5C)alkanoyloxy, nitro, $NR^{xb}R^{xc}$, $NR^{xd}R^{xe}$, $C(=NR^{xf})NR^{xg}R^{xh}$, $CONR^{xb}R^{xc}$ and $COOR^{xj}$ wherein n is the integer 0, 1, or 2; R^{xa} is (1–6C)alkyl, (3–6C)cycloalkyl or phenyl (which phenyl may bear a halo, trifluoromethyl, (1–3C)alkyl or (1–3C)alkoxy substitutent); the radical NR^{x}-$_{b}R^{xc}$ contains zero to seven carbons and each or R^{xb} and R^{xc} is independently hydrogen, (1–5C)alkyl or (3–6C)cycloalkyl, or

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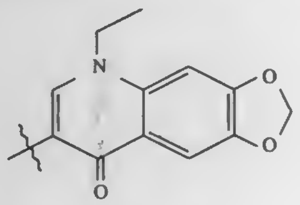
the radical $NR^{xb}R^{xc}$ is pyrrolidino, piperidino, morpholino, thiomorpholine (or its S-oxide) or piperazinyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position); and wherein R^{xd} is hydrogen or (1–4C)alkyl and R^{xc} is (1–5C)alkanoyl, benzoyl; or a group of formula $C(=J^x)NR^{xg}R^{xh}$ in which J^x is oxygen, sulfur, NR^{xf} or CHR^{xi}; R^{xf} is hydrogen, (1–5C)alkyl or together with R^{xg} forms an ethylene or trimethylene diradical, the radical $NR^{xg}R^{xh}$ contains zero to 7 carbons and each of R^{xg} and R^{xh} is independently hydrogen, (1–5C)alkyl or (3–6C)cycloalkyl, or the radical $NR^{xg}R^{xh}$ is pyrrolidino, piperidino, morpholino, thiomorpholino (or its S-oxide) or piperazinyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position); or R^{xg} together with R^{xf} forms an ethylene or trimethylene diradical and R^{xh} is hydrogen or (1–5C)alkyl; R^{xi} is cyano, nitro, (1–5C)alkylsulfonyl or phenylsulfonyl; and R^{xj} is hydrogen, (1–5C)alkyl or benzyl; and Het is a radical (or stable N-oxide thereof) attached via a ring carbon of a monocyclic aromatic ring containing five or six ring atoms consisting of carbon and one to four heteroatoms selected from oxygen, sulfur and nitrogen, or an ortho-fused bicyclic heterocycle derived therefrom by fusing a propenylene, trimethylene, tetramethylene or benz-diradical, which radical Het may be unsubstituted or may be substituted on carbon by one or more of the substituent defined above for Ar and may be substituted on nitrogen by (1–3C)alkyl;

Q^2 and Q^3 are independently hydrogen or (1–3C)alkyl;

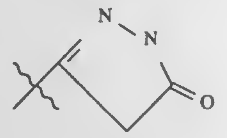
Q^4 is phenyl which may bear one or two substituents independently selected from halo, trifluoromethyl, hydroxy, (1–3C)alkoxy, (1–3C)alkyl and methylenedioxy; or Q^4 is thienyl, imidazolyl, benzo[b]thiophenyl or naphthyl any of which may bear a halo substituent; or Q^4 is biphenylyl; or Q^4 is carbon-linked indolyl which may bear a benzyl substituent at the 1-position; and

Q^5 is formyl, 4-imidazolidinyl, 3-pyrrolidinyl (wherein the nitrogen may optionally be substituted by a substituent selected from (1–3C)alkyl, acyl, and benzyloxycarbonylaminoacetyl), (3–6C)cycloalkyl, trifluoromethyl, 4-piperidino (wherein the nitrogen may optionally be substituted by a substituent selected from (1–3C)alkyl, and acyl), aryl, heteroaryl, pyrid-1-ylmethyl, fluorenyl, b-styryl, a radical of formula XII–XXII:

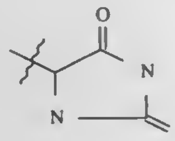
(XII)



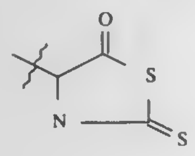
(XIII)



(XIV)



(XV)



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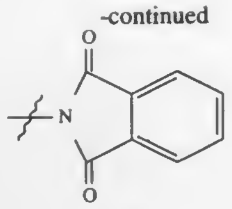
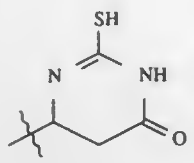
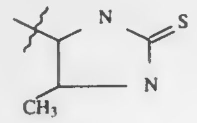
(XVI)



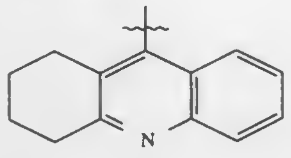
(XVII)



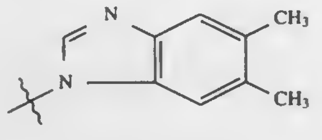
(XVIII)



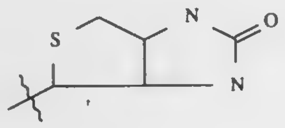
(XIX)



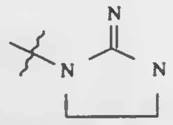
(XX)



(XXI)



(XXII)



or xanthenyl; or Q^5 is (1–8C)alkyl which may be substituted by 0–3 substituents selected from aryl, heteroaryl, (aryl)oxy, aryl(1–3C)-alkyl, heteroaryl(1–3C)alkyl, (1–6C)alkyl, (heteroaryl)oxy, benzyloxy. (3–6C)cycloalkyl, adamantyl, norbornanyl, b-styryl, cyano, trifluoromethyl, oxo, hydroxy), (1–4C)alkoxy, $—NR^aR^b$, $—NC(=O)NR^cR^d$, $—NC(=O)OR^e$, $—C(=O)OR^f$, $—S(O)R^g$, $—S(O)_2R^h$, $=NR^i$, SR^j, and the radicals of formulae XII–XXII;

R^a–R^b are independently selected from hydrogen, acyl, formyl, and (1–4C)alkyl, or the group NR^aR^b may form a cyclic group selected from pyrrolidino, piperidino, morpholino, thiomorpholino (or its S-oxide) or piperazinyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position);

R^c–R^f and R^j are independently selected from hydrogen, phenyl, benzyl, phenethyl and (14C)alkyl;

R^g and R^h are independently selected from hydrogen, phenyl, benzyl, phenethyl, b-styryl and (14C)alkyl;

R^i is hydrogen, (1–4C)alkyl, acyl or (1–4C)alkoxy;

wherein any aryl or heteroaryl in, or any aryl or heteroaryl portion of, Q^5, or any aryl or heteroaryl portion of R^a–R^j, may be unsubstituted or may bear 1–5 substituents selected from halo, cyano, trifluoromethyl, (1–4C)alkyl, (1–4C)alkoxy, methylenedioxy, phenoxy, benzyloxy, NR^kR^m, $—NS(O)_2$aryl (wherein the aryl group may be substituted by 0–3 (1–3C)alkyl groups), hydroxy, $—SR^n$, and nitro; and wherein any b-styryl may optionally be substituted at the b-position by a substituent selected from (1–3C)alkoxy;

wherein R^k–R^m are independently selected from hydrogen, acyl, formyl, and (1–4C)alkyl, or the group NR^kR^m may form a cyclic group selected from pyrrolidino, piperidino, morpholino, thiomorpholino (or its S-oxide) or piperazinyl (which piperazinyl may bear a (1–3C)alkyl substituent at the 4-position); and

R^n is hydrogen or (1–3C)alkyl;

or the N-oxide of a piperidino nitrogen in Q^1 indicated by Δ;

or a pharmaceutically acceptable salt thereof;

or a quaternary ammonium salt thereof in which the piperidino nitrogen in Q^1 indicated by Δ is a quadricovalent ammonium nitrogen wherein the fourth radical on the nitrogen R^1 is (1–4C)alkyl or benzyl and the associated counterion A is a pharmaceutically acceptable anion.

5,710,170
TRI-ARYL ETHANE DERIVATIVES AS PDE IV INHIBITORS

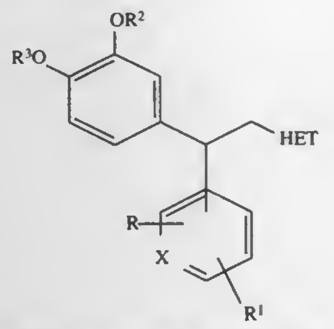
Daniel Guay, Ile Perrot; Yves Girard, Ille Bizard; Yves Ducharme, Montreal; Marc Blouin, St. Lazare; Pierre Hamel, Laval, and Mario Girard, Montreal, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Dec. 10, 1996, Ser. No. 763,566

Iot. Cl.^{6} C07D *213/30;233/64;* **A61K** *31/44;31/415*

U.S. Cl. 514—332 **9 Claims**

1. A compound of formula I



I

or a pharmaceutically acceptable salt thereof wherein:

R is selected from
  (a) hydrogen,
  (b) C_{1-6}alkyl,
  (c) halo and
  (d) CF_3;

R^1 is selected from
  $—(CH_2)_m—CO—N(R^4)—S(O)_2—R^5$, wherein m is 0, 1 or 2,
  $—(CH_2)_m—CO—N(R^4)—S(O)_2—NR^6R^7$,
  $—(CH_2)_m—S(O)_2—N(R^4)—CO—R^4$,
  $—(CH_2)_m—S(O)_2—N(R^4)—CO—NR^6R^7$,
  $—C(OH)(C_{1-6}\text{haloalkyl})_2$,

R^2 and R^3 are independently selected from
  (a) C_{1-7}alkyl,
  (b) substituted C_{1-7} alkyl, wherein the substituent is F, Cl, Br or I,
  (c) 2-phenethyl or 2-indanyl, optionally mono or di-substituted, wherein the substituents on the benzene ring are independently selected from the group consisting of
    (1) halo,
    (2) C_{1-6}alkoxy,
    (3) C_{1-6}alkylthio,
    (4) CN,
    (5) CF_3,
    (6) C_{1-6}alkyl,
    (7) N_3,
    (8) $—CO_2H$,
  (d) C_{3-6} cycloalkyl,

R^4 is selected from
  (a) hydrogen,
  (b) C_{1-6}alkyl,
  (c) phenyl, benzyl or 2-phenethyl, optionally mono or di-substituted, wherein the substituents on the benzene ring are independently selected from the group consisting of
    (1) halo,
    (2) C_{1-6}alkoxy,
    (3) C_{1-6}alkylthio,
    (4) CN,
    (5) CF_3,
    (6) C_{1-6}alkyl,
    (7) N_3,
    (8) $—CO_2H$,

R^5, R^8 and R^{11} are each independently selected from
  (a) $—CF_3$,
  (b) C_{1-6}alkyl,
  (c) phenyl, benzyl or 2-phenethyl, optionally mono or di-substituted, wherein the substituents on the benzene ring are independently selected from the group consisting of
    (1) halo,
    (2) C_{1-6}alkoxy,
    (3) C_{1-6}alkylthio,
    (4) CN,
    (5) CF_3,
    (6) C_{1-6}alkyl,
    (7) N_3,
    (8) $—CO_2H$,

R^6, R^7, R^9 and R^{10} are each independently selected from
  (a) hydrogen, and
  (b) C_{1-6}alkyl, or

R^6 and R^7 may be joined to form a saturated 5, 6 or 7 membered heterocycle, said heterocycle containing a heteroatom which is nitrogen and optionally containing an additional hetero atom which is an O or an S atom or NR^4 , and optionally containing a carbonyl group;

HET is selected from

pyridyl and imidazolyl, optionally mono-, or disubstituted, wherein the substituents are independently selected from halo, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6} alkylthio, benzyl, 2-phenethyl, $NHCOR^8$, NR^9R^{10}, $NHS(O)_2R^{11}$, OH, CN, or CF_3, and the N-oxides thereof; and

X is selected from N, N→O or CH.

5,710,171
BISPHENYL INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

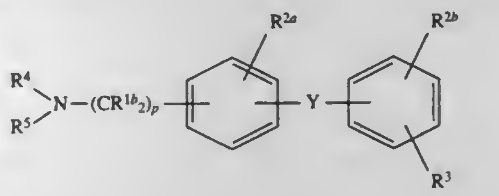
Christopher J. Dinsmore, North Wales; Suzanne C. MacTough, Chalfont; Gerald E. Stokker, Gwynedd Valley, and Theresa M. Williams, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 449,038, May 24, 1995, abandoned. This application May 15, 1996, Ser. No. 648,330

Int. Cl.^{6} A61K *31/415;* **C07D** *403/02;233/56;233/61;233/60;233/54*

U.S. Cl. 514—396 **26 Claims**

1. A compound which inhibits farnesyl-protein transferase having the Formula I:



I

wherein:
  R^{1a} and R^{1b} are independently selected from:
    a) hydrogen,
    b) unsubstituted or substituted aryl, unsubstituted or substituted heterocycle, unsubstituted or substituted C_3–C_6 cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^8O—$, $R^9S(O)_m—$, $R^8C(O)NR^8—$, CN, NO_2, $(R^8)_2N—C(NR^8)—$, $R^8C(O)—$, $R^8OC(O)—$, N_3, $—N(R^8)_2$, or $R^9OC(O)NR^8—$,
    c) C_1–C_6 alkyl unsubstituted or substituted by unsubstituted or substituted aryl, unsubstituted or substituted heterocyclic, unsubstituted or substituted C_3–C_6 cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^8O—$, $R^9S(O)_m—$,

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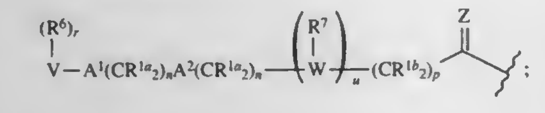
$R^8C(O)NR^8$—, CN, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, or $R^9OC(O)$—NR^8—;

R^{2a}, R^{2b} and R^3 are independently selected from:
- a) hydrogen,
- b) C_1–C_6 alkyl unsubstituted or substituted by C_2–C_6 alkenyl, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, N_3, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, —$N(R^8)_2$, or $R^9OC(O)NR^8$—,
- c) unsubstituted or substituted aryl, unsubstituted or substituted heterocycle, unsubstituted or substituted cycloalkyl, alkenyl, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, NO_2, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, halogen or $R^9OC(O)NR^8$—, and
- d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocyclic and C_3–C_{10} cycloalkyl;

provided that heterocycle is not tetrazolyl;

R^4 and R^5 are independently selected from:
- a) hydrogen, and



$$V-A^1(CR^{1a}_2)_nA^2(CR^{1a}_2)_n-\left(\overset{\overset{\textstyle R^7}{|}}{W}\right)_u-(CR^{1b}_2)_p-\overset{\overset{\textstyle Z}{\|}}{C}-\quad (R^6)_r \text{ on } V;$$

R^6 is independently selected from:
- a) hydrogen,
- b) unsubstituted or substituted aryl, unsubstituted or substituted heterocycle, unsubstituted or substituted C_3–C_6 cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perfluoroalkyl, F, Cl, Br, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, NO_2, $R^8{}_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, or $R^9OC(O)NR^8$—, and
- c) C_1–C_6 alkyl unsubstituted or substituted by unsubstituted or substituted aryl, unsubstituted or substituted heterocycle, unsubstituted or substituted C_3–C_6 cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perfluoroalkyl, F, Cl, Br, R^8O—, $R^9S(O)_m$—, $R^8C(O)NH$—, CN, H_2N—$C(NH)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, or $R^8OC(O)NH$—;

R^7 is selected from:
- a) hydrogen,
- b) C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perfluoroalkyl, F, Cl, Br, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, NO_2, $(R^8)_2N$—C—(NR^8)—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, or $R^9OC(O)NR^8$—, and
- c) C_1–C_6 alkyl unsubstituted or substituted by C_1–C_6 perfluoroalkyl, F, Cl, Br, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, or $R^9OC(O)NR^8$—;

R^8 is independently selected from hydrogen, C_1–C_6 alkyl, substituted or unsubstituted C_1–C_6 aralkyl and substituted or unsubstituted aryl;

R^9 is independently selected from C_1–C_6 alkyl and aryl;

R^{10} is independently selected from hydrogen, C_1–C_6 alkyl, substituted or unsubstituted C_1–C_6 aralkyl and substituted or unsubstituted aryl;

A^1 and A^2 are independently selected from: a bond, —CH═CH—, —C≡C—, —C(O)—, —$C(O)NR^8$—, —$NR^8C(O)$—, O, —$N(R^8)$—, —$S(O)_2N(R^8)$—, —$N(R^8)S(O)_2$—, or $S(O)_m$;

V is selected from:
- a) hydrogen,
- b) heterocycle,
- c) aryl,
- d) C_1–C_{20} alkyl wherein from 0 to 4 carbon atoms are replaced with a a heteroatom selected from O, S, and N, and
- e) C_2–C_{20} alkenyl,

provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$;

W is a heterocycle, provided that if W is imidazolyl, the point of attachment of the imidazolyl moiety to $(CR_2{}^{1b})_p$ is selected from the group consisting of 4 or 5 position carbon of the imidazolyl moiety;

Y is selected from: a bond, —$C(R^{10})$═$C(R^{10})$—, —C≡C—, —C(O)—, —$C(R^{10})_2$—, —$C(OR^{10})R^{10}$—, —$CN(R^{10})_2R^{10}$—, —$OC(R^{10})_2$—, —$NR^{10}C(R^{10})_2$—, —$C(R^{10})_2O$—, —$C(R^{10})_2NR^{10}$—, —$C(O)NR^{10}$—, —$NR^{10}C(O)$, O, —$NC(O)R^{10}$—, —$NC(O)OR^{10}$—, —$S(O)_2N(R^{10})$—, —$N(R^{10})S(O)_2$—, or $S(O)_m$;

Z is H_2 or O;

m is 0, 1 or 2;

n is 0, 1, 2, 3 or 4;

p is 0, 1, 2, 3 or 4;

r is 0 to 5, provided that r is 0 when V is hydrogen; and

u is 0 or 1;

or a pharmaceutically acceptable salt thereof.

5,710,172

HISTIDINE AS A PROTECTIVE AGENT IN CARDIAC SURGERY AND MYOCARDIAL ISCHEMIC SYNDROMES

Rakesh C. Kukreja, Richmond, and Michael L. Hess, Midlothian, both of Va., assignors to CYTOS Pharmaceuticals, LLC, Durham, N.C.

Continuation of Ser. No. 182,225, Jan. 14, 1997, abandoned, which is a continuation of Ser. No. 851,203, Mar. 13, 1992, Pat. No. 5,280,038. This application Jun. 7, 1995, Ser. No. 478,109

Int. Cl.^{6} A61K *31/415*

U.S. Cl. 514—400 **3 Claims**

1. A method for protecting a patient from arrhythmia, comprising the steps of:
- a) locating a blockage in arteries of a patient in need of protection from arrhythmia, said blockage caused by a thrombus and attributed to coronary thrombosis;
- b) administering a composition consisting essentially of a therapeutic dose of histidine to said patient to produce an increased histidine concentration in blood of said patient effective to reduce occurrences of ventricular tachycardia and ventricular fibrillation arrhythmias; and
- c) removing the blockage by dissolving or breaking apart the thrombus.

5,710,173

THIENYL COMPOUNDS FOR INHIBITION OF CELL PROLIFERATIVE DISORDERS

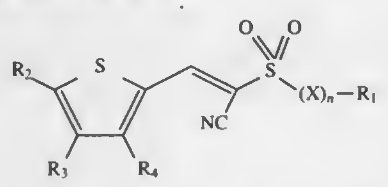
Peng Cho Tang, Moraga; Asaad S. Nematalla, Walnut Creek, and Gerald McMahon, Kenwood, all of Calif., assignors to Sugen, Inc., Redwood City, Calif.

Filed Jun. 7, 1995, Ser. No. 487,089

Int. Cl.^{6} A61K *31/38;31/44;* **C07D** *333/42;409/12*

U.S. Cl. 514—447 **24 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein:

X is selected from the group consisting of oxygen, CH_2, NH, substituted alkene, and CH_2CN,

n is selected from the group consisting of 0, 1, 2, and 4,

R_1 is an aryl or heteroaryl 5 or 6 membered ring optionally substituted with one or more member of the group consisting of hydroxy, halo, alkoxy, trihalomethyl, nitro, carboxy, amide, sulfonyl, and sulfonamide; and

R_2, R_3, and R_4 are independently selected from the group consisting of hydroxy, halo, alkoxy, trihalomethyl, nitro, carboxy, amide, sulfonyl, and sulfonamide.

5,710,174

FACTOR XIIIA INHIBITOR

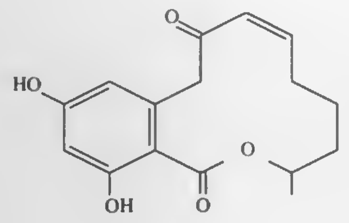
Robert R. West, Seattle; Teresa Martinez, Oak Harbor; Hank R. Franklin, Seattle; Paul D. Bishop, Fall City, all of Wash., and Birgitte Rømer Rassing, Copenhagen, Denmark, assignors to Zymo Genetics, Inc., Seattle, Wash., and Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jun. 7, 1995, Ser. No. 483,213

Int. Cl.^{6} A61K *31/335*

U.S. Cl. 514—450 **9 Claims**

1. A pharmaceutical composition comprising a compound having the structure:



a buffer, and a pharmaceutically acceptable vehicle.

5,710,175

GROWTH STIMULATING FACTORS

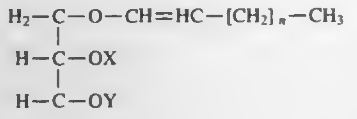
Edward Nudelman, Seattle, and Sen-Itiroh Hakomori, Mercer Island, both of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Continuation of Ser. No. 285,153, Aug. 3, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 627,623

Int. Cl.^{6} A01N *37/02;37/06;* **A61K** *31/72*

U.S. Cl. 514—547 **10 Claims**

1. A method for augmenting new blood vessel formation in a patient in need of augmenting healing tissue injury, comprising administering an effective amount of an alk-1-enyl glycerol derivative having the formula:



$$\begin{array}{l} H_2-C-O-CH=HC-[CH_2]_n-CH_3 \\ \quad\;\; | \\ H-C-OX \\ \quad\;\; | \\ H-C-OY \end{array}$$

wherein n is 0–23 and X and Y each is H or an acyl group having from 2 to 26 carbon atoms.

5,710,176

RETINOYLOXY (SUBSTITUTED) METHYL BUTYRATES USEFUL FOR THE TREATMENT OF CANCER AND OTHER PROLIFERATIVE DISEASES

Ada Rephaeli, Palo Alto, Calif., and Abraham Nudelman, Rehovot, Israel, assignors to Bar-Ilan University, and Kupat Holim Health Insurance Institution of the General Federation of Labor, both of Israel

Filed Sep. 16, 1994, Ser. No. 306,422

Int. Cl.^{6} C07C *403/10;* **A61K** *31/225;* **G01N** *33/48*

U.S. Cl. 514—548 **4 Claims**

1. A compound which is trans-retinoyloxymethyl butyrate.

5,710,177

SYNERGISTIC COMBINATIONS OF ACTIVE SUBSTANCE FOR THE COSMETIC OR DERMATOLOGICAL CARE OF THE SKIN, HAIR & NAILS

Gerhard Sauermann, Wiemersdorf; Uwe Schönrock, Norderstedt; Volker Schreiner, Hamburg, and Franz Stäb, Echem, all of Germany, assignors to Beiersdorf AG, Hamburg, Germany

PCT No. PCT/DE93/01166, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/14412, PCT Pub. Date Jul. 7, 1994

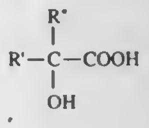
PCT Filed Dec. 7, 1993, Ser. No. 448,620

Claims priority, application Germany, Dec. 18, 1992, 42 42 876.9

Int. Cl.^{6} A61K *31/19;31/415*

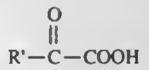
U.S. Cl. 514—557 **16 Clalms**

1. Cosmetic and/or dermatologically active compound combinations comprising
- a) an active amount of biotin and/or biotin esters,
- b) an active amount of one or more α-hydroxycarboxylic acids of the general formula



$$R'-\overset{\overset{\textstyle R''}{|}}{\underset{\underset{\textstyle OH}{|}}{C}}-COOH$$

and/or an active amount of one or more α-keto-carboxylic acids of the general formula



$$R'-\overset{\overset{\textstyle O}{\|}}{C}-COOH$$

wherein R' and R" independently of one another are chosen from the group consisting of
- (b1) H—,
- (b2) branched or unbranched C_{1-25}-alkyl-,
- (b3) branched or unbranched C_{1-25}-alkyl- which is substituted by one or more carboxyl groups and/or hydroxyl groups and/or aldehyde groups and/or oxo groups (keto groups),
- (b4) phenyl- and
- (b5) phenyl- which is substituted by one or more carboxyl groups and/or hydroxyl groups and/or branched and/or unbranched C_{1-25}-alkyl groups, or wherein the α-carbon atom of the α-hydroxycarboxylic acid, together with R' and R", forms a
- (b6) unsubstituted cycloalkyl group having 3 to 7 ring atoms or a
- (b7) cycloalkyl group having 3 to 7 ring atoms which is substituted by one or more carboxyl groups and/or hydroxyl groups and/or oxo groups (keto groups) and/or branched and/or unbranched C_{1-25}-alkyl groups,

and
- where the α-hydroxycarboxylic acid or the α-hydroxycarboxylic acids or the α-keto-carboxylic acid or the α-keto-carboxylic acids can optionally be present in the form of their physiologically tolerated salts and/or ethyl esters and/or methyl esters,

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and

c) an active amount of one or more antioxidants.

5,710,178
COMPOSITIONS AND METHODS FOR THERAPY AND PREVENTION OF PATHOLOGIES INCLUDING CANCER, AIDS, AND ANEMIA

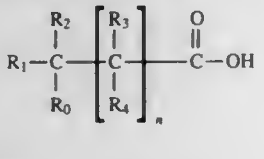
Dvorit Samid, Charlottesville, Va., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 135,661, Oct. 12, 1993, which is a continuation-in-part of Ser. No. 779,744, Oct. 21, 1991. This application Jun. 6, 1995, Ser. No. 469,691

Int. Cl.^{6} A01N *37/00;* **A61K** *31/19*

U.S. Cl. 514—557 **63 Claims**

1. A pharmaceutical composition for treating or preventing a neoplastic condition, inducing the differentiation of a cell, inducing the production of fetal hemoglobin, treating a pathology associated with abnormal hemoglobin activity, treating a viral infection, preventing a viral infection, inhibiting the production of IL-6 in a cell, inducing the production of TGFα, inhibiting the production of TGF-β2, treating an AIDS-associated dysfunction of the central nervous system, enhancing immunosurveillance, monitoring the bioavailability of the composition, promoting the healing of a wound, or treating a neoplastic condition in a subject resistant to radiation and chemotherapy, comprising a pharmaceutically-acceptable carrier and a pharmaceutically-effective amount of a compound of the formula:



$$R_1-\overset{R_2}{\underset{R_0}{C}}-\left[\overset{R_3}{\underset{R_4}{C}}\right]_n-\overset{O}{\overset{\|}{C}}-OH$$

wherein

n is an integer of from 1 to 2;

R_0 is aryl or phenoxy, the aryl and phenoxy being unsubstituted or substituted with, independently, one or more halogen, hydroxy or lower alkyl;

R_1 and R_2 are independently H, lower alkoxy, hydroxy, lower alkyl or halogen; and

R_3 and R_4 are independently H, lower alkyl, lower alkoxy or halogen;

except that if n is 2 and R_1, R_2, R_3, and R_4 are H, R_0 cannot be unsubstituted phenyl;

a pharmaceutically-acceptable salt thereof; or a mixture thereof.

5,710,179
ANTITUMOR AGENT

Shigeyuki Arai; Yasushi Nishizaki; Tetsuo Kimoto, and Masashi Kurimoto, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Jul. 3, 1996, Ser. No. 675,059

Claims priority, application Japan, Apr. 5, 1995, 7-191015

Int. Cl.^{6} A61K *31/19*

U.S. Cl. 514—568 **3 Claims**

1. A method for treating human malignant tumors, which comprises administering to a patient in need thereof an effective amount of an antitumor agent comprising a pharmaceutically-acceptable carrier and as an effective ingredient at least one member selected from the group consisting of sodium, potassium, calcium, magnesium and ammonium salts of 3-[4-hydroxy-3,5-bis(3-methyl-2-butenyl)phenyl]-2-propenoic acid, said human malignant tumors being colon cancer, rectum cancer, gastric cancer, thyroid gland cancer, lingual cancer, bladder cancer, choriocarcinoma, cancer of liver, uterine cancer, prostatic cancer, pharyngeal cancer, lung cancer, breast cancer, malignant melanoma, Kaposi sarcoma, brain tumor, neuroblastoma, ovarian tumor, testicular tumor, osteosarcoma, pancreatic cancer, renal carcinoma, hypernephroma, angioendothelioma, leukemia and lymphoma.

5,710,180
PHENETHYLAMINE COMPOUNDS

Siegfried Christensen, IV, Philadelphia, and Cornelia Jutta Forster, Bensalem, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US94/09308, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO95/05386, PCT Pub. Date Feb. 23, 1995

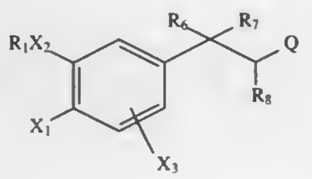
PCT Filed Aug. 19, 1994, Ser. No. 596,197

Int. Cl.^{6} A61K *31/16;* **C07C** *233/18*

U.S. Cl. 514—630 **3 Claims**

1. A compound of formula I

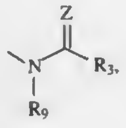
I



or a salt thereof,

where Q is a radical of formula

(B)



R_1 is C_{7-11} polycycloalkyl, C_{3-6} cycloalkyl wherein the cycloalkyl moieties are unsubstituted or substituted by 1 to 3 methyl groups or one ethyl group;

R_2 is $—CH_3$ or $—CH_2CH_3$ unsubstituted or substituted by 1 or more halogens:

R_3 is lower alkyl unsubstituted or substituted by one or more halogens, $—CR_4R_5OR_4$ or $—CR_4(OR_4)CR_4R_5OR_4$;

R_4 and R_5 are independently hydrogen, methyl or ethyl;

R_6 is hydrogen, halogen, $—C_{1-4}$ alkyl, halo-substituted C_{1-4} alkyl, $—CH{=}CR_4R_5$, cyclopropyl unsubstituted or substituted by R_4, or $—C{\equiv}CR_4$;

R_7 is hydrogen, F, or $—CH_3$ unsubstituted or substituted by 1 to 3 fluoro groups;

R_8 is H, F, or C_{1-2} alkyl optionally substituted by 1 or more fluoro groups;

R_9 is H or unsubstituted or substituted C_{1-6} alkyl, wherein optional substituents are from one to three groups independently selected from the group consisting of $—CH_3$ or $—CH_2CH_3$ unsubstituted or substituted by 1 or more halogens;

X_1 is YR_2,

X_2 is O;

X_3 is hydrogen, halogen or X_1;

Y is O, S, SO or SO_2;

Z is O.

5,710,181
INHIBITION OF NITRIC OXIDE FORMATION IN INFLAMMATORY BOWEL DISEASE

Joseph R. Williamson; John A. Corbett, both of St. Louis; Michael L. McDaniel, Glendale, all of Mo., and Ronald G. Tilton, Sugarland, Tex., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 328,925, Oct. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 110,915, Aug. 24, 1993, Pat. No. 5,358,969, which is a continuation-in-part of Ser. No. 843,387, Feb. 28, 1992, Pat. No. 5,246,971, and a continuation-in-part of Ser. No. 906,632, Jun. 30, 1992, Pat. No. 5,246,970, which is a continuation-in-part of Ser. No. 807,912, Dec. 16, 1991, abandoned. This application Mar. 25, 1996, Ser. No. 620,833

Int. Cl.^{6} A61K *31/155*

U.S. Cl. 514—634 **9 Claims**

1. A method of inhibiting nitric oxide production in a warm blooded mammal afflicted with inflammatory bowel disease, said method comprising administering a nitric oxide inhibitory effective amount of aminoguanidine.

5,710,182
OPHTHALMIC COMPOSITION

Timo Reunamäki; Kari Lehmussaari; Elja Vartiainen; Olli Oksala, all of Tampere, and Sakari Alaranta, Kangasala, all of Finland, assignors to Santen Oy, Tampere, Finland

PCT No. PCT/FI95/00166, § 371 Date Apr. 2, 1996, § 102(e) Date Apr. 2, 1996, PCT Pub. No. WO95/26711, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 29, 1995, Ser. No. 535,037

Claims priority, application Sweden, Mar. 31, 1994, 9401108

Int. Cl.^{6} A61K *47/00*

U.S. Cl. 514—772.3 **12 Claims**

1. Ophthalmic composition in the form of a topical aqueous solution consisting essentially of

an opthalmologically active agent,

an ion sensitive, hydrophilic polymer in an amount of 0.004 to 1.5% by weight,

at least one salt selected from the group of inorganic salts and buffers in a total amount of from 0.01 to 2.0% by weight,

a wetting agent in an amount of 0 to 3.0% by weight,

a preservative in an mount of 0 to 0.02% by weight,

water, and

where the composition has a pH outside the range of 4.0 to 8.0, a pH regulating agent in an amount sufficient to give a pH of about 4.0 to about 8.0 to the composition, the ratio between salt and polymer being such that the solution exhibits a viscosity of less than 1000 centipoise.

5,710,183
LAXATIVE/ANTIDIARRHEAL COMPOSITION COMPRISING POLYETHYLENE GLYCOL AND FIBER BULKING AGENT

George M. Halow, 4003 Santa Anna, El Paso, Tex. 79902

Filed Jul. 14, 1995, Ser. No. 502,773

Int. Cl.^{6} A61K *9/16*

U.S. Cl. 514—892 **33 Claims**

1. A composition for the improvement of bowel function comprising polyethylene glycol and a fiber bulking agent, wherein the polyethylene glycol is present in a weight ratio of polyethylene glycol to fiber of at least about 1:2 and no more than about 7:1.

33. A method for improving bowel function in a mammal, comprising orally administering polyethylene glycol to the mammal, in an amount sufficient to improve bowel motility, stool formation, or both.

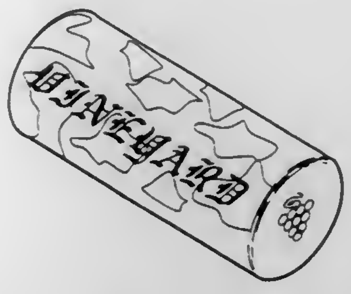
5,710,184
MOLDED STYRENE BLOCK COPOLYMER CLOSURE FOR A LIQUID CONTAINER

Dennis L. Burns, Kent, Wash., assignor to Supreme Corq, Kent, Wash.

Continuation of Ser. No. 671,807, Jun. 25, 1996, which is a continuation of Ser. No. 514,774, Aug. 14, 1995, abandoned, which is a continuation of Ser. No. 238,170, May 4, 1994, Pat. No. 5,480,915, which is a continuation-in-part of Ser. No. 58,914, May 5, 1993, Pat. No. 5,496,862. This application Feb. 27, 1997, Ser. No. 807,639

Int. Cl.^{6} C08J *9/00*

U.S. Cl. 521—50 **22 Claims**



1. A molded closure suitable for insertion into a liquid container comprising:

(a) a thermoplastic elastomer comprising a styrene block copolymer, and

(b) a blowing agent,

wherein, upon insertion of said molded closure into a container containing wine, said molded closure does not permit substantial passage of oxygen into the container, does not substantially absorb oxygen from the wine, does not substantially taint the wine, permits said container to be placed horizontally substantially immediately after insertion of said molded closure into said container, and can permanently retain printed matter on a surface of said molded closure.

5,710,185
PRODUCTION OF MOLDING CONTAINING ESTER AND URETHANE GROUPS, ISOCYANATE SEMIPREPOLYMERS CONTAINING ESTER GROUPS FOR THIS PURPOSE AND THEIR USE

Otto Volkert, Weisenheim; Peter Brandt, Ludwigshafen, and Harald Fuchs, Kübbach, all of Germany, assignors to BASF Aktiengesellschaft, Germany

Division of Ser. No. 653,527, May 24, 1996, Pat. No. 5,585,409. This application Aug. 29, 1996, Ser. No. 705,277

Claims priority, application Germany, May 26, 1995, 195 19 335.0

Int. Cl.^{6} C08J *9/34;* **C08G** *18/10;18/34*

U.S. Cl. 521—51 **5 Claims**

1. An isocyanate semiprepolymer which is liquid at room temperature, contains ester groups and has an isocyanate content of from 10 to 26% by weight, prepared by reacting

ai) diphenylmethane 4,4'-diisocyanate or mixtures of diphenylmethane 4,4'-diisocyanate and modified or unmodified diphenylmethane diisocyanate isomers with

aii) at least one polyester polyol having a functionality of from 2 to 3 and a molecular weight of from 600 to 3000 and

aiii) at least one dihydroxy compound containing at least one bonded ester unit as bridge and bonded lateral alkyl groups and having a molecular weight of up to 500.

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5,710,186

FOAMS CONTAINING TREATED TITANIUM DIOXIDE AND PROCESSES FOR MAKING

Bharat I. Chaudhary, Westerville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 656,653, May 31, 1996. This application Oct. 23, 1996, Ser. No. 736,024

Int. Cl.^{6} C08J *9/18;* **C08G** *18/00*

U.S. Cl. 521—60 **24 Claims**

1. A process for making an extruded thermoplastic polymer foam, comprising:

a) heating a thermoplastic polymer material to form a melt polymer material;
b) incorporating into the melt polymer material about 1 to about 20 weight percent of titanium dioxide particulates based upon the weight of the polymer wherein the particulates have a wetting agent applied to a substantial portion of their surfaces;
c) further incorporating into the melt polymer material at an elevated pressure a blowing agent to form a foamable gel;
d) cooling the foamable gel to an optimum foaming temperature; and
e) extruding the foamable gel through a die to a region of lower pressure to form the foam.

5,710,187

HIGHLY CROSS-LINKED NANOPOROUS POLYMERS

Warren P. Steckle, Jr.; Paul G. Apen, and Michael A. Mitchell, all of Los Alamos, N. Mex., assignors to The Regents of the University of California, Los Alamos, N. Mex.

Division of Ser. No. 447,139, May 22, 1995. This application Nov. 29, 1995, Ser. No. 564,891

Int. Cl.^{6} C08J *9/08*

U.S. Cl. 521—64 **7 Claims**

1. A cross-linked nanoporous polymer prepared by a process comprising:

(a) combining under polymerization conditions at least one aromatic monomer and a cross-linking agent chosen from the group of multifunctional acyl halides and benzylic halides;
(b) allowing polymerization to occur until a copolymer gel is formed;
(c) removing catalysts and unreacted monomers from said copolymer gel;
(d) adding liquid carbon dioxide to said copolymer gel; and
(e) removing said liquid carbon dioxide under supercritical conditions.

5,710,188

PVC FOAM COMPOSITIONS

George F. Beekman, Westchester, and Lionel R. Price, Cincinnati, both of Ohio, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 19, 1997, Ser. No. 820,192

Int. Cl.^{6} C08J *9/00*

U.S. Cl. 521—89 **8 Claims**

1. A method for foaming a vinyl chloride polymer comprising heating a mixture comprising the polymer, a blowing agent, an an organotin halide having the formula:

$$R_{(4-x)}SnX_x \qquad I$$

wherein R is an alkyl radical having from 1 to 18 carbon atoms, and X is halogen of atomic weight 35 to 127, and x is from 1 to 3; and

at least one stabilizer selected from the group consisting of:

(A) an organotin mercaptide of a mercaptocarboxylic acid ester having the formula:

$$R^1_{(4-y)}Sn[SZ(COOR^2)_m]_y \qquad II$$

wherein R^1 is an alkyl or cycloalkyl group having from 1 to 30 carbon atoms, Z is a alkylene radical group derived from an alcohol having from 1 to 4 hydroxyl groups and from 1 to 30 carbon atoms, m is an integer from 1 to 4, and y is any number from 1 to 3; with the proviso that when y is less than 3, the R^1 groups may be the same or different, and when m is more than 1, the R^2 groups may be the same or different, and

(B) a sulfide of an organotin mercaptide of Formula II.

5,710,189

BLOWING AGENT COMPOSITION AND A METHOD FOR MAKING A BLOWING AGENT

M. Karl Braadt, 680 Wise Ferry Rd., Lexington, S.C. 29072

Continuation-in-part of Ser. No. 488,746, Jun. 8, 1995. This application Dec. 18, 1996, Ser. No. 769,458

Int. Cl.^{6} C08J *9/00*

U.S. Cl. 521—91 **8 Claims**

1. A method for preparing a foamed resin composition, said method comprising the steps of:

mixing a blowing agent compound with a resin to form a first mixture, said blowing agent compound comprising a first molecular trap, a second molecular trap and a foaming material, said foaming material being carried by a preselected quantity of said second molecular trap, wherein said first molecular trap is a type 3A molecular trap and wherein said second molecular trap has a pore size greater than 3A, said first mixture having a temperature and a pressure; and

changing said temperature and said pressure of said first mixture until said temperature and said pressure are within a preselected range so that said foaming material evolves from said second molecular trap into said polymer to form said composition.

5,710,190

SOY PROTEIN-BASED THERMOPLASTIC COMPOSITION FOR FOAMED ARTICLES

Jay-lin Jane, and Su She Zhang, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 7, 1995, Ser. No. 487,047

Int. Cl.^{6} C08J *9/06;9/08;9/10;* **C08K** *5/24*

U.S. Cl. 521—102 **18 Claims**

1. A biodegradable, soy protein-based thermoplastic composition, comprising the reaction mixture of:

(a) about 50–100 parts by weight soy protein;
(b) about 0.1–10 parts by weight of a sulfonylhydrazide foaming agent;
(c) about 5–60 parts by weight organic plasticizing agent; and
(d) about 5–20 parts by weight water;

the composition being a moldable, biodegradable thermoplastic composition having a foamed, cellular structure when molded into an article.

5,710,191

HYDROXYMETHYL QUINUCLIDINE CATALYST COMPOSITIONS FOR MAKING POLYURETHANE FOAMS

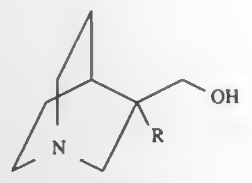
Mark Leo Listemann, Whitehall; Kristen Elaine Minnich, Allentown; Brian Eugene Farrell, Fogelsville; Lisa Ann Mercando, Pennsburg; Michael John Kimock, Kutztown, and James Dudley Nichols, Fogelsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 463,154, Jun. 5, 1995, abandoned. This application May 21, 1996, Ser. No. 647,159

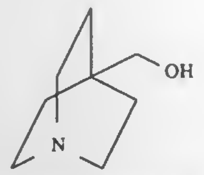
Int. Cl.^{6} C08G *18/20;* **C08J** *9/04;* **C07D** *251/34;* **C07C** *269/02*

U.S. Cl. 521—118 **16 Claims**

1. In a method for catalyzing the trimerization of an isocyanate and/or its reaction with an active hydrogen-containing compound, the improvement which comprises using as a catalyst at least one compound of formulas IA and IB:



IA



IB

where R is hydrogen, methyl or hydroxymethyl.

5,710,192

POLYDIENE DIOLS IN RESILIENT POLYURETHANE FOAMS

Hector Hernandez, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 2, 1996, Ser. No. 724,940

Int. Cl.^{6} C08G *18/04*

U.S. Cl. 521—155 **20 Claims**

1. A polyurethane foam, produced by a process comprising the steps of:

combining a polydiene diol having a number average molecular weight from 1,000 to 20,000, wherein between 30% and 70% of the polydiene diol forming monomers add by 1,4-addition, and a functionality of from 1.6 to 2 hydroxyl groups per molecule with an aromatic polyisocyanate having a functionality of from 1.8 to 2.5 isocyanate groups per molecule; and

foaming the combined polydiene diol and aromatic polyisocyanate to form a resilient polyurethane foam.

5,710,193

PHOTOPOLYMERISABLE COMPONENTS OF RADIATION SENSITIVE COMPOSITIONS

John Robert Wade, Leeds; Michael John Pratt, Ilkley, and Jianrong Ren, Leeds, all of United Kingdom, assignors to DuPont (UK) Limited, Stevenage, United Kingdom

Continuation of Ser. No. 6,549, Jan. 21, 1993, abandoned.

This application May 21, 1996, Ser. No. 646,808

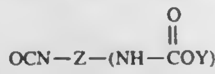
Claims priority, application United Kingdom, Jan. 21, 1992, 9201269

Int. Cl.^{6} C08F *2/50;* **C08G** *18/10;18/71;18/40*

U.S. Cl. 522—35 **8 Claims**

1. A process for producing a polyunsaturated compound which comprises

(a) forming a mono isocyanate compound having the formula



$$OCN-Z-(NH-\overset{\overset{O}{\|}}{C}OY)_n$$

by reacting a compound YOH with a polyisocyanate OCN—Z—$(NCO)_n$ where n is 1 or 2; Z represents the residue of a polyisocyanate OCN—Z—$(NCO)_n$, and Y is the residue of a monohydroxyl compound of the formula YOH where Y contains at least two ethylenically unsaturated double bonds in a reaction medium in which said compound YOH and said polyisocyanate are miscible and said mono isocyanate compound is immiscible;

(b) recovering said mono isocyanate compound from said reaction medium, and reacting a compound of the formula ©-$(XH)_r$ with said mono isocyanate compound wherein © represents the residue of an active hydrogen containing compound of the formula ©-$(XH)_r$ where XH is a hydroxyl group, a mercapto group or a primary or secondary amino group; and

r is an integer ranging from 1 to 10 for a simple molecule and from 1 to 10,000 for a polymeric macromolecule.

5,710,194

DENTAL COMPOUNDS, COMPOSITIONS, PRODUCTS AND METHODS

Paul D. Hammesfahr, Wyoming; Kewang Lu, Dover, and Paul A. Silver, Wilmington, all of Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Continuation-in-part of Ser. No. 259,833, Jun. 15, 1994, which is a continuation-in-part of Ser. No. 49,221, Apr. 19, 1993, Pat. No. 5,338,773. This application Feb. 15, 1996, Ser. No. 603,957

Int. Cl.^{6} A61K *6/08;* **C07C** *322/00*

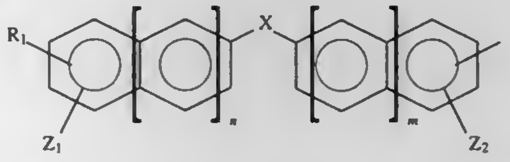
U.S. Cl. 523—116 **23 Claims**

1. A polymerizable dental composition, comprising:

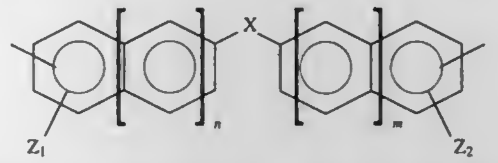
at least one compound within the scope of the general formula:

$$[R'\}\!-\!\{R_1''-R_1'\}_{q_1}\!-\!\{R''-R'\}_q\!-\!\{R_1]_{q_2}$$

wherein each R' indepently is within the scope of the general formula:

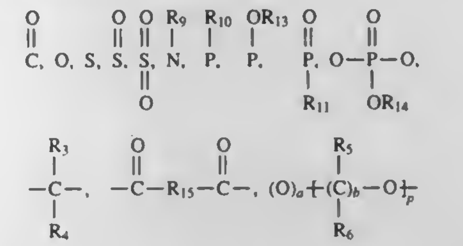


each R_1' independently is within the scope of the general formula:



each R_1'' and R" independently is a divalent hydrocarbon group selected from the group consisting of alkylene having from 4 to 40 carbon atoms, aryl containing alkylene having from 6 to 40 carbon atoms, ether containing alkylene having from 2 to 40 carbons, alkyl aryl containing alkylene having from 7 to 40 carbon atoms and alkyl containing alkylenes having from 2 to 40 carbon atoms,

each X independently is



$$\overset{\overset{O}{\|}}{C},\ O,\ S,\ \overset{\overset{O}{\|}}{S},\ \underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}},\ \overset{\overset{R_9}{|}}{N},\ \overset{\overset{R_{10}}{|}}{P},\ \overset{\overset{OR_{13}}{|}}{P},\ \underset{\underset{R_{11}}{|}}{\overset{\overset{O}{\|}}{P}},\ O-\underset{\underset{OR_{14}}{|}}{\overset{\overset{O}{\|}}{P}}-O,$$

$$-\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{C}}-,\ -\overset{\overset{O}{\|}}{C}-R_{15}-\overset{\overset{O}{\|}}{C}-,\ (O)_a\{(\underset{\underset{R_6}{|}}{\overset{\overset{R_5}{|}}{C}})_b-O\}_p$$

or omitted whereby the adjacent rings are directly covalently bonded together,

each R_1 independently is a polymerizable unsaturated moiety having from 2 to 30 carbon atoms,

R_3, R_4, R_5, and R_6 each independently is hydrogen, halogen, alkyl having from 1 to 10 carbon atoms or halogenated alkyl of from 1 to 10 carbon atoms,

R_9, R_{10}, R_{11}, R_{12}, R_{13} and R_{14} each independently is hydrogen, alkyl having from 1 to 10 carbon atoms or aryl having from 6 to 10 carbon atoms,

R_{15} is alkylene diol, alkylene diamine, substituted alkylene diol or substituted alkylene diamine,

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- Z_1 and Z_2 each independently is a moiety including an acid group,
- a, m and n each independently is 0 or 1,
- b, and p independently is an integer from 1 to 10, q is zero or 1, q_1 is zero, 1 or 2, q_2 is zero or 1,
- when q is zero; q_2 is 1; and when q is 1 q_2 is zero, an effective amount of a polymerization initiator, and at least 10 percent by weight of ceramic, metal and/or

metal oxide filler particles having a particle size less than 500 microns.

5,710,195

NON-PIGMENTED OPAQUE JET INK COMPOSITIONS AND METHODS OF CREATING OPAQUE INDICIA

Ramesh B. Subbaraman, 207 N. Acacia, Apt. D, Fullerton, Calif. 92631, and Barry R. Brucker, 805 N. Roxbury St., Beverly Hills, Calif. 90210

Filed Aug. 5, 1994, Ser. No. 286,634

Int. Cl.^{6} C08L *1/02;1/28*

U.S. Cl. 524—31 **28 Claims**

1. A non-pigmented jet ink composition for producing opaque indicia on a non-porous substrate, which upon drying becomes opaque without applying moisture upon application to said substrate, consisting of: by weight of said ink composition:

- A) 3 to 10% of a film forming resin selected from the group consisting of:
  - 1) nitrates of cellulose having a nitrogen content of between 11.8 and 12.2% by weight;
  - 2) ethyl hydroxy ethyl cellulose; and
  - 3) ethyl cellulose;
- B) 0.5 to 2.5% of a modifying resin selected from the group consisting of:
  - 1) Acrylics;
  - 2) Styrene-Acrylic Co-polymers;
  - 3) Alkyds; and
  - 4) Polyvinyl Butyral Resins; and
- C) 55 to 85% of a solvent blend consisting of: at least one solvent selected from the group consisting of:
  - 1) Alcohols;
  - 2) Ketones;
  - 3) Esters; and
  - 4) Glycol Ethers.

5,710,196

ASPHALT COMPOSITIONS CONTAINING ACRYLONITRILE-BUTADIENE-STYRENE COPOLYMER

G. Fred Willard, St. Charles, Mo., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1996, Ser. No. 703,625

Int. Cl.^{6} C08L *95/00*

U.S. Cl. 524—68 **24 Claims**

1. An asphalt composition comprising:

- a) an asphalt;
- b) a graft copolymer resin comprising a rubbery polymeric substrate and a rigid polymeric superstrate; and
- c) at least one additional component selected from the group consisting of aggregate, vulcanized rubber, reinforcing fiber, block copolymer resin, and oil.

5,710,197

CROSSLINKED POLYMER PARTICLES CONTAINING A FLUORESCENT DYE

Wolfgang Fischer, Ludwigshafen; Andreas Deckers, Flomborn; Norbert Güntherberg, Speyer; Ekkehard Jahns, Hirschberg; Sylke Haremza, Neckargemünd; Werner Ostertag, Grünstadt, and Helmut Schmidt, Osthofen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 13, 1995, Ser. No. 501,927

Claims priority, application Germany, Jul. 14, 1994, 44 24 817.2

Int. Cl.^{6} C08K *5/45*

U.S. Cl. 524—82 **4 Claims**

1. A process for the preparation of a fluorescent pigment comprising a polymer matrix based on polymethyl methacrylate and a nonpolar fluorescent dye from the coumarin or perylene series, wherein the polymer matrix is a crosslinked polymethacrylate or polyacrylate prepared by suspension polymerization, wherein a mixture comprising

- (A) from 69.9 to 99.8% by weight of a C_8–C_8-alkyl ester of acrylic or methacrylic acid,
- (B) from 0 to 29.9% by weight of a copolymerizable, monoethylenically unsaturated monomer and
- (C) from 0.1 to 30.0% by weight of a copolymerizable, polyfunctional, crosslinking monomer is polymerized in suspension in the presence of
- (D) from 0.1 to 15.0% by weight, based on the sum of (A) and (B), of a nonpolar fluorescent dye from the coumarin or perylene series and recovering the fluorescent pigment from the reaction mixture.

5,710,198

CYCLIC DIPHENYLACETONITRILES AS STABILIZERS

Rita Pitteloud, Praroman, Switzerland, assignor to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 180,399, Jan. 11, 1994, abandoned. This application Jun. 14, 1996, Ser. No. 662,108

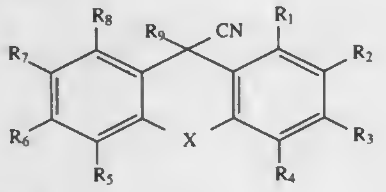
Claims priority, application Switzerland, Jan. 18, 1993, 129/93

Int. Cl.^{6} C08K *5/15;5/45*

U.S. Cl. 524—110 **16 Claims**

1. A composition comprising

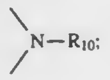
- a) an organic material subjected to oxidative, thermal or light-induced degradation and
- b) an effective stabilizing amount of at least one compound of the formula I



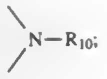
(I)

in which

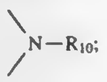
R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 independendy of one another are hydrogen, haloge or C_2–C_{25}salkyl which is interrupted by oxygen, sulfur or


$>N-R_{10};$

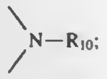
C_5C_8cloalkyl which is unsubstituted or substituted by C_1C_4alkyl; phenyl which is unsubstituted or substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl, hydroxyl, C_1C_{18}alkoxy or C_3C_{18}alkoxy which is interrupted by oxygen, sulfur or


$>N-R_{10};$

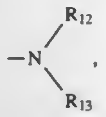
mercapto, C_1–C_{18}alkylthio or C_3C_{18}alkylthio which is interrupted by oxygen, sulfur or


$>N-R_{10};$

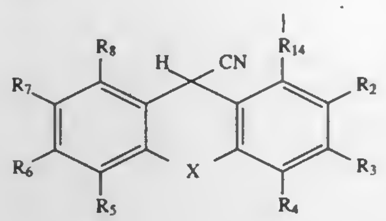
C_1C_{25}alkanoyloxy or C_3C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or


$>N-R_{10};$

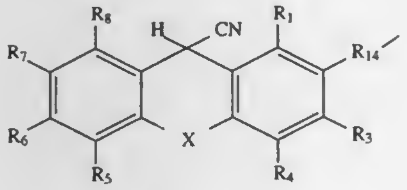
C_3–C_{25}alkenoyloxy, benzoyloxy or benzoyloxy which is substituted by C_1C_{12}alkyl; nitro, cyano, —$(CH_2)_m$$COR_{11}$ or


$-N(R_{12})(R_{13})$,

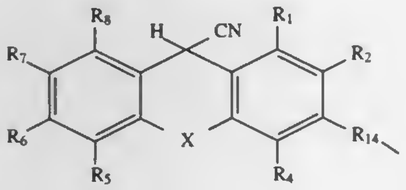
and furthermore the radicals R_1 and R_2, R_2 and R_3, R_3 and R_4, R_5 and R_6, R_6 and R_7 or R_7 and R_8, together with the carbon atoms to which they are bonded, form a benzo ring, or the same pairs of radicals together are —$O(CH_2)_nO$—, with the condition that at least one of the radicals R_1, R_2, R_3 or R_4 and at least one of the radicals R_5, R_6, R_7 or R_8 is hydrogen, R is additionally a radical of the formula II, R_2 is additionally a radical of the formula III, R_3 is additionally a radical of the formula IV and R_4 is additionally a radical of the formula V, and at the same time only one radical of the formula II, III, IV or V occurs in the compound of the formula I,



(II)



(III)



(IV)

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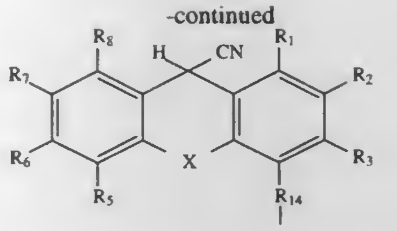
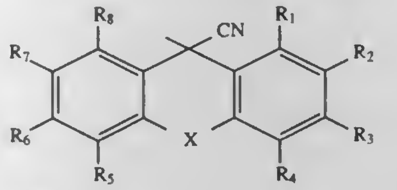


(V)

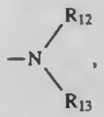
R_9 is hydrogen or a radical of the formula VI



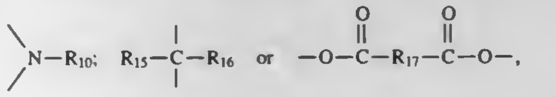
(VI)

in which

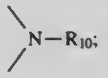
- R_1, R_2, R_3 and R_4 are not a radical of the formula II, III, IV or V,
- R_{10} is hydrogen or C_1–C_8alkyl,
- R_{11} is hydroxyl, C_1C_{18}alkoxy or


$-N(R_{12})(R_{13})$,

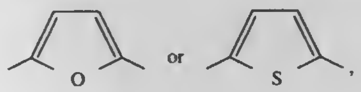
- R_{12} and R_{13} independendy of one another are hydrogen or C_1–C_{18}alkyl,
- R_{14} is a direct bond, C_1C_{18}alkylene or C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or


$>N-R_{10};\quad R_{15}-\overset{|}{\underset{|}{C}}-R_{16}\quad \text{or}\quad -O-\overset{O}{\overset{\|}{C}}-R_{17}-\overset{O}{\overset{\|}{C}}-O-,$

- R_{15} and R_{16} independenfiy of one another are hydrogen, CF_3, C_1–C_{12}alkyl or phenyl, or R_{15} and R_{16}, together with the C atom to which they are bonded, form a C_5C_8cycloalkylidene ring which is unsubstimted or substituted by 1 to 3 C_1–C_4alkyl groups,
- R_{17} is a direct bond, C_1C_{18}alkylene or C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or


$>N-R_{10};$

C_2–C_{18}alkenylene, C_2–C_{20}alkylidene, C_7C_{20}phenylalkylidene, C_5–C_8cycloalkylene, C_7C_8bicycoalcne, phcnyenc which is unsuhsdtuted or substituted by C_1C_4alkyl,



m is 0,1 or 2 and
n is 1 or 2.

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5,710,199
AUTOMOTIVE ADDITIVES AND SEALANTS CONTAINING WASTE POWDER PRIME

James F. Hubert, 21615 Holly Crest Dr., Brookfield, Wis. 53045, and Richard A. Rinka, S83 W17491 Cedarcrest La., Muskego, Wis. 53150

Filed Jun. 19, 1996, Ser. No. 666,170

Int. Cl.^{6} C08K *5/524;5/12;* **L08J** *11/26*

U.S. Cl. 524—141 **9 Claims**

1. A composition, comprising:

waste powder prime; and

a plasticizer selected from the group consisting of 2-ethylhexyl diphenyl phosphate, diisoheptyl phthalate, a linear phthalate based upon C_7–C_9 alcohols, a mixture of esters containing from about 50 to about 85 percent of 2-methyl-3-(benzoyloxy)-2,2,4-trimethylpentyl ester (CAS #22527-63-5), from about 10 to 30 percent of 2,2,3-trimethyl-1,3-pentanediol dibenzoate (CAS #68052-23-3) and from about 5 to about 10 percent of 2-methyl-2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester and dipropylene glycol dibenzoate, wherein the waste powder prime and the plasticizer are present in amounts effective to provide a viscosity-stable dispersion of the waste powder prime in the plasticizer.

5,710,200
NATURAL RUBBER TREATED WITH VISCOSITY STABILIZERS AND PRODUCTION THEREOF

Hirotoshi Toratani; Eiji Nakamura, both of Tokyo; Hideki Aoyama, and Yasushi Hirata, both of Saitama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 204,447, Mar. 2, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,221

Claims priority, application Japan, Mar. 2, 1993, 5-41344; Aug. 3, 1993, 5-192516; Aug. 3, 1993, 5-192517

Int. Cl.^{6} C08K *5/24;* **C08F** *8/30*

U.S. Cl. 524—191 **12 Claims**

1. A method of treating natural rubber in which gelation of the natural rubber is suppressed, comprising the steps of:

drying the natural rubber;

before the natural rubber gels compounding into the natural rubber based on 100 parts by weight of the natural rubber 0.01 to 0.5 part by weight of a hydrazide compound as a viscosity stabilizer represented by the following general formula:

$$R\text{—}CONHNH_2$$

wherein R is selected from the group consisting of an alkyl group having 1 to 30 carbon atoms, a cycloalkyl group having 3 to 30 carbon atoms and an aryl group; and

reacting the hydrazide compound with functional groups of a polyisoprene molecule in the natural rubber to cap the functional groups.

5,710,201
PAINT COMPOSITION

Takeshi Hayakawa, and Kishio Shibato, both of Kanagawa-ken, Japan, assignors to BASF Corporation, Southfield, Mich.

PCT No. PCT/EP93/02065, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/03547, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 3, 1993, Ser. No. 379,553

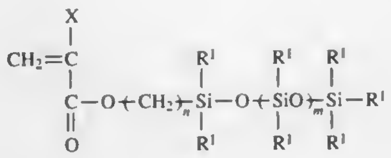
Claims priority, application Japan, Aug. 7, 1992, 4-232809

Int. Cl.^{6} C08G *18/62;* **C09D** *143/04*

U.S. Cl. 524—269 **3 Claims**

1. Paint composition comprising (A) a vinyl type copolymer obtained by polymerizing

(i) 1–50% by weight of a silicone type vinyl monomer represented by the general formula

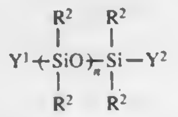


$$CH_2{=}C(X)-C(=O)-O+CH_2+_n Si(R^1)_2-O+Si(R^1)_2O+_m Si(R^1)_2-R^1$$

in the formula X is a hydrogen atom or a methyl group, R^1 is a methyl group or a phenyl group, k is a number 1–5, and m is a number 3–150

(ii) 5–60% by weight of a vinyl monomer containing a hydroxyl group, and (iii) 5–80% by weight of another vinyl monomer,

(B) a silicone compound represented by the general formula



$$Y^1+Si(R^2)_2O+_n Si(R^2)_2-Y^2 \qquad [2]$$

in the equation either one of Y^1 and Y^2 is a hydroxyl group and the remaining one is a hydroxyl group or a methyl group; R^2 is a methyl group or a phenyl group, and n is a number 3–150, and

(C) a hardening agent which allows reaction with hydroxyl groups.

5,710,202
FLAME RETARDANT COMPOSITION

Gerard W. Kuckro, 10620 Montgomery Rd., #221, Cincinnati, Ohio 45242

Continuation of Ser. No. 582,363, Jan. 5, 1996, abandoned. This application Aug. 4, 1997, Ser. No. 905,871

Int. Cl.^{6} C08K *3/38;5/09*

U.S. Cl. 524—405 **13 Claims**

1. A crosslinkable flame retardant composition consisting of :

(a) a copolymer of ethylene and a vinyl ester of a C_{2-4} aliphatic carboxylic acid;

(b) a hydrated inorganic filler selected from the group consisting of hydrated calcium borate, hydrated aluminum oxides, hydrated magnesia, hydrated calcium silicate, and mixtures and blends thereof; and

(c) a coupling agent comprising oxalic acid, said composition characterized by the absence of silane compounds.

5,710,203
ELECTRONIC COATING COMPOSITIONS

Robert Charles Camilletti; Loren Andrew Haluska, and Keith Winton Michael, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 103,142, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 28,063, Mar. 8, 1993. This application Nov. 7, 1994, Ser. No. 334,988

Int. Cl.^{6} C08K *3/10;* **C04B** *38/00*

U.S. Cl. 524—435 **8 Claims**

1. A coating composition comprising a silica precursor resin and a filler diluted in a solvent, wherein the filler is a metal which reacts in an oxidizing atmosphere to liberate heat selected from the group consisting of magnesium, iron, silicon, tin and zinc.

5,710,204
CASTABLE, CURABLE COMPOSITION FOR PRODUCING PLASTIC MOLDED ARTICLES

Stefan Harke, Sinsheim-Rohrbach; Stefanie Grathwohl, Oberderdingen; Rudolf Paternoster, Rinchnach; Thomas Wilhelm, Sulzfeld; Klaus Hock, and Werner Fenzl, both of Regen, all of Germany, assignors to Blanco GmbH & Co. KG, Oberderdingen, and Schock & Co. GmbH, Schorndorf, both of Germany

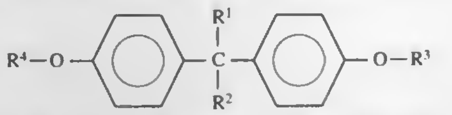
Filed Sep. 20, 1996, Ser. No. 718,212

Claims priority, application Germany, Mar. 26, 1994, 44 10 526.6

Int. Cl.^{6} C08F *2/44*

U.S. Cl. 524—494 **7 Claims**

1. Castable, curable composition for producing plastic molded articles, comprising a sirup containing a proportion of acrylic acid monomer and/or derivatives thereof and a proportion of a further component containing one or more compounds of the formula (I):



(I)

wherein R^1 and R^2 are the same or different and represent a hydrogen atom, a C_1–C_6 alkyl group, an aryl group or jointly a cycloalkyl group, and the C_1–C_6 alkyl group, the aryl group and the cycloalkyl group can be substituted once or several times with a halogen atom, a cyano group, an alkyl group, a hydroxyl group, a carbonyl group and/or a carboxyl group.

wherein R_3 and R_4 are the same or different and

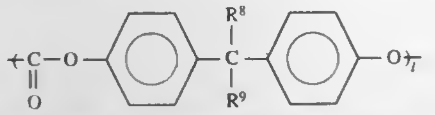
a) represent an ethylenically unsaturated group of the formula (II)

$$—R_5—R_6 \qquad (II)$$

wherein R_5 represents a single bond, an ether group of the formula $—(CR_2{}^7)_m—O—$ (wherein R^7 means hydrogen or alkyl and m an integer from 1 to 10) or a polyether group of the formula $—(CH_2—CH_2—O)_n—$ or $—(CH_2—CH_2—CH_2—O)_n—$, and n is an integer from 1 to 6 and, wherein R^6 represents an at least mono-unsaturated alkylene group with two or more C atoms, an acrylate group or a methacrylate group;

and/or

b) represent a group of the formula (III):



(III)

wherein R^8 and R^9 are defined like R^1 and R^2, but independently thereof, and l is an integer from 1 to 10,000, and R^8 and R^9 can have varying meanings at $l > 1$ in the formula (III),

and/or

c) represent hydrogen, and at the most one of the residues R^3 and R^4 is a hydrogen atom,

and the sirup optionally including a proportion of a prepolymer, in particular polymethyl methacrylate (PMMA),

and, in addition, containing a particulate, inorganic filler with a proportion of approximately 50 to 90% by weight in relation to the total composition, pigments and a radical initiator system, the viscosity of the total composition being $\leqq 80$ Pa·s, and the ratio of the sum of the weight content of acrylic acid monomer and its monomeric derivatives to the sum of the weight content of the further component and the weight content of prepolymer being 99:1 to 30:70, and, in the presence of prepolymer, the ratio of the weight content of the further component to the weight content of the prepolymer being at least 5:95.

5,710,205
COMPOSITION OF FLUOROPOLYMERS

Mark Davies, Yarm, and Paul Martin Hatton, Fullwood, both of United Kingdom, assignors to Imperial Chemical Industries PLC, United Kingdom

Continuation of Ser. No. 240,749, Aug. 12, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,391

Claims priority, application United Kingdom, Sep. 10, 1992, 9219140

Int. Cl.^{6} C08L *81/00*

U.S. Cl. 524—502 **10 Claims**

1. A solid fluoropolymer composition which comprises:

a) polytetrafluoroethylene (PTFE),

b) a poly(arylene sulphide) and

c) another aromatic polymer, at least 50 wt. % of which is made up of aromatic moieties linked by functional groups such as oxy, carbonyl, sulphonyl, sulphonyloxy, amino, imino and mixtures thereof

and wherein the PTFE is present as a sintered matrix and wherein a mixture of at least the PTFE and the poly(arylene sulphide) have been subjected to a heat treatment within the temperature range from 200° C. to 400° C. prior to sintering and wherein the PTFE provides at least 30 vol. % of the composition, the poly(arylene sulphide) provides up to 40 vol. % of the composition and the aromatic polymer provides up to 30 vol. % of the composition; and wherein the volume ratio of the poly(arylene sulphide) to the aromatic polymer is in the range of from 5:1 to 1:2.

5,710,206
GELS COMPRISING BLOCK COPOLYMERS

Jane Valarie Francis, Ashton Keynes, England; Noel Marchel Michiel Overbergh, Corbielaan, and Jan Lodewijk M. F. G. Vansant, Minneveld, both of Belgium, assignors to Raychem Limited, Swindon, United Kingdom

Continuation of Ser. No. 304,431, Mar. 20, 1989, abandoned. This application Mar. 4, 1996, Ser. No. 609,956

Int. Cl.^{6} C08L *53/02;* **C08K** *5/06*

U.S. Cl. 524—505 **16 Claims**

1. A gel or gelloid liquid-extended polymer composition having (i) an ASTM D217 cone penetration value within the range from 100 to 400 (10^{-1} millimeters), (ii) an ASTM D412 ultimate elongation greater than 100% with substantially elastic deformation to an elongation of at least 100%, (iii) an ASTM D412 ultimate tensile strength of less than 10 MegaPascal, and (iv) a dynamic storage modulus at 23° C. of less than 50000 Pascals; the composition comprising an intimate mixture of:

(a) more than 50% by weight (based on total polymer content) of a block copolymer containing relatively hard blocks and relatively elastomeric blocks;

(b) additional polymer or copolymer material which is a polyphenylene ether; and

(c) at least 500 parts by weight of extender liquid per 100 parts by weight of the said block copolymer, which liquid extends and softens the elastomeric blocks of the said block copolymer wherein the amount of the said additional polymer or block copolymer material is sufficient to increase the softening or melting temperature of the composition over that of the same composition without the said additional polymer or copolymer material.

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5,710,207

BLOCK POLYMERS CONTAINING ESTER GROUPS AS DEFOAMERS FOR AQUEOUS SYSTEMS

Thomas Möller, Düsseldorf; Ulrich Elcken, Korschenbroich; Herbert Fischer; Horst-W. Wollenweber, both of Düsseldorf; Wolfgang Gress, Wuppertal, all of Germany; Christian de Haut, Boissise le Roi, France; Ulrike Mahler, Suhr, Switzerland; Manfred Gorzinski, Düsseldorf, and Hans-Jürgen Sladek, Krefeld, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/02966, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/07742, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 6, 1994, Ser. No. 615,235

Claims priority, application Germany, Sep. 15, 1993, 43 31 228.4

Int. Cl.^{6} C08L *53/00;33/14;* **C08K** *5/101;* **B32B** *5/16*

U.S. Cl. 524—502 **33 Claims**

1. A method of regulating the foaming of water-based systems with a tendency to foam, said method comprising adding to a water-based system with a tendency to foam a block copolymer containing ester groups, said block copolymer corresponding to the general formula (I):

$$A-(CH_2CH_2O)_n-B \qquad (I)$$

in which n is an integer of 4 to 300, A is a hydroxycarboxylic acid residue and B is hydrogen, an alkyl or alkenyl radical containing 1 to 22 carbon atoms, a phenyl or benzyl radical or has the same meaning as A.

5,710,208

BINDER COMPOSITION, COATING COMPOSITION CONTAINING THIS BINDER, PRODUCTION AND USE THEREOF

Klaus Bederke, Sprockhövel; Carmen Flosbach, Wuppertal; Eva Frigge, Bochum, and Walter Schubert, Wuppertal, all of Germany, assignors to Herberts GmbH, Wuppertal, Germany

Continuation of Ser. No. 148,681, Nov. 4, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 542,544

Claims priority, application Germany, Nov. 7, 1992, 42 37 659.9

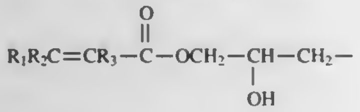
Int. Cl.^{6} C08J *3/00*

U.S. Cl. 524—513 **13 Claims**

1. A binder composition suitable for coating compositions, which binder comprises

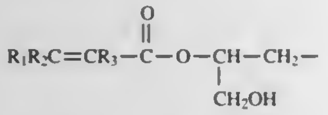
A) 25 to 75 wt % of one or more resins containing carboxyl groups, with a number average molecular weight (Mn) of **500** to **10000** g/mol and an acid value of 15 to 200 mg KOH/g,

B) 25 to 75 wt. % of one or more polyethers, polyesters, polyether-polyesters and/or (meth)acrylic copolymers, each containing groups of the formulas:



$$R_1R_2C=CR_3-\overset{O}{\overset{\|}{C}}-OCH_2-\underset{OH}{\underset{|}{CH}}-CH_2-$$

and/or



$$R_1R_2C=CR_3-\overset{O}{\overset{\|}{C}}-O-\underset{CH_2OH}{\underset{|}{CH}}-CH_2-$$

and having at least one α,β-unsaturated group and at least one epoxy group per molecule;

wherein R_1, R_2 and R_3 are each independently hydrogen or an unbranched or branched alkyl with 1 to 10 carbon atoms;

wherein the α,β-unsaturated groups and epoxy groups are present in a numerical ratio of 20:80 to 80:20, with a number average molecular weight (Mn) of up to 10000 g/mol, said molecular weight applies to all of the polyethers, polyesters, polyether-polyesters, and (meth) acrylic copolymers,

C) 0 to 60 wt. % of one or more polyols with at least two hydroxyl functional groups per molecule,

D_1) 0 to 20 wt. % of one or more melamine resins,

D_2) 0 to 40 wt. % of one or more capped polyisocyanates, wherein the sum of the weight percentages of components A), B), C), D_1) and D_2 is 100 wt. %, together with

E) 0 to 10 wt. % of one or more catalysts to catalyze the reaction of the carboxyl and epoxy groups, related to the sum of the weights of components A) to D_2, and

F) 0.1 to 10 wt. % of one or more thermally or photochemically activated initiators, related to the total weight of component A) and B).

5,710,209

AQUEOUS BINDERS FOR COATING COMPOSITIONS BASED ON POLYESTER POLYURETHANES

Harald Blum, Wachtendonk, and Josef Pedain, Köln, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 20, 1996, Ser. No. 602,539

Claims priority, application Germany, Feb. 27, 1995, 195 06 736.3

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—594 **5 Claims**

1. An aqueous dispersion having a viscosity at 23° C. of 10 to 20,000 mPa.s and a pH of 5.5 to 10 and containing 20 to 60 wt. %, based on solids, of a polyester polyurethane which has a weight average molecular weight of 1500 to 100,000, a hydroxyl number of 20 to 300 mg KOH/g, a carboxyl group content corresponding to an acid number of 7 to 70 mg KOH/g (in which 20 to 100% of the carboxyl groups are present in neutralized form as carboxylate groups), and a content of urethane groups (calculated as —NH—CO—O—, molecular weight 59) of 2.5 to 15 wt. %, and is the reaction of

a) 50 to 91 wt. % of a polyester component containing one or more polyester polyols having a hydroxyl number of 25 to 350,

b) 7 to 45 wt. % of a polyisocyanate component containing at least 50 wt. %, based on the weight of component b), of 1-methyl-2,4- and/or -2,6-diisocyanatocyclohexane, the remainder selected from organic polyisocyanates having a molecular weight of 140 to 1500,

c) 2 to 12 wt. % of a component containing one or more compounds having at least one isocyanate-reactive group and at least one anionic or potential anionic group,

d) 0 to 10 wt. % of a component containing one or more compounds having one or two isocyanate-reactive groups and containing at least one non-ionic, hydrophilic polyether chain and

e) 0 to 30 wt. % of a component, which is different from components a), c) and d), contains isocyanate-reactive groups and has a molecular weight of 62 to 2500,

wherein the sum of the percentages of a) to e) add up to 100.

5,710,210

PROCESS FOR POLYMER REACTIONS WITH FUNCTIONALIZED PEROXIDES

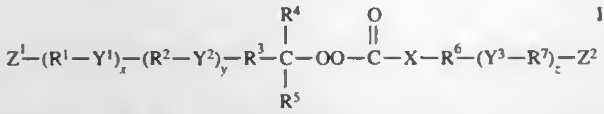
Daryl L. Stein, Bolingbrook, Ill., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 214,938, Mar. 17, 1994, Pat. No. 5,466,855, which is a division of Ser. No. 908,576, Jun. 25, 1992, Pat. No. 5,319,130, which is a continuation of Ser. No. 577,977, Sep. 5, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 465,899

Int. Cl.^{6} C08F *4/34;8/00;8/50;10/06;* **C08K** *5/14;* **C08G** *18/86;63/91;69/48*

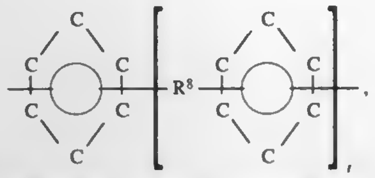
U.S. Cl. 525—50 **12 Claims**

1. A process for curing an elastomer resin, comprising heating an elastomer resin without unsaturation and about 0,001% by weight to about 10% by weight of a peroxide compound at a temperature effective to cure the elastomer resin, the peroxide compound having the following Formula I:



$$Z^1-(R^1-Y^1)_x-(R^2-Y^2)_y-R^3-\overset{R^4}{\overset{|}{\underset{R^5}{\underset{|}{C}}}}-OO-\overset{O}{\overset{\|}{C}}-X-R^6-(Y^3-R^7)_z-Z^2 \qquad I$$

wherein R^1, R^2, R^6 and R^7 are independently a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted cycloalkyl diradical of 5 to 18 carbons, a substituted or unsubstituted bicycloalkyl diradical of 7 to 12 carbons, a substituted or unsubstituted bicycloalkenyl diradical of 7 to 12 carbons, a substituted or unsubstituted alkenyl diradical of 2 to 18 carbons, a substituted or unsubstituted alkynyl diradical of 2 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or a substituted or unsubstituted diradical having the following Formula II:



II

with the proviso that when X is a direct bond, R^6 is not a tertiary alkyl diradical;

R^3 is a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or the substituted or unsubstituted diradical having the Formula II;

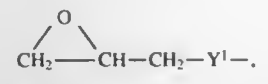
R^4 and R^5 are independently a substituted or unsubstituted alkyl radical of 1 to 10 carbons;

R^8 is a direct bond, —O—, —S—, $-S(=O)_2-$, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—NH— or a substituted or unsubstituted alkyl diradical of 1 to 6 carbons;

X is a direct bond;

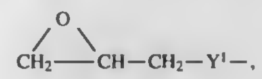
Y^1, Y^2 and Y^3 are independently —O—, —S—, $-S(=O)_2-$, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—O—, —O—C(=O)—NH—, —NH—C(=O)—NH, —C(=O)—C(=O)—, —O—C(=O)—C(=O)—O—, —NH—C(=O)—C(=O)—NH—, —NH—C(=O)—C(=O)—O— or —O—C(=O)—C(=O)—NH—;

Z^1 is H_2N-, O=C=N—, Cl—C(=O)—, Br—C(=O)—, HO—C(=O)—,



$H_2N-C(R^9)(R^{10})-(CH_2)_w-Y^1-$ or $R^{11}-O-C(=O)-$;

Z^2 is H_2N-, O=C=N—, Cl—C(=O)—, Br—C(=O)—,



or $H_2N-C(R^9)(R^{10})-(CH_2)_w-Y^1-$;

R^9 and R^{10} are independently hydrogen or a substituted or unsubstituted alkyl radical of 1 to 4 carbons;

R^{11} is an alkyl radical of 1–4 carbons, benzyl or phenyl;

t, x, y and z are independently 0 or 1;

w is an integer from 1 to 12; and

substituents for any of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9 or R^{10} are independently one or more of chloro, bromo, fluoro, cyano, amino, sulfo, carboxy, nitro, alkoxy of 1 to 12 carbons, alkylamino of 1 to 12 carbons, acyloxy of 1 to 12 carbons, alkenoyloxy of 3 to 12 carbons, alkenoylamino of 3 to 12 carbons, aroyloxy of 7 to 15 carbons, aroylamino of 7 to 15 carbons, phthalimido, alkoxycarbonyloxy of 2 to 13 carbons, alkoxycarbonylamino of 2 to 13 carbons, alkenyloxycarbonyloxy of 3 to 12 carbons, alkenyloxycarbonylamino of 3 to 12 carbons, aryloxycarbonyloxy of 7 to 15 carbons, alkylaminocarbonyloxy of 2 to 13 carbons, arylaminocarbonyloxy of 7 to 15 carbons, aralkylaminocarbonyloxy of 7 to 16 carbons, alkylsulfonyloxy of 1 to 8 carbons, alkylsulfonylamino of 1 to 8 carbons, arylsulfonylamino of 6 to 11 carbons or epoxyalkoxycarbonyl of 2 to 13 carbons.

5,710,211

PROCESS FOR PRODUCING VINYL ALCOHOL POLYMER

Toshiaki Sato; Naoki Fujiwara, and Atsushi Jikihara, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 19, 1996, Ser. No. 684,484

Claims priority, application Japan, Aug. 1, 1995, 7-196713; Aug. 1, 1995, 7-196714

Int. Cl.^{6} C08F *8/00*

U.S. Cl. 525—62 **17 Claims**

1. A process for producing a vinyl alcohol polymer, comprising:

reacting a vinyl acetate polymer (A) having an epoxy group with a compound (B) having a thiol or thioester group; and

hydrolyzing the polymer, said hydrolysis being conducted during or subsequent to the reaction of compound (B) with the polymer (A).

10. A process for producing a vinyl alcohol polymer, comprising:

reacting a vinyl acetate polymer (C) having a thiol or thioester group with a compound (D) having an epoxy group; and

hydrolyzing the polymer, said hydrolysis being conducted as the reaction proceeds or subsequent to the reaction.

5,710,212

THERMOPLASTIC RESIN COMPOSITION

Yukihiko Asano, Sodegaura, and Kazuhiro Doi, Ube, both of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jun. 27, 1996, Ser. No. 671,196

Claims priority, application Japan, Jun. 28, 1995, 7-162194; Jul. 18, 1995, 7-181793

Int. Cl.^{6} C08L *23/12;25/10*

U.S. Cl. 525—63 **9 Claims**

1. A thermoplastic resin composition comprising:

40–75 parts by weight of a polyamide resin (A),

5–30 parts by weight of a modified polyphenylene ether (B) which is a polyphenylene ether modified with an α,β-unsaturated carboxylic acid or a derivative thereof,

1–30 parts by weight of an aromatic vinyl compound-aliphatic hydrocarbon copolymer (C), and

1–30 parts by weight of a copolymer of ethylene with an α-olefin of 3 or more carbon atoms (D): with the total amount

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of the components (A), (B), (C) and (D) being 100 parts by weight, wherein the component (A) is present as a matrix phase and the other components (B), (C) and (D) are present as a disperse phase consisting of core-shell structure grains, in each of which grains the modified polyphenylene ether (B) forms a shell phase, the aromatic vinyl compound-aliphatic hydrocarbon copolymer (C) forms an intermediate phase and the copolymer of ethylene with the α-olefin (D) forms a core phase.

5,710,213

PROCESS FOR POLYMERIZATION REACTIONS WITH FUNCTIONALIZED PEROXIDES

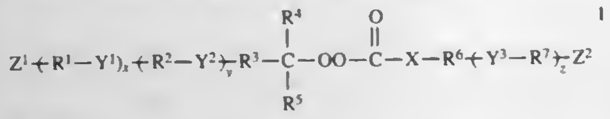
Daryl L. Stein, Bolingbrook, Ill., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 214,938, Mar. 17, 1994, Pat. No. 5,466,855, which is a division of Ser. No. 908,576, Jun. 25, 1992, Pat. No. 5,319,130, which is a continuation of Ser. No. 577,977, Sep. 19, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 465,851

Int. Cl.⁶ C08F *4/34;212/08;120/10;* **C08C** *19/00*

U.S. Cl. 525—107 **13 Claims**

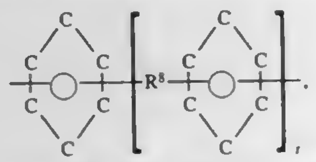
1. A process for polymerizing an unsaturated monomer or unsaturated polymer comprising reacting an unsaturated monomer or unsaturated polymer or a polymer susceptible to graft polymerization and a peroxide compound under conditions effective to polymerize the unsaturated monomer or polymer, the unsaturated monomer being selected from the group consisting of ethylenically unsaturated monomers, acrylic monomers, and mixtures thereof, and the unsaturated polymer being selected from the group consisting of unsaturated polyester resins, unsaturated elastomer resins, and mixtures therof, provided that when the polymer is one susceptible to graft polymerization, the peroxide compound is present in an amount of about 0.001% to about 50% by weight, when the unsaturated monomer is an acrylic monomer or mixture thereof, the peroxide compound is present in an amount of about 0.001% to about 15% by weight, and when the unsaturated monomer or unsaturated polymer is other than a polymer subject to graft polymerization or an acrylic monomer, the peroxide compound is present in an amount of about 0.001% to about 10% by weight, the peroxide compound having the following Formula I:



$$Z^1(R^1-Y^1)_x(R^2-Y^2)_y R^3-\overset{\displaystyle R^4}{\underset{\displaystyle R^5}{C}}-OO-\overset{\displaystyle O}{\overset{\|}{C}}-X-R^6(Y^3-R^7)_z Z^2 \qquad \text{I}$$

wherein

R^1, R^2, R^6 and R^7 are independently a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted cycloalkyl diradical of 5 to 18 carbons, a substituted or unsubstituted bicycloalkyl diradical of 7 to 12 carbons, a substituted or unsubstituted bicycloalkenyl diradical of 7 to 12 carbons, a substituted or unsubstituted alkenyl diradical of 2 to 18 carbons, a substituted or unsubstituted alkynyl diradical of 2 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or a substituted or unsubstituted diradical having the following Formula II:



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with the proviso that when X is a direct bond, R^6 is not a tertiary alkyl diradical;

R^3 is a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or the substituted or unsubstituted diradical having the Formula II;

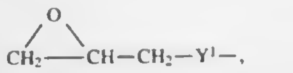
R^4 and R^5 are independently a substituted or unsubstituted alkyl radical of 1 to 10 carbons;

R^8 is a direct bond, —O—, —S—, —S(=O)$_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—NH— or a substituted or unsubstituted alkyl diradical of 1 to 6 carbons;

X is a direct bond;

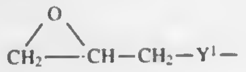
Y^1, Y^2 and Y^3 are independently —O—, —S—, —S(=O)$_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—O—, —O—C(=O)—NH—, —NH—C(=O)—NH, —C(=O)—C(=O)—, —O—C(=O)—C(=O)—O—, —NH—C(=O)—C(=O)—NH—, —NH—C(=O)—C(=O)—O— or —O—C(=O)—C(=O)—NH—;

Z^1 is H_2N—, O=C=N—, Cl—C(=O)—, Br—C(=O)—, HO—C(=O)—,



H_2N—C(R^9) (R^{10})—(CH_2)$_w$—Y^1— or R^{11}—O—C(=O)—;

Z^2 is H_2N—, O=C=N—, Cl—C(=O)—, Br—C(=O)—,



or H_2N—C(R^9) (R^{10})—(CH_2)$_w$—Y^1—;

R^9 and R^{10} are independently hydrogen or a substituted or unsubstituted alkyl radical of 1 to 4 carbons;

R^{11} is an alkyl radical of 1–4 carbons, benzyl or phenyl;

t, x, y and z are independently 0 or 1;

w is an integer from 1 to 12; and

substituents for any of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9 or R^{10} are independently one or more of chloro, bromo, fluoro, cyano, amino, sulfo, carboxy, nitro, alkoxy of 1 to 12 carbons, alkylamino of 1 to 12 carbons, acyloxy of 1 to 12 carbons, alkenoyloxy of 3 to 12 carbons, alkenoylamino of 3 to 12 carbons, aroyloxy of 7 to 15 carbons, aroylamino of 7 to 15 carbons, phthalimido, alkoxycarbonyloxy of 2 to 13 carbons, alkoxycarbonylamino of 2 to 13 carbons, alkenyloxycarbonyloxy of 3 to 12 carbons, alkenyloxycarbonylamino of 3 to 12 carbons, aryloxycarbonyloxy of 7 to 15 carbons, alkylaminocarbonyloxy of 2 to 13 carbons, arylaminocarbonyloxy of 7 to 15 carbons, aralkylaminocarbonyloxy of 7 to 16 carbons, alkylsulfonyloxy of 1 to 8 carbons, alkylsulfonylamino of 1 to 8 carbons, arylsulfonylamino of 6 to 11 carbons or epoxyalkoxycarbonyl of 2 to 13 carbons.

5,710,214

THERMOSETTING POWDER COATING COMPOSITIONS

Chun-Tzer Chou, and Robert B. Barbee, both of Kinsport, Tenn., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 227,220, Apr. 13, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 640,249

Int. Cl.⁶ C08F *8/30*

U.S. Cl. 525—124 **26 Claims**

1. A powder coating composition comprising:

A. about 55 to 71 weight percent of a glycidyl functionalized acrylic copolymer comprised of:
  1. about 10 to 40 percent by weight, based on the weight of the copolymer, of a monoethylenically unsaturated monomer having at least one epoxy group, and
  2. about 60 to 90 percent by weight, based on the weight of the copolymer, of at least one monoethylenically unsaturated monomer which is free of epoxy groups, wherein the copolymer has a number average molecular weight of about 1,000 to 8,000, a weight average molecular weight of about 2,000 to 16,000 and a glass transition temperature of 40° C. to 90° C., and

B. about 9 to 14 weight percent of an aliphatic carboxylic acid having 2 or 3 carboxylic acid groups per molecule, and

C. about 17 to 34 weight percent of a blocked polyisocyanate where the weight percents of A, B and C are based upon the total weight of A, B and C.

5,710,215

METHOD AND MATERIAL MIXTURE FOR MANUFACTURE OF REACTIVE HOTMELTS

Thomas P. Abend, St.Gallen, Switzerland, assignor to Ebnother AG, Sempach-Station, Switzerland

Continuation of Ser. No. 185,807, Jan. 28, 1994, abandoned. This application Oct. 17, 1996, Ser. No. 733,196

Claims priority, application Switzerland, Jun. 15, 1992, 1883/92

Int. Cl.⁶ C08L *75/04*

U.S. Cl. 525—124 **15 Claims**

1. A method of manufacturing a room-temperature shelf-stable mixture of reactive substances comprising

(A) at least one thermoplastic polymer having a melting point above 40° C., so that it is solid at room temperature, and which carries functional groups reactive with isocyanate,

(B) at least one solid polyisocyanate in powder form, suspended in the solid thermoplastic polymer and having a melting point higher than that of the thermoplastic polymer,

(C) at least one deactivating agent for reacting with surface isocyanate groups in the solid polyisocyanate,

wherein the polyisocyanate is pre-mixed with said deactivating agent, and is thereby deactivated, the pre-mix of polyisocyanate and deactivating agent is then, at a temperature above the melting point of the polymer but below the melting point of the deactivated polyisocyanate, mixed with the polymer, which has been made liquid through warming, in layers, so that the resulting mixture includes first layers which predominantly comprise said polymer, and, between said first layers, second layers which predominantly comprise said deactivated polyisocyanate and also unbound deactivating agent, and the mixture is then cooled and solidified with the said layer structure.

5,710,216

THERMOPLASTIC MOLDING MATERIALS BASED ON PARTLY AROMATIC POLYAMIDES AND POLYMETHACRYLAMIDES

Martin Weber, Neustadt; Herbert Fisch, Wachenheim; Gunter Pipper, Bad Dürkheim, and Axel Gottschalk, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 14, 1995, Ser. No. 572,039

Claims priority, application Germany, Dec. 14, 1994, 44 44 378.1

Int. Cl.⁶ C08L *33/10;77/06*

U.S. Cl. 525—132 **3 Claims**

1. A thermoplastic molding material containing

A) from 1 to 98.5% by weight of a partly aromatic copolyamide,

B) from 1 to 98.5% by weight of a polymethacrylimide,

C) from 0.5 to 30% by weight of a polycondensate of aliphatic or aromatic polyhydric alcohols with epihalohydrins,

D) from 0 to 60% by weight of fibrous or particulate fillers or mixtures thereof,

E) from 0 to 40% by weight of rubber impact modifiers and

F) from 0 to 40% by weight of conventional additives and processing assistants.

5,710,217

EXTRUDABLE THERMOPLASTIC HYDROCARBON COMPOSITIONS

Thomas J. Blong, Woodbury; Michael P. Greuel, White Bear Township, both of Minn., and Claude Lavallee, London, Canada, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1995, Ser. No. 559,789

Int. Cl.⁶ C08L *23/06;27/12*

U.S. Cl. 525—199 **19 Claims**

1. A chemically resistant, melt-processable composition comprising a blend of:

(1) one or more melt-processable thermoplastic hydrocarbon polymers;

(2) an amount effective to improve the processability of the composition of one or more chemically-resistant fluoropolymers comprising interpolymerized units of:

(a) one or more fluorinated olefin monomers of the general formula:

$CF_2{=}CXR^1$

wherein:

X is a hydrogen or a halogen atom; and

R^1 is a halogen atom or is an alkyl, cyclic alkyl, or aryl group having from 1 to 10 carbon atoms; such alkyl or aryl groups may optionally be halogenated and may contain one or more heteroatoms and may be partially-, fully-, or non-halogenated provided, however, that when X is a hydrogen atom R^1 contains an allylic carbon atom relative to the α-unsaturation and that allylic carbon atom is not perfluorinated; and

(b) one or more olefin monomers of the general formula:

$CH_2{=}CXR^2$

wherein:

X is a hydrogen or a halogen atom; and

R^2 is a hydrogen or is a halogen atom with the proviso that R^2 and X are not both fluorine; R^2 may also be an alkyl, cyclic alkyl, or aryl group having from 1 to 10 carbon atoms any of which may optionally be partially-, fully-, or non-halogenated and may contain one or more heteroatoms;

wherein the fluoropolymer or fluoropolymers constituting component (2) have a Carreau-Yasuda Equation m1 parameter of about 0.7 or less and wherein the ratio of the melt viscosity of the fluoropolymer or fluoropolymers constituting component (2) to the melt viscosity of the thermoplastic hydrocarbon polymer or polymers constituting component (1) is between 0.01 and 100 at the melt processing conditions of the composition.

5,710,218

ETHYLENE-PROPYLENE-DIENE RUBBER, ELASTOMER COMPOSITION AND VULCANIZED RUBBER THEREOF

Hidenari Nakahama, and Takashi Mishima, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Tokyo, Japan

Continuation of Ser. No. 71,226, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 689,909, Jun. 4, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 430,259

Claims priority, application Japan, Oct. 5, 1989, 1-260666; Oct. 5, 1989, 1-260667

Int. Cl.⁶ C08L *23/16;47/00;* **C08K** *3/06*

U.S. Cl. 525—211 **16 Claims**

1. An unvulcanized vulcanizable rubber mixture which consists essentially of

(A) 90% to 40% by weight of a high-molecular-weight ethylene-propylene-diene rubber having an ethylene content of 60 to 82 mol %, an intrinsic viscosity (η) of 3.0 to 5.0 dl/g as measured at 135° C. in decalin and an iodine value of 8 to 35,

(B) 10 to 60% by weight of a low-molecular-weight ethylene-propylene-diene rubber having an ethylene content of 60 to 82

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mol %, an intrinsic viscosity (η) of 0.15 to 0.8 dl/g as measured at 135° C. in decalin and an iodine value of 8 to 35, and

(C) sulfur, in an amount of 0.3 to 3 parts by weight based on 100 parts be weight of said ethylene-propylene-diene rubber, wherein the sulfur is uniformly dispersed therein at a temperature of 90° to 160° C., prior to the addition of a vulcanization accelerator, wherein the diene component of said rubber is a non-conjugated diene and said rubber mixture has a Mooney viscosity ML_{1+4} (100° C.) of 60 to 120 and ω_r=50 to 150.

5,710,219

MISCIBLE POLYOLEFIN BLENDS

Frank S. Bates, St. Louis Park, Minn.; Jeffrey H. Rosedale, Philadelphia, Pa.; Mark F. Schulz, Minneapolis, Minn., and Kristoffer Almdal, Roskilde, Germany, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 189,863, Feb. 1, 1994, Pat. No. 5,571,864, which is a continuation-in-part of Ser. No. 36,013, Mar. 23, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,410

Int. Cl.^{6} C08K *23/04*

U.S. Cl. 525—240 **18 Claims**

1. A polyolefin blend, comprising:

a) a primary polyolefin having a primary polyolefin segment length, wherein said primary polyolefin is polypropylene; and

b) at least one modifying polyolefin comprising a random copolymer of ethylene and one or more monomer units selected from the group consisting of a lower olefin, a lower diolefin, and mixtures thereof, wherein the modifying polyolefin has a modifying polyolefin segment length within 90% to 110% of the primary polyolefin length.

5,710,220

GRAFT POLYMER DISPERSION HAVING A THIRD MONOMER AND POLYURETHANE FOAMS HAVING A REDUCED TENDENCY TO SHRINK PREPARED THEREBY

Duane A. Heyman, Monroe, and James A. Gallagher, Grosse Ile, both of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 184,730, Jan. 21, 1994, abandoned. This application Jul. 10, 1995, Ser. No. 500,077

Int. Cl.^{6} C08F *290/06;290/14*

U.S. Cl. 525—404 **1 Claim**

1. A stable low viscosity graft polymer dispersion comprising from 25 to 60 weight percent based on the total weight of the polymer dispersion of a mixture of at least three ethylenically unsaturated monomers polymerized in the presence of a reaction moderator and a free radical initiator in a polyol mixture initially containing less than 0.1 moles of induced unsaturation per mole of said polyol mixture; wherein said mixture of ethylenically unsaturated monomers comprises (a) acrylonitrile, (b) 40 weight percent to 80 weight percent, based on the weight of the monomer mixture, styrene or 4-methylstyrene, and (c) 10 weight percent to 25weight percent, based on the weight of the monomer mixture, 2-hydroxyethyl methacrylate.

5,710,221

THERMOSETTING, POWDER COATING SYSTEM

Andreas Kaplan, Chur; Albert Reich, Trin, and Rene Gisler, Chur, all of Switzerland, assignors to EMS-Inventa AG, Zurich, Switzerland

Filed Jan. 23, 1996, Ser. No. 590,291

Claims priority, application Germany, Jul. 12, 1995, 195 25 437.6

Int. Cl.^{6} C08F *20/00*

U.S. Cl. 525—438 **15 Claims**

1. A method for producing glycidic ether-containing amorphous or semi-crystalline copolyesters, characterized in that in a first step a hydroxyl-functional amorphous or semi-crystalline copolyester is produced and subsequently in a second step is converted with an epihaloalkane to form a glycidic ether-containing copolyester.

5,710,222

METHOD FOR CONTROLLING THE MELTING POINTS AND MOLECULAR WEIGHTS OF SYNDIOTACTIC POLYOLEFINS USING METALLOCENE CATALYST SYSTEMS

John A. Ewen, Houston; B. R. Reddy, Baytown, both of Tex., and Michael J. Elder, Raleigh, N.C., assignors to Fina Technology, Inc., Dallas, Tex.

Filed Jun. 22, 1992, Ser. No. 903,058

Int. Cl.^{6} C08F *4/64*

U.S. Cl. 526—127 **30 Claims**

1. A process for polarizing propylene to produce syndiotactic polypropylene comprising:

a) selecting a metallocene compound described by the general formula:

$$R''(C_5H_4)(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)MeQ_p$$

wherein (C_5H_4) is a cyclopentadienyl ring and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ is a fluorenyl radical; R' is a hydrocarbyl radical, halogen, an alkoxy, an alkoxy alkyl or an alkylamino radical having from 1–20 carbon atoms, each R' may be the same or different; R" is a structural bridge between the (C_5H_4) and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ rings to impart stereorigidity; Q is a hydrocarbon radical or a halogen; Me is a Group IVB metal; $1 \leqq m \leqq 4$; $0 \leqq n \leqq 4$; and p is the valence of Me minus 2;

wherein R' is an electron donating substituent on the fluorene ligand at C1, C2, or C3 and has the ability to donate electrons equal to or greater than that for methoxy or wherein R' is a methyl group or methoxymethyl group at C4;

b) forming a catalyst comprising the metallocene compound;

c) introducing the catalyst into a polymerization reaction zone containing propylene and maintaining the reaction zone under polymerization reaction conditions; and

d) extracting polypropylene from the reaction zone.

5,710,223

PROCESS FOR POLYMERIZING PROPYLENE BY USING A NOVEL METALLOCENE CATALYST

Daisuke Fukuoka; Takashi Tashiro; Koji Kawaai; Junji Saito; Takashi Ueda; Yoshihisa Kiso; Junichi Imuta; Terunori Fujita; Masatoshi Nitabaru, and Masayasu Yoshida, all of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 474,658, Jun. 7, 1995, Pat. No. 5,658,997, which is a division of Ser. No. 255,706, Jun. 7, 1994, abandoned. This application Sep. 25, 1996, Ser. No. 719,540

Claims priority, application Japan, Jun. 7, 1993, 5-136253; Sep. 24, 1993, 5-238561; Oct. 6, 1993, 5-250742; Nov. 29, 1993, 5-298744; Nov. 29, 1993, 5-298745; Feb. 23, 1994, 6-25548

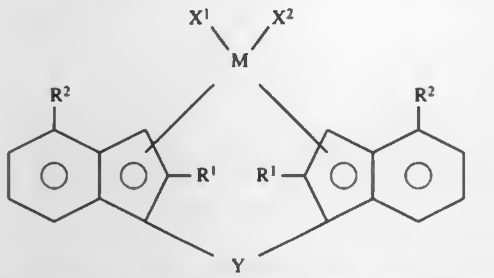
Int. Cl.^{6} C08F *4/64*

U.S. Cl. 526—127 **4 Claims**

1. A process for propylene polymerization comprising polymerizing propylene or copolymerizing propylene and at least one kind of α-olefin selected from the group consisting of ethylene and α-olefins of 4 to 10 carbon atoms to obtain propylene homopolymer or propylene copolymer containing propylene units in an amount of not less than 50% by mol in the presence of a propylene polymerization catalyst selected from the group consisting of

(I) a propylene polymerization catalyst produced by contacting, in any order,

(A) a propylene polymerization catalyst component comprising a transition metal compound represented by the following formula (I):



(I)

M is a transition metal selected from the group consisting of zirconium and hafnium;

R^1 is a hydrocarbon group of 2 to 6 carbon atoms;

R^2 is an aryl group selected from the group consisting of anthracenyl and phenanthryl, which may be substituted with a hydrocarbon group of 1 to 20 carbon atoms;

X^1 and X^2 are each a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group or a sulfur-containing group; and

Y is a divalent silicon-containing group selected from the group consisting of dialkylsilylene, alkylarylsilylene and diarylsilylene; with

(B) at least one compound selected from the group consisting of

(B-1) an aluminoxane, and

(B-2) a compound which reacts with said transition metal compound to form an ion pair;

(II) a propylene polymerization catalyst produced by contacting, in any order,

said propylene polymerization catalyst component as defined in (A) above,

said at least one compound as defined in (B) above, and (C) an organoaluminum compound;

(III) a propylene polymerization catalyst produced by contacting, in any order,

a fine particle carrier,

said propylene polymerization catalyst component as defined in (A) above, and

said at least one compound as defined in (B) above,

wherein said propylene polymerization catalyst as defined in (A) above and said at least one compound as defined in (B) above are supported on said fine particle carrier;

(IV) a propylene polymerization catalyst produced by contacting

said propylene polymerization catalyst as defined in (III) above, with

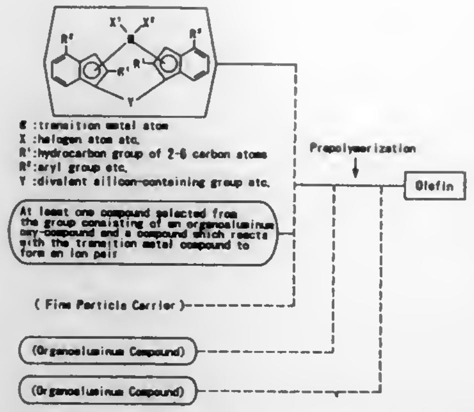
an organoaluminum compound as defined in (C) above;

(V) a propylene polymerization catalyst produced by prepolymerizing propylene with said propylene polymerization catalyst as defined in (IV) above; and

(VI) a propylene polymerization catalyst produced by contacting

said propylene polymerization catalyst as defined in (V) above, with

an organoaluminum compound as defined in (C) above.


X¹
X²
M
R²
R¹
R¹
R²
Y
M :transition metal atom
X :halogen atom etc.
R¹:hydrocarbon group of 2-6 carbon atoms
R²:aryl group etc.
Y :divalent silicon-containing group etc.
At least one compound selected from the group consisting of an organoaluminum oxy-compound and a compound which reacts with the transition metal compound to form an ion pair
(Fine Particle Carrier)
(Organoaluminum Compound)
(Organoaluminum Compound)
Prepolymerization
Olefin

5,710,224

METHOD FOR PRODUCING POLYMER OF ETHYLENE

Helmut G. Alt, Bayreuth, Germany; Syriac J. Palackal, Bartlesville, Okla.; M. Bruce Welch, Bartlesville, Okla.; David C. Rohlfing, Bartlesville, Okla., and Jay Janzen, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, Ser. No. 17,207, Feb. 12, 1993, Pat. No. 5,411,925, and Ser. No. 154,224, Nov. 17, 1993, Pat. No. 5,466,766. This application Mar. 3, 1995, Ser. No. 399,119

Int. Cl.^{6} G08F *4/64;10/02*

U.S. Cl. 526—160 **25 Claims**

1. A process for preparing a polymer of ethylene having a flow activation energy of at least about 25 kJ/mol, comprising contacting ethylene in a liquid diluent with a catalyst system comprising:

(1) a catalyst comprising 1-(9-fluorenyl)-2-(indenyl) ethane zirconium dichloride, and

(2) a cocatalyst for said metallocene.

9. A process for preparing a polymer of ethylene having a flow activation energy of at least about 25 kJ/mol comprising contacting ethylene in the presence of an acyclic olefinic comonomer having 4 to 12 carbon atoms in a liquid diluent wherein the molar ratio of the comonomer employed to the ethylene employed is in the range of from about 0.025/1 to about 0.5/1 and the resulting copolymer has a density in the range of 0.88 to about 0.96 g/cc using a catalyst system comprising:

(1) a fluorenyl-containing metallocene selected from compounds of the formula (Z)—R'—(Z')MeQ_2 wherein R' is selected from —CH_2CH_2—, —CH_2—, and dimethylsilylene, and each Q is a halide, Z is a substituted or unsubstituted fluorenyl radical, Z' is a substituted or unsubstituted fluorenyl radical, a substituted or unsubstituted indenyl radical, a substituted or unsubstituted cyclopentadienyl radical, a tetrahydroindenyl radical, or an octahydrofluorenyl radical; Me is selected from Zr and Hf, and

(2) a cocatalyst for said metallocene.

5,710,225

HETEROPOLYACID CATALYZED POLYMERIZATION OF OLEFINS

John R. Johnson, Euclid, and James D. Burrington, Mayfield, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Aug. 23, 1996, Ser. No. 701,937

Int. Cl.^{6} C08F *4/22;110/10*

U.S. Cl. 526—172 **10 Claims**

1. A method for producing polymers by polymerization of olefins, the method comprising:

contacting a C_2–C_{30} olefin of formula R'—C(R")↑CH_2 where R' is H or hydrocarbyl and R"is H or methyl with a partially or fully neutralized heteropolyacid to produce said polymer, said polymer having a degree of polymerization (dp) of at least 6.

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5,710,226
METHOD FOR FORMING POLYMERS

Willie Lau, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 467,688, Jun. 6, 1995, which is a division of Ser. No. 330,660, Oct. 28, 1994, Pat. No. 5,521,266.
This application Jun. 24, 1996, Ser. No. 668,707
Int. Cl.^{6} C08F *2/10;2/16*

U.S. Cl. 526—200 **8 Claims**

1. A reaction mixture, comprising:
- (a) at least one macromolecular compound having a hydrophobic cavity;
- (b) at least one monomer having low water solubility; and
- (c) water;

wherein the reaction mixture is substantially free of organic solvent.

5,710,227
HIGH TEMPERATURE POLYMERIZATION PROCESS FOR MAKING TERMINALLY UNSATURATED OLIGOMERS

Michael Bennett Freeman, Harleysville; Gary Robert Larson, Hatfield; Richard Foster Merritt, Fort Washington, all of Pa.; Yi Hyon Paik, Princeton, N.J.; Jan Edward Shulman, Newtown, Pa.; Graham Swift, Blue Bell, Pa., and Robert Wilczynski, Yardley, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 258,300, Jun. 13, 1994, abandoned.
This application Jan. 19, 1996, Ser. No. 587,707
Int. Cl.^{6} C08F *2/14;2/16*

U.S. Cl. 526—208 **5 Claims**

1. A continuous process for preparing terminally unsaturated oligomers comprising:
- (a) forming a reaction mixture comprising
  - (i) from 0.5 to 99.95 percent by weight of the reaction mixture of at least one monomer selected from the group consisting of acrylic acid and salts thereof, and acrylic acid and salts thereof in combination with at least one monoethylenically unsaturated monomer;
  - (ii) from 0.05 to 25 percent by weight based on the weight of the at least one monomer of at least one free-tactical initiator; and
  - (iii) no solvent or in the presence of up to 99.5 percent by weight of the reaction mixture of at least one solvent selected from the group consisting of water, acetone, methanol, isopropanol, propionic acid, acetic acid, methylethyl ketone, dimethylformamide, dimethylsulfoxide and combinations thereof, and
- (b) continuously passing the reaction mixture through a heated zone wherein the reaction mixture is maintained at a temperature of at least 275° C. for from 0. 1 seconds to 2 minutes to form terminally unsaturated oligomers.

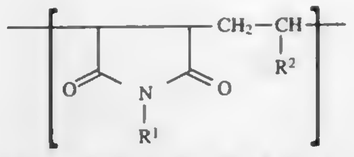
5,710,228
MALEIMIDE/α-OLEFIN COPOLYMERS AND THEIR USE AS LIGHT STABILIZERS AND STABILIZERS FOR ORGANIC MATERIAL

Alfred Krause, Schwetzingen; Walter Denzinger, Speyer; Albert Hettche, Hessheim; Alexander Aumueller, Neustadt, and Hubert Trauth, Dudenhofen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 406,907, Mar. 31, 1995, abandoned.
This application May 10, 1996, Ser. No. 644,123
Claims priority, application Germany, Nov. 24, 1992, 42 39 437.6
Int. Cl.^{6} C08F *222/40;210/00;2/06*

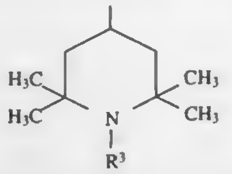
U.S. Cl. 526—262 **8 Claims**

1. A maleimide/α-olefin copolymer composed of structural units of the formula I



(I)

where R^1 is a tetramethylpiperidinyl radical of the formula II



(II)

R^3 is hydrogen, C_1–C_6-alkyl, formyl, C_2–C_6-alkanoyl, C_1–C_{12}-alkoxy, C_5- or C_6-cycloalkoxy, cyanomethyl, 2-hyrdoxy-ethyl, benzyl or a radical of the formula $—CR^4{=}CH—CO—OR^5$, R^4 is hydrogen, C_1–C_6-alkyl or a radical of the formula $—CO—OR^5$, and R^5 is C_1–C_{18}-alkyl, C_5–C_8-cycloalkyl, C_7–C_{18}-aralkyl, phenyl or tolyl, and

up to 8 mol %, based on II, of R^1 may furthermore be hydrogen, C_1–C_{22}-alkyl or C_5–C_8-cycloalkyl, and

R^2 is a mixture of C_{18}–C_{28}-alkyl groups, said mixture comprising at least two C_{18}–C_{28}-alkyl groups which may differ by no more than two carbon atoms, and each of said two C_{18}–C_{28}-alkyl groups being present in an amount of at least 30% of said mixture, and

said copolymer having a number average molecular weight of from 1,000 to 50,000.

5,710,229
LARGE-POLE POLYOLEFIN, A METHOD FOR ITS PRODUCTION AND A PROCATALYST CONTAINING A TRANSESTERIFICATION PRODUCT OF A LOWER ALCOHOL AND A PHTHALIC ACID ESTER

Thomas Garoff, Helsinki; Timo Leinonen, Tolkkinen, and Eero Iiskola, Porvoo, all of Finland, assignors to Borealis Holding A/S, Lyngby, Denmark

Continuation of Ser. No. 146,065, Nov. 9, 1993, abandoned.
This application May 1, 1995, Ser. No. 431,796
Claims priority, application Finland, May 9, 1991, 912264
Int. Cl.^{6} C08F *210/00;4/654*

U.S. Cl. 526—348 **28 Claims**

10. A method for preparing polyolefins having a median pore diameter of at least 15 µm, comprising:
- (A) a polymerizing step, comprising contacting olefins with a procatalyst composition, wherein said procatalyst composition has been prepared by a process comprising:
  - (a) contacting and mixing together (i) a solid $MgCl_2$ carrier selected from the group consisting of solid $MgCl_2$ and $MgCl_2$ impregnated on silica, a (ii) lower alcohol R_1OH wherein R_1 is a C_1–C_4-alkyl group, (iii) and a titanium compound to form a composition comprising a first reaction product, and reacting said composition comprising a first reaction product with a first alkyl ester of phthalic acid, wherein the alkyl moiety of said first alkyl ester of phthalic acid has at least 6 carbon atoms, to form a composition comprising a contacting product;
  - (b) heating said composition comprising contacting product to a temperature of between 130° C. and 140° C. thereby transesterifying said lower alcohol and said first alkyl ester of phthalic acid into a transesterification product comprising a second alkyl ester of phthalic acid, wherein the alkyl moiety of said second alkyl ester of phthalic acid is said C_1–C_4-alkyl group, R_1;
  - (c) separating and washing said transesterification product; and
  - (d) recovering the washed transesterification product as said procatalyst composition; and

- (B) recovering the polyolefin prepared with said procatalyst composition.

5,710,230
CYCLOALIPHATIC DIISOCYANATE BASED RIM ELASTOMERS

David D. Steppan, Gibsonia; Neil H. Nodelman, Upper St. Clair, both of Pa.; Eduard Mayer, Dormagen, Germany; A. Donald Meltzer, Brecksville, Ohio, and Albert Magnotta, Monaca, Pa., assignors to Bayer Corporation, Pittsburgh, Pa., and Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 4, 1996, Ser. No. 657,494
Int. Cl.^{6} C08G *18/75*

U.S. Cl. 528—53 **12 Claims**

1. A process for the production of a polyurethane/urea molding from a reaction injection molding process, wherein said reaction mixture comprises:
- a) an isocyanate component consisting essially of cycloaliphatic diisocyanate,

  and
- b) an isocyanate-reactive component comprising:
  - b1) from 40 to 90% by weight of one or more isocyanate-reactive compounds having a molecular weight of from about 500 to 8000 and containing an average number of functional groups of from 1.5 to 4.0, wherein said functional groups being selected from the group consisting of hydroxyl groups, primary amine groups and secondary amine groups, with the OH:NH equivalent ratio being from 0:1 to 1:1,

    and
  - b2) from 10 to 60% by weight of one or more organic chain extenders having molecular weights of from about 60 to 500, and being selected from the group consisting of diols, triols, primary aliphatic amines, secondary aliphatic amines, amino alcohols and mixtures thereof, wherein said chain extender or mixture thereof has an OH:NH equivalent ratio of from 1:2 to 10:1,

  wherein the percent by weight of components b1) and b2) totalling 100% of component b),

  and
- c) from 0. 1 to 10% by weight, based upon the weight of component b), of one or more catalyst for catalyzing the reaction between the isocyanate groups and the isocyanate-reactive groups,

wherein the reaction mixture is processed via a one-shot process at an isocyanate index of from 80 to 130.

5,710,231
ISOCYANATE-REACTIVE COMPOSITIONS CONTAINING INTERNAL MOLD RELEASE AGENTS

Brian Fogg, Rochester Hills, Mich.; Herbert Russell Gillis, West Deptford, N.J., and Nai Wen Lin, Rochester Hills, Mich., assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 224,892, Apr. 8, 1994, abandoned.
This application Feb. 20, 1996, Ser. No. 604,146
Int. Cl.^{6} C08G *18/10*

U.S. Cl. 528—59 **25 Claims**

1. An isocyanate-reactive composition for use in the manufacture of flexible foam, comprising:
- (a) at least one compound having a plurality of isocyanate-reactive groups; and
- (b) an internal mold release agent consisting essentially of a fatty polyamine having the formula

$$R^1—(NH—R^2)_x—NH_2$$

wherein R^1 is an alkyl group containing 8 to 40 carbon atoms, R^2 is a divalent linking group containing 1 to 8 carbon atoms, and x has a value in the range of 1 to 4.

5,710,232
POLY(ESTER-AMIDE) POLYOLS

Steve Carter, Brussels, and Christopher Phanopoulos, Tervuren, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

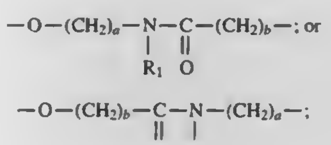
Continuation of Ser. No. 125,875, Sep. 23, 1993, abandoned.
This application Feb. 15, 1996, Ser. No. 601,664
Claims priority, application United Kingdom, Oct. 19, 1992, 9221869
Int. Cl.^{6} C08G *18/60;* **C07C** *233/17;233/46;69/00*

U.S. Cl. 528—82 **9 Claims**

1. Compounds having the formula

$$H—A—(BA)_n—OH$$

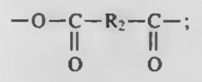
wherein
- n is 1–20;
- A is



$$—O—(CH_2)_a—\underset{R_1}{\underset{|}{N}}—\underset{O}{\underset{\|}{C}}—(CH_2)_b—;\ \text{or}$$

$$—O—(CH_2)_b—\underset{O}{\underset{\|}{C}}—\underset{R_1}{\underset{|}{N}}—(CH_2)_a—;$$

- B is



$$—O—\underset{O}{\underset{\|}{C}}—R_2—\underset{O}{\underset{\|}{C}}—;$$

- R_1 is alkyl having 1–6 carbon atoms;
- R_2 is an alkylene having 1–6 carbon atoms, alkenylene having 2–6 carbon atoms, cyclo-alkylene or cycloalkenylene having 5–8 carbon atoms or phenylene having 6–10 carbon atoms;
- a is 1–6; and
- b is 2–6.

5,710,233
POLYURETHANE ELASTOMERS WITH REDUCED GAS PERMEABILITY

Walter Meckel, Neuss; Klaus König, Odenthal, and Hans-Dieter Thomas, Bergisch Gladbach, all of Germany, assignors to Rhein Chemie Rheinau GmbH, Mannheim, Germany

Continuation of Ser. No. 390,212, Feb. 16, 1995, abandoned.
This application Jan. 6, 1997, Ser. No. 779,198
Claims priority, application Germany, Feb. 25, 1994, 44 06 158.7
Int. Cl.^{6} C08G *18/46;18/60;18/32;* **C08L** *75/06*

U.S. Cl. 528—84 **9 Claims**

1. Polyurethane elastomers with reduced gas permeability obtained by reaction of a mixture consisting of:
- a) diisocyanates,
- b) compounds with a molecular weight of 500 to 10,000 having at least two hydrogen groups that are reactive towards isocyanates,
- c) compounds with a molecular weight of 61 to 499 having at least two hydrogen groups that are reactive towards isocyanates, and optionally,
- d) additives,

  characterised in that
  - i) the ratio of the isocyanate groups in a) to the sum of the isocyanate-reactive groups in b) and c) is between 1:0.80 and 1:1.05 (isocyanate:isocyanate-reactive),
  - ii) the compound b) is a polyester polyol prepared by forming a reactant mixture consisting of adipic acid, ethylene glycol and ϵ-caprolactam, wherein the reactant mixture contains

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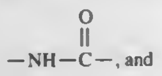
10 to 40% by wt. of ϵ-caprolactam, and then reacting the adipic acid with the ethylene glycol and the ϵ-caprolactam, said polyester polyol containing 3 to 15% by wt., based on the weight of compound b), of amide bonds



$-NH-\overset{O}{\overset{\|}{C}}-$, and

iii) the component d) is at least one material selected from the group consisting of fillers, antistatic agents, anti-ageing agents, flame retardants, pigments, plasticizers, inert solvents, slip agents, inorganic catalysts and organic catalysts.

5,710,234

ORTHO SPIROESTERS AND CURABLE AND CURED RESIN COMPOSITIONS OF SAME

Koichi Fujishiro; Masaya Furukawa; Kazuhiro Watanabe, and Takero Teramoto, all of Kawasaki, Japan, assignors to Nippon Steel Chemical Co., Ltd., and Nippon Steel Corporation, both of Tokyo, Japan

PCT No. PCT/JP94/01189, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/03310, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 19, 1994, Ser. No. 583,055

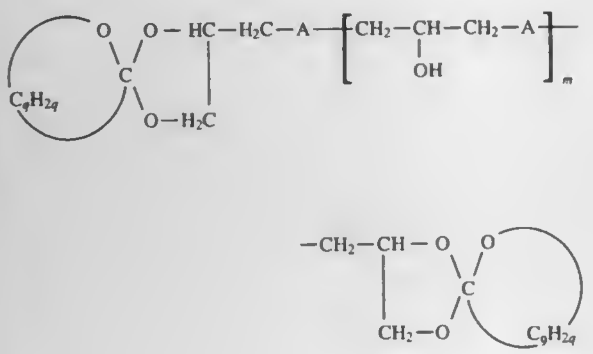
Claims priority, application Japan, Jul. 20, 1993, 5-179131; Aug. 30, 1993, 5-214292; Aug. 30, 1993, 5-214293

Int. Cl.^{6} C08G *59/40;65/00;63/08*

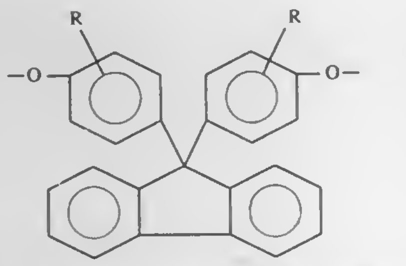
U.S. Cl. 528—106 **6 Claims**

1. An ortho spiroester represented by the following general formula (1)

(1)



wherein A is



2

with R designating hydrogen or a lower alkyl group, m is 0 to 10 and q is an integer from 2 to 10.

5,710,235

OLEFINIC AND URETHANE-TERMINATED ESTER POLYALKADIENE

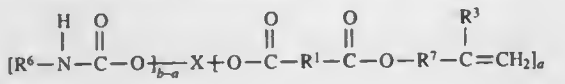
Kirk Joseph Abbey, Raleigh, and Ian Christopher Quarmby, Apex, both of N.C., assignors to Lord Corporation, Cary, N.C.

Filed Dec. 11, 1995, Ser. No. 570,055

Int. Cl.^{6} C08G *63/52*

U.S. Cl. 528—288 **11 Claims**

1. A polymer having a representative structure comprising



$[R^6-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-O\,]_{b-a}X[\,O-\overset{O}{\overset{\|}{C}}-R^1-\overset{O}{\overset{\|}{C}}-O-R^7-\overset{R^3}{\overset{|}{C}}=CH_2]_a$

wherein

X is a polyalkadiene residue,

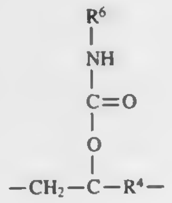
a averages from 1.2 to 2.6 per polymer molecule, provided a is≦b,

b is at least 1.2 per polymer molecule,

R^1 is a divalent radical that includes at least two carbon atoms and is selected from the group consisting of saturated alkylene, substituted saturated alkylene, arylene, and saturated heterocyclic,

R^6 is phenyl, napthyl, an alkyl group having from 1 to 24 carbon atoms, substituted phenyl, substituted napthyl, phenylalkyl or napthylalkyl,

R^7 has the structure



$-CH_2-\underset{}{\overset{O-C(=O)-NH-R^6}{\overset{|}{C}}}-R^4-$

wherein

R^4 is a divalent radical selected from the group consisting of alkylene, alkylene ester, arylene and alkylene ether, and

R^3 is hydrogen, an alkyl group of 1 to 4 carbon atoms, $-CH=CH_2$, or $-R^5-CH=CH_2$ wherein R^5 is an alkylene radical having 1 to 4 carbon atoms.

5,710,236

Patent Not Issued For This Number

5,710,237

LIQUID CRYSTALLINE POLYESTER RESIN

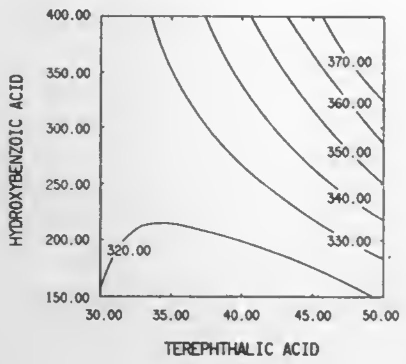
Marion Glen Waggoner, Hockessin, and Michael Robert Samuels, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

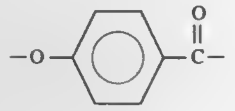
Continuation-in-part of Ser. No. 301,165, Sep. 6, 1994. This application May 8, 1995, Ser. No. 436,990

Int. Cl.^{6} C08G *63/02*

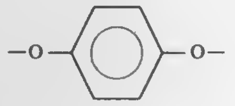
U.S. Cl. 528—190 **1 Claim**

1. A liquid crystalline polyester consisting essentially of repeat units of the formulas:

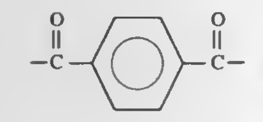




(I)

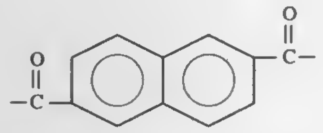


(II)



(IIIa)

and



(IIIb)

wherein:

repeat unit (I) constitutes 53 to 63 mole percent of said repeat units;

repeat unit (II) constitutes 18.5 to 25 mole percent of said repeat units;

repeat units (IIIa) plus (IIIb) constitute 18.5 to 25 mole percent of said repeat units;

the molar ratio of (IIIa):(IIIb) is 35:65 to 45:55; and

the molar ratio of (II) to [(IIIa)+(IIIb)] is about 1.0.

5,710,238

PROCESS FOR PREPARING BRANCHED POLYCARBONATES BY SOLID STATE POLYMERIZATION

Swaminathan Sivaram, and Sukhendu Bikash Hait, both of Maharashtra, India, assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1996, Ser. No. 653,166

Claims priority, application India, Dec. 29, 1995, 2463/DEL/95

Int. Cl.^{6} C08G *64/00*

U.S. Cl. 528—196 **14 Claims**

1. A process for the preparation of branched polycarbonates which comprises subjecting a linear crystallised polycarbonate oligomer prepared by reaction of a dihydroxydiaryl compound with a diaryl carbonate to solid state polycondensation by heating said oligomer at a temperature higher than its glass transition temperature but below its melting point, in the presence of a multifunctional phenol and an alkali or alkaline metal salt of a bisphenol or a tetraalkylammonium hydroxide, carboxylate or bicarboxylate as catalyst, said polycondensation being effected in an inert atmosphere.

5,710,239

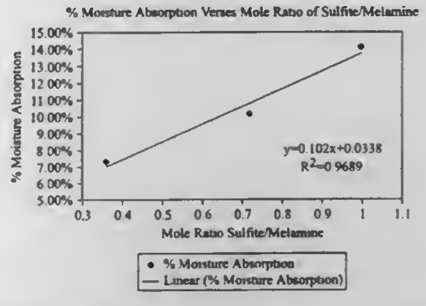
WATER-SOLUBLE SULFONATED MELAMINE-FORMALDEHYDE RESINS

Kim K. Tutin, Renton, Wash., assignor to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Feb. 29, 1996, Ser. No. 609,064

Int. Cl.^{6} C08G *12/30*

U.S. Cl. 528—254 **20 Claims**



1. A water-soluble sulfonated melamine-formaldehyde resin prepared by

reacting melamine and formaldehyde at an initial F/M mole ratio of about 2.0 to 3.0 in the presence of a polyhydroxy compound and under an alkaline condition to form an initial melamine-formaldehyde resin;

sulfonating the initial resin with sodium bisulfite or metabisulfite;

polymerizing the sulfonated melamine-formaldehyde resin by heating;

adding additional melamine to reduce the cumulative F/M mole ratio to about 1.6 to 1.7 and produce a final sulfonated melamine-formaldehyde resin; and

adjusting the pH of the final resin, as necessary, to about 9.0 to 10.0,

wherein sufficient sodium bisulfite or metabisulfite is added to provide a bisulfite/melamine mole ratio of about 0.05 to 1.5 based on the total amount of melamine.

5,710,240

CONDENSATES OF BUTYNE-LINKED HINDERED AMINES

Alfred Steinmann, Praroman, Switzerland, assignor to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Feb. 26, 1996, Ser. No. 606,897

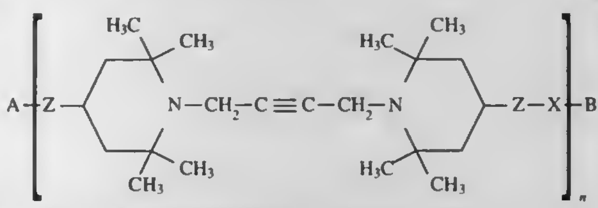
Claims priority, application Switzerland, Mar. 2, 1995, 596/95

Int. Cl.^{6} C08G *69/44;73/16*

U.S. Cl. 528—289 **10 Claims**

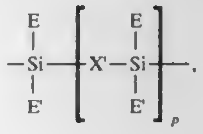
1. A compound of the formula Ia

Ia



in which n is a number in the range from 4 to 80;

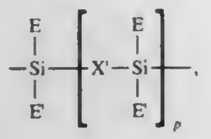
X is $-R^7$, —CO—, —CO—CO—, $-CO-R^2-CO-$, $-CO-NH-R^5-NH-CO-$, $-CO-O-R^6-O-CO-$ or



$-\overset{E}{\underset{E'}{Si}}-[X'-\overset{E}{\underset{E'}{Si}}]_p-$, where p is a number in the range from 0 to 6, X' is O or a direct bond, E is C_1–C_{12}alkyl, phenyl, C_7–C_{12}phenyl alkyl or C_5–C_{12} cycloalkyl, and E' is hydrogen or is as defined for E;

Z, when X is R^7, is O or NR^1;

Z, when X is



$$-\underset{E'}{\overset{E}{Si}}-\left[X'-\underset{E'}{\overset{E}{Si}}\right]_p-,$$

is O; and

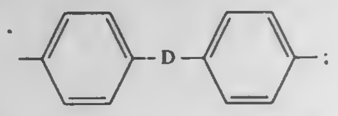
Z, in all other cases, is O, NH or NR^1;

R^1 is C_1–C_8alkyl, C_7–C_9 phenylalkyl, C_5–C_7cycloalkyl, C_2–C_8 alkanoyl, benzoyl or C_1–C_4alkyl-substituted benzoyl;

R^2 and R^7 are C_1–C_{18}alkylene; C_2–C_{18}alkylene which is interrupted by O or S; phenylene; a mixed aromatic/aliphatic radical containing 7 to 12 carbon atoms; naphthylene; or an —R^4—D—R^4— radical;

R^4 is 1,4-cyclohexylene or 1,4-phenylene; and

R^6 is phenylene, naphthylene or



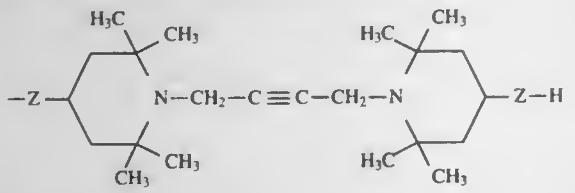
R^5, when Z is O, is as defined for R^2; and

R^5, when Z is NH or NR^1, is as defined for R^6; and

D is C_1–C_3alkylene, —S—, —SO^2, — CO—, —O—, —NH— or NR^1—;

A is hydrogen or a terminal group of the formula —X—Z';

B is a terminal group of the formula



or —Z'; and

Z' is OH, NH^2 or OR^1.

5,710,241

MONOANHYDRIDE COMPOUNDS, METHOD OF MAKING SAME AND REACTION PRODUCTS THEREOF

Michael Haubs, Bad Kreuznach, Germany; Paul Foley, Oldwick, and Dominick L. Cangiano, Neshanic, both of N.J., assignors to Hoechst Celanese Corp., Summit, N.J.

Filed Mar. 2, 1994, Ser. No. 205,054

Int. Cl.^{6} C08G *69/26*

U.S. Cl. 528—353 **5 Claims**

1. A method of preparing an imide-anhydride compound comprising:

(a) selectively hydrolyzing an aromatic dianhydride in an organic solvent medium with an amount of water sufficient and under conditions effective to convert at least 50% of said aromatic dianhydride to the corresponding monoanhydride-diacid;

(b) reacting the monoanhydride-diacid medium of step (a) above with a second compound having at least one primary amine functionality to form an amic acid-diacid intermediate; and

(c) dehydrating said intermediate to form an imide-anhydride compound.

5,710,242

HIGH TEMPERATURE EPOXY RESINS FROM HYDROGENATED QUINOXALINES

Peter Johncock, Farnborough, and David Alan Jones, Malvern, both of Great Britain, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland of Defence Evaluation Research Agency, United Kingdom

PCT No. PCT/GB93/00326, § 371 Date Oct. 25, 1996, § 102(e) Date Oct. 25, 1996, PCT Pub. No. WO95/23142, PCT Pub. Date Aug. 31, 1995

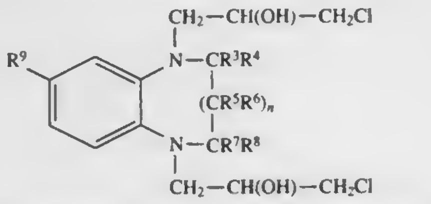
PCT Filed Feb. 16, 1995, Ser. No. 700,371

Claims priority, application United Kingdom, Feb. 24, 1994, 9403563

Int. Cl.^{6} C07D *405/14;* **C08G** *59/32;59/26*

U.S. Cl. 528—407 **15 Claims**

1. A high temperature multi-functional epoxy resin precursor of formula (I):



(I)

wherein R^3 to R^8 inclusive are independently selected from hydrogen, C_1 to C_3 alkyl or halo-alkyl, or aryl and wherein n=0,1 or 2, and wherein R^9=hydrogen, alkyl or halogen.

5,710,243

Patent Not Issued For This Number

5,710,244

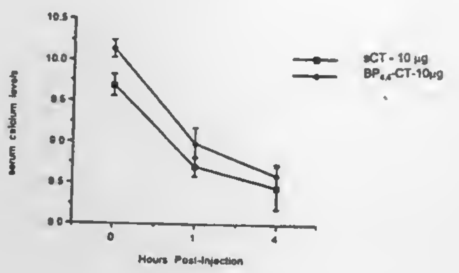
DERIVATIZED CALCITONINS

Virender M. Labroo, 2814 163rd Pl. SE., Mill Creek, Wash. 98012, and Tomikazu Sasaki, 762 Hayes St. #16, Seattle, Wash. 98109

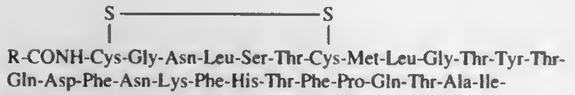
Continuation-in-part of Ser. No. 999,749, Dec. 31, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 176,153

Int. Cl.^{6} A61K *38/23;* **C07K** *14/585*

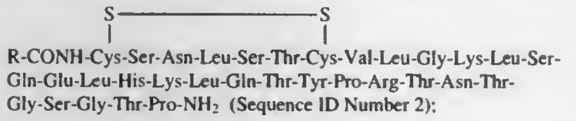
U.S. Cl. 530—307 **26 Claims**



1. A compound selected from the group consisting of:



R-CONH-Cys-Gly-Asn-Leu-Ser-Thr-Cys-Met-Leu-Gly-Thr-Tyr-Thr-Gln-Asp-Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-Gly-Ala-Pro-NH_2 (Sequence ID Number 1);



R-CONH-Cys-Ser-Asn-Leu-Ser-Thr-Cys-Val-Leu-Gly-Lys-Leu-Ser-Gln-Glu-Leu-His-Lys-Leu-Gln-Thr-Tyr-Pro-Arg-Thr-Asn-Thr-Gly-Ser-Gly-Thr-Pro-NH_2 (Sequence ID Number 2);

and pharmaceutically acceptable salts thereof, wherein R is substituted or unsubstituted biaryl, optionally containing 1 or 2 ring nitrogen atoms per ring; or substituted or unsubstituted bis-heterocycloalkyl containing 1 or 2 heteroatoms per ring selected from the group consisting of N, S and O.

5,710,245

ALPHA-HELIX MIMETICS AND METHODS RELATING THERETO

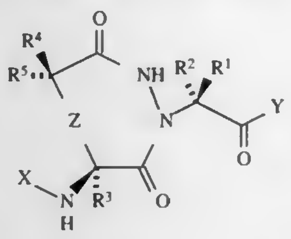
Michael Kahn, Bellevue, Wash., assignor to Molecumetics, Ltd., Bellevue, Wash.

Continuation of Ser. No. 236,240, May 2, 1994, Pat. No. 5,446,128, which is a continuation of Ser. No. 79,316, Jun. 18, 1993, abandoned. This application May 30, 1995, Ser. No. 453,006

Int. Cl.^{6} A61K *38/00;* **C07K** *7/00;7/10*

U.S. Cl. 530—324 **10 Claims**

1. An alpha-helix mimetic having the structure:



wherein Z is an optional methylene moiety; R^1 through R^5 are each selected from naturally occurring amino acid side chain moieties independently selected from the group consisting of amino acids, alpha-helix mimetics and terminating moieties.

5,710,246

PROCESS FOR INTERMEDIATES FOR THE SYNTHESIS OF LHRH ANTAGONISTS

Kenneth W. Funk, Lindenhurst; Edwin O. Lundell; Robert B. Miller, both of Libertyville; Jane L. Chang, Buffalo Grove; Vimal Kishore, Mundelein; James J. Napier, Lindenhurst, all of Ill., and Michael A. Staeger, Greenfield, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 19, 1996, Ser. No. 618,547

Int. Cl.^{6} A61K *38/04;* **C07K** *4/00;1/02*

U.S. Cl. 530—327 **20 Claims**

1. A process for preparing an LHRH antagonist having the structure Q-D2Nal^1-D4ClPhe^2-D3Pal^3-Ser^4-NMeTyr^5-DLys$(Nic)^6$-Leu^7-Lys$(iPr)^8$-Pro^9D$Ala^{10}NH_2$ wherein Q is selected from the group consisting of N-acetyl and THF-Gly, comprising the steps of

a) coupling a first protected oligopeptide compound having the formula

P^1-Ser(P^2)-NMeTyr(P^3)-D-Lys(Nic)-Leu-Lys(iPr)-Pro-DAlaNH_2 (IV)

wherein P^1 is an amino protecting group, and P^2 and P^3 are independently selected —OH protecting groups

with a second oligopeptide compound having the formula

Q-D-2Nal-D-4ClPhe-D-3PalOH (III)

to produce a third oligopeptide compound having the formula

Q-D-2Nal-D-4ClPhe-D-3Pal-Ser(R^1)-NMeTyr(R^2)-D-Lys(Nic)-Leu-Lys(iPr)-Pro-D-AlaNH_2 (V)

wherein R^1 and R^2 are independently selected from the group consisting of hydrogen and —OH protecting group with the proviso that at least one of R^1 or R^2 is an —OH protecting group and

b) when either or both of R^1 and R^2 is an —OH protecting group, deprotecting the compound of formula III to produce the LHRH antagonist.

5,710,247

PROCESS AND INTERMEDIATES FOR THE SYNTHESIS OF LHRH ANTAGONISTS

Kenneth W. Funk, Lindenhurst; Edwin O. Lundell; Robert B. Miller, both of Libertyville; Jane L. Chang, Buffalo Grove; Vimal Kishore, Mundelein; James J. Napier, Lindenhurst, all of Ill., and Michael A. Staeger, Greenfield, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 19, 1996, Ser. No. 618,674

Int. Cl.^{6} A61K *38/04;* **C07K** *4/00;1/02*

U.S. Cl. 530—327 **18 Claims**

1. A process for preparing an LHRH antagonist having the structure Q-D2Nal^1-D4ClPHe^2-D3Pal^3-Ser^4-NMeTyr^5-DLys$(Nic)^6$-Leu ^{7}-Lys$(iPr)^8$-Pro^9D$Ala^{10}NH_2$ wherein Q is selected from the group consisting of N-acetyl and THF-Gly, comprising the steps of:

(a) fully deprotecting a first protected oligopeptide compound having the formula

P^1Ser(P^2)-NMeTyr(P^3)-D-Lys(Nic)-Leu-Lys(iPr)-pro-D-AlaNH_2 (IV)

wherein P^1 is an amino protecting group, and P^2 and P^3 are independently selected —OH protecting groups; and

(b) coupling the unprotecting compound from step (a) with a second oligopeptide compound having the formula

Q-D-2Nal-D-4ClPhe-D-3Pal-OH (III)

to produce said LHRH antagonist.

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PEPTIDE TAG FOR IMMUNODETECTION AND IMMUNOPURIFICATION

Charles F. Grose, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Filed Jul. 29, 1996, Ser. No. 681,935

Int. Cl.^{6} A61K *38/04;* **C07K** *1/00;5/00;* **G01N** *33/53*

U.S. Cl. 530—327 **14 Claims**

1. A chimeric protein comprising a protein linked to one or more heterologous peptide tags wherein said peptide tag, or tags, has the amino acid sequence, SEQ ID No. 1, and wherein said chimeric protein binds to antibody to said peptide tag.

5,710,249

AMINO ACIDS AND PROCESSES FOR MAKING PEPTIDES USING SAME

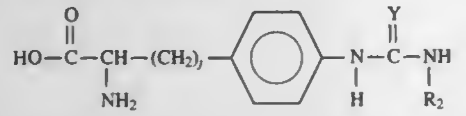
Carl A. Hoeger, San Marcos; Jean E. F. Rivier, La Jolla, and John S. Porter, Leucadia, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Division of Ser. No. 289,103, Aug. 11, 1994, Pat. No. 5,565,574, which is a division of Ser. No. 78,965, Jun. 17, 1993, Pat. No. 5,352,796, which is a continuation-in-part of Ser. No. 6,729, Jan. 21, 1993, Pat. No. 5,296,468, which is a continuation-in-part of Ser. No. 669,695, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 545,239, Jun. 27, 1990, Pat. No. 5,169,932, which is a continuation-in-part of Ser. No. 428,827, Oct. 30, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 465,854

Int. Cl.^{6} A61K *38/00;* **C07K** *2/00*

U.S. Cl. 530—333 **10 Claims**

1. An amino acid having the formula:



wherein J is 1, 2 or 3, Y is N—CN, CH—NO_2 or N—$CONH_2$, and R_2 is alkyl (C_1 to C_6), modified alkyl (C_1 to C_5 with terminal substitution by NH_2, OH, Cl, Br, F or F_3), alkenyl (C_2 to C_4), alkynyl (C_2 to C_4), benzyl, tolyl, p-amino-benzyl, p-chloro-benzyl, or methylpyridyl.

5,710,250

CALCIUM CHANNEL ALPHA 2 SUBUNIT POLYPEPTIDES

Steven Bradley Ellis, San Diego; Mark E. Williams, Carlsbad; Michael Miller Harpold, San Diego; Jean Sartor, San Diego, and Robert Brenner, San Diego, all of Calif., assignors to SIBIA Neurosciences, Inc., La Jolla, Calif.

Continuation of Ser. No. 314,083, Sep. 28, 1994, which is a division of Ser. No. 914,231, Jul. 13, 1992, Pat. No. 5,407,820, which is a continuation of Ser. No. 603,751, Nov. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 176,899, Apr. 4, 1988, abandoned. This application May 5, 1995, Ser. No. 435,675

Int. Cl.^{6} C07K *14/435;14/705;* **C12N** *15/12;15/85*

U.S. Cl. 530—350 **8 Claims**

1. A substantially pure $(alpha)_2$-subunit of a human calcium channel encoded by DNA comprising a sequence of nucleotides that encodes the $(alpha)_2$-subunit of a human calcium channel, wherein the sequence of nucleotides hybridizes under conditions of high stringency with a naturally occuring complementary DNA encoding a human calcium changed subunit that includes all or a portion of the nucleotide sequence set forth in FIG. 2*a* to 2*f* and the portion includes at least nucleotides 43–272 set forth in FIGS. 2*a* to 2*f*.

5,710,251

PURIFICATION OF BACTERIALLY EXPRESSED HUMAN INTERLEUKIN-10

Gary Vellekamp, Glen Ridge; Susan Cannon-Carlson, Wayne, and John Tang, Livingston, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US94/01909, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO94/20525, PCT Pub. Date Sep. 15, 1994

Continuation-in-part of Ser. No. 26,942, Mar. 5, 1993, Pat. No. 5,328,989. This PCT application Mar. 3, 1994, Ser. No. 495,558

Int. Cl.^{6} C07K *14/54;1/18;1/22;1/36*

U.S. Cl. 530—351 **9 Claims**

1. A method for purifying bacterially expressed human Interleukin-10 (IL-10) contained within a solution comprising:

(a) applying a solution containing IL-10 to a cation exchange chromatography column thereby obtaining fractions containing IL-10;

(b) applying the IL-10-containing fractions from step (a) to an anion exchange chromatography column thereby obtaining fractions containing IL-10;

(c) applying the IL-10-containing fractions from step (b) to a hydroxyapatite chromatography chromatography thereby obtaining fractions containing a single isolated dimer of IL-10.

5,710,252

METHOD FOR RECOMBINANT YEAST EXPRESSION AND ISOLATION OF WATER-SOLUBLE COLLAGEN-TYPE POLYPEPTIDES

Shane Crawford Weber, Woodbridge, Conn., and Arthur Herman Herz, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1995, Ser. No. 383,748

Int. Cl.^{6} A61K *38/39*

U.S. Cl. 530—356 **22 Claims**

1. A method for preparing and isolating a recombinant water-soluble collagen polypeptide comprising the steps of:

A) preparing and expressing a water-soluble collagen polypeptide in a yeast host cell culture containing yeast host cells using recombinant DNA technology, said culture comprising from about 10 to about 30 mmol of calcium ions,

B) after centrifugation or diafiltration of said culture to remove said yeast host cells, isolating said expressed water-soluble collagen polypeptide from the supernatant by isoelectric precipitation at a pH which is within ±1 pH unit of the isoelectric point of said water-soluble collagen polypeptide,

C) after centrifugation of the supernatant obtained in step B, resuspending the resulting pellet in a buffer,

D) after centrifugation of the buffered solution formed in step C, subjecting the supernatant thereby obtained to ion exchange chromatography to capture said water-soluble collagen polypeptide,

E) obtaining at least one elution fraction and subjecting it to either hydrophobic interaction chromatography or a second ion exchange chromatography, and

F) recovering said water-soluble collagen polypeptide from at least one elution fraction obtained in step E,

wherein between steps B and E, treating said water-soluble collagen polypeptide, independently, with a calcium salt and a protease.

5,710,253

METHOD FOR DECOLORING HUMAN SERUM ALBUMIN

Wataru Ohtani; Naoto Furuhata; Akinori Sumi; Munehiro Noda, and Takao Ohmura, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Dec. 19, 1994, Ser. No. 358,302

Claims priority, application Japan, Dec. 17, 1993, 5-318710; Dec. 17, 1993, 5-318724

Int. Cl.^{6} C07K *1/36;14/765;1/16;* **A61K** *38/38*

U.S. Cl. 530—364 **15 Claims**

1. A method for decoloring a recombinant human serum albumin, which comprises treating a recombinant human serum albumin (HSA), during purification thereof except in a heat treatment, with a reducing agent, thereby decoloring the recombinant HSA.

5,710,254

PURIFICATION OF VON WILLEBRAND FACTOR BY AFFINITY CHROMATOGRAPHY

Jack Newman, Delray Beach, Fla., and David Farb, Chalfont, Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation of Ser. No. 243,612, May 16, 1994, Pat. No. 5,506,341, which is a continuation of Ser. No. 924,393, Aug. 3, 1992, which is a continuation of Ser. No. 652,702, Feb. 8, 1991, which is a continuation of Ser. No. 205,881, Jun. 13, 1988, Pat. No. 5,006,642, which is a division of Ser. No. 67,990, Jun. 29, 1987, Pat. No. 4,774,323. This application Jun. 7, 1995, Ser. No. 474,623

Int. Cl.^{6} A61K *35/14;* **C07K** *1/00;14/00;16/00*

U.S. Cl. 530—383 **6 Claims**

1. A method of improving the therapeutic activity of von Willebrand Factor prepared by recombinant technology, the improvement comprising: incubating a solution of said Factor, substantially free from a chaotropic agent and Factor VIII and not in contact with a column matrix solid substance, at a temperature of about 20° C. to about 55° C. for about 1 to about 30 hours at a pH of about 6.5 to 7.5 and with buffering, which conditions increase the activity of said Factor.

5,710,255

CHARACTERIZATION OF A NOVEL ANTI-P110^{RB} MONOCLONAL ANTIBODY

H. Michael Shepard, Carlsbad, and Shu Fen Wen, San Diego, both of Calif., assignors to Canji, Inc., San Diego, Calif.

PCT No. PCT/US92/05866, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO94/01467, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 14, 1992, Ser. No. 204,329

Int. Cl.^{6} C07K *16/00;* **C12P** *21/08;* **C12N** *5/00;* **A61K** *39/395*

U.S. Cl. 530—388.8 **2 Claims**

1. An antibody which specifically binds an epitope comprising amino acid residues 886 to 905 of the human wild-type retinoblastoma (RB) tumor suppressor protein (SEQ. ID No. 1), wherein the antibody is the monoclonal antibody designated as 3C8.

5,710,256

METHADONE DERIVATIVES AND PROTEIN AND POLYPEPTIDE METHADONE DERIVATIVE CONJUGATES AND LABELS

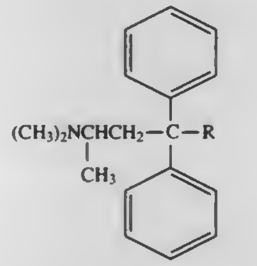
Kenneth F. Buechler, San Diego, Calif., assignor to Biosite Diagnostics Incorporated, San Diego, Calif.

Filed Apr. 3, 1995, Ser. No. 416,034

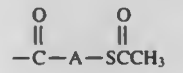
Int. Cl.^{6} C07K *5/00;7/00;17/00;16/00*

U.S. Cl. 530—388.9 **6 Claims**

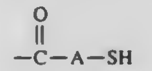
1. Compounds of the formula:



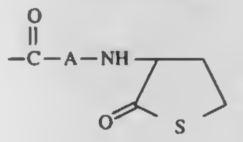
where R is a linking group selected from the group consisting of:



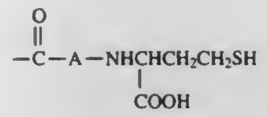
$$-\overset{\overset{O}{\|}}{C}-A-S\overset{\overset{O}{\|}}{C}CH_3$$



$$-\overset{\overset{O}{\|}}{C}-A-SH$$



and



$$-\overset{\overset{O}{\|}}{C}-A-NH\underset{\underset{COOH}{|}}{C}HCH_2CH_2SH$$

where A is a linking group of from 1 to 20 carbons and from 0 to 10 heteroatoms, either branched or straight chain, wherein said heteroatoms are selected from the group consisting of NH, O and S.

5,710,257

METHOD OF CAUSING SELECTIVE IMMUNOSUPPRESSION USING HL-60-RELATED LECTINS

Jeffrey J. Seilhamer, 118a Moulton Dr., Milpitas, Calif. 95035; Glenn Nedwin, 3245 Oyster Bay Ave., Davis, Calif. 95616; Tim Bringman, 817 Santa Florencia, Solana Beach, Calif. 92075, and Pierre-Olivier Couraud, Auffargis, 9 rue du Perray, 78610 Le Perray, France

Division of Ser. No. 326,739, Oct. 20, 1994, which is a continuation of Ser. No. 976,928, Nov. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 313,649, Feb. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 263,734, Oct. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 181,747, Apr. 14, 1988, abandoned. This application Sep. 25, 1996, Ser. No. 719,551

Int. Cl.^{6} C12N *15/00;* **C07K** *14/00*

U.S. Cl. 530—396 **8 Claims**

1. A method to prepare a pharmaceutical composition comprising a

(a) human HL-60 lectin in purified and isolated form, said lectin having an amino acid sequence consisting of positions 2–135 in FIG. 1 including a glycosylation site within positions 96–98, wherein said lectin binds beta-galactoside-containing

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moieties independent of the presence or absence or Ca^{+2}, and has a molecular weight of about 14 Kd; and wherein said lectin is homogenous using the criterion of producing a single peak when subjected to C4-HPLC, is capable of binding to asialofetuin and lypsinized rabbit erythrocytes and wherein agglutination of said lectin is inhibited by thiodigalactoside and beta-lactose; and

(b) a carbohydrate; in admixture with at least one pharmaceutically acceptable excipient,

which method comprises lyophilizing said soluble lectin in an aqueous solution containing about 1–40% concentration wt./volume of a protective carbohydrate at a pH of about 4–8.

5,710,258
AZO DYES

Jean-Marie Adam, Rosenau, France, and Peter Sutter, Muttenz, Switzerland, assignors to Ciba Specialty Chemicais Corporation, Tarrytown, N.Y.

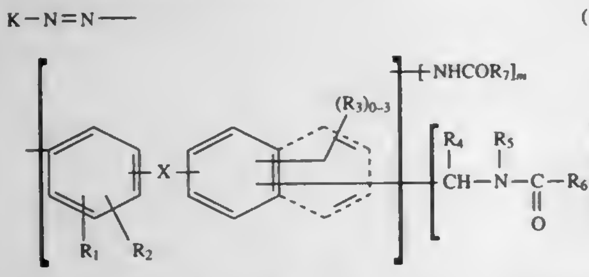
Filed Feb. 5, 1996, Ser. No. 595,435

Claims priority, application Switzerland, Feb. 10, 1995, 406/95

Int. Cl.^{6} C09B *62/62;62/665;62/82;* **D06P** *1/38*

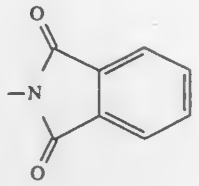
U.S. Cl. 534—643 **13 Claims**

1. A compound of formula

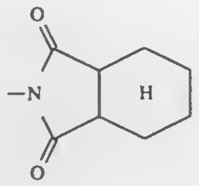


(1)

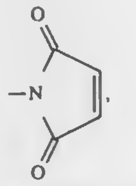
wherein K is the radical of a benzene, naphthalene, 1-phenypyrazol-5-one, 1-phenyl-5-aminopyrazole, pyridone, pyrimidine, indole, naphthylimidazole, diphenylamine, pyrazolo[2,3-a]pyrimidine, tetrahydroquinoline or aceto acetic acid amide coupling component, which radicals are unsubstituted or substituted by C_1–C_6alkyl; C_1–C_4alkoxy; phenoxy; unsubstituted or hydroxy-substituted C_2–C_6alkanoylamino; benzoylamino; amino; N-C_1–C_4alkylamino or N,N-di-C_1–C_4alkyamino, each of which is unsubstituted or substituted in the alkyl moiety by hydroxy, C_1–C_4alkoxy, carboxy, cyano, halogen, sulfo, sulfato, phenyl or sulfophenyl; cyclohexylamino; N-phenylamino or N-C_1–C_4alkyl-N-phenylamino, each of which is unsubstituted or substituted in the phenyl moiety by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or sulfo; C_2–C_4alkoxycarbonyl; trifluromethyl; nitro; cyano; halogen, ureido; hydroxy; carboxy; carboxy; sulfo; sulfomethyl; carbamoyl; sulfamoyl; N-phenylsulfamoyl or N-C_1–C_4alkyl-N-phenylsulfamoyl; each of which is unsubstituted or substituted in the phenyl moiety by sulfo or carboxy; methylsulfonyl or ethylsulfonyl; or phenylazo or naphthylazo, each of which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, sulfo, amino, N-C_1–C_4alkylamino, N,N-di-C_1–C_4alkylamino, or phenylamino; X is a bridge member of formula —SO_2—O—, R_1 and R_2 are each independently of the other hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, halogen or sulfo, $(R_3)_{0-3}$ is 0–3 identical or different radicals R_3 selected from the group consisting of C_1–C_4alkyl, C_1–C_4alkoxy, halogen and sulfo, R_4 is hydrogen, carboxyl or trihalomethyl, R_5 is hydrogen or C_1–C_4alkyl, R_6 is unsubstituted or substituted C_1–C_4alkyl, C_2–C_4alkenyl or phenyl, or the —N(R_5)—CO—R_6 radical is a radical of formula



(2)



or (3)



(4)

R_7 is a —CHY—CH_2Y or —CY═CH_2 radical, wherein Y is bromo or chloro, m is 0 or 1, and n is 0, 1, 2 or 3, with the proviso that the sum of (n+m) ≧1.

5,710,259
OLIGOSACCHARIDE-CONTAINING 14-AMINOSTEROID COMPOUNDS AND NOVEL DIASTEREOSELECTIVE AMINOSTEROID PROCESS CHEMISTRY

Paul Michael Dybas, Port Crane; Roland Norman Johnson, Norwich; Randy Stuart Muth, Poolville, and Song Liu, Norwich, all of N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 406,833, Mar. 20, 1995, abandoned, which is a continuation of Ser. No. 126,459, Sep. 24, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,911

Int. Cl.^{6} C07H *15/24;* **A61K** *31/705*

U.S. Cl. 536—18.5 **12 Claims**

1. A process for introducing an amino group at the 14-position on asteroid nucleus, wherein said amino group is diasteroselectively introduced onto the 14-position of the steroid nucleus via an iodoisocyanate addition comprising the steps of:

a) adding the iodoisocyanate to the 14–15 position double bond on the steroid nucleus; and

b) dehalogenation; and

c) isocyanate conversion to the amine moiety on the 14-position of the steroid nucleus.

5,710,260
METHOD OF EXTRACTING SENNOSIDES A, B AND A1

Alfons Carcasona, Köln; Wolf Grimminger, Bergisch-Gladbach, both of Germany; Pentti Hietala, Helsinki, Finland; Helga Zaeske, and Klaus Witthohn, both of Overath, Germany, assignors to Madaus AG, Cologne, Germany

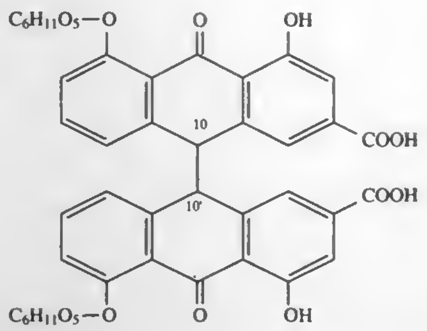
Continuation of Ser. No. 342,660, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 219,005, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 969,253, Feb. 19, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 614,772

Claims priority, application Germany, Jun. 25, 1991, 41 20 991.5

Int. Cl.^{6} C07H *15/244;1/00;* **A61K** *35/78*

U.S. Cl. 536—18.5 **15 Claims**

1. A process for obtaining sennosides A, B and Al of the formula:



which are substantially free from sennosides C, D and Dl and from aloe-emodin derivatives, wherein

a) a sennoside mixture is reduced to rhein-9-anthrone-8-glucoside and aloe-emodin-9-anthrone-8-glucoside,

b) a liquid-liquid partitioning of the compounds obtained is carried out between a polar organic solvent which is only partly miscible with water and an aqueous phase and

c) the rhein-9-anthrone-8-glucoside contained after partitioning in the aqueous phase is again oxidized to the corresponding sennosides and these are recovered.

5,710,261
PROCESS FOR THE SEPARATION OF ALCOHOLS BY DISTILLATION

Wilhelm Johannisbauer, Erkrath; Michael Nitsche, Solingen, and Lutz Jeromin, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 318,850, Dec. 16, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 594,506

Claims priority, application Germany, Apr. 24, 1992, 42 13 456.0

Int. Cl.^{6} O07H *15/04*

U.S. Cl. 536—18.6 **14 Claims**

1. A process for reducing the aliphatic alcohol content of a mixture comprised of an alkyl polyglycoside and an aliphatic alcohol having up to about 30 carbon atoms comprising passing a mixture comprised of an alkyl polyglycoside and one or more aliphatic alcohols having up to about 30 carbon atoms through a falling film evaporator wherein the linear load in said evaporator is at least 1.0 m^3/h m.

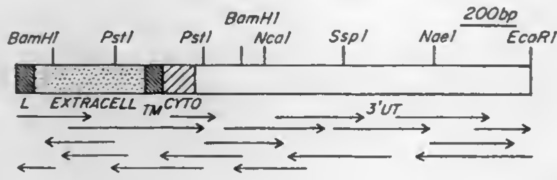
5,710,262
NUCLEIC ACID ENCODING HB15 POLYPEPTIDES

Thomas F. Tedder, Durham, N.C., and Liang-Ji Zhou, Boston, Mass., assignors to Dana-Faber Cancer Institute, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 870,029, Apr. 17, 1992, Pat. No. 5,316,920. This application Apr. 25, 1994, Ser. No. 233,005

Int. Cl.^{6} C12Q *1/68;* **G01N** *33/48;* **C07H** *19/00;21/02*

U.S. Cl. 536—22 **3 Claims**



1. An isolated nucleic acid comprising at least 20 nucleotides that hybridizes under stringent conditions with a region of the coding portion of the nucleotide sequence of SEQ ID NO: 1, said isolated nucleic acid comprising less than a full coding sequence for the HB15 protein having the amino acid sequence of SEQ ID NO:2.

5,710,263

Patent Not Issued For This Number

5,710,264
LARGE COMB TYPE BRANCHED POLYNUCLEOTIDES

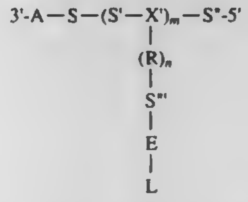
Michael S. Urdea, Alamo; Thomas Horn, Berkeley; Chu-An Chang, El Cerrito; Brian Warner, and Timothy J. Fultz, both of Martinez, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 813,588, Dec. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 558,897, Jul. 27, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 478,085

Int. Cl.^{6} C07H *21/02;21/04*

U.S. Cl. 536—23.1 **36 Claims**

1. A large comb-type branched polynucleotide of the formula:



$$\begin{array}{c} 3'\text{-}A-S-(S'-X')_m-S''\text{-}5' \\ | \\ (R)_n \\ | \\ S''' \\ | \\ E \\ | \\ L \end{array}$$

where A is an oligonucleotide substantially complementary to an analyte nucleic acid sequence;

S is a first spacer segment of 1 to 50 linked monomers wherein each of the monomers is independently selected from the group consisting of nucleotides and cleavable linker R;

S' is a branching site spacer segment of 0 to about 15 linked monomers wherein each of the monomers is independently selected from the group consisting of nucleotides and cleavable linker R;

X' is a multifunctional nucleotide that provides a branch site;

m is an integer of 1 to 100;

S" is a second spacer segment of 0 to 10 linked monomers wherein each of the monomers is selected from the group consisting of nucleotides and cleavable linker R;

R is a cleavable linker molecule;

n is 0 or 1;

S'" is a third spacer segment of 0 to 10 linked monomers wherein each of the monomers is selected from the group consisting of nucleotides and cleavable linker R;

E is an oligonucleotide segment of 5 to 10 nucleotides; and

L is an oligonucleotide containing 2 to 10 iterations of a nucleotide sequence substantially complementary to a labeled nucleic acid probe.

5,710,265
GENE ENCODING MELANOCORTIN-5 RECEPTOR AND METHODS OF USE

Tadataka Yamada, and Ira Gantz, both of Ann Arbor, Mich., assignors to The Regents Of The University Of Michigan, Ann Arbor, Mich.

Division of Ser. No. 200,711, Feb. 17, 1994, Pat. No. 5,622,860. This application Jun. 27, 1996, Ser. No. 672,109

Int. Cl.^{6} C12N *15/10;5/10;1/21;* **G01N** *33/53*

U.S. Cl. 536—23.5 **16 Claims**

6. An isolated nucleic acid molecule comprising a nucleotide sequence which hybridizes to the nucleic acid comprising the

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nucleotide sequence of Sequence Listing ID No. 9 in 6×SSC at 42° C. followed by washing with 1×SSC at 55° C. wherein said isolated nucleic acid molecule encodes a melanocortin-5 receptor.

5,710,266
NUCLEIC ACID ENCODING AN INTERLEUKIN 4 SIGNAL TRANSDUCER

Steven L. McKnight, and Jinzhao Hou, both of South San Francisco, Calif., assignors to Tularik Inc., South San Francisco, Calif.

Division of Ser. No. 276,099, Jul. 15, 1994, Pat. No. 5,591,825, which is a continuation-in-part of Ser. No. 269,604, Jul. 5, 1994, abandoned. This application Jan. 5, 1997, Ser. No. 781,890

Int. Cl.^{6} C12N *15/12;* **C07K** *14/47*

U.S. Cl. 536—23.5 **3 Claims**

1. An isolated nucleic acid encoding an interleukin-4 signal transducer and activator of transcription (IL-4 STAT) protein wherein said protein:
   (a) selectively binds a transcription factor binding site having a sequence selected from the group consisting of SEQ ID NO: 03, SEQ ID NO: 04, SEQ ID NO: 05, SEQ ID NO: 06, SEQ ID NO: 07, SEQ ID NO: 08 or SEQ ID NO: 09; and
   (b) selectively binds an IL-4 receptor peptide having a sequence defined by SEQ ID NO: 10 or SEQ ID NO: 11; and
   (c) is encoded by a DNA which hybridizes with SEQ ID NO:01 under high stringency conditions.

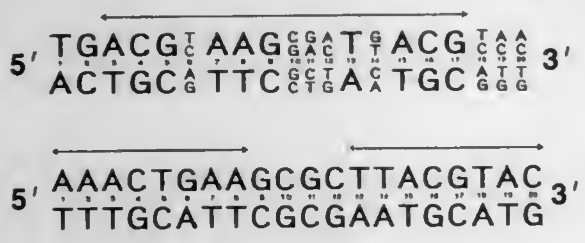
5,710,267
OCS-ELEMENT

Jeff G. Ellis, Macquarie; Daniel J. Llewellyn, O'Connor; W. James Peacock, Deakin; Elizabeth Dennis, Yarralumla, all of Australia, and David Bouchez, Versaille, France, assignors to Agrigenetics, L.P., San Diego, Calif., and Commonwealth Scientific and Industrial Research Organization, Australla

Continuation of Ser. No. 525,897, May 18, 1990, Pat. No. 5,573,932, which is a continuation-in-part of Ser. No. 11,614, Feb. 6, 1987, abandoned. This application Jun. 2, 1995, Ser. No. 460,378

Int. Cl.^{6} C12N *15/29;15/32;5/04;15/82*

U.S. Cl. 536—24.1 **34 Claims**



1. A recombinant DNA molecule comprising a DNA fragment which fragment is a plant enhancer element capable of being bound by an OCS transcription factor and displaying the upper band binding pattern characteristic of the wild-type ocs enhancer in gel retardation assays, said fragment comprising a consensus sequence selected from the group consisting of

```
5'-A-C-G-T-A-A-G-C-G-A-T-G-A-C-G-T-3'
         C        GAC   T   C
```

and its reverse sequence, in combination with
   (a) a plant-expressible promoter heterologous to said plant enhancer element wherein said promoter is placed 3' to said enhancer element, and
   (b) a plant-expressible structural gene wherein said gene is placed 3' to said promoter and under the regulatory control of said enhancer element and said plant-expressible promoter.

5,710,268
PROCESS FOR THE PREPARATION OF METHYLATED CYCLODEXTRIN DERIVATIVES, AND THEIR USE AS SOLUBILIZERS

Thomas Wimmer, München, Germany, assignor to Consortium für elektrochemische Industrie GmbH, Munich, Germany

Filed Sep. 14, 1994, Ser. No. 308,376

Claims priority, application Germany, Oct. 1, 1993, 43 33 598.5

Int. Cl.^{6} C08B *37/16;37/00*

U.S. Cl. 536—103 **16 Claims**

1. A process for the preparation of a methylated cyclodextrin selected from the group consisting of a methylated α-cyclodextrin, a methylated β-cyclodextrin, a methylated γ-cyclodextrin and the mixtures thereof, which process has a total reaction time of about 5–30 hours, comprising
   initially dissolving an α-, β-, or γ-cyclodextrin or mixture thereof in a portion of a base and subsequently adding methyl chloride as an O-alkylation agent and additional base simultaneously and continuously during a period of time up to two-thirds of the total reaction time;
   reacting the α-, β-, or γ-cyclodextrin or mixture thereof in said base with said methyl chloride O-alkylating agent to produce a reaction mixture; and
   separating the resulting methylated cyclodextrin derivatives out of the reaction mixture.

5,710,269
METHOD OF MAKING STARCH ACETATE USING AN ACID CATALYST

Bernice I. Feuer, Berkeley Heights, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Jan. 16, 1996, Ser. No. 584,931

Int. Cl.^{6} C08B *31/02;33/02;35/02*

U.S. Cl. 536—107 **24 Claims**

1. A method for the production of starch ester polymer comprising
   catalyzing the synthesis of starch esters from the reaction of
      (a) a starch,
      (b) a carboxylic acid selected from carboxylic acids which are liquid at room temperature, and
      (c) a carboxylic anhydride, selected from carboxylic anhydrides which are liquid at room temperature with an acid catalyst which does not generate oxidation products and does not depolymerize the starch,
   wherein the starch ester is characterized by at least about 20% high molecular weight carbohydrates, as determined using size exclusion chromatography, and is white in color.

5,710,270
WATER-SOLUBLE POLYSACCHARIDE AND A PROCESS FOR PRODUCING THE SAME

Hirokazu Maeda; Hitoshi Furuta; Ryuji Yoshida; Taro Takahashi; Yoko Sato, all of Ibaraki; Masanori Hisakawa, and Susumu Teranishi, both of Osaka, all of Japan, assignors to Fuji Oil Co., Ltd., Osaka, Japan

Continuation of Ser. No. 273,862, Jul. 12, 1994, abandoned. This application May 14, 1996, Ser. No. 647,558

Int. Cl.^{6} C07H *1/08;1/00;* **C08B** *37/00*

U.S. Cl. 536—124 **5 Claims**

1. A process for preparing a water-soluble polysaccharide wherein its constituent sugar components are rhamnose, fucose, arabinose, xylose, galactose, glucose and uronic acid, and having a degree of esterification of uronic acid not more than 50%, comprising demethoxylation of a methylated carboxyl group of uronic acid before or after extraction of a water-soluble hemicellulose, and in which process, said demethoxylation step comprises heating a raw material containing a water-soluble hemicellulose at a temperature of from 40° to 90° C. at a pH of from 9 to 14, and said extraction step comprises heat extracting a raw material containing a water-soluble hemicellulose at a temperature of from 80° to 130° C. at a pH of from 3 to 6 and separating a water-soluble fraction.

5,710,271
PROCESS FOR THE PREPARATION AND SEPARATION OF DIASTEREOMERIC SALTS OF FOLINIC ACID

Ernst Felder; Giorgio Ripa, and Carlo Distaso, all of Milan, Italy, assignors to Dibra S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 456,767, Jun. 1, 1995, Pat. No. 5,599,931. This application Jun. 7, 1995, Ser. No. 480,097

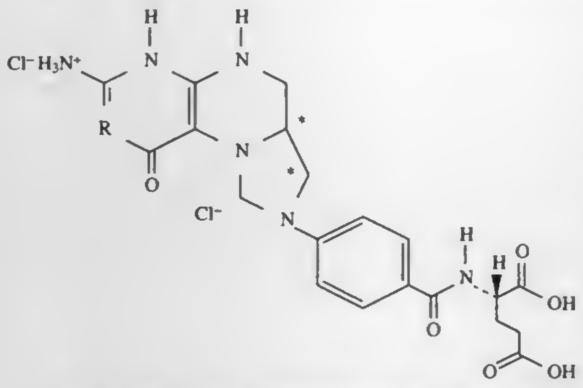
Claims priority, application Italy, Jun. 8, 1994, MI94A1193

Int. Cl.^{6} C07D *475/04*

U.S. Cl. 544—258 **7 Claims**

1. A process for the preparation of essentially pure (6S) diastereoisomer of the calcium salt of folinic acid which comprises the steps of:
   1) reacting the racemic mixture of (6RS) -5,10-methenyl-5,6,7,8-tetrahydrofolic acid chloride hydrochloride of formula (I)

I



   with a diamine which is a member selected from the group consisting of ethylenediamine, 1,2-diamino-propane, 1,3-diamino-propane, 1,3-diamino-2-hydroxy-propane, (cis)-1,2-diamino-cyclohexane, (trans)-1.2-diamino-cyclohexane, (trans)-1,2-diamino-cyclohexane, piperazine, 2-methylpiperazine 1,4-dimethyl-piperazine, 2,5-dimethyl piperazine in a reaction medium which is water or a water/aprotic dipolar solvent mixture in a ratio of 1:05–1-20 by weight, said aprotic dipolar solvent being a member selected from the group consisting of dimethylformamide, dimethyl-acetamide, dimethylsulphoxide, N-methyl-pyrrolidone and hexamethylfosphoramide; whereby said compound of formula (I) is hydrolyzed to give the racemic salt of (6 R,S) folinic acid with said diamine in a molar ratio of 1:1;
   2) crystallizing the most insoluble diastereoisomeric salt of said amino (6 R,S) folinate by cooling the reaction solution from step 1) and adding an amount of said aprotic dipolar solvent up to a maximum water/aprotic dipolar solvent ratio of 1:60 by weight;
   3) a) when in the most insoluble diastereoisomeric salt of step 2) is the (6S) diastereoisomer, reacting said amino (6S) folinate with calcium chloride in a (6S) salt/$CaCl_2$ ratio ranging from 1:1 to 1:6 by weight, in an aqueous solution, at a temperature from 5 to 25° C. and at a pH from 6.5 to 7.5;
      b) when the most insoluble diastereoisomeric salt from step 2) is the (6 R) diastereoisomer, removing the same and then crystallizing the amino (6S) folinate from the mother liquors by adding one of the aprotic dipolar solvents of step 1) and finally treating said amino (6S) folinate with $CaCl_2$ as described in step 3 a) or directly treating said mother liquors with $CaCl_2$ as described in step 3 a).

5,710,272
7-METHOXYMETHLY-3-METHYL-1-(5-OXOHEXYL)XANTHINE

Werner Aretz, Königstein/Taunus; Harald Furrer, Hofheim am Taunus; Ulrich Gebert, Schlossborn, and Heinz-Joachim Hinze, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 194,563, Feb. 10, 1994, Pat. No. 5,472,873, which is a division of Ser. No. 975,996, Nov. 13, 1992, Pat. No. 5,310,666, which is a continuation of Ser. No. 631,400, Dec. 21, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 480,801

Claims priority, application Germany, Dec. 23, 1989, 39 42 872.9

Int. Cl.^{6} C07D *473/06;473/10*

U.S. Cl. 544—271 **1 Claim**

1. 7-Methoxymethyl-3-methyl-1-(5-oxohexyl)xanthine.

5,710,273
COMPLEX CRYSTAL COMPRISING TRICYCLIC ORGANIC BASES

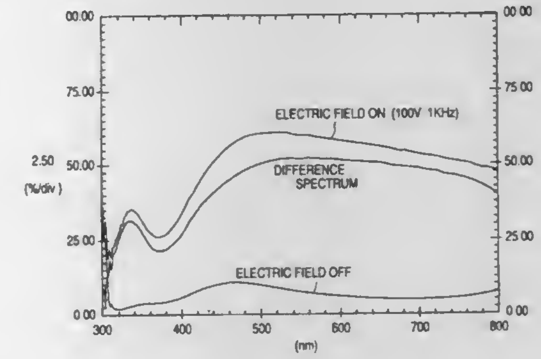
Arimitsu Usuki, Nagoya; Hisato Takeuchi, Chita; Narihito Tatsuda, Nagoya; Akane Okada, Obu; Toshio Kurauchi, Nagoya; Hiromitsu Tanaka, Aichi-ken; Shinobu Okayama, Toyota; Kazuo Tojima, Toyota; Akio Fukui, Toyota, and Toshiro Okamoto, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi-ken, Japan

Division of Ser. No. 510,755, Aug. 3, 1995, Pat. No. 5,646,284, which is a continuation of Ser. No. 202,925, Feb. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 987,961, Dec. 11, 1992, abandoned. This application Jul. 25, 1996, Ser. No. 686,040

Claims priority, application Japan, Dec. 12, 1991, 3-329115; Jul. 14, 1992, 4-187020; Dec. 4, 1992, 4-325592; Jun. 29, 1993, 5-159398

Int. Cl.^{6} C07D *241/46*

U.S. Cl. 544—347 **20 Claims**



1. A complex crystal consisting essentially of:
   the anion of triiodine;
   the cation of acridine or a derivative thereof having a basic property; and

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the anion of a Bronsted acid selected from the group consisting of sulfuric, hydrochloric, phosphoric, hydroiodic, sulfonic, monocarboxylic, and dicarboxylic acids, wherein the cation and the Bronsted acid anion form a neutral salt, so that an electron placed on the complex crystal is likely to move because of an interaction between the salt and the triiodine anion.

5,710,274

N-AMINOALKYLDIBENZOFURANCARBOXAMIDES; NEW DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

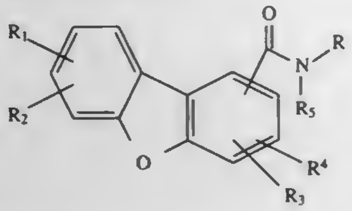
Jun Yuan, Clinton, and Xi Chen, New Haven, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Feb. 28, 1996, Ser. No. 608,259

Int. Cl.^{6} C07D *405/12;401/00;241/02;209/00*

U.S. Cl. 544—375 **14 Claims**

1. A compound of the formula:



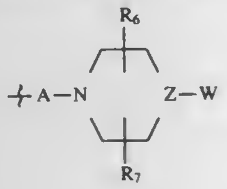
or the pharmaceutically acceptable salts thereof wherein:

R_1, R_2, R_3, R_4 are the same or different and represent hydrogen, C_1–C_6 alkyl, halogen, hydroxy, amino, cyano, nitro, trifluoromethyl, trifluoromethoxy, C_1–C_6 alkoxy, —O_2CR', —NHCOR', —COR', —SO_mR', where R' is C_1–C_6 alkyl and wherein m is 0, 1 or 2; or

R_1, R_2, R_3, R_4 independently represent —$CONR''_m$, or where m is 0, 1 or 2 and R" is hydrogen or C_1–C_6 alkyl;

R_5 is hydrogen or C_1–C_6 alkyl; and

R represents an aminoalkyl group of the formula



where

A represents an alkylene group of 2 to 6 carbon atoms optionally substituted with one or more alkyl groups having from 1 to 4 carbon atoms;

R_6 and R_7 are the same or different and represent hydrogen or C_1–C_6 alkyl; and

W is phenyl, naphthyl, 1-(5,6,7,8-tetrahydro)naphthyl or 4-(1,2-dihydro)indenyl, pyridinyl, pyrimidyl, isoquinolinyl, benzofuranyl, benzothienyl; each of which is optionally substituted with up to three groups independently selected from halogen, C_1–C_6 alkyl, C_1–C_4 alkoxy, thioalkoxy, hydroxy, amino, monoalkylamino, dialkylamino, cyano, nitro, trifluoromethyl or trifluoromethoxy.

5,710,275

7BETA-SUBSTITUTED-4-AZA-5ALPHA-ANDROSTAN-3-ONES AS 5ALPHA-REDUCTASE INHIBITORS

Raman K. Bakshi, Edison; Gary H. Rasmusson, Watchung; Richard L. Tolman, Warren; Gool F. Patel, Califon; Georgianna S. Harris, Tinton Falls; Donald W. Graham, Mountainside, and Bruce E. Witzel, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

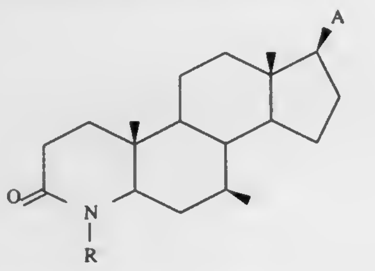
PCT No. PCT/US93/04643, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO93/23420, PCT Pub. Date Nov. 25, 1993

Continuation-in-part of Ser. No. 886,572, May 20, 1992, abandoned. This PCT application May 14, 1993, Ser. No. 341,602

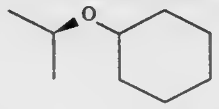
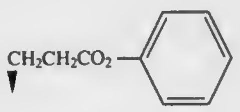
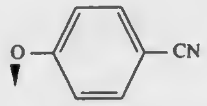
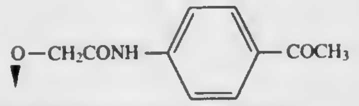
Int. Cl.^{6} A61K *31/47*

U.S. Cl. 546—78 **2 Claims**

1. A compound of structural formula



selected from the group consisting of those in the following table:

R	A
H	
—CH_3	
—CH_3	
—CH_3	$O—CH_2—CO_2C_2H_5$
—CH_3	$O—CH_2CO_2H$
—CH_3	O—CH_2CONHPh
—CH_3	

5,710,276

Patent Not Issued For This Number

5,710,277

PROCESS FOR R (+) 1,2,3,6-TETRAHYDRO-4-PHENYL-1-[(3-PHENYL-3-CYCLOHEXEN-1-YL)METHYL]PYRIDINE, A CENTRAL NERVOUS SYSTEM AGENT

Donald Eugene Butler, Holland, Mich.; Jodette Gailey, Chicago, Ill.; Tung Van Le, Jenison, Mich.; William John Smith, III, Indianapolis, Ind., and David Juergen Wustrow, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

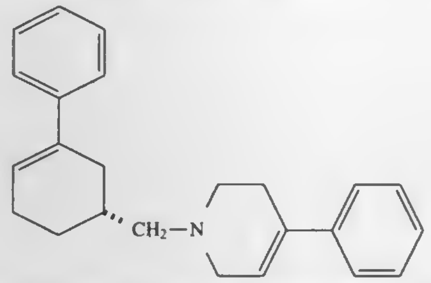
Filed Sep. 12, 1994, Ser. No. 304,074

Int. Cl.^{6} C07D *211/02;* **C07C** *69/76;65/32*

U.S. Cl. 546—185 **39 Claims**

1. A process for the preparation of the compound of Formula I

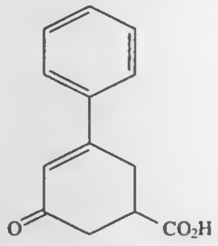
I



and pharmaceutically acceptable salts thereof which comprises:

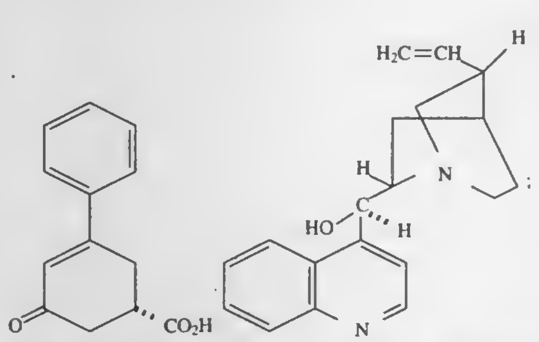
Step (a) treating the racemic compound of Formula VIII

VIII



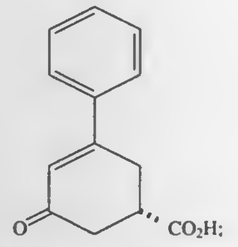
with cinchonidine in a solvent to afford the compound of Formula VII

VII



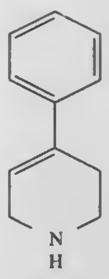
Step (b) treating the compound of Formula VII with a base in a solvent to afford after acidification the compound of Formula VI

VI



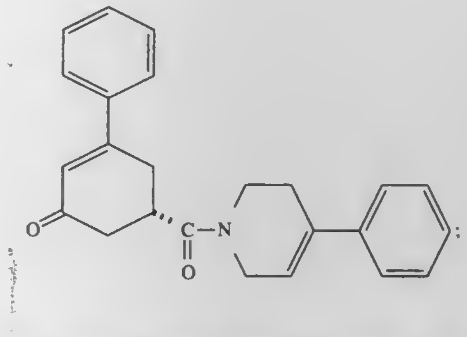
Step (c) treating the compound of Formula VI with the compound of Formula V

V

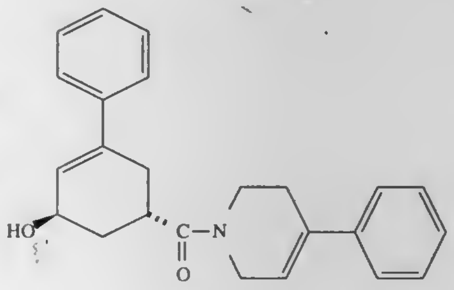


in the presence of a coupling reagent and a solvent to afford the compound of Formula IV

IV

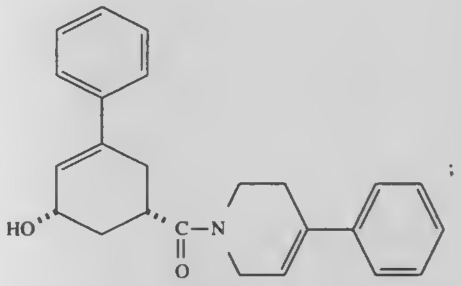


Step (d) treating the compound of Formula IV with a reducing reagent in a solvent to afford a mixture of compounds of Formula IIIa and Formula IIIb



IIIa

+



IIIb

Step (e) treating the mixture of compounds of Formula IIIa and Formula IIIb with a mixture of zinc chloride, and sodium cyanoborohydride in a solvent followed by a solution of a carboxylic acid in a solvent to afford the compound of Formula II

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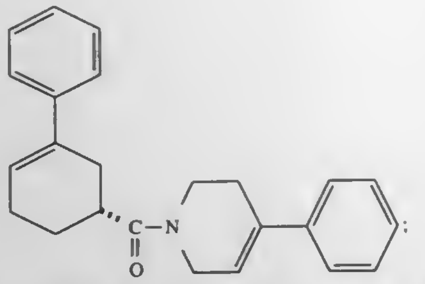


II

Step (f) treating the compound of Formula II with a metal hydride reducing agent in a solvent to afford the compound of Formula I;

Step (g) and, if desired, converting the resulting compound of Formula I to a corresponding pharmaceutically acceptable acid addition salt by conventional means, and if so desired, converting the corresponding pharmaceutically acceptable acid addition salt to a compound of Formula I by conventional means.

5,710,278
HERBICIDAL 1-PYRIDYLTETRAZOLINONES

Toshio Goto; Koichi Moriya, both of Tochigi; Fritz Maurer, Tokyo; Seishi Ito, Oyama; Katsuaki Wada, Tochigi; Kazuhiro Ukawa, Oyama; Ryo Watanabe, and Asami Ito, both of Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

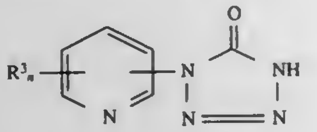
Division of Ser. No. 498,736, Jun. 6, 1995, Pat. No. 5,641,727. This application Feb. 19, 1997, Ser. No. 802,152

Claims priority, application Japan, Jul. 12, 1994, 6-181916; Jan. 30, 1995, 7-31785

Int. Cl.^{6} C07D *401/04*

U.S. Cl. 546—268.4 **3 Claims**

1. A pyridyltetrazolonone of the formula



in which

n is 0, 1, 2, or 3, and

R^3 each independently is nitro, halogen, alkyl, haloalkyl, alkoxy, alkylthio or phenoxy.

5,710,279
N-ACYLOXYALKYL-CARBOXAMIDES AND PROCESS FOR THEIR PREPARATION

Reinhard Lantzsch, Wuppertal, and Werner Lindner, Köln, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

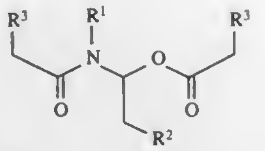
Division of Ser. No. 393,960, Feb. 24, 1995, Pat. No. 5,599,940. This application Sep. 5, 1996, Ser. No. 708,441

Claims priority, application Germany, Mar. 4, 1994, 44 07 182.5

Int. Cl.^{6} C07C *69/63;69/02;* **C07D** *213/55;333/24*

U.S. Cl. 546—329 **1 Claim**

1. A process for the preparation of an N-acyloxyalkyl-carboxamide of the formula (I):



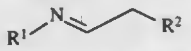
(I)

in which

R^1 is alkyl, alkenyl, alkinyl, cycloalkyl, cycloalkylalkyl, arylalkyl or heteroarylalkyl, each of which is optionally substituted,

R^2 is optionally substituted alkyl and

R^3 is hydrogen, halogen or optionally substituted alkyl, which comprises reacting an imine of the formula



(II)

with an anhydride of the formula

$$(R^3—CH_2—CO)_2O \qquad (III)$$

in the presence of a base and optionally in the presence of a diluent, at a temperature between −30° C. and +50° C., and isolating the compound of the formula (I).

5,710,280
PREPARATION OF FLUCONAZOLE AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Kae-Shyang Shih; Lie-Rong Chen; Ching-Wei Liu, and Chia-Lin J. Wang, all of Taipei, Taiwan, assignors to Development Center for Biotechnology, Taiwan

Filed Jul. 9, 1996, Ser. No. 679,457

Int. Cl.^{6} C07D *249/08*

U.S. Cl. 548—266.6 **20 Claims**

1. A process for preparing 2-(2,4-difluorophenyl)- 1,3-bis-(1H-1,2,4-triazol-1-yl)propan-2-ol, said process comprising

(1) acylating 1,3-difluorobenzene (DFB) to obtain 2-chloro-2',4'-difluoroacetophenone (CAP);

(2) alkylating 4-amino-4H-1,2,4-triazole (4-AT) with CAP to obtain 2-(1H-1,2,4-triazol-1-yl)- 2',4'-difluoroacetophenone (TAAP) salt;

(3) deaminating TAAP salt to obtain TAAP; and

(4) reacting TAAP with 1,2,4-triazole to obtain fluconazole.

5,710,281
ORGANIC COMPOUNDS SUITABLE AS REACTIVE DILUENTS AND BINDER PRECURSOR COMPOSITIONS INCLUDING SAME

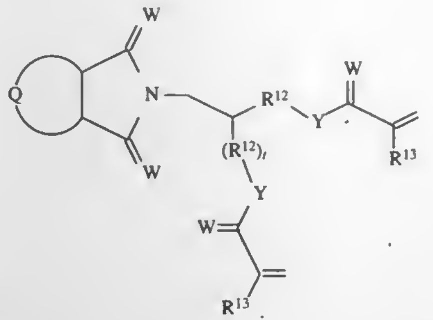
Ernest L. Thurber, St. Paul; Eric G. Larson, Lake Elmo; Alan R. Kirk, Cottage Grove, and Gregg D. Dahlke, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 334,817, Nov. 4, 1994, Pat. No. 5,523,152, which is a continuation-in-part of Ser. No. 143,824, Oct. 27, 1993, abandoned. This application Feb. 23, 1996, Ser. No. 606,325

Int. Cl.^{6} C07D *487/04;209/48;* **B32B** *5/16;18/04*

U.S. Cl. 548—429 **9 Claims**

1. Organic compounds having at least one ethylenically-unsaturated group and being suitable for use as reactive diluents, said compounds being N-substituted succinimide derivatives of formula (III):



(III)

wherein:

R^{12} is selected from the group consisting of $—C_xH_{2x}—$ and $—(C_yH_{2y})—O—(C_{y'}H_{2y'})$, wherein x is an integer ranging from 1 to 12 inclusive and y and y' are independently an integer ranging from 1 to 6 inclusive;

R^{13} is H;

W is selected from the group consisting of O, S, NR^{13}; Y is selected from the group consisting of O, S, NR^{14};

R^{14} is selected from the group consisting of H, $—C_xH_{2x+1}—$ wherein x is an integer ranging from 1 to 12 inclusive, $—C(=O)—C(R^{13})=CH_2$, and $—R^{12}—O—C(=O)—C(R^{13})=CH_2$;

Q is an organic radical which forms phthalimide, hexahydrophthalimide, tetrahydrophthalimide, or derivatives thereof with an N-substituted succinimide ring; and

t is 0 or 1.

5,710,282
PROCESS FOR PREPARING SUBSTITUTED ARYLS

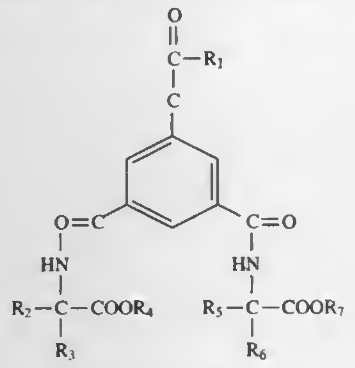
Kathleen Nelson Juneau; Richard Vicari, and Carl David Murphy, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Warren, N.J.

Filed Aug. 18, 1995, Ser. No. 516,768

Int. Cl.^{6} C07D *403/10*

U.S. Cl. 548—455 **3 Claims**

1. A process for preparing an aryl compound having the formula



wherein R_1–R_7 are each independently selected from the group consisting of

(a) hydrogen

(b) alkyl C_1–C_{20}

(c) alkoxy alkyl having 1 to 8 carbon atoms in both alkoxy group and alkyl group

(d) phenyl

(e) naphthyl, and

(f) indole,

which comprises the steps of (a) reacting a phenyl dicarboxylic acid with a carboxylic acid activating functionally for a sufficient period of time and at a temperature of from about −20° C. to about 120° C. to form an activated intermediate, and (b) reacting said activated intermediate with a suitable nucleophile for a sufficient period of time and at a temperature of from about −20° C. to about 120° C. to form said aryl compound.

5,710,283
PREPARATION OF CHIRAL PYRROLIDINONE DERIVATIVES

Glynn Mitchell, Cookham, and Shaheen Khatoon Vohra, Woodley, both of United Kingdom, assignors to Zeneca Limited, London, England

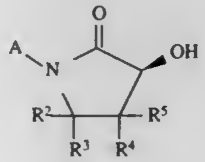
Filed Nov. 21, 1996, Ser. No. 749,350

Claims priority, application United Kingdom, Nov. 30, 1995, 9524526

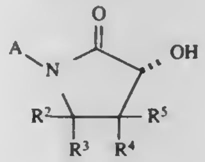
Int. Cl.^{6} C07D *207/20;207/50*

U.S. Cl. 548—530 **10 Claims**

1. A process for the preparation of a compound of formula IIa or IIb:



IIa



IIb

wherein

R^2, R^3, R^4 and R^5 independently represent hydrogen or C_1–C_4 alkyl;

A is an aromatic or heteroaromatic ring system optionally substituted with one or more substituents selected from halogen, C_1–C_{10} hydrocarbyl, $S(O)_p(C_1–C_{10}$ hydrocarbyl), cyano, nitro, SCN, SiR^c_3 where each R^c is independently C_1–C_4 alkyl or phenyl, COR^8, CR^8NOR^9, NHOH, ONR^8R^9, SF_5, $COOR^8$, $SO_2NR^8R^9$, OR^{10} and $NR^{11}R^{12}$; and in which any ring nitrogen atom may be quaternised or oxidised;

alternatively, any two substituents of the group A may combine to form a fused 5- or 6- membered saturated or partially saturated carbocyclic or heterocyclic ring in which any carbon or quaternised nitrogen atom may be substituted with any of the groups mentioned above for A or in which a ring carbon atom may be oxidised;

p is 0, 1 or 2;

R^8 and R^9 independently represent hydrogen or C_1–C_{10} hydrocarbyl;

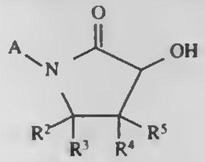
R^{10} is hydrogen, C_1–C_{10} hydrocarbyl. $SO_2(C_1–C_{10}$ hydrocarbyl), CHO, $CO(C_1–C_{10}$ hydrocarbyl), $COO(C_1–C_{10}$ hydrocarbyl) or $CONR^8R^9$;

R^{11} and R^{12} independently represent hydrogen, C_1–C_{10} hydrocarbyl, $O(C_1–C_{10}$ hydrocarbyl), $SO_2(C_1–C_{10}$ hydrocarbyl), CHO, $CO(C_1–C_{10}$ hydrocarbyl), $COO(C_1–C_{10}$ hydrocarbyl) or $CONR^8R^9$;

any of the hydrocarbyl groups within the group A may optionally be substituted with halogen, hydroxy, $SO_2NR^aR^b$ where R^a and R^b independently represent hydrogen or C_1–C_6 alkyl, cyano, nitro, amino, mono- and dialkylamino in which the alkyl groups have from 1 to 6 or more carbon atoms, acylamino, C_1–C_6 alkoxy, C_1–C_6 haloalkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulphinyl, C_1–C_6 alkylsulphonyl, carboxy, carboxyamide in which the groups attached to the N atom may be hydrogen or C_1–C_{10} hydrocarbyl optionally substituted with halogen, alkoxycarbonyl wherein the alkoxy group may have from 1 to 6 or more carbon atoms or aryl;

the process comprising the steps of:

a. reacting a racemic mixture of a compound of formula II:



II

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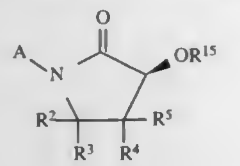
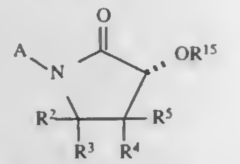
wherein R^2, R^3, R^4, R^5 and A are as defined for formulae IIa and IIb;

with a sterically hindered chiral esterifying agent at a temperature of from 0° to 50° C. to form enantiomers of formulae IIIa and IIIb:



IIIa



IIIb

wherein R^2, R^3, R^4, R^5 and A are as defined for formulae IIa and IIb and R^{15} is a chiral sterically hindered residue;

b. separating the diastereomers of formulae IIIa and IIIb by any suitable means; and

c. converting the diastereomers of formulae IIIa and IIIb separately to compounds of formulae IIa and IIb respectively by acid or base hydrolysis.

5,710,284

PURIFICATION OF N-VINYLPYRROLIDONE BY CRYSTALLIZATION

Martin Schmidt-Radde, Beindersheim; Herbert Helfert, Frankenthal; Bernd Eck, Viernheim, and Bernhard Maltry, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 9, 1996, Ser. No. 708,820

Claims priority, application Germany, Oct. 2, 1995, 195 36 859.2

Int. Cl.^{6} C07D *207/08*

U.S. Cl. 548—543 **8 Claims**

1. A process for purifying N-vinylpyrrolidone by crystallization in a crystallizer, wherein those surfaces of the crystallizer from which crystals grow during the crystallization are covered with an N-vinylpyrrolidone seed layer before the crystallization.

5,710,285

PROCESS FOR PREPARING 2-SUBSTITUTED BENZO[B]THIOPHENE COMPOUNDS AND INTERMEDIATES THEREOF

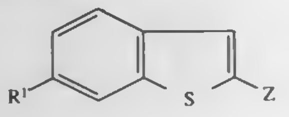
Kenneth L. Hauser, Greencastle; Alan D. Palkowitz, Carmel; Daniel J. Sall, Greenwood, and Kenneth J. Thrasher, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 415,014, Mar. 31, 1995, Pat. No. 5,614,639. This application Oct. 27, 1995, Ser. No. 549,595

Int. Cl.^{6} C07D *333/06;333/16*

U.S. Cl. 549—4 **8 Claims**

1. A compound of formula IX



IX

wherein

R^1 IS —OH or —OR^3, in which R^3 is a hydroxy protecting group; and

Z is bromo, iodo, triflate or —$B(OH)_2$;

with the proviso that when Z is bromo or iodo, $R^{1'}$ is not alkoxy.

5,710,286

PROCESSES AND INTERMEDIATES FOR THE PREPARATION OF CYCLIC UREA HIV PROTEASE INHIBITORS

Lucius Thomas Rossano, Newark, and Young Sek Lo, Hockessin, both of Del., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

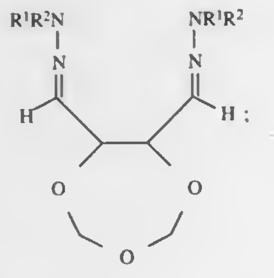
Division of Ser. No. 268,702, Jun. 30, 1994, Pat. No. 5,466,797. This application Nov. 14, 1995, Ser. No. 557,254

Int. Cl.^{6} C07D *325/00*

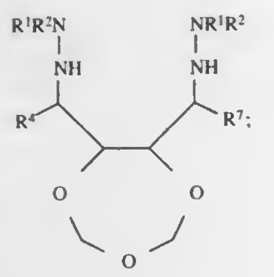
U.S. Cl. 549—352 **4 Claims**

1. The compounds of the formulae:

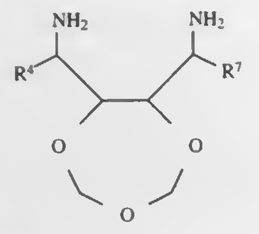
(II)



(III)



(IV)



wherein:

R^1 and R^2 are independently selected from the group: C_1–C_4 alkyl, acetyl, phenyl; or R^1 and R^2 may be taken together to form a ring such as triazole, 4-methylpiperazine, or morpholine;

R^4 and R^7 are independently selected from the group:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{11};

C_3–C_{14} carbocyclic ring system substituted with 0–3 R^{11} or 0–3 R^{12};

a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{12};

R^{11} and R^{11A} are independently selected at each occurrence from the group:

H, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, —OR^{13}, —$S(O)_mR^{13}$, —$NR^{14}SO_2NR^{13}R^{14}$, —$NR^{14}SO_2R^{13}$, —$SO_2NR^{13}R^{14}$, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, boronic acid, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, 2-(1-morpholino)ethoxy, azido;

C_3–C_{10} cycloalkyl substituted with 0–2 R^{12};

C_1–C_4 alkyl substitued with 0–2 R^{12};

aryl(C_1–C_3 alkyl)-, substituted with 0–2 R^{12};

C_2–C_6 alkoxyalkyl-, substituted with 0–2 R^{12};

C_5–C_{14} carbocyclic residue substituted with 0–3 R^{12};

a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–3 R^{12};

R^{12}, when a substituent on carbon, is independently selected at each occurrence from the group:

phenyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, C_1–C_4 alkoxy, C_3–C_6 cycloalkoxy, —OR^{13}, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkylene optionally substituted with —$Si(CH_3)_3$, methylenedioxy, ethylenedioxy, —$S(O)_mR^{13}$, —$SO_2NR^{13}R^{14}$, —$NHSO_2R^{14}$, 2-(1-morpholino)ethoxy; or

a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur;

or R^{12} may be a 3- or 4-carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6 -membered ring being optionally substituted on the aliphatic carbons with C_1–C_4 alkyl, C_1–C_4 alkoxy; or —$NR^{13}R^{14}$; or

when R^{12} is attached to sulfur it may be =O;

R^{12}, when a substituent on nitrogen, is independently selected at each occurrence from the group:

phenyl, benzyl, phenethyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl;

R^{13} is independently selected at each occurrence from the group:

H;

phenyl substituted with 0–3 R^{11A};

benzyl substituted with 0–3 R^{11A};

C_1–C_6 alkyl substituted with 0–3 R^{11A};

an amine protecting group when R^{13} is bonded to N;

a hydroxy protecting group when R^{13} is bonded to O;

R^{14} is independently selected at each occurrence from the group:

hydrogen, hydroxy, C_1–C_6 alkyl substituted with 0–3 groups selected from OH, C_1–C_4 alkoxy, NH_2, —$NH(C_1$–C_4 alkyl), C_1–C_6 alkoxy, C_2–C_6 alkenyl, phenyl, benzyl, an amine protecting group when R^{14} is bonded to N, a hydroxy protecting group when R^{14} is bonded to O;

R^{13} and R^{14} can alternatively join to form —$(CH_2)_4$—, —$(CH_2)_5$—, —$CH_2CH_2N(R^{15})CH_2CH_2$—, or —$CH_2CH_2OCH_2CH_2$—;

R^{13A} and R^{14A} are independently selected at each occurrence from the group: H, C_1–C_6 alkyl;

R^{13A} and R^{14A} can alternatively join to form —$(CH_2)_4$—, —$(CH_2)_5$—, —$CH_2CH_2N(R^{15})CH_2CH_2$—, or —$CH_2CH_2OCH_2CH_2$—;

R^{15} is H or CH_3.

5,710,287

TAXANES HAVING AN AMINO SUBSTITUTED SIDE-CHAIN AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

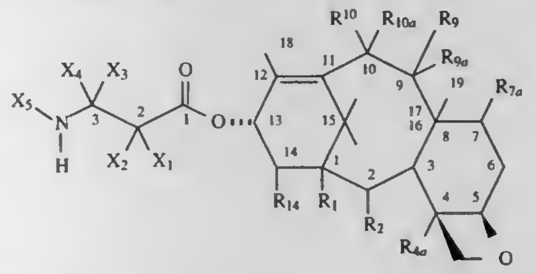
Robert A. Holton; Hossain Nadizadeh, both of Tallahassee, Fla.; Kasthuri Rengan, Rego Park, N.Y., and Chunlin Tao, Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Continuation of Ser. No. 94,566, Jul. 20, 1993, which is a continuation-in-part of Ser. No. 34,247, Mar. 22, 1993, Pat. No. 5,430,160, which is a continuation-in-part of Ser. No. 949,107, Sep. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 863,849, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,955, Apr. 3, 1992, abandoned, and a continuation-in-part of Ser. No. 34,852, Mar. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 862,819, Apr. 3, 1992, Pat. No. 5,227,400, which is a continuation-in-part of Ser. No. 763,805, Sep. 23, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,122

Int. Cl.^{6} C07D *305/14*

U.S. Cl. 549—510 **34 Claims**

1. A taxane having the formula



wherein

X_1 is —OX_6, —SX_7, or —NX_8X_9;

X_2 is hydrogen; substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; or substituted or unsubstituted aryl or heteroaryl;

X_3 and X_4 are independently hydrogen; substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; or substituted or unsubstituted aryl or heteroaryl;

X_5 is —$CONX_8X_{10}$;

X_6 is hydrogen; substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; substituted or unsubstituted aryl or heteroaryl; or hydroxy protecting group;

X_7 is substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; substituted or unsubstituted aryl or heteroaryl; or sulfhydryl protecting group;

X_8 is hydrogen; substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; or substituted or unsubstituted aryl or heteroaryl;

X_9 is an amino protecting group;

X_{10} is substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; or substituted or unsubstituted aryl or heteroaryl;

R_1 is hydroxy, protected hydroxy or together with R_{14} forms a carbonate;

R_2 is hydroxy or —$OCOR_{31}$;

R_{4a} is hydrogen; substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; substituted or unsubstituted aryl or heteroaryl; cyano; hydroxy; or —$OCOR_{30}$;

R_{7a} is hydrogen, halogen, or —OR_{28};

R_9 is hydrogen or together with R_{9a} forms an oxo;

R_{9a} is hydrogen, hydroxy, protected hydroxy, acyloxy, or together with R_9 forms an oxo;

R_{10} is hydrogen or together with R_{10a} forms an oxo,

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R_{10a} is hydrogen, —$OCOR_{29}$, hydroxy, or protected hydroxy, or together with R_{10} forms an oxo;

R_{14} is hydrogen, hydroxy, protected hydroxy or together with R_1 forms a carbonate;

R_{28} is hydrogen, acyl, or hydroxy protecting group; and

R_{29}, R_{30}, and R_{31} are independently hydrogen; substituted, unsubstituted, straight, branched chain or cyclic alkyl; substituted, unsubstituted, straight or branched chain alkenyl or alkynyl; or substituted or unsubstituted monocyclic aryl or monocyclic heteroaryl.

5,710,288

1,3-BENZODIOXOLE AND 1,2-DIALKOXYBENZENE DERIVATIVES AS OCULAR HYPOTENSIVE AGENTS

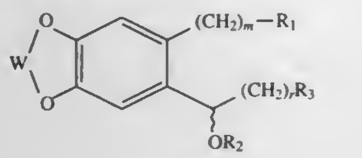
Robert M. Burk, Laguna Beach, and David F. Woodward, El Toro, both of Calif., assignors to Allergan, Waco, Tex.

Continuation-in-part of Ser. No. 345,176, Nov. 28, 1994, Pat. No. 5,523,296, which is a continuation-in-part of Ser. No. 51,104, Apr. 21, 1993, Pat. No. 5,369,127. This application May 3, 1996, Ser. No. 646,697

Int. Cl.^{6} C07D *409/10;407/10*

U.S. Cl. 549—435 **15 Claims**

1. A compound of the formula



where

W is (CH_2). where n is 1 or 2;

m is an integer between 1 and 8;

R_1 is COOH or a pharmaceutically acceptable salt thereof, $COOR_4$, $CONR_5R_6$, $CONR_5SO_2R_7$,CH_2OH, CH_2OR_7, CH_2O—COR_7, CH_2 O—$CONR_5R_7$, CH_2OCOOR_7, $CH_2NR_5R_6$, $CH_2NR_5COR_7$, CHO, $CH(OR_8)_2$, $CH(OR_9O)$, —COR_{10}, $CR_{10}(OR_8)_2$, or $CR_{10}(OR_9O)$, where R_4 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_4 is phenyl or lower alkylphenyl, R_5 and R_6 independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_7 is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl, R_8 is lower alkyl, and R_9 is divalent alkyl radical of 2–5 carbons, R_{10} is an alkyl or cycloalkyl containing 1 to 5 carbons;

R_2 is H, COR_7, R_7, CO—OR_7, CO—NR_2R_7, $PO(OH)OR_7$, $PO(OR_7)_2$, POR_7OH, or $POR_7(OR_7)$;

R_3 is HETEROCYCLIC—$(R_{11})_p$, where HETEROCYCLIC is a 5 or six-membered heterocyclic ring containing 1 or 2 heteroatoms selected from N, S, and O;

R_{11} is independently lower alkyl of 1–6 carbons, halogen, fluoro-substituted lower alkyl of 1–6 carbons, C≡N, NO_2, SO_2R_{12}, COOH, $COOR_{12}$, $CONH_2$, $CONHR_{12}$, $CON(R_{12})_2$, or CO—R_{12};

p is an integer between 1–3,

r is an integer between 1–5, and

R_{12} is lower alkyl of 1–6 carbons.

5,710,289

PROCESS FOR THE PREPARATION OF DIHALOTETRAHYDROFURANS FROM DIHYDROFURAN

Stephen N. Falling, and Patricia Lopez, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport,, Tenn.

Filed Jan. 7, 1997, Ser. No. 779,758

Int. Cl.^{6} C07D *307/56*

U.S. Cl. 549—504 **13 Claims**

1. Process for the preparation of a dihalotetrahydrofuran which comprises reacting a dihydrofuran with X_2 in the presence of a quaternary onium halide compound; wherein the dihalotetrahydrofuran is 3,4-dichlorotetrahydrofuran, 3,4-dibromotetrahydrofuran, 2,3-dichlorotetrahydrofuran, or 2,3-dibromotetrahydrofuran; the dihydrofuran is 2,5- or 2,3-dihydrofuran; and X_2 is chlorine or bromine.

5,710,290

FUNCTIONALIZED CYCLOALIPHATIC NITRILE OXIDES

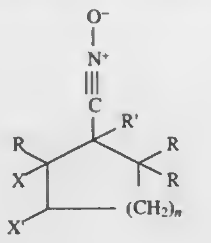
Zenon Lysenko; Clark H. Cummins, both of Midland, Mich.; Ramki Subramanian, Houston, Tex., and Richard F. Fibiger, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 21, 1996, Ser. No. 734,291

Int. Cl.^{6} C07D *303/38;* **C07C** *13/10;13/18*

U.S. Cl. 549—513 **12 Claims**

1. A compound represented by the formula:



wherein R' and each R are independently hydrogen, C_1–C_{12} alkyl, or halo; X and X' are independently hydrogen, halo, hydroxyl, or together with the carbon atoms to which they are attached form an epoxy group with the proviso that not more than one of X and X' is hydrogen; and n is 1 or 2.

5,710,291

PROCESS FOR THE SELECTIVE ALKYLATION OF BETAXOLOL INTERMEDIATES

Xiu C. Wang; Luping Liu, both of Gurnee, and Ashok V. Bhatia, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 19, 1996, Ser. No. 667,038

Int. Cl.^{6} C07D *303/18*

U.S. Cl. 549—539 **9 Claims**

1. A process for the selective alkylation of the ethanol hydroxy moiety 1-[4-(hydroxyethyl)phenoxy] -2,3-epoxypropane comprising the steps of reacting the 1-[4-(hydroxyethyl)phenoxy] -2,3-epoxypropane in the presence of an alkylating reagent, a solvent and a strong base.

5,710,292

PROCESS FOR THE SELECTIVE OXIDATION OF AROMATIC COMPOUNDS

Wolfgang Anton Herrmann, Freising; Joao Domingos Galamba Correia, Mü , and Richard Walter Fischer, Frankfurt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 2, 1995, Ser. No. 459,836

Claims priority, application Germany, Jun. 6, 1994, P 44 19 800.0

Int. Cl.^{6} C07C *50/12;52/32;27/10;27/16*

U.S. Cl. 552—296 **20 Claims**

1. A method of using compounds of the formula (I) as catalysts for the oxidation of electron-rich aromatic compounds and derivatives thereof, wherein the formula (I) is:

$$Re_aO_bX_cL_d \qquad (I)$$

in which

X=F, Cl, Br, I or OH,

L=Lewis base,

a=an integer 1, 2 or 3,

b=zero or an integer from 2 to 9,

c=zero or an integer from 1 to 9,

d=zero or an integer from 1 to 6,

and the sum of a, b and c is such that it is appropriate to the zerovalency or trivalency to heptovalency of rhenium with the proviso that if b is not equal to zero, $b \geqq 2 \cdot a$, comprising the steps of adding the aromatic compounds and catalyst to a solvent and oxidizing the aromatic compounds at the aromatic core.

5,710,293

METHOD OF PREPARATION OF ESTER DERIVATIVES OF STEROIDS

Fang Li, New York, N.Y., assignor to The Population Council, Center for Biomedical Research, New York, N.Y.

Filed Oct. 13, 1995, Ser. No. 542,664

Int. Cl.^{6} C07J *75/00*

U.S. Cl. 552—595 **22 Claims**

1. A method of synthesizing acylated derivative of norprogesterone compounds comprising the steps of:

providing a norprogesterone compound having the tetracyclic ring system of asteroid substituted in the 16th position with an exomethylene group and having a hydroxyl group in the 17α position;

and reacting said norprogesterone compound with at least one acylating agent in the presence of perchloric acid, so as to form a reaction mixture containing the corresponding ester derivative of said norprogesterone compound.

5,710,294

19-NOR VITAMIN D COMPOUNDS

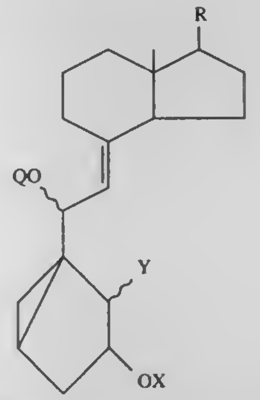
Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis.; Rafal R. Sicinski, Warsaw, Poland, and Jean Martin Prahl, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 281,261, Jul. 27, 1994, abandoned, which is a division of Ser. No. 123,485, Sep. 17, 1993, Pat. No. 5,342,975, which is a division of Ser. No. 960,241, Oct. 13, 1992, Pat. No. 5,246,925, which is a continuation of Ser. No. 879,706, May 5, 1992, abandoned, which is a continuation of Ser. No. 557,400, Jul. 23, 1990, abandoned, which is a division of Ser. No. 481,354, Feb. 16, 1990, Pat. No. 5,237,110, which is a continuation-in-part of Ser. No. 321,030, Mar. 9, 1989, abandoned. This application Nov. 17, 1995, Ser. No. 558,221

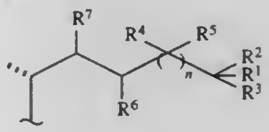
Int. Cl.^{6} C07C *401/00*

U.S. Cl. 552—653 **5 Claims**

1. A compound having the formula



where R is a side chain selected from the group consisting of alkyl, hydrogen, hydroxyalkyl, fluoroalkyl and a side chain of the formula



wherein R^1 represents hydrogen, hydroxy or O-acyl, R^2 and R^3 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group—$(CH_2)_m$—where m is an integer having a value of from 2 to 5, R^4 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or, R^4 and R^5 taken together represent double-bonded oxygen, R^6 and R^7 are each selected from the group consisting of hydrogen, hydroxy, O-acyl, fluorine and alkyl, or, R^6 and R^7 taken together form a carbon-carbon double bond, and wherein n is an integer having a value of from 1 to 5 and wherein any of the groups —$CH(CH_3)$—, —$CH(R^7)$—, or —$CH(R^6)$— at positions 20, 22 and 23, respectively, may be replaced by an oxygen atom, Q represents an alkyl, X is selected from the group consisting of hydrogen, acyl, alkylsilyl and alkoxyalkyl and Y is selected from the group consisting of hydroxy, hydrogen and protected hydroxy where the protecting group is acyl, alkylsilyl or alkoxyalkyl.

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5,710,295
PREPARATION OF ALKALI METAL ACYL AMINO ACIDS

Richard P. Woodbury, Amherst; Roger R. Gaudette, Lithfield, and F. David Wood, Epsom, all of N.H., assignors to Hampshire Chemical Corp., Lexington,, Mass.

Filed Jun. 6, 1995, Ser. No. 466,094

Int. Cl.^{6} C07C *231/00*

U.S. Cl. 554—69 **9 Claims**

1. A process for producing alkali metal N-acyl amino acid, comprising reacting a fatty acid having the formula RCOOH wherein R is a C_1 or higher hydrocarbyl substituent with (a) an alkali metal amino acid in which the amino group is substituted with at least one hydrogen atom, and (b) the acid of said alkali metal amino acid.

5,710,296
PROCESS FOR PREPARING PHENYL ESTERS

LaFayette D. Foland, Dublin, and Thomas B. Ottoboni, Belmont, both of Calif., assignors to The Clorox Company, Oakland, Calif.

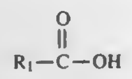
Filed May 25, 1995, Ser. No. 450,162

Int. Cl.^{6} C11C *3/00*

U.S. Cl. 554—167 **15 Claims**

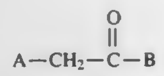
1. A method of preparing a phenyl ester, comprising:

reacting an aliphatic or aromatic carboxylic acid having the structure



$$R_1-\overset{\overset{O}{\|}}{C}-OH$$

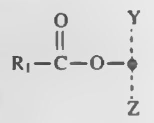
where R_1 is C_{1-20} alkyl or alkenyl or an aryl, with an acid halide having the structure



$$A-CH_2-\overset{\overset{O}{\|}}{C}-B$$

where A is a halide, methoxy, ethoxy, or an electron withdrawing group having an O, N, or S heteroatom and B is a halide, to form an activated intermediate; and,

exposing the activated intermediate to a phenol to form a phenyl ester having the structure



where Y and Z are each H, SO_3M, CO_2M, SO_4M, OH, a halo substituent, $—OR^2$, R^3, $NR_3{}^4X$, and mixtures thereof, wherein M is an alkali metal or alkaline earth counterion, R^2 of the OR^2 substituent is C_{1-30} alkyl, R^3 is C_{1-6} alkyl, R^4 of the $NR_3{}^4$ substituent is C_{1-30} alkyl, X is a counterion, and Y and Z can be the same or different.

5,710,297
METALLOCENES, AND THEIR USE AS CATALYSTS

Thomas Weller, Mainz; Michael Aulbach, Hofheim; Frank Küber, Oberursel; Gerbard Erker; Christian Psiorz, both of Münster; Bernd Bachmann, Eppstein, and Frank Osan, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 361,423, Dec. 21, 1994, abandoned. This application Sep. 13, 1996, Ser. No. 712,681

Claims priority, application Germany, Dec. 21, 1993, 43 43 566.1; Dec. 24, 1993, 43 44 631.0; Sep. 14, 1994, 44 32 617.3

Int. Cl.^{6} C07F *17/00;7/28;* B01J *31/00*

U.S. Cl. 556—11 **21 Claims**

1. A stereorigid metallocene compound containing, as ligands, at least two substituted or unsubstituted cyclopentadienyl groups which are bonded to one another via a monocyclic or polycyclic ring system, where at least one cyclopentadienyl group is fused to the monocyclic or polycyclic ring system, and metallocenes containing a 4-(η^5-3'-alkylcyclopentadienyl)-4,6,6-trimethyl(η^5-2-alkyl-4,5-tetrahydropentalene) as ligand system are excluded.

19. A stereorigid metallocene compound containing, as ligands, at least two substituted or unsubstituted cyclopentadienyl groups bonded to one another via a monocyclic ring system, in which at least one cyclopentadienyl group is fused to the monocyclic ring system and one cyclopentadienyl group is a substituent on the monocyclic ring system.

20. A stereorigid metallocene compound containing, as ligands, at least two substituted or unsubstituted cyclopentadienyl groups bonded to one another via a polycyclic ring system, in which at least one cyclopentadienyl group is fused to the polycyclic ring system.

5,710,298
METHOD OF PREPARING RUTHENIUM AND OSMIUM CARBENE COMPLEXES

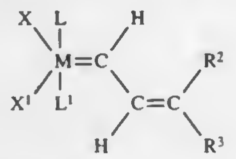
Robert H. Grubbs, South Pasadena; SonBinh T. Nguyen, Pasadena, both of Calif., and Lynda K. Johnson, Carrboro, N.C., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 282,826, Jul. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 106,292, Aug. 13, 1993, Pat. No. 5,342,909, which is a division of Ser. No. 863,606, Apr. 3, 1992, Pat. No. 5,312,940. This application Aug. 30, 1996, Ser. No. 708,057

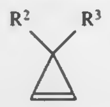
Int. Cl.^{6} C07F *15/00*

U.S. Cl. 556—22 **25 Claims**

1. A method of preparing a compound of formula



the method comprising reacting a compound of the formula $(XX^1ML_nL^1{}_m)_p$ with a cyclopropene of the formula



in the presence of a solvent wherein:

M is Os or Ru;

R^2 and R^3 are independently selected from the group consisting of hydrogen, and a substituent group selected from the group consisting of C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_2–C_{18} alkynyl, C_2–C_{18} alkoxycarbonyl, aryl, C_1–C_{18} carboxylate, C_1–C_{18} alkenyloxy, C_2–C_{18} alkynyloxy, C_1–C_{18} alkoxy, aryloxy, C_1–C_{18} alkylthio, C_1–C_{18} alkylsulfonyl and C_1–C_{18} alkylsulfinyl; each substituent group optionally substituted with C_1–C_5 alkyl, halogen, C_1–C_5 alkoxy or with a phenyl group optionally substituted with halogen, C_1–C_5 alkyl or C_1–C_5 alkoxy;

X and X^1 are independently selected from the group consisting of any anionic ligand;

L and L^1 are independently selected from the group consisting of any neutral electron donor;

n and m are independently 0–4, provided n+m=2, 3 or 4;

p is an integer equal to or greater than 1; and

any 2 or 3 of X, X^1, L, and L^1 are optionally bonded together to form a chelating multidentate ligand.

5,710,299
PRODUCTION OF BRIDGED METALLOCENE COMPLEXES AND INTERMEDIATES THEREFOR

Meng-Sheng Ao; Hassan Y. Elnagar; Arcelio J. Malcolm, and Jamie R. Strickler, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Jun. 27, 1996, Ser. No. 672,128

Int. Cl.^{6} C07F *17/00*

U.S. Cl. 556—53 **41 Claims**

39. A process which comprises:

1) mixing together at least one of each of the following: (a) a 4,5-benzoindanone, (b) an alkali or alkaline earth metal borohydride or alkali or alkaline earth metal aluminum hydride, and (c) a hydroxyl-containing compound selected from the group consisting of water, an alcohol, and a mixture thereof capable of interacting with (b) to serve as a hydrogen source, under reaction conditions causing a 4,5-benzoindanol to be formed;

2) terminating the reaction by quenching the reaction mixture with water or an aqueous mixture;

3) extracting the quenched reaction mixture with a liquid hydrocarbon;

4) distilling the resultant extract to leave a liquid hydrocarbon solution of the 4,5- benzoindanol;

5) catalytically dehydrating said 4,5-benzoindanol using a arylsulfonic acid catalyst to thereby form a 4,5-benzoindene;

6) deprotonating said 4,5-benzoindene with a strong base and reacting the resultant deprotonated intermediate with a reactant which in its original condition can be depicted by the formula $R^{11}R^{12}M^1X_2$ where R^{11} and R^{12} are the same or different and each is (i) a hydrocarbyl group containing up to about 18 carbon atoms or (ii) a hydrocarbyl(oxyalkylene) or hydrocarbylpoly(oxyalkylene) group containing up to about 100 carbon atoms; M^1 is a silicon, germanium or tin atom; and X is a halogen atom; such that a silicon-, germanium- or tin-bridged complex of the 4,5-benzoindene is formed;

7) deprotonating said bridged complex with a strong base and reacting the resultant deprotonated intermediate with a Group IV, V, or VI metal tetrahalide to thereby form solids comprising a silicon-, germanium- or tin-bridged Group IV, V, or VI metal-containing metallocene complex; and

8) forming and heating a slurry of said solids at an elevated temperature in an aprotic, polar solvent so as to extract impurities from said solids to said solvent and then separating the impurity-containing solvent and the solids from each other.

5,710,300
SILOXY PHOSPHONATE AS STABILIZING AGENT FOR POLYDIORGANOSILOXANES

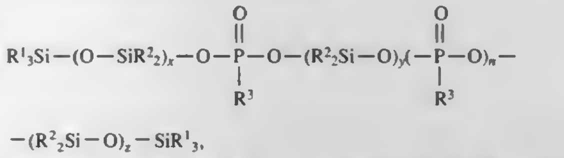
Daniel Graiver, Midland, and Arnold Wade Lomas, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 11, 1997, Ser. No. 827,822

Int. Cl.^{6} C07F *7/08*

U.S. Cl. 556—401 **14 Claims**

1. A method for stabilizing polydiorganosiloxanes, the method comprising: contacting a mixture comprising a polydiorganosiloxane and an alkali metal with a stabilizing amount of a siloxy phosphonate described by formula



$$R^1{}_3Si-(O-SiR^2{}_2)_x-O-\underset{\underset{R^3}{|}}{\overset{\overset{O}{\|}}{P}}-O-(R^2{}_2Si-O)_y(-\underset{\underset{R^3}{|}}{\overset{\overset{O}{\|}}{P}}-O)_n-(R^2{}_2Si-O)_z-SiR^1{}_3, \quad (1)$$

where each R^1, R^2, and R^3 is an independently selected hydrocarbon group comprising one to about twelve carbon atoms, n=0 or 1, x, y, and z are integers, where x=1 to 1000, y=0 to 1000, and z=0 to 1000.

5,710,301
ORGANOSILICON COMPOUNDS

Michiya Fujiki, 1182-1-4-403, Hase, Atsugi, Kanagawa-ken, Japan

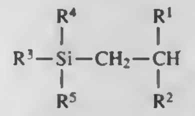
Filed Feb. 18, 1994, Ser. No. 198,787,

Claims priority, application Japan, Feb. 23, 1993, 5-056321; Jul. 26, 1993, 5-202474; Jul. 26, 1993, 5-202528

Int. Cl.^{6} C07F *7/08*

U.S. Cl. 556—430 **11 Claims**

1. An organosilicon compound possessing a β-branched alkyl group and represented by Formula (II):



$$R^3-\underset{\underset{R^5}{|}}{\overset{\overset{R^4}{|}}{Si}}-CH_2-\underset{\underset{R^2}{|}}{\overset{\overset{R^1}{|}}{CH}} \quad (II)$$

wherein R^1 represents a methyl group or an ethyl group; R^2 represents a C1–C18 alkyl group; R^3, R^4, and R^5, each independently represent Si, Cl, an alkyl group, an aryl group, or an aralkyl group, with the exception of those compounds in which, at the same time:

(a) R^1 and R^2 each represent a methyl group, and R^3, R^4, and R^5 each independently represent Cl;

(b) one of R^1 and R^2 represents a methyl group and the other represents an ethyl group, and two of R^3, R^4, and R^5 represent Cl and the third represents a methyl group; and

(c) R^1 and R^2 each represent a methyl group, and two of R^3, R^4, and R^5 represent Cl and the third represents a methyl group.

5,710,302
MONOMERIC UNITS USEFUL FOR REDUCING THE MODULES OF SILICONE HYDROGELS

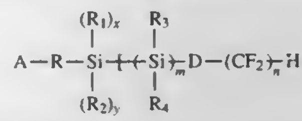
Jay F. Kunzler, Canandaigua, and Richard M. Ozark, Solvay, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 12, 1996, Ser. No. 745,538

Int. Cl.^{6} C07F *7/04*

U.S. Cl. 556—434 **13 Claims**

1. A monomeric unit represented by Formula I:



$$A-R-\underset{\underset{(R_2)_y}{|}}{\overset{\overset{(R_1)_x}{|}}{Si}}-[-(\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{Si}})_m-D-(CF_2)_n-H]_z \quad (I)$$

wherein:

A is a polymerizable ethylenically,

R and D independently are alkyl, alkylene or haloalkyl groups having 1 to 10 carbon atoms wherein said carbon atoms may include ether linkages therebetween;

R_1, R_2, R_3 and R_4 are independently selected from: alkyl or haloalkyl groups wherein ether linkages may be included between carbon atoms; siloxane groups; and carbocyclic ring groups having from 6 to 18 carbon atoms;

m is an integer from 1 to 500; n is an integer from 1 to 20; x and y are 0 or 1;

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z is 1 or2; and x+y+z=3;

so long as at least one of R_1 or R_2 is an alkyl group having from 1 to 10 carbon atoms.

5,710,303

PROCESS FOR THE PREPARATION OF ALKOXYTRIAZOLINONES

Heinz-Jürgen Wroblowsky, Langenfeld, and Klaus König, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 528,583, Sep. 15, 1995, Pat. No. 5,599,945. This application Sep. 30, 1996, Ser. No. 723,706

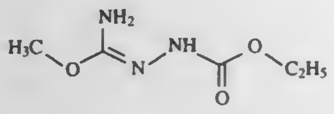
Claims priority, application Germany, Sep. 23, 1994, 44 33 967.4

Int. Cl.^{6} C07C *275/70*

U.S. Cl. 558—8 **1 Claim**

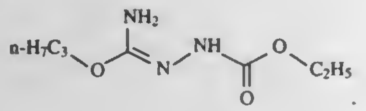
1. The semicarbazide compounds

(a) ethyl N'-(α-amino-α-methoxy-methylene)-hydrazine-N-carboxylate



and

(b) ethyl N'-(α-amino-α-propoxy-methylene)-hydrazine-N-carboxylate



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5,710,304

GABA AND L-GLUTAMIC ACID ANALOGS FOR ANTISEIZURE TREATMENT

Richard B. Silverman, Morton Grove, Ill.; Ryszard Andruszkiewicz, Sopot, Poland; Po-Wai Yuen, Ann Arbor, Mich.; Denis Martin Sobieray, Holland, Mich.; Lloyd Charles Franklin, Hamilton, Mich., and Mark Alan Schwindt, Holland, Mich., assignors to Northwestern University, Evanston, Ill.

Division of Ser. No. 420,577, Apr. 12, 1995, Pat. No. 5,608,090, which is a division of Ser. No. 64,285, May 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 886,080, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 618,692, Nov. 27, 1990, abandoned. This application Oct. 16, 1996, Ser. No. 733,102

Int. Cl.^{6} C07C *303/00*

U.S. Cl. 558—52 **1 Claim**

1. A compound which is

5-methyl-3-[[[(4-methylphenyl) sulfonyl]oxy]-methyl]-hexanoic acid, phenylmethyl ester, or

5-methyl-3-[[[(4-methylphenyl) sulfonyl]oxy]-methyl]-hexanoic acid, 1,1 -dimethylethyl ester.

5,710,305

FLAME RETARDANT PRODUCT AND PROCESS

Adrian Charles Archer, West Midlands; Christopher John Harris, Worcester; Gary Woodward, Kidderminster, and Mohsen Zakikhani, Harborne, all of England, assignors to Albright & Wilson UK Limited, West Midlands, England

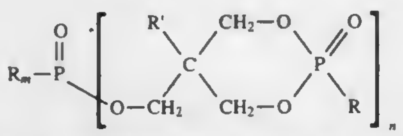
Filed Aug. 1, 1996, Ser. No. 691,119

Claims priority, application United Kingdom, Aug. 16, 1995, 9516794

Int. Cl.^{6} C07F *9/6574*

U.S. Cl. 558—77 **21 Claims**

1. A method of producing a flame retardant of general formula (I):



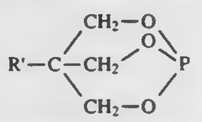
(I)

in which R is independently selected from the group consisting of linear, branched or cyclic alkyl, alkenyl, and provided that R bonded to the cyclic phosphorus atom is not alkoxy, alkoxyl, R' is selected from the group consisting of linear, branched or cyclic alkyl, alkenyl, alkaryl, aryl, aralkyl, haloaryl, aryloxyalkyl, haloaryloxyalkyl, and hydroxyalkyl, m is 0, 1 or 2, n is 1, 2 or 3 and (n+m) is 3

wherein said method comprises a first step and a second step, and optionally a third step,

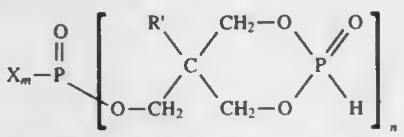
said first step comprising:

(a) reacting a bicyclic phosphite of general formula (II):



(II)

wherein said R' is as hereinabove defined, with an acid selected from the group consisting of phosphorous acid, phosphoric acid, hypophosphorous acid, phosphonic acid and derivatives or salts thereof, in a molar ratio sufficient to produce a phosphite of general formula (III):



(III)

wherein said R', n and m are as hereinabove defined, and each X is independently selected from the group consisting of H, OH, alkyl, alkenyl, and alkoxy, and mixtures thereof

and said second step comprising:

(b) reacting said phosphite (III) with an alkene or alkyne selected from the group consisting of linear, branched or cyclic alkenes or alkynes, and substituted alkenes or alkynes which have at least one α-unsaturated bond, in the presence of a free radical initiator to produce said flame retardant of general formula (I)

and said optional third step comprising:

(c) purifying said flame retardant.

5,710,306

PROCESS TO PREPARE A MULTIDENTATE PHOSPHITE COMPOUND

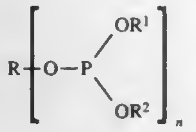
Carina S. Snijder, Sittard; Antonius J. J. M. Teunissen, Geleen; Carolina B. Hansen, Sittard, all of Netherlands; Rafael Shapiro, and James M. Garner, both of Wilmington, Del., assignors to DSM N.V., Heerlen, Netherlands, and E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1996, Ser. No. 616,747

Int. Cl.^{6} C07F *9/145*

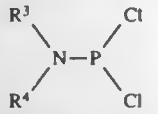
U.S. Cl. 558—93 **16 Claims**

1. A process for preparing a multidentate phosphite compound represented by the general formula (1)



in which n is 2–6. R is an n-valent organic group and R^1 and R^2 are fused aromatic ring systems with 2 or more rings, which rings are substituted on the ortho position relative to the oxygen atom only with hydrogen, by first preparing a phosphorochloridite compound from a R^1—OH and R^2—OH alcohol compound and a phosphorus chloride compound and subsequently contacting the phosphorochloridite compound with an alcoholic compound according to R—$(OH)_n$, wherein the phosphorochloridite is prepared by performing the two steps in a solvent:

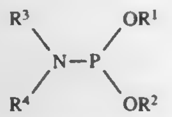
a) contacting a compound with the general formula:



(2)

in which R^3 and R^4 are C_1–C_4 alkyl groups, with the R^1OH and R^2OH compounds, and

b) contacting the resulting compound of step (a) which has the formula (3):



(3)

with HY, wherein Y represents F, Cl, Br or I.

5,710,307

PROCESS FOR THE PRODUCTION OF TRIALKYL PHOSPHITES

Wolfgang Ohlendorf, and Hans-Dieter Block, both of Leverkusen, Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Feb. 19, 1997, Ser. No. 802,712

Claims priority, application Germany, Feb. 28, 1996, 19607459.2

Int. Cl.^{6} C07F *9/142*

U.S. Cl. 558—96 **16 Claims**

1. A process for the production of trialkyl phosphites comprising the following steps:

forming a reaction mixture consisting essentially of phosphorus trichloride, an alcohol, a solvent and an auxiliary base, characterised in that at least one alkyl amine having more than 10 carbon atoms is used as the auxiliary base, at least one alkyl aromatic having more than 50 wt. % of aromatic carbon atoms, a molecular weight of from 106 to 150 and a boiling point of below 220° C. at standard pressure is used as the solvent and the alcohol has an alkyl group and a hydroxy group and the alkyl group of the alcohol is the same as the alkyl group of the trialkyl phosphite, and

reacting the phosphorus trichloride with the alcohol in the solvent in the presence of the auxiliary base to form a reaction product.

5,710,308

PROCESS FOR PRODUCING OGRANOPHOSPHORUS ESTER COMPOUND AND REACTIVE FLAME RETARDANT

Keiji Tanaka, and Munekazu Sataka, both of Kyoto , Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

PCT No. PCT/JP95/00081, § 371 Date Jul. 24, 1996, § 102(e) Date Jul. 24, 1996, PCT Pub. No. WO95/20593, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 25, 1995, Ser. No. 682,591

Claims priority, application Japan, Jan. 27, 1994, 06/026068

Int. Cl.^{6} C07F *9/02;9/28*

U.S. Cl. 558—97 **16 Claims**

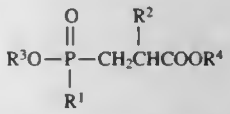
1. A process for producing an organophosphorus ester compound characterized in that

① a reaction mixture (M1) is produced by reaction of a dichlorophosphine derivative (a) of the general formula (1): R^1PCl_2 (1)

wherein R^1 represents a hydrocarbon group having 1 to 18 carbon atoms with (meth) acrylic acid (b) said reaction is conducted in the absence of a catalyst and subsequently is esterified with a monool having 1 to 4 carbon atoms (c) to produce a reaction mixture (M2)

② the resulting reaction mixture (M2) is neutralized with an alkali metal hydroxide or alkaline earth metal hydroxide (d) either in a solid form or in the form of an aqueous solution, wherein (d) is used in an amount corresponding to an equivalent ratio of hydrochloric acid in (M2)+unreacted (b) in (M2)/(d) in a range of 1/(0.8 to 1), and purified by phase separation or filtration to provide

③ a purified organophosphorus alkyl ester compound (A) of the following general formula (2).



$$R^3O-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle R^1}{|}}{P}}-CH_2\overset{\overset{\displaystyle R^2}{|}}{C}HCOOR^4 \qquad (2)$$

wherein R^1 represents a hydrocarbon group having 1 to 18 carbon atoms; R^2 represents hydrogen or methyl; R^3 represents hydrogen or an alkyl group having 1 to 4 carbon atoms; R^4 represents an alkyl group having 1 to 4 carbon atoms.

5,710,309

PROCESS FOR PRODUCING TRIS (TRIBROMONEOPENTYL) PHOSPHATE

Setsuo Nishibori, and Hideaki Ohnishi, both of Shiga, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed May 31, 1996, Ser. No. 657,840

Claims priority, application Japan, Jun. 8, 1995, 7-142142

Int. Cl.^{6} C07F *9/09*

U.S. Cl. 558—102 **4 Claims**

1. A process for producing tris(tribromoneopentyl) phosphate comprising reacting tribromoneopentyl alcohol with phosphorus oxyhalide in the presence of anhydrous aluminum chloride catalyst in an organic solvent characterized in that a basic magnesium salt is added to the reaction mixture at completion of the reaction.

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5,710,310

PROCESS FOR THE CONTINUOUS PRODUCTION OF DIARYL CARBONATES

Pieter Ooms; Hans-Josef Buysch, both of Krefeld; Steffen Kühling, Meerbusch, and Gottfried Zaby, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft

Filed Jul. 25, 1996, Ser. No. 690,332

Claims priority, application Germany, Aug. 2, 1995, 195 28 298.1

Int. Cl.^{6} C07C *69/96*

U.S. Cl. 558—274 **2 Claims**

1. Process for continuous production of diaryl carbonates by reaction of phosgene with aromatic hydroxy compounds in the presence of heterogeneous catalysts, comprising the steps of

(1) introducing a reaction mixture consisting of aromatic hydroxy compound and optionally chloroformates thereof together with phosgene into a reactor filled with heterogeneous catalyst and reacting the mixture in such a way that heat of reaction is dissipated by evaporation of educts and products and whereby reaction temperature increases by a maximum of 50° C. above admission temperature of the reaction mixture,

(2) degassing product leaving the reactor, sending waste gas towards a flow of molten aromatic hydroxy compound which optionally contains some chloroformate, whereby phosgene, aromatic hydroxy compound and the chloroformate thereof are removed from the flow of waste gas,

(3) feeding reaction product withdrawn from the reactor and degassed into a second reactor in which residual chloroformate is caused to react further, over heterogeneous catalyst, with aromatic hydroxy compound still present or that has been fed in so as to form diaryl carbonate,

(4) degassing product leaving the second reactor, supplying waste gas for washing with molten aromatic hydroxy compound specified under step (2),

(5) feeding degassed product from the second reactor into a distillation column to distill off aromatic hydroxy compound and, where appropriate, chloroformate still present and introducing distilled product from the distillation column into the first reactor,

(6) supplying sump of this first column to a second distillation column, whereby traces of low-boiling components which may, where appropriate, still be present in it are removed from the diaryl carbonate, and returning the traces into an upper part of the first column,

(7) discharging diaryl carbonate from a gas space of the second column, and

(8) supplying sump of the second column to a third distillation unit, whereby diaryl carbonate is distilled off and returned into the second column, and high-boiling components are withdrawn from a sump of the third distillation unit.

5,710,311

2-SULPHURED METAPHENYLENEDIAMINES FOR DYEING HAIR

Alex Junino, Livry-Gargan; Alain Genet, Aulnay-sous-Bois, and Alain Lagrange, Coupvray, all of France, assignors to L'Oreal, France

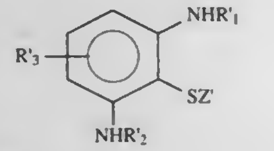
Continuation of Ser. No. 162,011, Nov. 23, 1993, Pat. No. 5,505,741. This application Sep. 29, 1995, Ser. No. 536,369

Claims priority, application France, Mar. 25, 1992, 92 03614

Int. Cl.^{6} C07C *255/34;321/06;323/29;381/06*

U.S. Cl. 558—414 **2 Claims**

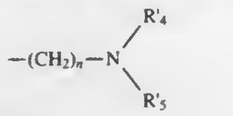
1. A 2-sulfurated metaphenylenediamine having the formula



(V)

wherein

Z' represents C_1–C_{18} alkyl, aralkyl wherein the alkyl moiety is C_1–C_6, C_1–C_6 monohydroxyalkyl, C_2–C_6 polyhydroxyalkyl, aryl, aminoalkyl having the formula



$$-(CH_2)_n-N\begin{matrix} R'_4 \\ R'_5 \end{matrix} \qquad (II)$$

wherein

n is an integer from 1 to 6;

R'_4 and R'_5, each independently, represent hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl or C_1–C_6 acyl;

R'_1 and R'_2, each independently, represent hydrogen, C_1–C_6 alkyl, C_1–C_6 monohydroxyalkyl, C_2–C_6 polyhydroxyalkyl, C_1–C_6 monocarbamoylalkyl, C_1–C_6 dialkylcarbamoyl, C_1–C_6 aminoalkyl, C_1–C_6 acyl, C_2–C_6 carbalkoxy, carbamyl or C_1–C_6 monoalkylcarbamoyl;

R'_3 represents hydrogen, C_1–C_4 alkyl, nitrile, amide, C_1–C_4 fluoroalkyl or —COOR wherein R represents hydrogen or C_1–C_4 alkyl; and the acid salt thereof, with the proviso that:

(a) when R'_1, R'_2 and R'_3 represent hydrogen, Z' is other than said C_1–C_{18} alkyl or said aryl;

(b) when Z' represents methyl and R'_3 represents hydrogen, R'_1 and R'_2 do not represent the same C_1–C_6 acyl,

(c) when Z' represents methyl and when R'_3 represents hydrogen and when one of R'_1 and R'_2 represents hydrogen, the other R_1 and R'_2 do not represent a C_4 acyl;

(d) when R'_1 and R'_2 represent hydrogen and R'_3 represents a trifluoromethyl in the 5 position, Z' does not represent C_1–C_4 alkyl; and

(e) when R'_1 and R'_2 represent hydrogen and R'_3 represents methyl in the 4 position, Z' does not represent methyl.

5,710,312

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MICROBICIDES

Albert Pfiffner, Bülach, Switzerland, and Stephan Trah, Freiburg, Germany, assignors to Novartis Corporation, Summit, N.J.

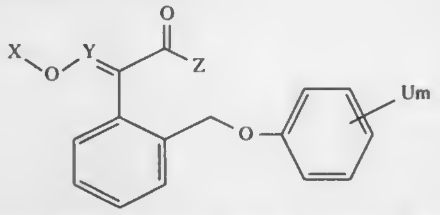
Filed Jun. 2, 1995, Ser. No. 460,397

Claims priority, application Switzerland, Sep. 30, 1994, 2967/94

Int. Cl.^{6} C07C *69/76;233/00;* **A01N** *37/12*

U.S. Cl. 560—60 **10 Claims**

1. A compound of formula I



I

or a possible isomer or isomeric mixture thereof, wherein

a)

X is CH_2F or CHF_2;

Y is CH and

Z is OMe, or

b)

X is CH_2F or CHF_2;

Y is a nitrogen atom and

Z is OMe or $NHCH_3$,

and wherein also

m is 0, 1, 2, 3, 4 or 5 and

U represents identical or different substituents selected from halogen, cyano, nitro, C_1–C_{12}alkyl, C_3–C_8cycloalkyl, C_3–C_6alkenyl, C_3–C_6 alkenyloxyiminomethyl, C_1–C_4alkoxy, C_1–C_4alkoxyiminomethyl, C_1–C_2haloalkyl, C_1–C_2haloalkoxy, unsubstituted or substituted phenyl, unsubstituted or substituted phenoxy and unsubstituted or substituted benzyl or represents substituents at two adjacent positions of the phenyl ring of formula I that define a fused hydrocarbon bridge so as to form a larger hydrocarbon ring having up to 14 carbon atoms.

5,710,315

MONOMER RECOVERY PROCESS FOR CONTAMINATED POLYMERS

Francis Glenn Gallagher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 250,391, May 27, 1994, Pat. No. 5,532,404. This application Jun. 24, 1996, Ser. No. 668,760

Int. Cl.^{6} C07C *67/48*

U.S. Cl. 560—78 **20 Claims**

1. Process for recovering reaction products from a reaction mass that comprises a starting polymer which is at least one member of the group consisting of polyesters, polyamides, and polyesteramides having about 2% to 70% by weight of non-polymer contaminants, which process comprises:

(a) depolymerizing the polymer by means of a depolymerization agent to yield volatile reaction products;

(b) vapor-phase stripping the volatile reaction products, to yield a stripping agent/product distillate;

wherein said reaction mass in said depolymerizing and stripping steps comprises from about 5% to about 99% by weight of the reaction mass of a solid support, which solid support is solid under the conditions of steps (a) and (b) and forms a suspended bed, either the quantity or both the quantity and the rate of recovery of reaction products being enhanced over that obtained in the absence of said solid support; and

(c) recovering the reaction products from the stripping agent/product distillate while leaving non-volatile residue material with the support material.

5,710,316

TRANSESTERIFICATION PROCESS FOR MAKING ALLYL ESTERS OF AROMATIC CARBOXYLIC ACIDS

Jude T. Ruszkay, Coatesville, and Katherine A. McCarron, Glen Mill, both of Pa., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Nov. 27, 1996, Ser. No. 757,522

Int. Cl.^{6} C07C *69/76*

U.S. Cl. 560—95 **13 Claims**

1. A transesterification process for making an allyl ester of an aromatic carboxylic acid, said process comprising:

(a) preparing a mixture of an alkyl ester of an aromatic carboxylic acid and an allylic alcohol;

(b) distilling the mixture to produce a dry mixture that contains less than about 200 ppm of water;

(c) heating the dry mixture in the presence of an amount of a transesterification catalyst effective to produce an allyl ester of the carboxylic acid and an alcohol by-product;

(d) distilling alcohol by-product from the mixture to produce a purified allyl ester of the carboxylic acid.

5,710,317

PREPARATION OF DIFLUOROACETIC ACID FLUORIDE AND DIFLUOROACETIC ACID ESTERS

Kazuya Oharu, and Seisaku Kumai, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 26, 1995, Ser. No. 506,730

Claims priority, application Japan, Jul. 28, 1994, 6-177220; Jun. 29, 1995, 7-164187

Int. Cl.^{6} C07C *69/63;53/21*

U.S. Cl. 560—227 **18 Claims**

1. A method for preparing difluoroacetic acid fluoride, which comprises reacting a 1-alkoxy-1,1,2,2 -tetrafluoroethane of the formula $HCF_2CF_2OR^1$ wherein R^1 is a $C_{1\text{-}4}$ alkyl group in a gas phase in the presence of a metal oxide catalyst.

5,710,318

FLUID BED PROCESS FOR THE ACETOXYLATION OF ETHYLENE IN THE PRODUCTION OF VINYL ACETATE

Larry M. Cirjak, Burton, Ohio; Michael F. Lemanski, Houston, Tex.; David R. Wagner, Lenexa, Kans.; Nancy C. Benkalowycz, Westlake, Ohio; Patricia R. Blum, Macedonia, Ohio; Marc A. Pepera, Northfield, Ohio, and Christos Paparizos, Willowick, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 375,762, Jan. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 252,874, Jun. 2, 1994, Pat. No. 5,550,281. This application Aug. 27, 1996, Ser. No. 703,842

Int. Cl.^{6} C07C *67/05*

U.S. Cl. 560—245 **17 Claims**

1. The process for manufacturing vinyl acetate in a fluid bed reactor comprising co-joining an oxygen-containing gas, ethylene and acetic acid in a fluid bed reactor to react in the presence of a fluid bed catalyst material to produce vinyl acetate and recovering the vinyl acetate, wherein the improvement comprises feeding a gaseous mixture comprising ethylene and acetic acid into said fluid bed reactor through one or more inlets, feeding an oxygen-containing gas into said fluid bed reactor through at least one further inlet wherein the ratio of the sum of the ethylene, acetic acid and oxygen-containing gas entering the fluid bed reactor is within the flammability limits of a mixture of the gases.

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5,710,319
PROCESS FOR THE PREPARATION OF SUBSTITUTED QUINAZOLINE-2,4-DIONES

Robert Cosmo, Darmstadt, Germany, assignor to Hoechst Aktiengesellschaft, Frankfort, Germany

Filed Nov. 16, 1995, Ser. No. 559,534

Claims priority, application Germany, Nov. 18, 1994, 44 41 145.6

Int. Cl.^{6} C07D *403/02;239/96;* **C07C** *265/02*

U.S. Cl. 560—355 **1 Claim**

1. 4-Bromo-2-fluorobenzyl isocyanate.

5,710,320
DIARYLIODONIUM FLUOROALKYL SULFONATE SALTS AND A METHOD OF MAKING

Dennis E. Vogel, and Kim M. Vogel, both of Lake Elmo, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

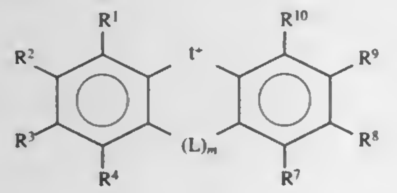
Division of Ser. No. 278,139, Jul. 21, 1994, Pat. No. 5,488,147. This application Jan. 16, 1996, Ser. No. 586,586

Int. Cl.^{6} C07C *309/06*

U.S. Cl. 562—113 **2 Claims**

1. A cyclic diaryliodonium sulfonate salt having the formula:

$R^{11}-CF_2-SO_3^{\ominus}$



wherein

- m represents an integer of 0 or 1, when m is zero, the carbons at the aryl positions ortho to the iodine being directly linked by a single carbon-carbon bond;
- L is an electron neutral or electron donating group selected from the group consisting of —O—; —NR^{12}—, wherein R^{12} represents —H or an alkyl group; and —$(CR^{13}R^{14})$n— wherein R^{13} and R^{14} each independently represent —H or an alkyl group and n represents an integer of 1 to 2;
- R1, R2, R3, R4, R7, R8, R9, and R10 are each independently selected from the group consisting of electron neutral groups and electron withdrawing groups, wherein adjacent R1, R2, R3, R4, R7, R8, R9, R10 groups optionally may together form a ring; and
- R11 is selected from the group consisting of halide groups, alkyl groups, chlorofluoroalkyl groups, chlorinated alkyl groups, and fluorinated alkyl groups.

5,710,321
PROCESS FOR PREPARING THE CYCLOHEXYLAMINE SALT OF (+) - THREO-2-HYDROXY-3-(2'-AMINOPHENYLTHIO) -3-(4"-METHOXYPHENYL) -PROPIONIC ACID AND OF ITS (-) -ANTIPODE"

Roberto Bortolaso, and Siro Serafini, both of Vicenza, Italy, assignors to F.I.S. Fabbrica Italiana Sintetici S.p.A., Italy

Filed Apr. 15, 1996, Ser. No. 632,077

Claims priority, application Italy, May 11, 1995, M195A0948

Int. Cl.^{6} C07C *55/00*

U.S. Cl. 562—401 **5 Claims**

1. A process for preparing the cyclohexylamine salt of (+)-threo-2-hydroxy-3-(2'-aminophenylthio)-3-(4"-methoxyphenyl)-propionic acid and of its (−)-antipode, which comprises the steps of:

a) reacting said threo acid in racemic form with the chiral base (+)-1-cyclohexylethylamine or its (−)-1-cyclohexylethylamine enantiomer to form the corresponding (+)- or (−)-1-cyclohexylethylamine salt thereof, and

b) reacting said cyclohexylethylamine salt formed in step a) with cyclohexylamine to form the corresponding cyclohexylamine salt of (+)- or, respectively, (−)-threo-2-hydroxy-3-(2'-aminophenylthio)-3-(4"'-methoxyphenyl)-propionic acid.

5,710,322
OPTICALLY ACTIVE IMINOCARBOXYLIC ACID DERIVATIVES

Emil Albin Broger, Magden, and Rudolf Schmid, Arlesheim, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

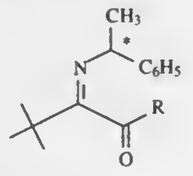
Filed Feb. 28, 1997, Ser. No. 808,297

Claims priority, application European Pat. Off., Mar. 29, 1996, 96105034

Int. Cl.^{6} C07C *249/00*

U.S. Cl. 562—440 **18 Claims**

1. A compound of the formula



wherein

R is OH, NH_2, lower-alkyl-NH or phenyl-lower-alkyl-NH and the enantiomers and diastereomers thereof.

5,710,323
PROCESS FOR PRODUCING MONOCARBOXYLIC AND/OR DICARBOXYLIC ACIDS

Ryoichi Okuda; Tadashi Kato, and Yoshio Okada, all of Tokuyama, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01444, § 371 Date Mar. 27, 1997, § 102(e) Date Mar. 27, 1997, PCT Pub. No. WO96/10006, PCT Pub. Date Apr. 4, 1996

PCT Filed Jul. 20, 1995, Ser. No. 809,701

Claims priority, application Japan, Sep. 29, 1994, 6-235724; Apr. 13, 1995, 7-088192

Int. Cl.^{6} C07C *51/10*

U.S. Cl. 562—497 **14 Claims**

1. A process for producing a monocarboxylic acid and/or a dicarboxylic acid by a reaction of a starting compound selected from the group consisting of a saturated hydrocarbon, a saturated monocarboxylic acid and a saturated monocarboxylic ester either with both of carbon monoxide and water at the same time or first with carbon monoxide and then with water, wherein the reaction of the starting compound either with both of carbon monoxide and water or with carbon monoxide alone is conducted in a strong acid solution containing at least trifluoromethane-sulfonic acid catalyst and an alcohol and/or an olefin of 3 to 5 carbon atoms.

5,710,324
INHIBITORS OF NITRIC OXIDE BIOSYNTHESIS

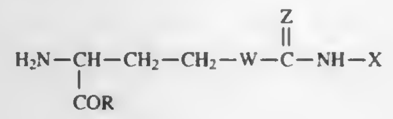
Jeffrey P. Whitten, Cincinnati; Ian A. McDonald, Loveland; Laurie E. Lambert, Morrow, all of Ohio, and Niall S. Doherty, Lyme, Conn., assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 201,915, Feb. 25, 1994, abandoned, which is a division of Ser. No. 91,082, Jul. 13, 1993, Pat. No. 5,318,992, which is a continuation of Ser. No. 840,572, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 585,349, Sep. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 485,109, Feb. 26, 1990, abandoned. This application Oct. 4, 1994, Ser. No. 317,458

Int. Cl.^{6} A61K *31/195;* **C07C** *61/04*

U.S. Cl. 562—506 **13 Claims**

1. A compound of the formula:



$$H_2N-\underset{\displaystyle COR}{\underset{|}{CH}}-CH_2-CH_2-W-\overset{\displaystyle Z}{\overset{\|}{C}}-NH-X$$

in which

- X is represented by cyano, cyclopropyl, 2-propyne, 2, 3-butadiene or NHR_2, in which R_2 is represented by H, or $C_{1\text{-}6}$ alkyl;
- R is represented by an amino acid or OM in which M is represented by H, $C_{1\text{-}6}$ alkyl, benzyl, phenyl, or pivoyl methyl ether;
- Z is represented by O or NR_1, in which R_1 is represented by H, —CF_3, — CH_2CF_3, or $C_{1\text{-}6}$ alkyl; and
- W is represented by a substituent selected from the group consisting of CH_2—NH—, —$(CH_2)_2$—NH—, —NH—NH—, —CH_2—NH—NH, —CH_2—O—NH and —O—NH;

and the pharmaceutical acceptable salts thereof; with the following proviso's;

1) that when W is —NH—NH or —$(CH_2)_2$—NH— then Z must be represented by O, and
2) that when X is —NHR_2 and Z is —NHR_1 then R_1 and R_2 must t be represented by the same C $_{1\text{-}6}$ alkyl substituent, and
3) that when Z is represented by O and X is represented by NR_1 then W must be —CH_2—NH— or —$(CH_2)_2$—NH—, and
4) that when W is represented by CH_2—NH, Z is represented by NH, and X is NHR_2, then R_2 is not represented by H.

5,710,325
MANUFACTURE OF ADIPIC ACID

Harold Stanley Bruner, Jr., Hockessin, Del.; Samuel Livingston Lane, and Bruce Edwin Murphree, both of Beaumont, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del., and DSM, N.V., Galeen, Netherlands

Filed Nov. 1, 1996, Ser. No. 740,812

Int. Cl.^{6} C07C *51/10;51/14;55/14*

U.S. Cl. 562—517 **5 Claims**

1. A process for the preparation of adipic acid from pentenoic acid or mixtures of pentenoic acid isomers which comprises:

(a) forming a reaction mixture containing the pentenoic acids or mixtures thereof, water, carbon monoxide, gamma-valerolactone, an iridium catalyst promoted with bromide or iodide and optionally a strong acid reaction promoter wherein the concentration of gamma-valerolactone is from 30 to 70% by weight of the reaction mixture; and

(b) reacting the mixture to convert pentenoic acid to adipic acid and branched six carbon dicarboxylic isomers of adipic acid.

5,710,326
CATALYST REGENERATION PROCESS

Carl R. Beck, Baton Rouge, La., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 3, 1991, Ser. No. 695,165

Int. Cl.^{6} C07C *51/14*

U.S. Cl. 562—521 **6 Claims**

1. In a continuous process for the production of aliphatic carboxylic acids by the reaction of an olefin and carbon monoxide in the presence of a catalyst comprising a BF_3 hydrate composition and the regeneration of said catalyst by control of the water content of said regenerated catalyst exiting hydrolysis, a method of determining catalyst strength as a function of the water content in the catalyst comprising the steps of:

(a) introducing water for hydrolysis of the reaction product of the olefin and carbon monoxide and for catalyst strength control;

(b) withdrawing the BF_3 hydrate composition catalyst resulting from hydrolysis;

(c) measuring the electrical conductivity of the catalyst complex exiting hydrolysis;

(d) continuously comparing the electrical conductivity measured in step with a predetermined value thereof;

(e) increasing the rate of introduction of water per step (a) in the event the electrical conductivity measured in step (c) is less than the predetermined value; and

(f) decreasing the rate of introduction of water per step (a) in the event the electrical conductivity measured in step (c) is greater than the predetermined value.

5,710,327
PREPARATION OF MODIFIED POLYASPARTIC ACIDS

Matthias Kroner, Eisenberg, and Gunnar Schornick, Neuleiningen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/03621, § 371 Date Mar. 27, 1997, § 102(e) Date Mar. 27, 1997, PCT Pub. No. WO96/10050, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 14, 1995, Ser. No. 809,296

Claims priority, application Germany, Sep. 27, 1994, 44 34 463.5

Int. Cl.^{6} C07D *229/00*

U.S. Cl. 562—565 **3 Claims**

1. A process for preparing modified polyaspartic acids, which comprises cocondensing aspartic acid with

(a) polybasic carboxylic acids or anhydrides of polybasic carboxylic acids and

(b) ammonia without diluent at temperatures of at least 140° C. in the absence of inorganic acids, and hydrolyzing the cocondensates with alkali metal and/or alkaline earth metal bases in aqueous medium.

5,710,328
PREPARATION OF α, β-UNSATURATED CARBOXYLIC ACIDS AND ANHYDRIDES

James Jerry Spivey, Cary; Makarand Ratnakav Gogate, Durham, both of N.C.; Joseph Robert Zoeller, and Gerald Charles Tustin, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 27, 1995, Ser. No. 562,860

Int. Cl.^{6} C07C *51/00*

U.S. Cl. 562—599 **3 Claims**

1. Process for the preparation of α,β-unsaturated carboxylic acids and anhydrides thereof which comprises contacting formaldehyde or a source of formaldehyde with a carboxylic anhydride in the presence of a catalyst comprising mixed oxides of vanadium and phosphorus.

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ANTIFOULANT FOR ACRYLIC ACID PURIFICATION

Hester A. Clever, Sugar Land, Tex., assignor to Nalco/Exxon Energy Chemical, L. P., Sugar Land, Tex.

Filed Oct. 23, 1996, Ser. No. 735,772

Int. Cl.^{6} C07C *51/42*

U.S. Cl. 562—600 **7 Claims**

1. A method of dispersing tars, gums, and foulants in acrylic acid monomer process equipment which comprises adding to the liquid or gaseous phases contained therein an effective antifouling amount of an antifoulant, said antifoulant having the structure:

$$R(SO_3)_nM$$

wherein R is a hydrocarbonaceous group having from 1–34 carbon atoms chosen from linear or branched alkyl groups, aromatic, cyclic, alkaryl, aralkyl, or alkenyl groups, alkyl diphenyl ether groups, dialkyl naphthalene groups, or mixtures thereof; M is chosen from the group consisting of hydrogen, alkali metal, alkaline earth metal, ammonium cation, alkyl ammonium cation, or mixtures thereof; and n ranges from 1 to about 6.

5,710,330

PROCESS FOR PREPARING ALKANEPHOSPHONIC ANHYDRIDES

Carl Christoph Mollenkopf, Frankfurt am Main; Ernst Ingo Leupold, Neu-Anspach, and Günter Roscher, Kelkheim, all of Germany, assignors to Hoechst AG, Frankfurt, Germany

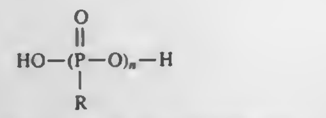
Filed Nov. 2, 1995, Ser. No. 556,859

Claims priority, application Germany, Nov. 4, 1994, 44 39 362.8

Int. Cl.^{6} C07F *9/38*

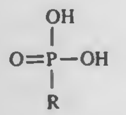
U.S. Cl. 562—878 **20 Claims**

1. A process for preparing alkanephosphonic anhydrides of the formula (I)

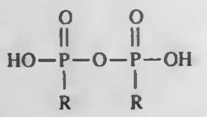


$$\mathrm{HO}-(\underset{\underset{\textstyle R}{|}}{\overset{\overset{\textstyle O}{\|}}{P}}-\mathrm{O})_n-\mathrm{H} \qquad (I)$$

where R is straight-chain or branched unsubstituted C_1–C_6-alkyl and n≧3, which comprises pyrolytically eliminating water from an alkanephosphonic acid of the formula (II) or a pyroalkanephosphonic acid of the formula (III)



$$\mathrm{O}=\underset{\underset{\textstyle R}{|}}{\overset{\overset{\textstyle OH}{|}}{P}}-\mathrm{OH} \qquad (II)$$



$$\mathrm{HO}-\underset{\underset{\textstyle R}{|}}{\overset{\overset{\textstyle O}{\|}}{P}}-\mathrm{O}-\underset{\underset{\textstyle R}{|}}{\overset{\overset{\textstyle O}{\|}}{P}}-\mathrm{OH} \qquad (III)$$

where R is straight-chain or branched C_1–C_6-alkyl, without addition of solvent and removing the water from the reaction mixture by means of an inert gas stream.

5,710,331

PREPARATION OF N-ALKENYL CARBOXAMIDES

Marc Heider, Neustadt; Thomas Rühl, Frankenthal, and Jochem Henkelmann, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

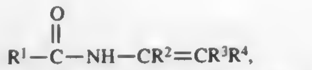
Filed Oct. 26, 1995, Ser. No. 548,724

Claims priority, application Germany, Oct. 27, 1994, 44 38 366.5

Int. Cl.^{6} C07C *231/08;233/05*

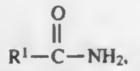
U.S. Cl. 564—215 **6 Claims**

1. A process for the preparation of an N-alkenyl carboxamide of the general formula I



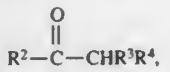
$$R^1-\overset{\overset{\textstyle O}{\|}}{C}-NH-CR^2=CR^3R^4, \qquad (I)$$

in which the radicals R^1 to R^4 independently stand for hydrogen or for aliphatic, cycloaliphatic, or aromatic radicals, which optionally carry inert substituents, wherein an amide of the general formula



$$R^1-\overset{\overset{\textstyle O}{\|}}{C}-NH_2, \qquad (II)$$

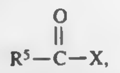
in which the radical R^1 has the above meaning, and a carbonyl compound of the general formula III



$$R^2-\overset{\overset{\textstyle O}{\|}}{C}-CHR^3R^4, \qquad (III)$$

in which the radicals R^2 to R^4 have the above meanings, are caused to react in the presence of a base, said reaction being either

a) carried out in the presence of a carboxylic acid derivative of the general formula IV



$$R^5-\overset{\overset{\textstyle O}{\|}}{C}-X, \qquad (IV)$$

in which the radical R^5 stands for hydrogen or an alkyl or aryl group and X is a halogen, alkoxy, or carboxylalkyl radical, or

b) continued in the presence of a carboxylic acid derivative of the formula and the amide of the formula I is isolated.

5,710,332

CARBOHYDRATE-DERIVED SURFACTANTS AND THEIR PRECURSORS

Brynley Morris Phillips, Kidderminster; Ajit Kumar, West Bromwich, and Alan Smithson, Kidderminster, all of England, assignors to Albright & Wilson Limited, Warley, England

Division of Ser. No. 596,452, Feb. 2, 1996, abandoned, which is a division of Ser. No. 340,801, Nov. 16, 1994, Pat. No. 5,523,478, which is a continuation of Ser. No. 60,280, May 11, 1993, abandoned. This application Jul. 12, 1996, Ser. No. 679,152

Claims priority, application United Kingdom, May 11, 1992, 9210094; May 11, 1992, 9210133; Mar. 3, 1993, 9304273

Int. Cl.^{6} C07C *291/00*

U.S. Cl. 564—297 **3 Claims**

1. An N—C_{10-20} alkyl-N-methylglycamine N-oxide.

5,710,333

PROCESS FOR THE PREPARATION OF TERTIARY AMINE OXIDES

Georg Bäder, Hofheim, Germany, and Ramon Joglar Tamargo, Tarragona, Spain, assignors to Hoechst Aktiengesellschaft, Germany

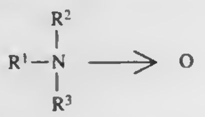
Filed Aug. 6, 1996, Ser. No. 693,915

Claims priority, application Germany, Aug. 7, 1995, 195 28 945.5

Int. Cl.^{6} C07C *291/04*

U.S. Cl. 564—298 **13 Claims**

1. A process for the preparation of a tertiary amine oxide of the formula I



$$R^1-\underset{\underset{\textstyle R^3}{|}}{\overset{\overset{\textstyle R^2}{|}}{N}} \longrightarrow O \qquad (I)$$

in which

R^1 is C_1–C_3-alkyl,

R^2 is C_1–C_{20}-alkyl and

R^3 is C_6–C_{22}-alkyl,

by reaction of a tertiary amine of the formula II

$$R^1R^2R^3N \qquad (II)$$

with a compound which splits off oxygen, which comprises carrying out the reaction in the presence of 1 to 15% by weight, based on the reaction mixture of a tertiary amine oxide of the formula I wherein essentially all of said tertiary amine oxide is present in the reaction mixture before the reaction starts.

5,710,334

AROMATIC DINITRO AND DIAMINO INTERMEDIATES

Yuko Ishihara; Mitsunori Matsuo, both of Kanagawa-ken; Keizaburo Yamaguchi, Chiba-ken, and Akihiro Yamaguchi, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 280,551, Jul. 26, 1994, Pat. No. 5,480,965, which is a continuation-in-part of Ser. No. 63,322, May 19, 1993, abandoned. This application May 26, 1995, Ser. No. 453,073

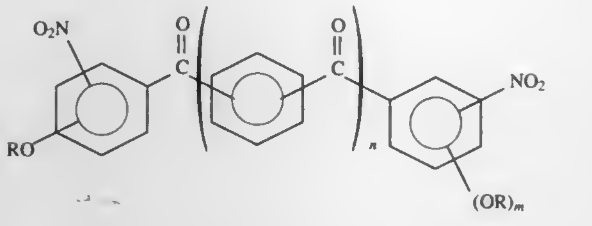
Claims priority, application Japan, May 25, 1992, 4-132081; Sep. 28, 1992, 4-258004; Nov. 12, 1992, 4-302270; Feb. 19, 1993, 5-030082; Mar. 17, 1993, 5-056977; Aug. 18, 1993, 5-203871; Dec. 27, 1993, 5-331996; Jun. 8, 1994, 6-126128

Int. Cl.^{6} C07C *217/84;217/90*

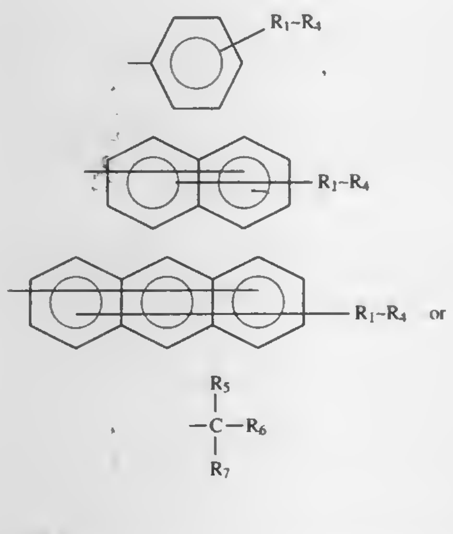
U.S. Cl. 561—328 **7 Claims**

1. An aromatic nitro compound of the formula (11):

(11)



wherein m and n are individually an integer of 0 or 1, and R is



wherein R_1, R_2, R_3 and R_4 are individually a hydrogen atom, halogen atom, alkyl having 1 to 8 carbon atoms, aryl, alkenyl, aralkyl or alkoxy having 1 to 5 carbon atoms, and R_5, R_6 and R_7 are individually a hydrogen atom, alkyl having 1 to 8 carbon atoms, aryl, alkenyl, aralkyl or δ-alkyloxyoligo-(alkyleneoxy)alkyl having 1 to 10 carbon atoms and 1 to 3 oxygen atoms with the proviso that R_5, R_6 and R_7 are not all hydrogen.

5,710,335

PROCESS FOR PREPARING 3-(N,N-DISUBSTITUTED AMINO)PHENOL

Kenichiro Horiuchi; Bunji Sawano, both of Osaka-fu; Nobuaki Sasaki, Kyoto-fu, and Mansuke Matsumoto, Hyogo-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, and Yamamoto Chemicals, Inc., Yao, both of Japan

Filed Oct. 4, 1996, Ser. No. 725,505

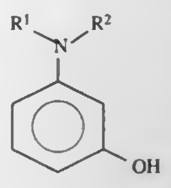
Claims priority, application Japan, Oct. 16, 1995, 7-267283

Int. Cl.^{6} C07C *209/18*

U.S. Cl. 564—403 **5 Claims**

1. A process for preparing a 3-(N,N-disubstituted amino)phenol represented by formula (1):

(1)



wherein R^1 is an alkyl group, a cycloalkyl group, an alkenyl group, an alkoxyalkyl group, an aryl group or an aralkyl group; and R^2 is an alkyl group or a cycloalkyl group,

said process comprising the following steps (a) to (d):

(a) the step of reacting resorcin with a primary amine represented by formula (2):

$$R^1NH_2 \qquad (2)$$

wherein R^1 is the same as defined above, and then terminating the reaction when the conversion of resorcin is 50 mol % or more and when the amount of an N,N'-disubstituted-m-phenylenediamine as a by-product is 2 mol % or less of the amount of used resorcin, thereby obtaining a reaction mixture including a 3-(N-monosubstituted amino)phenol,

(b) the step of adding an alkyl halide represented by formula (3):

$$R^2X \qquad (3)$$

wherein R^2 is the same as defined above; and X is a halogen atom,

to the reaction mixture obtained in step (a) to obtain a reaction mixture including the 3-(N,N-disubstituted amino)phenol,

(c) the step of adding an aqueous alkaline solution to the reaction mixture obtained in step (b) to dissolve unreacted resorcin in the aqueous alkaline solution, and extracting the 3-(N,N-disubstituted amino)phenol with an organic solvent, and

(d) the step of recovering unreacted resorcin from the aqueous alkaline solution layer of step (c).

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5,710,336

PROCESS FOR THE PREPARATION OF 5-6-DIHYDROXY-2-AMINO-1, 2, 3, 4-TETRAHYDRONAPHTHALENE DERIVATIVES

Paolo Chiesi; Paolo Ventura; Vittorino Servadio; Maurizio Del Canale; Renato De Fanti, and Gabriele Amari, all of Parma, Italy, assignors to Chiesi Farmaceutici S.p.A., Parma, Italy

PCT No. PCT/EP95/01406, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO95/29147, PCT Pub. Date Nov. 2, 1995

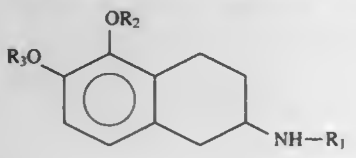
PCT Filed Apr. 13, 1995, Ser. No. 722,227

Claims priority, application Italy, Apr. 26, 1994, MI94A0802

Int. Cl.^{6} C07C *211/38*

U.S. Cl. 564—428 **8 Claims**

1. A process for preparation of a compound of the formula (I):



(I)

wherein:

wherein:

R_1 is lower alkyl;

R_2 and R_3 are each hydrogen, which process comprises:

a) cyclizing 2-alkylamino-4-(2,3-dialkoxy-phenyl)butyric acid with simultaneous dealkylation on oxygen, thereby producing in a single step salified 2-alkylamino- 5,6-dihydroxy-1-tetralone; and

b) catalytically reducing said tetralone, thereby producing said compound of the formula (I).

5,710,337

SYNTHESIS OF AND HYDROFORMYLATION WITH FLUORO-SUBSTITUTED BIDENTATE PHOSPHINE LIGANDS

Jerry D. Unruh; Brigitte E. Segmuller; Gabriel R. Chapa, all of Corpus Christi, and Kent E. Pryor, Houston, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 453,283, May 30, 1995, Pat. No. 5,567,856. This application Apr. 10, 1996, Ser. No. 630,146

Int. Cl.^{6} C07F *9/52*

U.S. Cl. 568—16 **4 Claims**

1. The compound trans-2,3-Bis[bis(4-trifluoromethylphenyl)phosphinomethyl] norbornane.

2. The compound trans-2,3-Bis[bis(3,5difluorophenyl)phosphinomethyl] norbornane.

5,710,338

SYNTHESIS OF AND HYDROFORMYLATION WITH FLUORO-SUBSTITUTED BIDENTATE PHOSPHINE LIGANDS

Jerry D. Unruh; Brigitte E. Segmuller; Gabriel R. Chapa, all of Corpus Christi, and Kent E. Pryor, Houston, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 453,283, May 30, 1995, Pat. No. 5,567,856. This application Apr. 10, 1996, Ser. No. 630,316

Int. Cl.^{6} C07F *9/52*

U.S. Cl. 568—16 **2 Claims**

1. The compound 1,2-bis[bis(3,5-difluoro-phenyl)phosphino]-5-fluorobenzene.

2. The compound 1,3-bis[bis(3,5-difluoro-phenyl)phosphino]-5-fluorobenzene.

5,710,339

BISPHOSPHINES AS CATALYSTS FOR ASYMMETRIC REACTIONS

Christian Laue, Monheim; Georg Schröder, Leverkusen, and Dieter Arlt, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

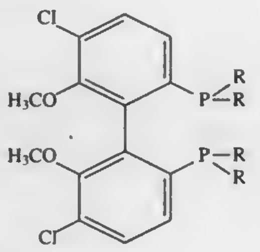
Filed Jun. 13, 1996, Ser. No. 664,073

Claims priority, application Germany, Jun. 20, 1995, 195 22 293.8

Int. Cl.^{6} C07F *9/50*

U.S. Cl. 568—16 **6 Claims**

1. An enantiomerically pure bisphosphines of the general formula (I)



(I)

where

R in each case represents a phenyl group which in turn can be substituted by from 1 to 3 substituents from the group OR^1, R^1, nitro, NH_2, NHR^1 or $NR_2{}^1$, where R^1 is an alkyl group having up to 6 carbon atoms, or

R is an alkyl group having up to 7 carbon atoms or a cycloalkyl group having from 3 to 7 carbon atoms.

5,710,340

SYNTHESIS OF CYCLOALKYLDIARYLPHOSOPHINES

K. Pushpananda A. Senaratne, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Apr. 29, 1996, Ser. No. 639,497

Int. Cl.^{6} C07F *9/50*

U.S. Cl. 568—17 **35 Claims**

1. A process of forming a tertiary phosphine having two aryl groups and one alkyl-substituted cycloalkyl group, which process comprises reacting an alkali metal diarylphosphide with a monoalkyl- or polyalkyl-substituted cycloalkyl mesylate or tosylate in which an alkyl group is in the 2-position, in a liquid reaction medium in which these reactants are soluble, such that said phosphine is formed.

5,710,341

PREPARATION OF α-CHLOROALKYL ARYL KETONES

Wolfgang Siegel, Limburgerhof; Walter Dobler, Heidelberg, and Michael John, Lambsheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

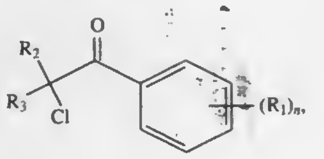
Filed Mar. 22, 1996, Ser. No. 620,317

Claims priority, application Germany, Mar. 31, 1995, 195 11 861.8

Int. Cl.^{6} C07C *45/63*

U.S. Cl. 568—316 **4 Claims**

1. A process for preparing α-chloroalkyl aryl ketones of the formula I



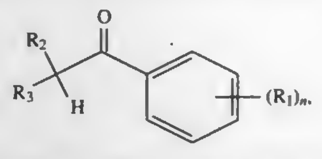
I

where

n is 1 to 5,

R_1 independently of one another are H, alkyl, alkoxy, aryl, aryloxy, acyloxy, acylamino, halogen or nitro,

$R_{2,3}$ independently of one another are H, alkyl or aryl, by chlorination of alkyl aryl ketones of the formula II



II

with sulfuryl chloride, which comprises carrying out the chlorination in the presence of an aliphatic alcohol.

5,710,342

PROCESS FOR PREPARING CARBONYL COMPOUNDS BY CATALYSED OXIDATION OF OLEFINS AND CATALYSTS PRESENT MICROEMULSIONS

Laszlo Imre; Reinhard Schomäcker, and Judit Daun, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

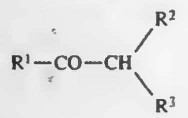
Filed Dec. 6, 1995, Ser. No. 568,054

Claims priority, application Germany, Dec. 15, 1994, 44 44 738.8

Int. Cl.^{6} C07C *45/34*

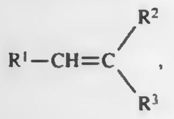
U.S. Cl. 568—360 **14 Claims**

1. A process for preparing a carbonyl compound of the formula



$$R^1-CO-CH\begin{array}{l}\diagup R^2\\ \diagdown R^3\end{array}$$

by catalytic oxidation of an olefin of the formula



$$R^1-CH=C\begin{array}{l}\diagup R^2\\ \diagdown R^3\end{array},$$

where, in the formulae

R^1, R^2 and R^3 are, independently of one another, hydrogen; straight-chain or branched C_1–C_8-alkyl which is unsubstituted or monosubstituted or disubstituted by halogen, hydroxy, cyano, COO—C_1–C_4-alkyl, CO—C_1–C_4-alkyl, SO_2—O—C_1–C_2-alkyl or phenyl; or phenyl or naphthyl which are unsubstituted or monosubstituted or disubstituted by halogen, hydroxy, nitro, cyano, C_1–C_4-alkyl, COO—C_1–C_4-alkyl, CO—C_1–C_4-alkyl or SO_2—O—C_1–C_4-alkyl,

and

R^1 and R^3 or R^2 and R^3 can further more together form an alkylene chain $-(CH_2)_m-$ where m=3–10 and 1–2 of the alkylene chain carbon atoms can be substituted by halogen, hydroxy, C_1–C_4-alkyl, COO—C_1–C_4-alkyl, CO—C_1–C_4-alkyl, SO_2—O—C_1–C_4-alkyl or phenyl,

by an oxygen or oxygen-containing gas, wherein the oxidation is carried out at 0°–200° C. and 0.2–200 bar in the presence of a catalyst system comprising a palladium compound and one or more reoxidizing agents from the group of compounds of further subgroup metals and quinones, in a microemulsion as reaction medium and catalyst support, wherein the size of the droplets of said microemulsion range from 5 to 100 nm.

5,710,343

METHOD FOR THE PREPARATION OF 3,4-DIHYDROXY-5-NITROBENZALDEHYDE

Reijo Johannes Bäckström, Helsinki, Finland, assignor to Orion-Yhtymä Oy, Espoo, Finland

PCT No. PCT/FI95/00513, § 371 Date May 8, 1997, § 102(e) Date May 8, 1997, PCT Pub. No. WO96/09274, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 20, 1995, Ser. No. 809,405

Claims priority, application United Kingdom, Sep. 23, 1994, 9419274

Int. Cl.^{6} C07C *37/055*

U.S. Cl. 568—424 **10 Claims**

1. A method for the preparation of 3,4-dihydroxy-5-nitrobenzaldehyde characterized in that 3-ethoxy-4-hydroxy-5-nitrobenzaldehyde is reacted with a reagent comprising zinc chloride, water and hydrogen chloride.

5,710,344

PROCESS TO PREPARE A LINEAR ALDEHYDE

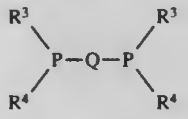
Anne Irisa Breikss, Hockessin; Patrick M. Burke; James Michael Garner, both of Wilmington, all of Del., and Wilson Tam, Boothwyn, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del., and DSM N.V., Gallen, Netherlands

Filed Nov. 8, 1996, Ser. No. 745,238

Int. Cl.^{6} C07C *45/50*

U.S. Cl. 568—454 **29 Claims**

1. Process for the preparation of a linear aldehyde organic compound starting from an ethylenically unsaturated organic compound by hydroformylation in the presence of a catalyst system comprising a Group VIII metal and a bidentate organic ligand having two trivalent phosphorus atoms, characterized in that the two phosphorus atoms are linked with a 2,2'-dihydroxyl-1,1'-binapthalene or 2,2'-dihydroxyl-1,1'-biphenylene bridging group (Q). The ligand has the structure:



$$\begin{array}{ccccc}R^3 & & & & R^3\\ & \diagdown & & \diagup & \\ & P & -Q- & P & \\ & \diagup & & \diagdown & \\ R^4 & & & & R^4\end{array}$$

R^3 and R^4 are the same or different aryl or nitrogen containing heterocycle groups, where the nitrogen is bound to the phosphorus.

5,710,345

FLOORINATED POLYMERS AND COPOLYMERS CONTAINING CYCLIC STRUCTURES

Walter Navarrini, Boffalora Ticino; Vito Tortelli, Milano, and Alessandro Zedda, La Spezia, all of Italy, assignors to Ausimont, S.P.A, Milano, Italy

Division of Ser. No. 441,197, May 15, 1995, Pat. No. 5,589,557. This application Nov. 15, 1996, Ser. No. 749,504

Claims priority, application Italy, May 19, 1994, MI94A1011

Int. Cl.^{6} C07C *43/03*

U.S. Cl. 568—596 **13 Claims**

1. Fluorinated derivatives of bisvinyloxymethane of structure $CFX^1=CX^2-O-CX^3X^4-O-CX^{2'}=CX^{1'}F$, wherein X^1 and X^2, equal to or different from each other, are F, Cl or H; X^3 and X^4, equal to or different from each other, are F or CF_3; $X^{1'}$ and $X^{2'}$, equal to or different from each other, are X^1 or X^2, with the proviso that when X^1 is different from X^2 then $X^{1'}$ is different from $X^{2'}$.

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5,710,346

2,2-BIS(3,5-DISUBSTITUTED-4-HYDROXYPHENYL) PROPANE DERIVATIVE, PROCESS FOR PRODUCTION THEREOF, AND PROCESS FOR PRODUCING PYROGALLOL USING SAID DERIVATIVE

Masakazu Takahashi, Tokyo; Tomonori Miyazaki, Shizuoka-ken; Chika Maejima, Shizuoka-ken, and Yoshikazu Kimura, Shizuoka-ken, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01775, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO95/11211, PCT Pub. Date Apr. 27, 1995

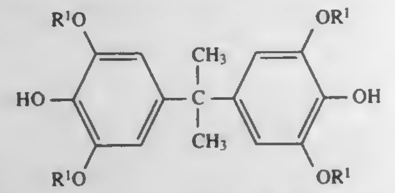
PCT Filed Oct. 21, 1994, Ser. No. 454,157

Claims priority, application Japan, Oct. 22, 1993, 5-287472

Int. Cl.^{6} C07C *39/16*

U.S. Cl. 568—723 **4 Claims**

1. A 2,2-bis (3,5-disubstituted-4-hydroxyphenyl)propane derivative represented by formula (1)



(1)

wherein each R^1 represents a hydrogen atom.

5,710,347

METHOD OF PRODUCING A HIGH-MELTING POWDER OF 2,2-BIS[4'-(2",3"-DIBROMOPROPOXY)-3',5'-DIBROMOPHENYL]-PROPANE

Setsuo Nishibori; Hideaki Ohnishi, both of Shiga, and Tsuyoshi Furukawa, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Sep. 26, 1995, Ser. No. 533,822

Int. Cl.^{6} C07C *37/24*

U.S. Cl. 568—725 **5 Claims**

1. A method of producing a high-melting powder of 2,2-bis[4'-(2",3"-dibromopropoxy)-3',5'-dibromophenyl]propane characterized by comprising a step of adding water to a solution of 2,2-bis[4'-(2",3"-dibromopropoxy)-3',5'-dibromophenyl]propane in an organic solvent in the presence of a surfactant to give a water-in-oil emulsion and a step of removing the organic solvent from said emulsion in the presence of a crystal nucleus to induce crystallization to give an aqueous dispersion of 2,2-bis[4'-(2",3"-dibromopropoxy)-3',5'-dibromophenyl]propane.

5,710,348

Patent Not Issued For This Number

5,710,349

PROCESS FOR PRODUCING DIOL COMPOUNDS

Shinichi Furusaki; Masaoki Matsuda; Yasunori Miyamoto, and Yasushi Shiomi, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

PCT No. PCT/JP94/01664, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/10497, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 5, 1994, Ser. No. 448,488

Claims priority, application Japan, Oct. 8, 1993, 5-253205

Int. Cl.^{6} C07C *29/149*

U.S. Cl. 568—864 **6 Claims**

1. A process for producing diol compounds comprising the steps of;

esterifying a carboxylic acid mixture collected from a reaction product mixture liquid obtained by a liquid phase oxidation reaction of cyclohexane with air, with an alcohol, and

hydrogenate-decomposing the resultant esterification product with hydrogen,

wherein the hydrogenate-decomposition of the esterification product with hydrogen is carried out in the presence of a combined catalyst comprising:

a catalyst (A) comprising, as principal components, copper oxide and zinc oxide in the form of particles passed through a 200 mesh sieve and having an average size of 1 to 50 μm,

and a catalyst (B) comprising copper oxide and iron oxide carried on aluminum oxide in the form of particles having an average size of 5 to 15 μm,

the catalyst (A) and the catalyst (B) are present in a weight ratio of 1:0.5 to 1:10.

5,710,350

PROCESS FOR THE PRODUCTION OF DIGLYCEROL

Lutz Jeromin; Bernhard Gutsche, both of Hilden; Reinhard Bunte, Dormagen, and Volkmar Jordan, Steinfurt, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/00834, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/21582, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 522,387

Claims priority, application Germany, Mar. 25, 1993, 43 09 741.3

Int. Cl.^{6} C07C *31/18*

U.S. Cl. 568—869 **20 Claims**

1. A process for the production of diglycerol by condensation of glycerol in the presence of a basic catalyst, at a reaction temperature of from 200° C. to 275° C. and concentration of the diglycerol by distillation, which comprises:

a) partially reacting glycerol, in a reaction zone, to form a reaction mixture containing 10% to 15% by weight of diglycerol;

b) terminating the reaction by cooling the reaction mixture to a temperature below 200° C.;

c) distilling the reaction mixture in a first distillation zone which comprises a distillation zone selected from the group consisting of a wiped film evaporator zone and a short-path evaporator zone, at a pressure of 0.5 to 5 mbar and a bottom temperature of the distillation zone of 125° C. to 170° C. to form a first bottom product; and

d) distilling the first bottom product in a second distillation zone comprising a short path evaporator zone at a pressure of 0.05 to 0.3 mbar and a bottom temperature of 140° C. to 170° C. to obtain a second bottom product containing more than 90% by weight of diglycerol.

5,710,351

PROCESS FOR PRODUCING HEXAFLUOROETHANE

Hiromoto Ohno; Tetsuo Nakajo; Tatsuharu Arai, and Toshio Ohi, all of Kanagawa, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 630,534

Int. Cl.^{6} C07C *17/00*

U.S. Cl. 570—123 **10 Claims**

1. A process for producing hexafluoroethane which comprises reacting a hydrofluorocarbon containing two carbon atoms in the molecule with fluorine gas at an elevated temperature in a vapor phase in the presence of a diluent gas.

5,710,352

VAPOR PHASE PROCESS FOR MAKING 1,1,1,3,3-PENTAFLUOROPROPANE AND 1-CHLORO-3,3,3-TRIFLUOROPROPENE

Hsueh Sung Tung, Erie County, N.Y., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Sep. 19, 1996, Ser. No. 716,013

Int. Cl.^{6} C07C *17/08*

U.S. Cl. 570—166 **24 Claims**

1. A process for the preparation of 1,1,1,3,3-pentafluoropropane comprising the steps of:

(a) conducting a fluorination reaction by reacting 1,1,1,3,3-pentachloropropane with hydrogen fluoride in a reactor in the vapor phase and in the presence of a fluorination catalyst, thereby forming a reaction product comprising HCl, 1,1,1,3,3-pentafluoropropane, 1-chloro-3,3,3-trifluoropropene and 1,3,3,3-tetrafluoropropene;

(b) separating 1,1,1,3,3-pentafluoropropane from said reaction product; and

(c) subsequently recycling the 1-chloro-3,3,3-trifluoropropene and/or 1,3,3,3-tetrafluoropropene to a liquid phase reactor for reaction with HF to thereby produce additional 1,1,1,3,3 -pentafluoropropane.

5,710,353

PROCESS FOR FLUORINATING HALOGENATED HYDROCARBON

Takashi Shibanuma; Yasufu Yamada; Toshikazu Yoshimura, and Hiroshi Momota, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/01787, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/13610, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 9, 1993, Ser. No. 464,636

Claims priority, application Japan, Oct. 5, 1992, 4-265877; Dec. 15, 1992, 4-334174

Int. Cl.^{6} C07C *17/07;17/087*

U.S. Cl. 570—168 **11 Claims**

1. A process for producing a fluorinated saturated hydrocarbon comprising fluorinating a halogenated alkane or alkene having 1 to 5 carbon atoms with hydrogen fluoride in a gas phase reaction or through addition of hydrogen fluoride, respectively, in the presence of a catalyst which comprises:

(a) at least one element selected from the group consisting of Ti, V, Zr, Mo, Ge, Sn and Pb, and

(b) alumina, aluminum fluoride or partially fluorinated alumina.

5,710,354

PREPARATION OF BROMINATED INDANES

Saadat Hussain, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Aug. 29, 1996, Ser. No. 705,493

Int. Cl.^{6} C07C *25/22;* **C07K** *5/03*

U.S. Cl. 570—206 **11 Claims**

1. A process for the manufacture of a polybrominated indane product, said process comprising the steps of:

(a) forming an intermediate by reacting an indane compound with bromine, under reaction conditions so as to dissolve and partially ar-brominate the indane compound to contain an average of at least about two ar-bromine atoms per molecule, the reaction occurring in the presence of from about 0.001 to about 0.1 gram per gram of indane compound of a weak Lewis acid catalyst selected from the group consisting of antimony chlorides, tin chloride, zinc chloride, bismuth chloride, and cadmium chloride or of from about 0.001 to about 0.005 gram per gram of indane compound of a strong Lewis acid catalyst selected from the group consisting of iron containing bromination catalyst, an aluminum containing bromination catalyst, and zirconium tetrachloride bromination catalyst; and

(b) catalytically ar-brominating the intermediate to obtain a polybrominated indane product, the catalytic ar-bromination occurring in the presence of aluminum containing bromination catalyst or iron containing bromination catalyst or zirconium tetrachloride bromination catalyst and in a mole ratio of bromine to said intermediate of at least 5.

5,710,355

METHOD OF MAKING CHLOROBENZENES

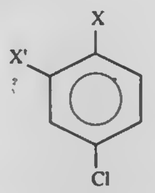
Ramesh Krishnamurti, Williamsville, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jun. 10, 1996, Ser. No. 660,994

Int. Cl.^{6} C07C *22/08;25/08;25/10*

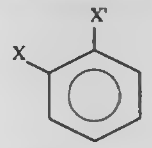
U.S. Cl. 570—208 **20 Claims**

1. A method of making a chlorobenzene having the general formula



where X is C or F, and X' is X or CF$_3$ comprising

(A) heating a compound having the formula



with at least 2 moles per mole of said compound of a sulfonating agent selected from the group consisting of sulfuric acid, chlorosulfonic acid, and mixtures thereof to produce a sulfonated compound; and

(B) heating said sulfonated compound at about 50° to about 250° C. in the presence of at least a catalytic amount of gaseous chlorine to produce said chlorobenzene.

5,710,356

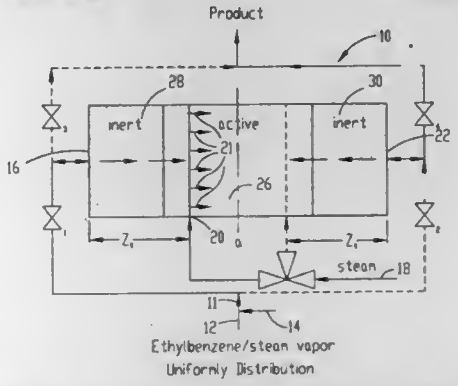
METHOD OF CONDUCTING AN ENDOTHERMIC REACTION IN A PACKED-BED REACTOR WITH EXTERNAL ENERGY ADDITION

Bala Subramaniam, and Jon D. Snyder, both of Lawrence, Kans., assignors to The University of Kansas, Lawrence, Kans.

Filed Nov. 22, 1994, Ser. No. 343,218

Int. Cl.^{6} C07C *5/32*

U.S. Cl. 585—440 **21 Claims**



1. A method of carrying out an endothermic reaction in a stationary reactor having a pair of symmetrically opposed catalyst

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containing portions presenting two opposite ends, the reaction having a desired temperature profile within the reactor associated with an optimal conversion and product selectivity, the method comprising:

- passing a reaction mixture through the stationary reactor by introducing the mixture through the reactor first end;
- introducing heat at a first axially discrete location within the first symmetric portion to establish a desired temperature profile;
- catalyzing the endothermic reaction to produce a desired end product; and
- periodically reversing the flow of the reaction mixture by introducing the mixture at the second reactor end and switching the introduction of beat to a second discrete location within said second symmetrical reactor portion which is axially symmetrical to said first location, the rate of reversal being sufficient to reduce heat losses from the reactor.

5,710,357

PROCESS FOR RECOVERING OLEFINS FROM CAT-CRACKED GAS WITHOUT ACCUMULATING UNDESIRABLE OXIDES OF NITROGEN

Dane Clark Grenoble, Nassau Bay; Roy Thomas Halle, League City, both of Tex., and William Douglas Thomson, Southampton, Great Britain, assignors to Exxon Chemical Patents Inc., Houston, Tex.

Continuation of Ser. No. 967,835, Oct. 28, 1992, Pat. No. 5,444,176. This application Jun. 5, 1995, Ser. No. 464,492

Int. Cl.^{6} C07C *7/00;* **F25J** *3/00*

U.S. Cl. 585—809 **26 Claims**

1. A process for preventing the accumulation of undesirable oxides of nitrogen during the recovery of one or more desired hydrocarbons from cat-cracked gas comprising:

- passing said gas through an alkaline solution to remove acid gases;
- passing said gas through a depropanizer at a temperature between about −28.89° C. (−20° F.) to −40° C. (−40° F.) to form a first portion and a second portion;
- passing said first portion through an absorber demethanizer at a temperature above about −45.56° (−50° F.) to form a third portion and a fourth portion;
- recovering at least one desired hydrocarbon from said third portion at temperatures above about −106.67° C. (−160° F.).

5,710,358

OXIDATIVE DETOXIFICATION OF PHOSPHONOTHIOLATES AND PHOSPHONOTHIOIC ACIDS

Yu-Chu Yang; John B. Samuel; William T. Beaudry; Linda L. Szafraniec, all of Bel Air, Md., and Clifford A. Bunton, Santa Barbara, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 8, 1996, Ser. No. 687,065

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 588—200 **14 Claims**

1. A method of detoxifying phosphonothiolates and phosphonothioic acids, which comprises:

- (a) reacting a composition comprising a phosphonothiolate or phosphonothioic acid with a sufficient amount of a compound containing an HSO_5^- ion for a sufficient time and under conditions sufficient to produce a reaction product having less toxicity than the phosphonothiolate or phosphonothioic acid; and
- (b) subsequently hydrolyzing said reaction product under acid pH to produce an hydrolysis product.

5,710,359

ENVIRONMENTALLY APPROPRIATE DEGRADATION AND DISPOSAL OF HETEROATOM-CONTAINING COMPOUNDS

Johannes Lercher, Vienna, Austria, and Zhan Zhaoqui, Enschede, Netherlands, assignors to DSM Chemie Linz GmbH, Linz, Austria

Continuation of Ser. No. 302,338, Sep. 8, 1994, abandoned. This application Dec. 13, 1995, Ser. No. 571,697

Claims priority, application Austria, Sep. 9, 1993, 1819/93

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 588—208 **16 Claims**

1. Process for the degradation of atrazine or melamine-formaldehyde resins having C—X bonds where X is N, or compounds which have one or more C—X bonds, where X is selected from the group consisting of F, Cl, Br, I, O and S, by cleavage of the C—X bonds, wherein said atrazine or melamine-formaldehyde resins or compounds or articles which contain said atrazine or melamine-formaldehyde resins or compounds are treated with water vapor at a temperature of 300° to 600° C. in the presence of an aluminum catalyst consisting essentially of catalytically active aluminum oxide or AlOOH as active constituent.

5,710,360

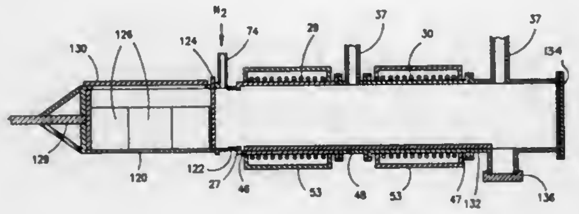
THERMAL DESORPTION SYSTEM FOR DECONTAMINATING MATERIALS

John R. Self, Vinemont, Ala., and Robert A. Olexy, Littleton, Colo., assignors to Vanish, Inc., Ponte Vedra Beach, Fla.

Continuation of Ser. No. 414,336, Mar. 31, 1995, abandoned. This application Oct. 9, 1996, Ser. No. 728,429

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 588—213 **20 Claims**



1. A thermal desorption system for decontaminating materials comprising:

- an induction tube furnace for heating contaminated materials to be decontaminated, said induction tube furnace including:
- a metal susceptor tube for receiving materials to be heated, said susceptor tube being formed from a metal having a melting temperature higher than approximately 2300° F., and an electrical resistance of greater than approximately 100 µohm-cm at 1800° F.; and
- at least one induction coil surrounding said susceptor tube for heating said tube to a temperature sufficient to completely desorb material contained in said susceptor tube;
- means for charging material to be decontaminated into said susceptor tube;
- at least one power supply for supplying current to said at least one induction coil to heat said susceptor tube;
- means for maintaining an inert atmosphere in said susceptor tube during heating of said material therein;
- means for removing from said susceptor tube, vaporized contaminants that are released from the material when it is heated; and
- means for removing desorbed material from said susceptor tube after it has been heated therein.

5,710,361

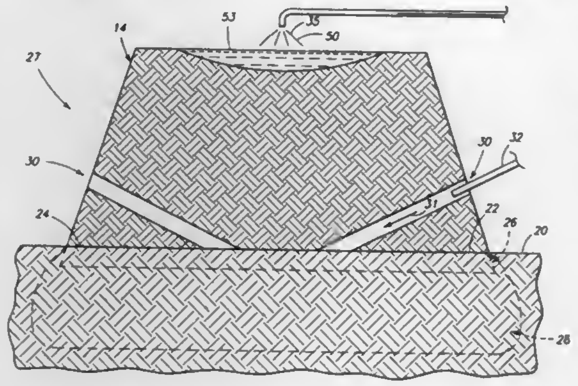
IN-SITU TREATMENT OF WASTE STACKS, SOILS OR EARTH MATERIALS TO IMMOBILIZE METALS CONTAINED THEREIN

Joseph G. Harrington, Moscow; Roger B. Humberger, Pocatello; Michael L. Orr, Pocatello, and Charles H. Schwartz, Pocatello, all of Id., assignors to J. R. Simplot Company, Boise, Id.

Continuation of Ser. No. 573,230, Dec. 15, 1995, Pat. No. 5,632,715. This application Dec. 18, 1996, Ser. No. 772,174

Int. Cl.^{6} A62D *3/00;* **B09B** *3/00*

U.S. Cl. 588—256 **51 Claims**



1. A process for in situ immobilization of metals in waste stacks, soils, or earth materials having metals therein, comprising:

- forming at least one treatment passageway which extends into said waste stacks, soils, or earth materials;
- injecting a treatment liquid into the treatment passageway; said treatment liquid including at least one microbe nutrient which is capable of sustaining activity of at least one microbe;
- providing at least one microbe in sufficient proximity to the treatment passageway to receive treatment liquid therefrom; said at least one microbe being capable of growing in the presence of said treatment liquid; said at least one microbe also being capable of producing microbial sulfides which are sulfide by-products of microbial activity in said waste stacks, soils, or earth materials;
- reacting the microbial sulfides in situ with metal ions or metal-containing compounds contained in said waste stacks, soils, or earth materials to form metal sulfides;
- reducing solubility of the metal ions or metal-containing compounds contained in said waste stacks, soils, or earth materials as a result of forming the metal sulfides;
- inhibiting the migration rate of metal ions or metal-containing compounds within or from said waste stacks, soils, or earth materials.

5,710,362

LANDFILL LINER FOR CAPTURING CERTAIN LEACHATE CONTAMINANTS IN THE EVENT OF LEAKAGE

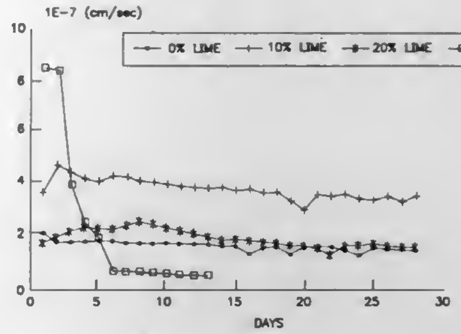
P. Aarne Vesilind, Chapel Hill, and Tsau-don Tsai, Durham, both of N.C., assignors to Duke University, Durham, N.C.

Filed May 20, 1996, Ser. No. 650,443

Int. Cl.^{6} B09B *1/00*

U.S. Cl. 588—259 **10 Claims**

1. In a landfill of the type including a clay landfill liner and a system for collecting and removing leachate generated by the landfill, the improvement comprising an improved landfill. liner for capturing heavy metals and the like to prevent groundwater contamination in the event of leakage of leachate through the landfill liner, said landfill liner comprising a plurality of successive layers of clay and lime that are each mixed subsequent to placement and prior to being covered by another layer of clay and lime that are in turn mixed together.



7. A landfill liner for enhanced removal of heavy metals and the like to prevent groundwater contamination in the event of seepage of leachate through the landfill liner, the landfill liner comprising an admixture of clay and lime.

5,710,363

Patent Not Issued For This Number

5,710,364

CRUCIFEROUS PLANT HAVING A HIGH CAROTENE CONTENT

Yurie Shintaku, 10-2, Shimizu 2-chome, Suginami-ku, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 359,061

Claims priority, application Japan, Dec. 24, 1993, 5-326913

Int. Cl.^{6} A01H *5/00;1/00*

U.S. Cl. 800—200 **10 Claims**

1. A plant belonging to *Brassica napus* L., *Brassica campestris* L., or *Raphanus sativus* L., having an Or gene.

2. A cultivar of cabbage (*B. oleracea* L. var. capitata L.), kale (*B. oleracea* L. var. acephala DC.), kohlrabi (*B. oleracea* L. var. gongylodes DC.), savoy cabbage (*B. oleracea* L. var. bullta DC.), Brussels sprouts (*B. oleracea* L. var. gemmifera Zenk.), broccoli (*B. oleracea* L. var. italica DC.) or Chinese kale (*B. oleracea* L. var. alboglabra Bayl.), having an Or gene.

5,710,365

SOYBEAN PRODUCTS WITH IMPROVED CARBOHYDRATE COMPOSITION AND SOYBEAN PLANTS

Phillip Scott Kerr, Urbandale, Iowa, and Scott Anthony Sebastian, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 211,709, Apr. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 782,033, Oct. 24, 1991, abandoned. This application Jan. 31, 1995, Ser. No. 382,313

Int. Cl.^{6} A01H *5/00;5/10;1/00*

U.S. Cl. 800—200 **32 Claims**

1. A hybrid or mutant soybean plant homozygous for at least one gene that confers a heritable phenotype of a seed stachyose content of less than 35 µmol/g, provided that the soybean plant is not a member of the line LR28.

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5,710,366

HELIANTHUS ANNUUS BEARING AN ENDOGENOUS OIL WHEREIN THE LEVELS OF PALMITIC ACID AND OLEIC ACID ARE PROVIDED IN AN ATYPICAL COMBINATION VIA GENETIC CONTROL

Glenn S. Cole, Woodland, Calif.; Jan P. Hazebroek, Johnston, Iowa, and Thomas C. Heaton, Davis, Calif., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jun. 7, 1995, Ser. No. 475,974

Int. Cl.^{6} A01H *5/00;5/10;1/04;* **C12P** *7/64*

U.S. Cl. 800—200 **25 Claims**

9. An oilseed *Helianthus annuus* plant which is capable of forming oilseeds that yield an endogenous oil wherein the levels of palmitic acid and oleic acid are provided in an atypical combination of concentrations via genetic control wherein said oil exhibits following crushing and extraction in the absence of hydrogenation or other chemical or physical modification (1) at least 20 percent by weight of palmitic acid based upon the total fatty acid content, and (2) at least 45 percent by weight of oleic acid based upon the total fatty acid content, and wherein the genetic means for the expression of said fatty acids (1) and (2) in said concentrations is obtainable from 93PMOL040G having ATCC Accession No. 97159.

5,710,367

APOMICTIC MAIZE

Bryan K. Kindiger, Woodward, Okla., and Victor Sokolov, Novosibirsk, Russian Federation, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 22, 1995, Ser. No. 532,904

Int. Cl.^{6} A01H *5/00;* **C12M** *15/00*

U.S. Cl. 800—200 **28 Claims**

1. Apomictic maize having at least one dominant gene N for controlling nonreduction of the egg and at least one dominant gene A for controlling apomictic development of the egg.

5,710,368

SOYBEAN CULTIVAR 924181339

William K. Rhodes, Queenstown, Md., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed May 10, 1996, Ser. No. 644,498

Int. Cl.^{6} A01H *5/00;5/10;* **C12N** *5/04*

U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 924181339 deposited as ATCC Accession Number 97555.

2. A soybean plant produced by growing the seed of claim 1.

5,710,369

A16 SOYBEANS HAVING LOW LINOLENIC ACID CONTENT AND DESCENDENTS

Walter R. Fehr, and Earl G. Hammond, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Des Moines, Iowa

Division of Ser. No. 376,535, Jan. 20, 1995, Pat. No. 5,534,425, which is a continuation of Ser. No. 180,115, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 839,242, Feb. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 645,244, Jan. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 445,393, Dec. 5, 1989, abandoned, which is a continuation of Ser. No. 151,705, Feb. 3, 1988, abandoned. This application May 24, 1996, Ser. No. 656,017

Int. Cl.^{6} A01H *5/00;5/10*

U.S. Cl. 800—200 **3 Claims**

1. A soybean seed designated A16 having ATCC Accession No. 40538 and its descendents which are capable of yielding an endogenously formed vegetable oil exhibiting a linolenic acid content of less than 2.5% by weight based upon the total fatty acid content.

3. Soybean plant produced by the seed of claim 1.

5,710,370

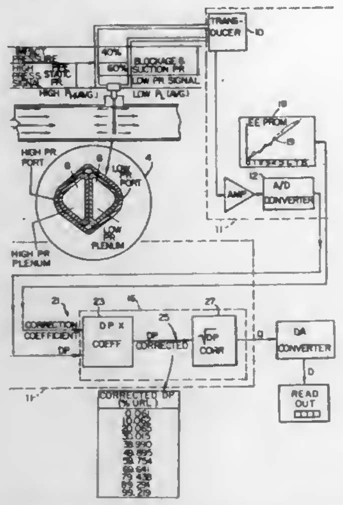
METHOD FOR CALIBRATING A DIFFERENTIAL PRESSURE FLUID FLOW MEASURING SYSTEM

Eugene Miles Shanahan, Niwot; John Everett Garnett, Boulder; Robert James Gray, Louisville, and Gabriel Dragnea, Longmont, all of Colo., assignors to Dieterich Technology Holding Corp., Boulder, Colo.

Filed May 17, 1996, Ser. No. 650,140

Int. Cl.^{6} G01F *25/00*

U.S. Cl. 73—1.35 **15 Claims**



1. A system calibration process for a differential pressure flow measuring system for fluid flowing in a confined conduit, where such system comprises a primary flow sensor and a secondary electro-mechanical conversion apparatus, including electronic memory, for converting high and low fluid pressure signals derived from the primary flow sensor to an electric signal output representative of fluid flow, comprising the steps of;

calibrating the secondary apparatus against known pressures over the operating range of the apparatus to obtain initial output characterization data and storing the characterization data in the electronic memory,

sensing the fluid impact pressure and the fluid static low pressure for a plurality of known reference fluid flows to establish a plurality of high and low pressure signals over a range of flows,

with the use of the initial output characterization data, transducing the said high and low pressure signals into measured electrical differential pressure signals representative of the difference between the sensed high and low pressure for each of the plurality of reference flow rates,

determining a correction factor for the output of the secondary apparatus for each of the plurality of reference flow rates as a function of the deviation of each value of measured differential pressure from the nominal differential pressure corresponding to each of the said plurality of reference flow rates,

modifying the data from the initially characterized secondary apparatus by overwriting, in the electronic memory, the initial characterization data with the calculated correction values.

5,710,371

CONTAINER FOR CALIBRATING FLUIDS, AND DEVICE AND METHOD FOR MEASURING PARAMETERS OF A SAMPLE OF FLUID, AND OXYGEN ELECTRODE THEREFOR

Andrzej Czernecki, Warsaw; Andrzej Bylina, Legionowo; Jan Kawiak, and Piotr Ohnsorge, both of Warsaw, all of Poland, assignors to Przedsiebiorstwo Zagraniezne HTL, Warsaw, Poland

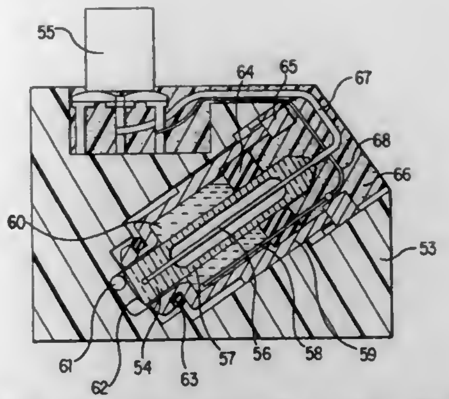
Filed Jan. 22, 1996, Ser. No. 589,617

Claims priority, application Poland, Jan. 25, 1995, 306960; Sep. 19, 1995, 310543

Int. Cl.^{6} G01N *27/42;33/18;* **G01M** *03/04*

U.S. Cl. 73—53.01 **10 Claims**

6. A liquid analysis device for measuring parameters of a sample of fluid, comprising:



an analyzer and a control unit with a monitor, the analyzer comprising a measuring chamber with measuring electrodes, the measuring chamber being connected with closed, replaceable containers for holding calibrating fluids with a specified pH or partial pressure of gas as a reference and for holding working fluids and into which measuring chamber are introduced a sample of a measured fluid, control elements and operating elements to control the operation of the device and to maintain a constant temperature of the device, as well as computer processing elements for transforming results of measurements into quantities of parameters of the sample of fluid;

wherein the device comprises elastic, impermeable, and exchangeable containers for the calibrating fluids, said containers having a connecting element wherein said connecting element is a self-tightening elastic joint ensuring tightness of a connection between the container and the device, said joint remaining closed during filling, storing, installing and using of the container in the device, whereby the calibrating fluids maintain a constant concentration of saturating gases during storage, installation and use of the container; and

further comprising oxygen electrodes each comprising a Clark's electrode system, wherein an anode of the electrode system is made of an element selected from the VIB group of the periodic table system of chemical elements.

5,710,372

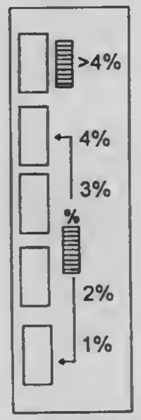
METHOD OF ANALYSIS FOR AQUEOUS FLUIDS

Giles J. P. Becket, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 17, 1996, Ser. No. 768,190

Int. Cl.^{6} G01N *21/78;31/22;* **C09K** *03/00*

U.S. Cl. 73—53.01 **20 Claims**



1. In a method of measuring the concentration of a constituent of an aqueous fluid composition the steps comprising a) contacting a solid state test device with the aqueous fluid composition, the solid state test device comprising an inert support and a plurality of individual spaced apart test regions on the support, wherein each test region comprises an inert matrix impregnated with a reagent selectively interactive with the constituent and a color indicator that produces a change in color in response to changes in the test

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region resulting from interaction between the reagent and the constituent and wherein the amount of the reagent in each test region differs in a predetermined manner from the amount of reagent in adjacent test regions, and b) comparing the solid state test device after contact with the aqueous fluid to a constituent concentration color calibration scale, whereby correspondence is determined between a pattern of resultant colors of the test regions and a constituent concentration represented by the constituent concentration color calibration scale.

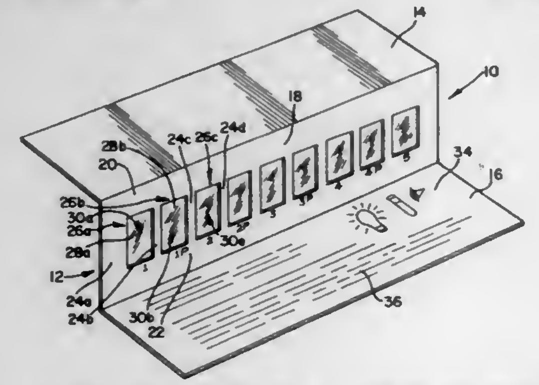
5,710,373
VISUAL COMPARATOR WITH TEST CHART AND METHOD FOR EVALUATING CONTAMINATION OF WASHING FLUIDS

Frank A. Osmanski, Hanover Park, Ill., assignor to Safety-Kleen Corporation, Elgin, Ill.

Filed Feb. 18, 1997, Ser. No. 800,597

Int. Cl.^{6} G01N *33/28;21/71;15/07;* **G01D** *21/00*

U.S. Cl. 73—53.05 **12 Claims**



1. A visual comparator for use in evaluating the nature and extent of contamination in a solvent used for cleaning mechanical parts, said comparator comprising opaque frame, and array of viewing apertures formed in said frame, each of said apertures being covered by a translucent viewing panel, with certain of said viewing panels comprising a first array having a graduated sequence of predetermined colors and optical densities, each indicative of a given level of soluble liquid contamination, and the remainder of said viewing panels comprising a second array having a graduated sequence of predetermined optical densities, each indicative of a given level of contamination by suspended particles, said arrays being arranged so as to facilitate comparison between both the color and optical density of a sample of solvent received in a transparent tube, and both the color and optical density of a particular viewing panel when said viewing panel and said sample-containing tube are alternately illuminated by an intense but diffused light source.

5,710,374
ELECTRONIC VISCOMETER

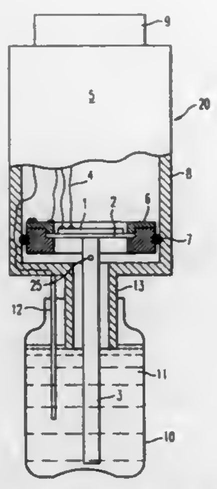
Robert A. Ross, and James J. Kauzlarich, both of Charlottesville, Va., assignors to University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 418,112, Apr. 6, 1995, Pat. No. 5,571,952. This application Jun. 25, 1996, Ser. No. 669,949

Int. Cl.^{6} G01N *11/10*

U.S. Cl. 73—54.24 **8 Claims**

1. An electronic viscometer, comprising:
a piezoelectric crystal attached to a first side of a metal plate;
a hollow circular tube having a first end attached to a second side of said plate, said tube having a longitudinal axis perpendicular to said second side;
said piezoelectric crystal being driven by a piezoelectric drive means having a feedback electrode for providing a feedback signal, wherein said piezoelectric drive means includes a phase compensation network receiving a feedback signal from said feedback electrode and providing a compensated feedback signal to a phase locked loop and wherein said phase locked loop provides a piezoelectric drive signal having the same frequency as a frequency of said phase compensated feedback signal and wherein said piezoelectric crystal receives said piezoelectric drive signal as an input signal and outputs an exclusive longitudinal vibratory motion at resonance to said tube, said tube having at least a second end which has a sufficiently thin wall to maximize shear forces produced by said exclusive longitudinal vibratory motion when said second end is inserted in a liquid whose viscosity is to be measured and wherein said tube has an aspect ratio chosen so that said tube provides said exclusive longitudinal vibratory motion when said piezoelectric drive signal is an oscillating constant root means square value driving voltage.



5,710,375
V-ENGINE EQUIPPED WITH MEANS FOR TAKING MEASUREMENTS

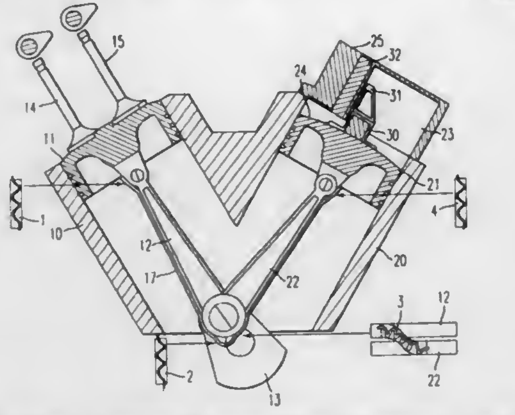
Christian Marie Michel Roger, Bois-Colombes, France, assignor to Societe Hispano-Suiza, Colombes Cedex, France

Filed Nov. 21, 1996, Ser. No. 754,794

Claims priority, application France, Nov. 22, 1995, 95 13833

Int. Cl.^{6} G01M *15/00*

U.S. Cl. 73—117.3 **9 Claims**



1. An internal combustion piston engine comprising a plurality of pistons and cylinders disposed in first and second banks defining a V, wherein said first bank is provided with measurement sensors and is arranged to perform the normal cycle of induction, compression, combustion, and exhaust, and wherein each cylinder of said second bank has a fuel inlet closed and a combustion chamber open to the atmosphere whereby said second bank functions without compression and combustion and is effectively inert, said second bank serving as a mechanical support for means for conveying signals from said measurement sensors.

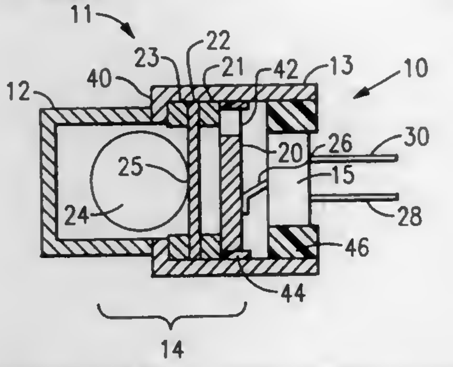
5,710,376
CHARGED MASS THIN FILM CONDENSER ACCELEROMETER

Gerard Vincent Weber, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,453

Int. Cl.^{6} G01P *15/125*

U.S. Cl. 73—514.32 **12 Claims**



1. A charged mass thin film condenser transducer comprising:
a housing;
spaced apart planar electrodes in said housing forming a condenser whose capacitance changes when a first one of the planar electrodes is flexed, said first electrode being a thin film;
a spherical mass located in said housing connected to and flexing said first planar electrode responsive to acceleration; and
an electrical amplifier having an input terminal connected to a second one of said planar electrodes for sensing changes of capacitance of said condenser, and an output terminal for providing an electrical output which changes according to the change of capacitance of said condenser.

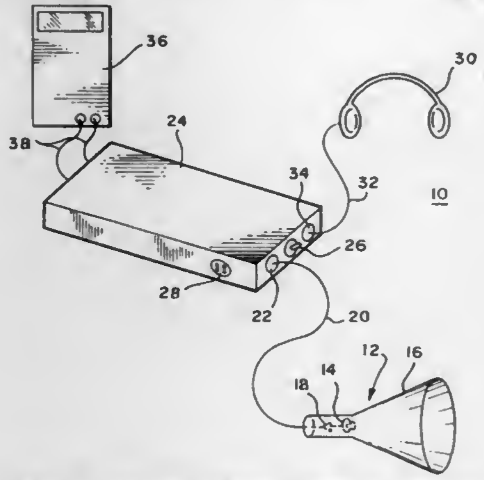
5,710,377
ULTRASONIC LEAK DETECTION SYSTEM

Robert C. Youngquist, Cocoa, Fla., and J. Steven Moerk, Taylorsville, N.C., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 17, 1995, Ser. No. 540,616

Int. Cl.^{6} G01H *13/00;* **G01M** *3/24*

U.S. Cl. 73—584 **20 Claims**



1. A system for detecting ultrasonic vibrations comprising:
a) a first housing;
b) an ultrasonic transducer disposed in said housing for detecting ultrasonic vibrations and generating an electrical signal in response thereto, said transducer including an output for transmitting a transducer signal generated thereby;
c) a parabolic collecting horn attached to said housing and positioned for collecting and focusing said ultrasonic vibrations onto said transducer; and
d) a processing circuit electrically connected to said output of said transducer for converting said transducer signal into an audio frequency signal having a magnitude proportional to a magnitude of said transducer signal.

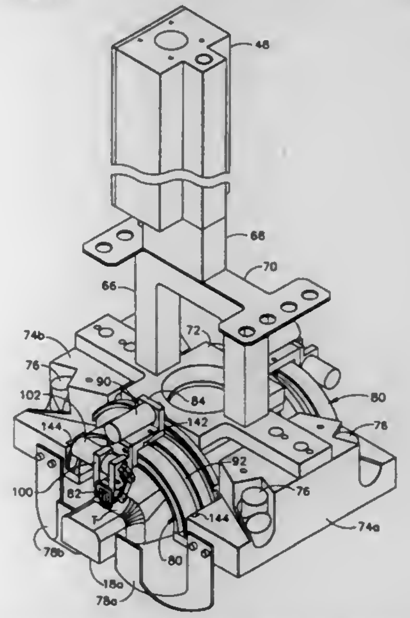
5,710,378
INSPECTION TOOL FOR DETECTING CRACKS IN JET PUMP BEAMS OF BOILING WATER REACTOR

Edward Ray Dykes, San Jose; Yehuda Krampfner, Pleasanton; David Lee Richardson, Los Gatos; Michael Edward Mosseau, Mountain View, and Gunnar Viggo Vatvedt, Los Gatos, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 31, 1995, Ser. No. 414,270

Int. Cl.^{6} G01N *27/90;29/04*

U.S. Cl. 73—601 **14 Claims**



1. An inspection tool for detecting cracks in a structural member having a curved surface, comprising:
a support frame;
a curved track attached to said support frame;
a rolling carriage coupled to said curved track;
first drive means mounted on said carriage for driving said carriage to roll along said curved track;
a pivot pivotably mounted on said carriage;
second drive means mounted on said carriage for driving said pivot to swivel;
a crack detecting device carried by said pivot and having a tip, wherein said tip of said crack detecting device travels along a first path lying in a first plane during rolling of said carriage along said track, and said tip travels along a second path lying in a second plane perpendicular to said first plane during swiveling of said pivot, and said first drive means comprises a flexible toothed belt having ends anchored on said curved track and having teeth which face said curved track, a pinion gear rotatably mounted on said carriage and having teeth, said pinion gear being arranged between said toothed belt and said curved track such that said teeth of said pinion gear mesh with said teeth of said toothed belt, and a stepper motor mounted on said carriage and coupled to said pinion gear.

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5,710,379

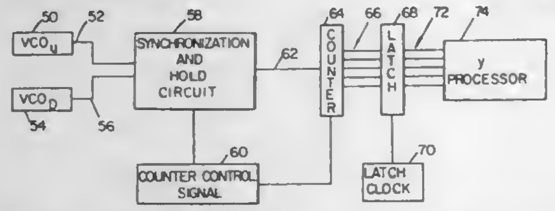
APPARATUS AND METHOD FOR DETERMINING A FLOW COUNT

Alvin E. Brown, Santa Cruz, Calif., assignor to Dieterich Technology Holding Corp., Boulder, Colo.

Filed Oct. 4, 1996, Ser. No. 720,791

Int. Cl.^{6} G01F *1/66*

U.S. Cl. 73—861.28 **21 Claims**



10. A method for determining a flow data count in an ultrasonic flow meter, comprising the steps of:

(a) adjusting a period of an upstream signal to be an integer divisor of an upstream transit time;

(b) adjusting a period of a downstream signal to be an integer divisor of a downstream transit time;

(c) counting the periods of the upstream signal to form an up count;

(d) counting the periods of the downstream signal to form a down count; and

(e) subtracting the down count from the up count to form a count signal proportional to the flow data count.

5,710,380

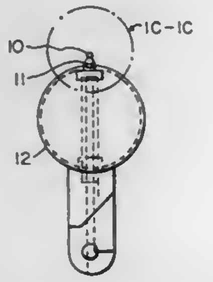
ANEMOMETER

Robert Lee Talley, S. 2221 Eastwood Rd., East Aurora, N.Y. 14052, and Theodore Jeffrey Becker, 31 Glendale Dr., Lancaster, N.Y. 14086

Filed Jun. 7, 1996, Ser. No. 660,133

Int. Cl.^{6} G01P *5/06*

U.S. Cl. 73—861.85 **11 Claims**



1. Anemometer for measuring the speed of air flow, operating in a cyclic mode with reduced power requirements, comprising

(a) a temperature sensor having a single element responsive to air flow omni-directionally with respect to said element, said element also serving as a heater;

(b) means to generate bursts of duty cycle controllable current pulses over a first period during a measurement cycle to heat said element to a known first temperature;

(c) means for determining a second period during said cycle during which said element is cooled by said air flow to a second temperature;

(d) means to detect a third period during said cycle following said second period during which said third period, said element is cooled by said air flow to a third temperature; and

(e) means responsive to the duration of said third period for determining said air flow speed.

5,710,381

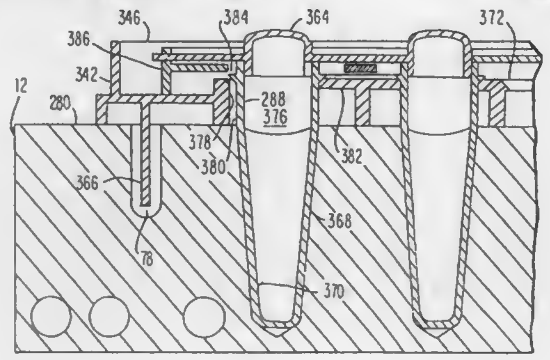
TWO PIECE HOLDER FOR PCR SAMPLE TUBES

John Girdner Atwood, West Redding; Albert Carmelo Mossa, Trumbull; Lisa May Goven, Bridgeport; Fenton Williams, Brookfield; Timothy M. Woudenberg, Bethel, all of Conn.; Marcel Margulies, Scarsdale, N.Y.; Robert P. Ragusa, Newton, Conn.; Richard Leath, Berkley, and Clive Miles, San Rafael, both of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 871,264, Apr. 20, 1992, Pat. No. 5,475,610, which is a continuation-in-part of Ser. No. 670,545, Mar. 14, 1991, abandoned, and a continuation-in-part of Ser. No. 620,606, Nov. 29, 1990, abandoned. This application Mar. 1, 1994, Ser. No. 198,079

Int. Cl.^{6} B01L *9/00*

U.S. Cl. 73—864.91 **18 Claims**



1. A two-piece plastic holder for loosely holding a plurality of microliter sample tubes of a preselected design, each having a cylindrically shaped upper section open at its top end and a closed, tapered lower section extending downwardly therefrom, each tube being of circular cross section and having a circumferential shoulder extending outwardly from said upper section at a position on said upper section spaced from the open end thereof, comprising

a. a one-piece tray member comprising

i. a flat, horizontal plate section containing holes in a rectangular array compatible with industry standard microliter plate format, said holes being slightly larger than the outside diameter of the upper sections of said tubes but smaller than the outside diameter of said shoulder,

ii. a first vertical tray sidewall section completely around said plate extending upwardly to a height greater than the height of a tube resting in one of said holes,

iii. a second vertical tray sidewall section around said plate extending downwardly approximately to the bottom of the upper section of a tube resting in one of said holes,

b. a one-piece retainer releasably engageable inside said tray over any sample tubes resting in said tray comprising

i. a flat, horizontal plate section containing holes in a rectangular array compatible with industry standard microliter plate format, said holes being slightly larger than the outside diameter of the upper sections of said tubes but smaller than the outside diameter of said shoulder,

ii. a vertical retainer sidewall section around said retainer plate section extending upwardly from said plate,

wherein when said retainer is engaged inside said tray, the retainer plate section lies slightly above the shoulder of a tube resting in said tray and the first tray sidewall section is about as high as said retainer sidewall section, whereby tubes resting in said tray are retained loosely both vertically and laterally.

5,710,382

ALUMINUM NITRIDE, ALUMINUM NITRIDE CONTAINING SOLID SOLUTIONS AND ALUMINUM NITRIDE COMPOSITES PREPARED BY COMBUSTION SYNTHESIS AND SINTERED BODIES PREPARED THEREFROM

Stephen D. Dunmead; William G. Moore; Kevin E. Howard, all of Midland, Mich.; Kevin C. Morse, Bolingbrook, Ill., and Theresa A. Guiton, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 532,729, Sep. 26, 1995, Pat. No. 5,649,278. This application Jan. 31, 1996, Ser. No. 593,310

Int. Cl.^{6} C22C *29/14;* **C04B** *35/58;* **B22F** *3/00*

U.S. Cl. 75—230 **6 Claims**

1. Aluminum nitride platelets, prepared by combustion synthesis comprising:

a) igniting, in the presence of gaseous nitrogen at a pressure of from 0.75 to 30 atmospheres (0.075 to 3 MPa), a particulate material that is a metal selected from aluminum and aluminum alloys in admixture with carbon and

b) allowing the combustion wave to pass through substantially all of the admixture to convert at least 10 percent by weight of the aluminum in the particulate material to aluminum nitride.

5,710,383

CARBONITRIDE-TYPE CERMET CUTTING TOOL HAVING EXCELLENT WEAR RESISTANCE

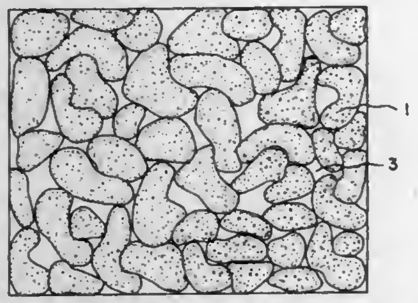
Hidemitsu Takaoka, c/o Mitsubishi Materials Corporation 1-297 Kitabukuro-cho, Omiya, Saitama 330, Japan

Filed Nov. 26, 1996, Ser. No. 753,534

Claims priority, application Japan, Nov. 27, 1995, 7-307155; May 9, 1996, 8-114765; May 13, 1996, 8-117466; Jun. 11, 1996, 8-148875

Int. Cl.^{6} B22F *3/12*

U.S. Cl. 75—238 **16 Claims**



1. A carbonitride-type cermet cutting tool having excellent wear resistance, wherein said cermet cutting tool has a microstructure comprising a complex-carbonitride phase, the grains of which have grown in the shape of a cashew nut during a sintering process; and a binder phase which is distributed as a dispersed phase between the grains of said complex-carbonitride phase.

5,710,384

MAGNETO-OPTICAL RECORDING MEDIUM TARGET AND MANUFACTURE METHOD OF SAME

Kaoru Masuda, Yasugi, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,096

Claims priority, application Japan, Mar. 8, 1995, 7-077243

Int. Cl.^{6} C22C *19/00;* **B22F** *3/00*

U.S. Cl. 75—246 **9 Claims**

1. A target for a magneto-optical recording medium, having a target micro structure formed by sintering alloy powder composed essentially of intermetallic compound containing 15 to 30 atomic % of at least one rare earth metal and the balance of at least one transition metal so that original morphology of said alloy powder essentially remains.

5,710,385

CELESTIAL CHIME BOX

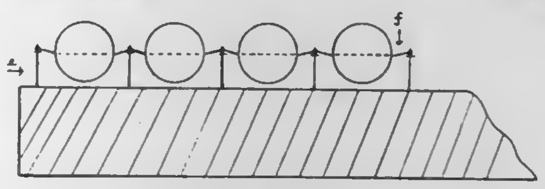
David Gregory Myler, P.O. Box 537, Murwillumbah, N.S.W. 2484, Australia

Filed May 13, 1994, Ser. No. 242,861

Claims priority, application Australia, Jul. 6, 1993, 40046/93

Int. Cl.^{6} G10D *13/08*

U.S. Cl. 84—403 **3 Claims**



1. A musical instrument comprising;

a plurality tubes;

a base including a first side wall and an opposite second side wall;

a plurality of nails extending from each of said side walls; and,

a first elastic cord attached to each of said nails extending from said first side wall and a second elastic cord attached to each of said nails extending from said second side wall; each of said tubes being suspended parallel to each other by said cords between adjacent ones of said nails.

5,710,386

METHOD AND APPARATUS FOR EFFICIENTLY CONTROLLING ACCESS TO STORED OPERATION CONTROL DATA AND TONE FORMING DATA

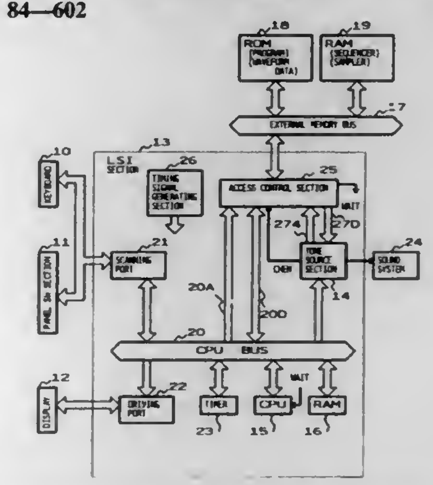
Yasunao Abe, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jan. 5, 1993, Ser. No. 887

Claims priority, application Japan, Jan. 8, 1992, 4-19567

Int. Cl.^{6} G10H *7/00*

U.S. Cl. 84—602 **17 Claims**



2. An electronic musical instrument which comprises:

storage means for storing tone forming data and operation controlling data;

a control section for reading out the operation controlling data to control an operation of circuitry on the basis thereof;

a tone source section for reading out the tone forming data to form a tone signal on the basis thereof;

request signal generating means for causing a utilization-request signal to be generated from said tone source section when the tone forming data is needed; and

access control means for normally allowing said control section to access said storage means, and allowing when the utilization-request signal is given, said tone source section to

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access said storage means only for a time necessary to read out the tone forming data,

wherein said tone source section is capable of generating tone signals independently in respective ones of plural tone generation channels,

different readout times are assigned, as a time to read out the tone forming data, to the respective tone generation channels,

said request signal generating means generates the utilization-request signal during the assigned readout time of the tone generation channel where it is necessary to form a tone signal,

the time necessary to read out the tone forming data is a part of the assigned readout time, and

said access control means, during the assigned readout time of the tone generation channel to which the utilization-request signal has been given, allows said tone source section to access said storage means only for a time necessary to read out the tone forming data and allows said control section to access said storage means for a remaining part of the time.

5,710,387

METHOD FOR RECOGNITION OF THE START OF A NOTE IN THE CASE OF PERCUSSION OR PLUCKED MUSICAL INSTRUMENTS

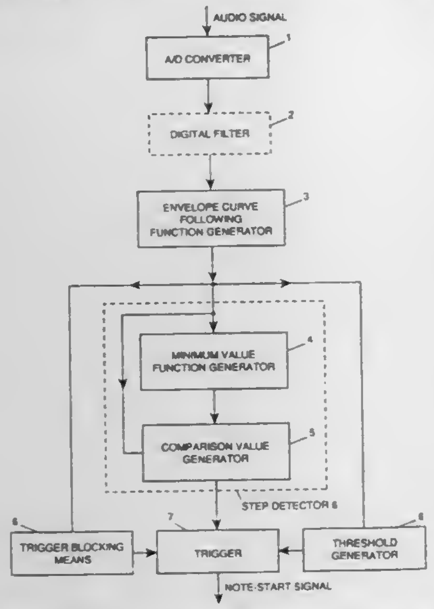
Andreas Szalay, Emmelshausen, Germany, assignor to Yamaha Corporation, Japan

Filed Jan. 11, 1996, Ser. No. 585,165

Claims priority, application Germany, Jan. 12, 1995, 195 00751.4-51

Int. Cl.⁶ G01H *1/02;5/00*

U.S. Cl. 84—663 **28 Claims**



1. A method for recognition of the start of a note in the case of percussion or plucked musical instruments, comprising the steps of:

providing an audio signal from the musical instrument;

forming an envelope curve following function from the audio signal,

forming a comparison value from a current value of the envelope curve following function and a predecessor value corresponding to an earlier value of the envelope curve following function, and

providing a start of a note signal at a point in time at which the comparison value exceeds a threshold value.

5,710,388

UMBILICAL CORD FOR PROJECTILE LAUNCHING DEVICE

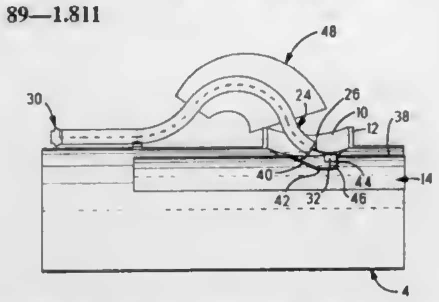
James David Hutchinson, Walthamstow, and Jonathan Nunn, Middelsec, both of Great Britain, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 12, 1996, Ser. No. 695,733

Claims priority, application United Kingdom, Aug. 16, 1995, 9516804

Int. Cl.⁶ P41F *3/04;* **H01R** *17/00*

U.S. Cl. 89—1.811 **12 Claims**



1. An umbilical cord for connecting control systems within a control center to operating systems of a projectile that is located within a launch tube and is to be launched therefrom, the umbilical cord comprising a cable having a plurality of conductors therein and having a first connector terminated to the conductors at a control center end and at a second connector terminated to the conductors at a projectile end, the second connector having insulation displacement contacts therein where the conductors are terminated and the second connector is captivatively pluggable into a recess in the side of a projectile through a port in the launch tube and upon the launching of the projectile, the second connector remains therewith and the conductors remain with the launch tube whereby they are pulled from the insulation displacement contacts.

5,710,389

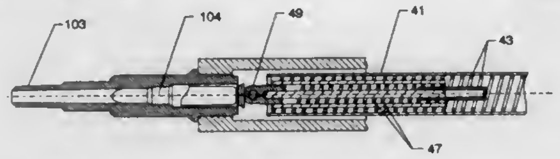
BREECH BOLT AND LOCK ASSEMBLY

Michael Canaday, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1995, Ser. No. 514,884

Int. Cl.⁶ F41A *3/56*

U.S. Cl. 89—194 **4 Claims**



1. A breech bolt and lock assembly for a gas-operated firearm comprising:

a bolt housing having a cylindrical shape;

a first spring contained within said bolt housing;

a two-part bolt assembly having an outer cylindrical bolt slideably positioned within said bolt housing and operated by said first spring and having an inner bolt and weighted pin mechanism slideably positioned within said outer cylindrical bolt and providing an inertial bolt lock; and

a second spring positioned within said outer cylindrical bolt and enclosing said inner bolt and weighted pin mechanism and further urging said inner bolt and pin assembly toward the firing position.

5,710,390

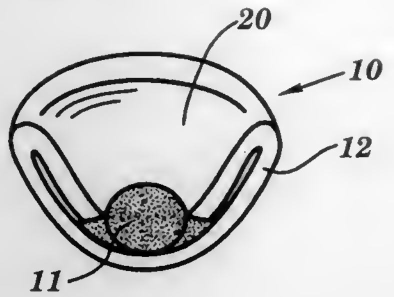
SHOCK TUBE INITIATING SYSTEM FOR DISPLAY FIREWORKS

William W. Ofca, 66 Holt Rd., Hyde Park, N.Y. 12538

Filed Aug. 1, 1995, Ser. No. 510,003

Int. Cl.⁶ C06C *5/04;7/00;* **F42B** *3/00*

U.S. Cl. 102—275.4 **22 Claims**



1. An apparatus comprising:

a input initiator device wherein an amount of a chemical composition is enclosed therein, said chemical composition having the characteristics of a BCTK composition which provides a deflagrating, percussive shock explosion upon ignition;

an output device, wherein an amount of said chemical composition is enclosed therein; and

a length of high velocity shock tube wherein the input initiator device is operably coupled to a first end of the length of shock tube and the output device is operably coupled to a second end of the length of shock tube.

5,710,391

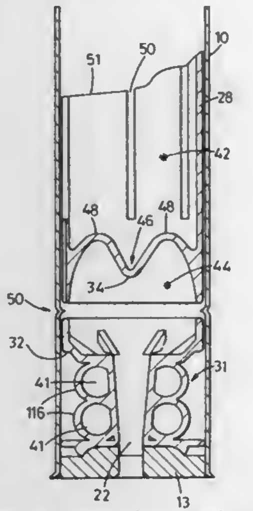
RECOIL REDUCER WAD FOR AMMUNITION

Francis Chetcuti, 3 St. Mary's Street, Tarxien, PLA 11, Malta

Filed Apr. 12, 1996, Ser. No. 631,867

Int. Cl.⁶ F42B *5/26*

U.S. Cl. 102—430 **16 Claims**



1. A round of munition comprising a casing, and a base, within the casing there being contained a charge, and at least one projectile forward of the charge and a gap between the base and the charge, the gap being at least partially occupied by a charge support which separates the charge from the base, wherein on discharge of the round the charge support undergoes compressive deformation, characterized in that the charge support incorporates a plurality of hollow, air filled formations which undergo resilient or crushing deformation on discharge of the round, the air filled formations being defined as tubular members entirely within the charge support, the tubular members being spaced from an inner wall of the casing and from a rearward end of the charge support.

5,710,392

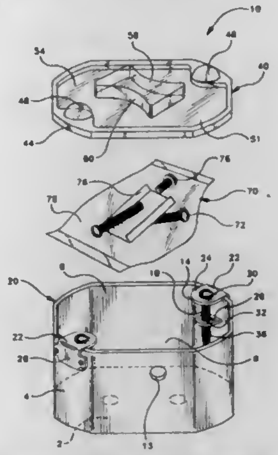
ELECTRICAL OUTLET BOX ASSEMBLY HAVING A REMOVABLE COVER

Mark A. Bordwell, and James A. Feeney, Jr., both of Memphis, Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Oct. 16, 1995, Ser. No. 543,645

Int. Cl.⁶ H02B *1/40*

U.S. Cl. 174—50 **18 Claims**



1. An electrical outlet box assembly comprising:

an outlet box having a bottom wall, an upwardly extending sidewall perimetrically bounding said bottom wall, an open upper end defining a box interior therein and a first pair of opposed ears, each ear being secured to said sidewall and extending inwardly towards said box interior, each ear of said first pair including a mounting hole therethrough adapted to threadedly support a screw for mounting electrical fixtures to said outlet box; and

an outlet box cover removably positionable over said open upper end of said box, said cover having a generally planar top and bottom surface and a pair of locking members disposed on said bottom surface of said cover, said locking members being frictionally engagable with said ears for frictionally retaining said cover on said box, said cover further including a pair of opposed indentations extending upwardly from said top surface of said cover and disposed on said cover such that each indentation aligns with said mounting hole for accommodating said screws supported by said ears.

5,710,393

MODULAR ARRAY TERMINATION FOR MULTICONDUCTOR ELECTRICAL CABLES

Daniel B. Smith, Beaverton, and Dan A. Vance, Portland, both of Oreg., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 17, 1995, Ser. No. 442,729

Int. Cl.⁶ H01R *23/06*

U.S. Cl. 174—74 R **8 Claims**

1. A termination for coaxial cables comprising at least one insulating support body,

multiple coaxial cables for electrical connection to a circuit, the coaxial cables being constructed, respectively, with central conductors within dielectric layers, conductive shields tightly arranged about the dielectric layers, and insulating jackets over the shields,

main body portions of the jackets being attached to the support body,

short lengths of the jackets being displaced from the main body portions of the jackets to reveal exposed portions of the shields, the short lengths of the jackets being attached to the support body to hold the exposed portions of the shields in positions for connection with the circuit,

the short lengths of the jackets surrounding respective distal portions of the shields,

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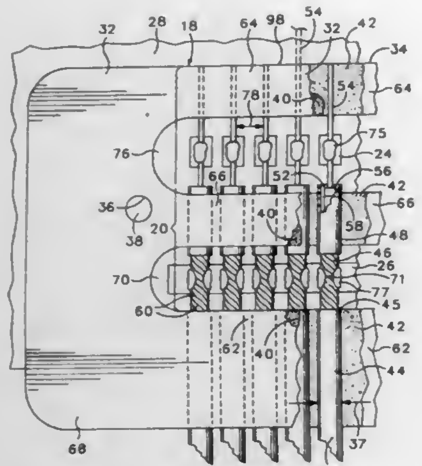


the exposed portions of the shields being maintained tightly arranged about the dielectric layers by the short lengths of the jackets surrounding said distal portions of the shields, while being in said positions for connection with the circuit, and

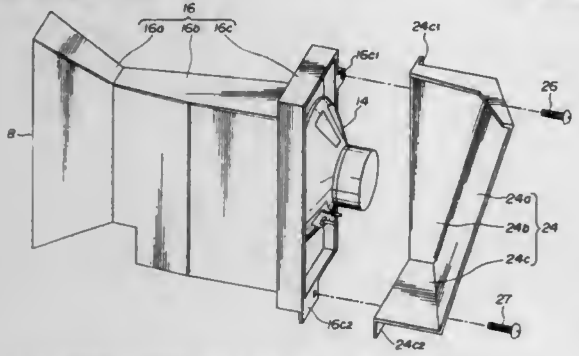
exposed portions of the central conductors extending beyond the short lengths of the jackets and being attached to the support body while being in positions for connection with the circuit.

5,710,394
TELEVISION SET SPEAKER SYSTEM

Hitoshi Saito, Ohsato-gun, and Hitoshi Sango, deceased, late of Santo-gun, both of Japan, by Michiko Sango, legal representative, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 520,517, Aug. 29, 1995, abandoned.
This application Dec. 14, 1995, Ser. No. 572,668
Claims priority, application Japan, Aug. 30, 1994, 6-205628
Int. Cl.^{6} H05K *5/00*

U.S. Cl. 181—152 **9 Claims**

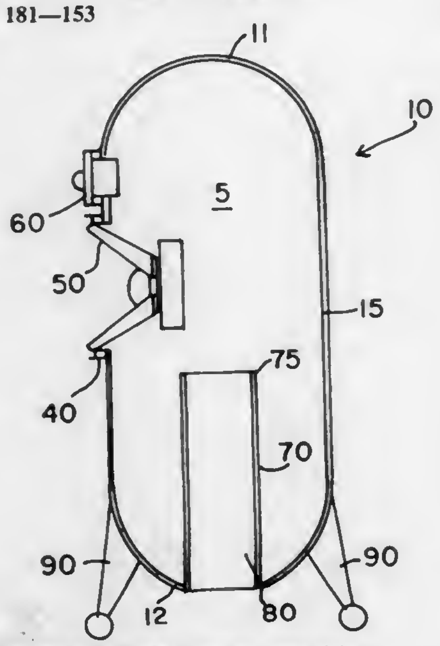


1. A speaker system for a television set, comprising:
a television set cabinet;
a speaker having a diaphragm, said speaker being provided within said cabinet so as to radiate sound from said diaphragm to a front of said television set;
an acoustic waveguide mounted at a front surface side of said speaker within said cabinet for guiding sound radiated from said diaphragm so as to be radiated from a front surface of said television set; and
a directional reflector mounted at a rear side of said speaker within said cabinet for reflecting sound radiated from a rear surface part of said diaphragm in a direction diagonally forward from a side surface part of said television set and also diagonally forward from a top surface part of said television set.

5,710,395
HELMHOLTZ RESONATOR LOUDSPEAKER

Paul Wilke, Eroicagasse 13, 1190 Vienna, Austria
Filed Mar. 28, 1995, Ser. No. 411,229
Int. Cl.^{6} H05K *5/00*

U.S. Cl. 181—153 **5 Claims**

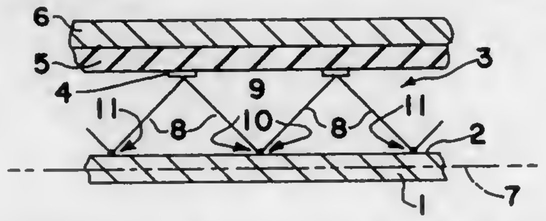


1. A Helmholtz resonator speaker comprising:
(a) a speaker assembly;
(b) a speaker enclosure having a generally tubular shape with a hemispherical closure at each end of the tubular speaker enclosure so that the speaker enclosure forms a generally capsule shape;
(c) a first opening in said speaker enclosure, said first opening adapted to receive said speaker assembly so that the axis of the speaker assembly forms a generally right angle to the axis of the speaker enclosure;
(d) a second opening in said speaker enclosure; and
(e) a tube member disposed within said speaker housing, said tube member having a first tube end and a second tube end, wherein said first tube end is disposed in said speaker enclosure and said second tube end is connected to said speaker enclosure as said second opening so that when the speaker assembly generates sound waves within said speaker enclosure, the sound waves can enter into said first opening propagate through said conduit, exit said second port, and exit said speaker enclosure.

5,710,396
ENERGY-DISSIPATING VIBRATION DAMPING STRUCTURE

Lynn C. Rogers, 3945 N. Lake Shore Dr., Jamestown, Ohio 45335
Filed Jan. 2, 1996, Ser. No. 582,117
Int. Cl.^{6} F16F *15/00*

U.S. Cl. 181—208 **15 Claims**

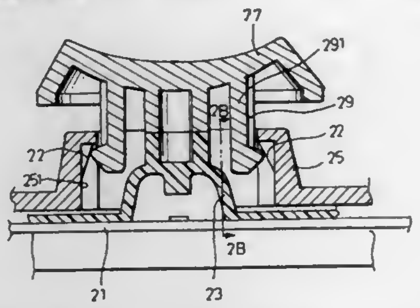


1. An apparatus for damping vibrations and wave motions of an elongated structure member having an extended surface, said damping occurring between said structure member and an elongated extensionally stiff constraining member having an extended surface offset laterally from and substantially parallel to said structure member extended surface, said damping apparatus comprising:
a triangle comprising first and second extensionally stiff legs joined at a first hinge flexure, at least one of which first and second legs has a body portion adjacent the first hinge flexure;
distal ends of said first and second legs being connected by means of second and third hinge flexures respectively to a given length of one of said extended surfaces, whereby said given length constitutes a third leg of said triangle;
the triangle extending between and interconnecting the structure member and the constraining member and serving to transmit motion due to vibrations in said structure member relative to said constraining member;
at least one standoff having one end fastened to the extended surface of that member to which said second and third hinge flexures are connected and the opposite end of said standoff having a body portion remote from said one end, said standoff being generally aligned with and located remote from said triangle along the extended surface to which the triangle is attached;
that member other than the member to which the standoff is fastened spanning and interconnecting the triangle body portion with said standoff body portion; and,
at least one oscillatory energy-dissipating mechanism connecting at least one of said body portions to the member spanning said portions.

5,710,397
SWITCH ACTUATOR FOR MEMBRANE SWITCH

Pin-Chien Liao, Taoyuan, Taiwan, assignor to Acer Peripherals, Inc., Taoyuan, Taiwan
Filed Aug. 4, 1995, Ser. No. 511,132
Int. Cl.^{6} H01H *3/12;13/50*

U.S. Cl. 200—5 A **13 Claims**

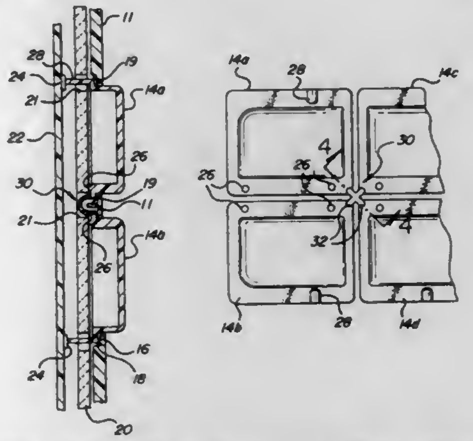


1. An actuator for a switch, comprising:
a rubber dome having an electrically conductive bridge surface, the rubber dome being seated on the switch for selectively actuating the switch;
a housing for receiving the rubber dome, the housing having an upper opening defining an edge of the opening and having an inner surface, the inner surface having portions of a horizontal surface and a slanted surface;
a plunger moving reciprocally within the housing and being guided by the edge of the opening during the reciprocal movement, the plunger having a hook end retained by the slanted surface of the inner surface of the housing in response to an upward movement of the plunger, thereby reducing the noise generated by the movement of the plunger, wherein the horizontal surface of the inner surface prevents detachment of the plunger from within the housing;
a keytop having a bottom surface, the keytop moving reciprocally and vertically together with the plunger to selectively deform the rubber dome and actuate the switch as a result of the operation of a user.

5,710,398
HINGED PUSH BUTTON CLUSTER

Edgar Glenn Hassler, Sharpsville, and Kerry J. Kline, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed May 20, 1996, Ser. No. 650,495
Int. Cl.^{6} H01H *9/26*

U.S. Cl. 200—5 A **7 Claims**

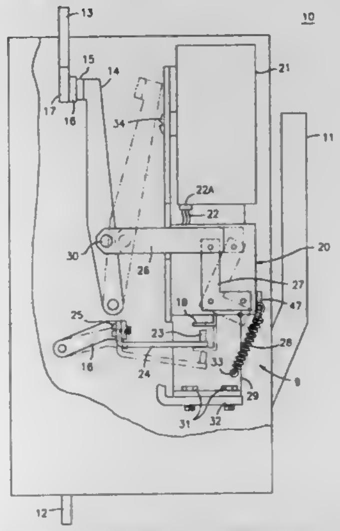


1. A push button cluster for an electrical control comprising:
a one-piece molding containing at least four buttons in a two row planar array such that a corner of each button is adjacent to corners of three other buttons to define at least one intersection;
the molding including a hinge at each intersection for joining corners of four adjacent buttons; and
the hinge including an am extending from each button transverse to the plane of the array and joining the arms of the other buttons, wherein each arm is sufficiently thin and long to afford the requisite flexibility.

5,710,399
ELECTRONIC TRIP UNIT CONVERSION KIT FOR HIGH AMPERE-RATED CIRCUIT BREAKERS

Roger N. Castonguay, Terryville, and Jeffrey D. Lord, Unionville, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed May 1, 1996, Ser. No. 640,612
Int. Cl.^{6} H01H *3/00;73/100*

U.S. Cl. 200—17 R **21 Claims**



1. A trip unit conversion kit for circuit breakers comprising:
a trip actuator unit responsive to a trip initiating signal from a circuit breaker trip unit to articulate a circuit breaker operat-

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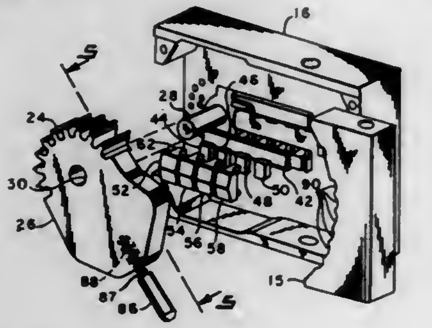
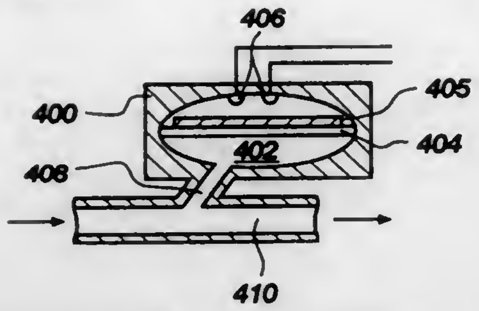
ing mechanism and separate a pair of circuit breaker contacts, said trip actuator unit including a flux shift unit having a flux shift plunger;
a reset bracket pivotally arranged on said trip actuator unit and connecting with said flux shift plunger; and
a reset arm attached to said reset bracket and a connector link attached to said reset arm and arranged for interacting with a circuit breaker cross bar at an opposite end, whereby said cross bar motivates said connector link and said reset arm and said reset bracket upon separation of said circuit breaker contacts.

5,710,400
ROTARY MULTIPLE CAPACITIVE SWITCH
Edwin D. Lorenz, Grand Blanc, and Stephen W. Smith, South Lyon, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Feb. 23, 1996, Ser. No. 606,129
Int. Cl.^{6} H01H *9/00*
U.S. Cl. 200—61.54 **10 Claims**



1. A stalk actuated switch assembly comprising:
(a) housing means;
(b) an elongated stalk mounted at the end thereof for pivotal movement about at least one axis on said housing means, said stalks having portions thereof rotatable about an axis extending along the length thereof;
(c) a cam member disposed on said housing means, said cam member operatively connected for rotary movement upon user rotation of said rotatable portion of said lever;
(d) a plurality of switches disposed on said housing means, each of said switches having,
  (i) a dielectric substrate having a first coating of conductive ink;
  (ii) a first coating of dielectric ink superposed on a portion of said conductive ink;
  (iii) a second coating of conductive ink superposed on said first coating of dielectric ink;
  (iv) a final coating of dielectric ink superposed on said second coating of conductive ink;
(e) an actuator member for each of said switches moveable in response to selective movement of said cam member; and,
(f) a conductive elastomer member disposed on each of said switches to be compressed on said final coating by said movement of said actuator member, said elastomer member effecting a change in capacitance between said first and second coating of conductive ink, said change being sufficiently significant to be detectable electrically as a switching function.

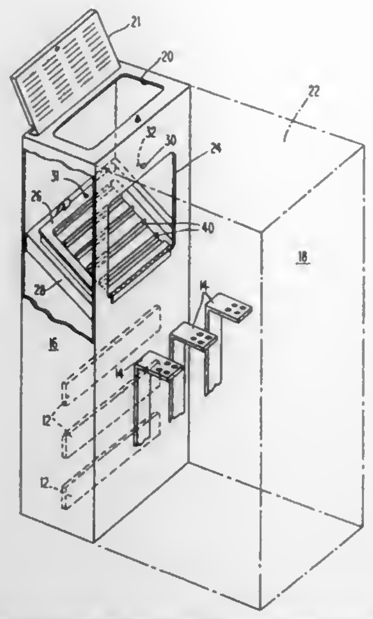
5,710,401
VOLUMETRIC PUMP/VALVE
Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos Group, Salt Lake City, Utah Division of Ser. No. 157,693, Nov. 23, 1993. This application Jun. 6, 1995, Ser. No. 470,999
Int. Cl.^{6} H01H *35/34*
U.S. Cl. 200—83 J **3 Claims**



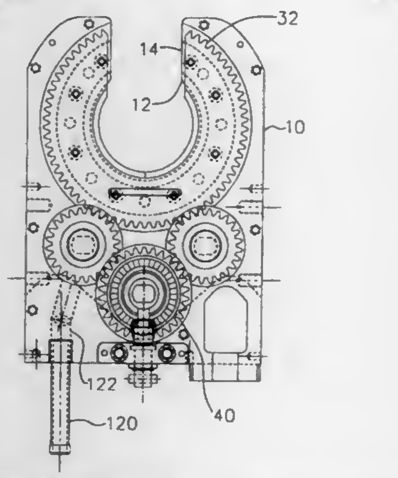
1. A switch for detecting fluid pressure comprising:
a housing defining an interior cavity;
a nonconductive diaphragm having a mounting surface and being disposed in the cavity to divide the cavity into first and second chambers;
a fluid inlet means for carrying fluid from the outside of the housing into the first chamber;
separate flexible conductive means contiguously disposed against the mounting surface of the diaphragm and extending outwardly therefrom into the second chamber for conducting electricity, such that said mounting surface defines a nonconductive/conductive boundary residing between the nonconductive diaphragm and the conductive means; and
first and second conductivity sensors disposed in the second chamber oppositely the conductive means;
said diaphragm being sufficiently flexible to bow toward the sensors under fluid pressure in the first chamber, whereby if a certain pressure is present, the diaphragm is caused to bow until the conductive means contacts the first and second conductivity sensors.

5,710,402
ARC-RESISTANT SWITCHGEAR ENCLOSURE EMPLOYING A TOGGLE FLAP VENTING SYSTEM
Robert S. Karnbach, Lake Mary; David S. Komives, Apopka, both of Fla., and Leo E. Blom, Murfreesboro, Tenn., assignors to ABB Power T&D Company Inc., Raleigh, N.C.
Filed Jul. 30, 1996, Ser. No. 688,504
Int. Cl.^{6} H01H *33/53;* **H02B** *1/56*
U.S. Cl. 218—157 **7 Claims**

1. An arc resistant enclosure for electrical components comprising:
first and second compartments for housing said electrical components,
each of said first and second compartments housing one or more of said electrical components,
said first compartment having an aperture for permitting pressure and gases to flow therefrom and vent from said arc resistant enclosure;
said second compartment having an aperture for permitting pressure and gases to flow therefrom into said first compartment and having a toggle flap for covering said aperture in said second compartment;
said toggle flap being movable from a first position covering said aperture of said second compartment to a second position within said first compartment in which it forces any pressure and gases exiting said second compartment to exit through the aperture of said first compartment.

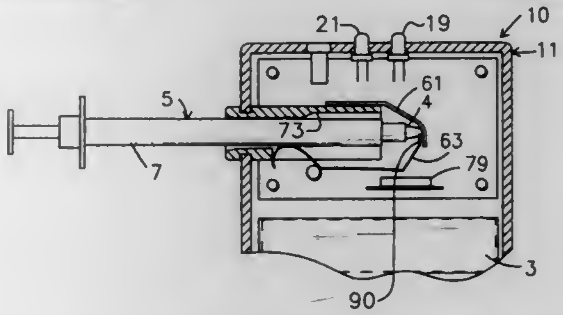


5,710,403
ORBITAL WELDHEAD WITH INTEGRAL COOLING
Vytautas John Jusionis, 5302 Clark Cir., Westminister, Calif. 92683
Filed Oct. 15, 1996, Ser. No. 732,658
Int. Cl.^{6} B23K *9/12*
U.S. Cl. 219—60 A **12 Claims**



1. An orbital weldhead comprising:
a nonconductive housing having a substantially circular workpiece aperture with an open bight portion for insertion and removal of a workpiece;
a nonconductive self-lubricating race mounted in the housing, said race surrounding the workpiece aperture and having an coincident open bight portion;
a integral cover adapted to mate with the housing with a coincident workpiece aperture and open bight portion and having a nonconductive body and;
  an electrode plate secured to the body adjacent the race and having a coincident workpiece aperture and open bight portion, said electrode plate and body cooperatively forming a coolant flow channel surrounding the workpiece aperture;
a rotor engaged intermediate the race and electrode plate and having an open bight portion aligning with the open bight portions of the housing, cover, race and electrode in a home position, said rotor supporting a welding cathode;
means for rotating the rotor;
means for introducing coolant into the coolant flow channel; and
means for providing power to the electrode plate for welding.

5,710,404
PORTABLE HAND-HELD DEVICE FOR INCINERATING NEEDLES
Serge Jacques Descent, St. Petersburg, Fla., assignor to Biotronix 2000, Inc., Canada
Filed Jul. 26, 1996, Ser. No. 688,817
Int. Cl.^{6} B23K *11/22;* **A61G** *12/00;* **A61L** *11/00*
U.S. Cl. 219—68 **13 Claims**



1. A portable hand-held device for incinerating needles comprising:
a) a compact housing sized to be hand-held;
b) a chamber within said housing containing two adjacent electrodes one fixed in position and the other flexible, such electrodes connected into an electric circuit therewithin;
c) a generally cylindrical guideway leading from said chamber to an opening accessible external to said housing, the guideway receiving a portion of the flexible electrode;
d) a power supply connectable to said electrodes; and
e) an ambient temperature sensor within said chamber, said sensor sensing temperature in said chamber and, responsive to sensing of temperature above a pre-set threshold, said sensor causing opening of a switch in said circuit to disconnect said power supply from said electrodes.

5,710,405
METHOD FOR DEVELOPING RESIDUAL COMPRESSIVE STRESS IN STAINLESS STEEL AND NICKEL BASE SUPERALLOYS
Harvey Donald Solomon, Niskayuna; Raymond Alan White, Schenectady, and Robert Anthony Fusaro, Jr., Cobleskill, all of N.Y., assignors to General Electrical Company, Schenectady, N.Y.
Filed Apr. 9, 1996, Ser. No. 629,669
Int. Cl.^{6} B23K *10/00*
U.S. Cl. 219—121.46 **7 Claims**

1. A process for developing residual compressive stresses in metals selected from the group consisting of stainless steels and nickel base superalloys; the process comprising:
forming a pool of molten metal adjacent unmelted metal;
cooling the pool to form a metallurgical bond with the adjacent unmelted metal; and

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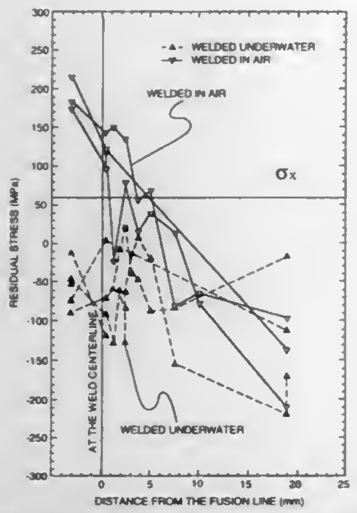
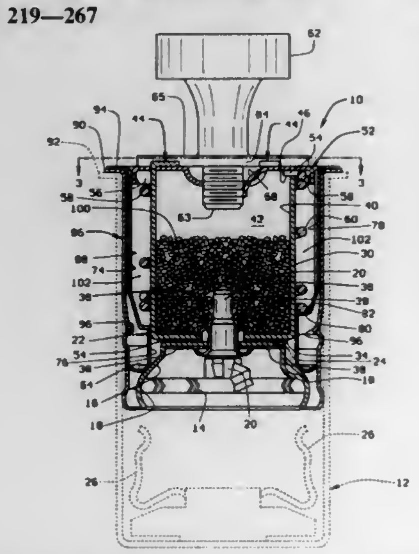


quenching metallurgically bonded metal to an ambient temperature below the melting range of the metal by contacting the metallurgically bonded metal with a quenching medium.

5,710,406
DEODORIZING CIGARETTE LIGHTER

Louie G. Garris, Rte. 1, P.O. Box 244, St. Mary, Mo. 63673, and Jerry J. Garris, Rte. 6 Box 12, Perryville, Mo. 63775
Filed Apr. 12, 1996, Ser. No. 631,064
Int. Cl.^{6} F23Q *7/22*
U.S. Cl. 219—267 **20 Claims**

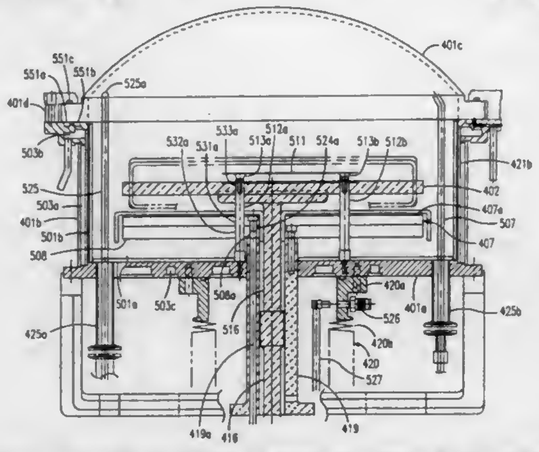


20. A deodorizing cigarette lighter for use in a motor vehicle comprising, in combination:

- a cigarette igniting unit including a plug body and an electric heating element disposed at one end of the plug body, said heating element being maintained in a heat transfer relationship with the plug body upon energization of the heating element; and
- a heat responsive, nonflammable deodorant comprising solid granular material impregnated with a liquid fragrance stored inside said plug body such that said deodorant is maintained in a heat transfer relationship with the plug body, said deodorant emitting a fragrant vapor into the vehicle interior upon energization of the heating element.

5,710,407
RAPID THERMAL PROCESSING APPARATUS FOR PROCESSING SEMICONDUCTOR WAFERS

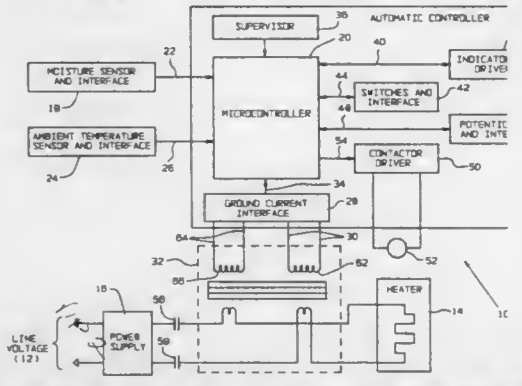
Gary M. Moore, and Katsuhito Nishikawa, both of San Jose, Calif., assignors to Moore Epitaxial, Inc., San Jose, Calif.
Continuation of Ser. No. 7,981, Jan. 21, 1993, Pat. No. 5,444,217. This application Jun. 7, 1995, Ser. No. 479,889
Int. Cl.^{6} C23C *16/00*
U.S. Cl. 219—405 **6 Claims**



1. In a reactor for processing a substrate, a structure comprising:
- a susceptor having a first surface adapted for mounting a substrate thereon; a second surface; and a plurality of openings extending through said susceptor from said first surface to said second surface wherein each opening in said plurality of openings extending through said susceptor from said first surface to said second surface has a surface; and
- a plurality of substrate support pins;
  - wherein a substrate support pin is movably mounted in each of said plurality of openings and in a first position said substrate support pins are seated in said susceptor when said substrate is supported by said susceptor, and in a second position said substrate support pins hold said substrate above said first surface; and
  - each substrate support pin in said plurality of substrate support pins has a surface wherein in said first position, the surface on the substrate support pin mates with the surface of the opening so as to inhibit gas flow through said plurality of openings in said susceptor during processing.

5,710,408
AUTOMATIC CONTROLLED FOR AN ICE AND SNOW MELTING SYSTEM WITH GROUND FAULT CIRCUIT INTERRUPTION

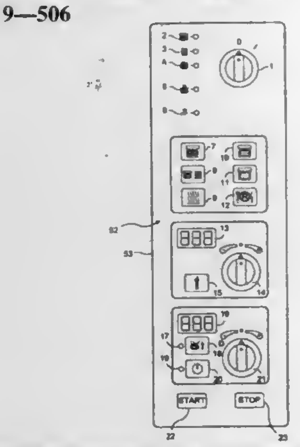
Thaddeus M. Jones, Bremen, Ind., assignor to MSX, Inc., South Bend, Ind.
Filed Aug. 15, 1996, Ser. No. 696,562
Int. Cl.^{6} H05B *1/02*
U.S. Cl. 219—481 **10 Claims**



1. An ice and snow melting system, comprising: at least one sensor, each said sensor being configured for sensing one of temperature and moisture associated with an ambient environment and providing a signal indicative thereof;
- a heater for melting the ice and snow, said heater including at least two electrical conductors associated therewith; and
- an automatic controller connected to said at least one sensor, said controller including heater control circuitry and a ground fault circuit interrupter, said ground fault circuit interrupter being in communication with at least two of said electrical conductors associated with said heater, said ground fault circuit interrupter detecting a ground fault condition associated with said heater and providing a signal indicative thereof, said heater control circuitry of said controller receiving each of said sensor signal and said ground fault circuit interrupter signal and selectively controlling operation of said heater dependent upon said sensor signal and said ground fault circuit interrupter signal.

5,710,409
CONTROL ARRANGEMENT FOR COOKING DEVICES

Werner Schwarzbäcker, Egling, and Boguslaw Ziarko, Murnau, both of Germany, assignors to Convotherm Elektrogeraete GmbH, Egling, Germany
Filed Oct. 6, 1995, Ser. No. 539,989
Claims priority, application Germany, Oct. 7, 1994, 44 35 931.4
Int. Cl.^{6} H05B *1/02*
U.S. Cl. 219—506 **4 Claims**

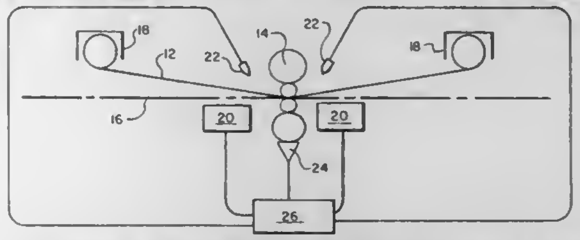


1. A control arrangement for cooking devices each with an embedded control for regulating cooking processes whose various parameters can be set by actuating elements at the respective cooking device, comprising:
- an external programming unit comprising hand-held programming means for setting and storing, independently from the embedded controls of the respective cooking devices, different simple cooking programs and/or optional combination cooking programs or complex cooking programs, diagnostic programs and user functions which can be called, checked and changed optionally and for transmitting such programs to the embedded control of each cooking device, said hand-held programming means including a plain text display, a user guide, and a wireless transmitter for transmitting the set cooking programs and user functions, said hand-held programming means as a program unit including means for storing optionally combined cooking programs or complex cooking programs under an identification code and transmitting the stored combined cooking programs or complex cooking programs to each of the embedded controls, each of the embedded controls including means for activating the transmitted combined cooking programs or complex cooking programs by the same adjustable identification code.

5,710,410
Patent Not Issued For This Number

5,710,411
INDUCTION HEATING IN A HOT REVERSING MILL FOR ISOTHERMALLY ROLLING STRIP PRODUCT

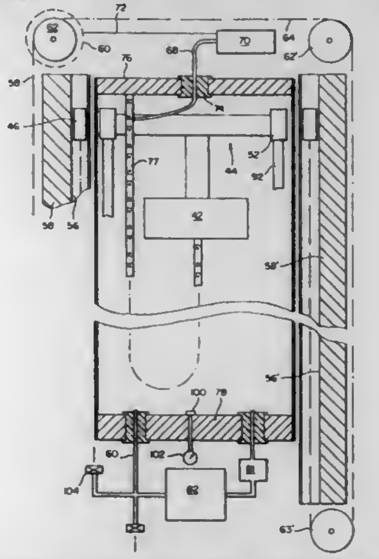
George W. Tippins; John E. Thomas, both of Pittsburgh, Pa., and Nicholas V. Ross, Youngstown, Ohio, assignors to Tippins Incorporated, Pittsburgh, Pa., and Ajax Magnethermic Corporation, Warren, Ohio
Filed Aug. 31, 1995, Ser. No. 521,961
Int. Cl.^{6} H05B *6/02;* **B21B** *37/74*
U.S. Cl. 219—602 **9 Claims**



1. A method of isothermally rolling in multiple passes a metal strip product on a hot reversing mill comprising:
- a) repeatedly passing a metal strip product at a hot rolling temperature through a reversing rolling mill, wherein an induction heater for heating said metal strip product is positioned in proximity to said reversing rolling mill and a cooling unit for cooling said metal strip product is positioned in proximity to said reversing rolling mill;
- b) sensing one of a temperature condition or a temperature-dependent condition at spaced positions on said metal strip product being rolled during each said pass; and
- c) selectively induction heating or cooling portions of said metal strip product with said induction heater or said cooling unit in response to predetermined differentials between said sensed conditions to achieve isothermal rolling conditions at said hot rolling temperatures.

5,710,412
FLUID TOOLING FOR THERMOPLASTIC WELDING

Karl A. Hansen, deceased, late of Seattle, Wash., by John J. Dejong, executor, assignor to The Boeing Company, Seattle, Wash.
Continuation-in-part of Ser. No. 314,027, Sep. 28, 1994, Pat. No. 5,508,496. This application Jan. 3, 1995, Ser. No. 367,557
Int. Cl.^{6} H05B *6/10*
U.S. Cl. 219—633 **20 Claims**



1. A fluid tooling system for welding a thermoplastic weld at a bond line between two thermoplastic parts, comprising:
- an induction coil;
- an elongated vessel made of fluid impervious flexible material, the vessel having a longitudinal axis and an open end at each

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axial end and having a cross-sectional dimension sized to accommodate the coil for generating an alternating magnetic field transverse to the longitudinal axis;

an end closure sealing each axial end, at least one of the end closures being removable for insertion of the coil into the vessel;

a linear guide in the vessel extending axially for substantially the full length of the vessel engaging the coil for guiding the coil;

power leads, connected to the coil and extending through a pass-through formed into the vessel for providing electrical power to the coil;

a motive system for moving the coil axially along the vessel over the bond line at a controlled speed while applying electrical power to the coil to form the thermoplastic weld by inductive heating along the bond line;

a backup structure for exerting a downward force along the vessel; and

pressurizing fluid sealed in the vessel for distributing pressure uniformly over one part to press that part against the other part and to facilitate formation of the thermoplastic weld.

5,710,413

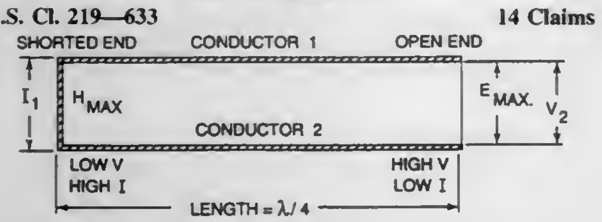
H-FIELD ELECTROMAGNETIC HEATING SYSTEM FOR FUSION BONDING

James D. King, and Harold F. Donoho, Jr., both of San Antonio, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 29, 1995, Ser. No. 413,119

Int. Cl.^{6} H05B *6/10*

U.S. Cl. 219—633 **14 Claims**



1. A system for fusion bonding via electromagnetic heating in the H-field, comprising:

a composite bonding material having a bonding matrix and a plurality of susceptors, said susceptors being magnetically reactive at a frequency of from above 50 MHz to less than or equal to about 1000MH;

applicator means for applying radiant electromagnetic energy to said composite bonding material at a frequency of from above 50 MHz to less than or equal to about 1000MHz, such that said susceptors may be heated sufficiently to melt a portion of said bonding matrix;

said applicator means including a plurality of wires, electrically insulated from one another, each forming a coil with a common axis, each of said wires being electrically connected in parallel, wherein several of said plurality of wires are stacked to form multiple layers of said coils, such that the effective resistance of said applicator is reduced and the current-carrying capacity is increased; and

a plurality of capacitors, each connected in series with a respective one of said wire coils, such that current in said coils is approximately uniform for coil circumferences which are greater than 0.1 of the wavelength of said radiant electromagnetic energy.

5,710,414

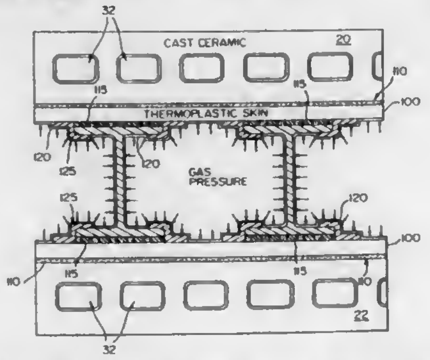
INTERNAL TOOLING FOR INDUCTION HEATING

Marc R. Matsen, Seattle, Wash., and Allan R. Hodges, Troy, Mont., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 341,779, Nov. 18, 1994, Pat. No. 5,599,472, which is a continuation-in-part of Ser. No. 169,655, Dec. 16, 1993, Pat. No. 5,530,227, which is a continuation-in-part of Ser. No. 777,739, Oct. 15, 1991, Pat. No. 5,410,132, said Ser. No. 341,779is a continuation-in-part of Ser. No. 92,050, Jul. 15, 1993, Pat. No. 5,410,133, which is a division of Ser. No. 681,004, Apr. 5, 1991, Pat. No. 5,229,562, which is a continuation-in-part of Ser. No. 151,433, Nov. 12, 1993, Pat. No. 5,420,400. This application Jun. 6, 1995, Ser. No. 469,985

Int. Cl.^{6} H05B *6/10*

U.S. Cl. 219—633 **7 Claims**



1. A method for counteracting sagging during thermoplastic welding of prefabricated, thermoplastic resin composite parts having internal hollow spaces accessible before and after welding, comprising the steps of:

(a) positioning an inflatable bladder in the hollow spaces when assembling a preform of the parts and susceptors, the preform being positioned in a die set;

(b) applying heat and pressure to the preform;

(c) inflating the bladder to substantially fill the hollow spaces and to provide a reaction force to counter sagging of the parts;

(d) welding the parts together to form welds on bondlines containing the susceptors while maintaining pressure on the bondlines from the die set and the reaction force by heating the susceptors to melt thermoplastic resin at the bondlines;

(e) deflating the bladder after completing the welds; and

(f) extracting the bladder.

5,710,415

SALES-REGISTRATION-DATA PROCESSING APPARATUS

Mitsunori Kono, Shizuoka-ken; Yukio Tsuchiya, Susono, and Kunio Matsushita, Yokosuka, all of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Mar. 8, 1996, Ser. No. 613,002

Claims priority, application Japan, Mar. 10, 1995, 7-051614; Mar. 10, 1995, 7-051615

Int. Cl.^{6} G07G *1/00*

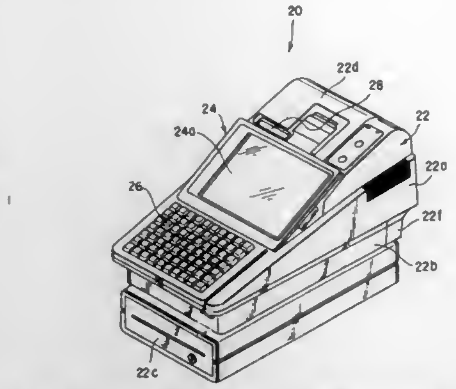
U.S. Cl. 235—7 R **9 Claims**

1. A sales-registration-data processing apparatus comprising:

a housing for accommodating a control unit, the housing having an outer surface in which a recess having a semicircular cross section is provided;

a display unit being independent of said housing and having front and back surfaces, a display portion being provided on the front surface of said display unit, and an expanding portion having a semicircular cross section being provided in the back surface of said display unit, and wherein the expanding portion is arranged in the recess of said housing so as to be movable along a curvature portion of the recess; and

a tilt-angle adjustment and maintaining mechanism rotatably connecting said display unit to said housing, capable of tilting said display unit in the recess of said housing from a laid-down position in which the display portion of said display unit is laid down along the outer surface of said housing, to a desired tilt angle of said display unit relative to said housing, and maintaining a desired tilt angle of said display unit, wherein said tilt-angle adjustment and maintaining mechanism includes:



at least one erection guide groove formed in the recess of said housing and having a substantially semicircular-arc shaped vertical cross section extending along the curvature of the recess;

at least one guide projection mounted on the expanding portion of the back surface of said display unit and being slidable along said at least one erection guide groove of said housing; and

a frictional-force adjustment mechanism mounted on said at least one guide projection so as to be frictionally engaged with said at least one erection guide groove and capable of adjusting a frictional force generated between said frictional-force adjustment mechanism and said at least one erection guide groove.

5,710,416

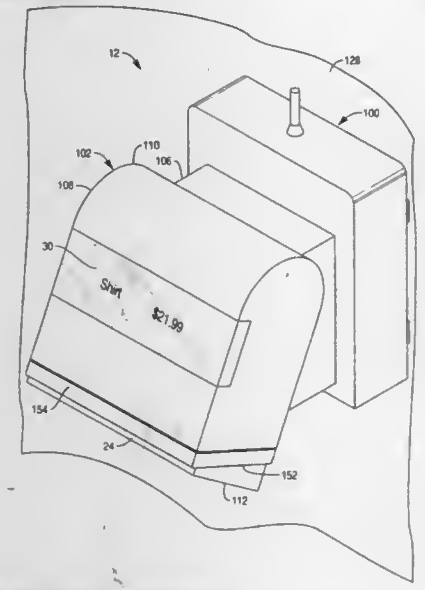
PRICE VERIFIER

William M. Belknap, Lawrenceville; Thai-Bao H. Kien, Norcross, both of Ga., and Kevin P. Kellar, Burlington, Mass., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 5, 1995, Ser. No. 539,454

Int. Cl.^{6} G06K *5/00; 15/00*

U.S. Cl. 235—383 **25 Claims**



1. A price verifier comprising:

a housing attached to an immovable mounting surface including a first housing portion and a second housing portion detachably mounted to the first housing portion, wherein the second housing portion comprises first and second substantially orthogonal sides, and wherein the second side contains a window;

a hands-free operated bar code reader within the second housing portion for reading a bar code label on an item whose price is to be verified through the window;

a display within the second housing portion, on the first side facing a user, for displaying the price of the item;

control circuitry within the first housing portion and coupled to the bar code reader and the display, which obtains the price of the item from a host terminal after the bar code reader has read the bar code label;

a storage medium coupled to the control circuitry for storing program commands executed by the control circuitry; and

communications circuitry within the first housing portion linking the control circuitry to the host terminal.

5,710,417

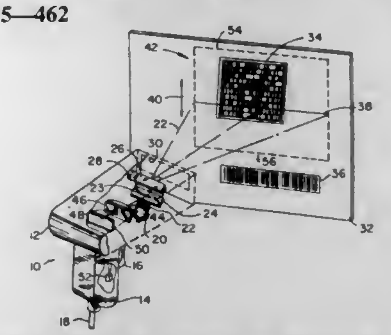
BAR CODE READER FOR READING BOTH ONE DIMENSIONAL AND TWO DIMENSIONAL SYMBOLOGIES WITH PROGRAMMABLE RESOLUTION

Eugene Joseph, Port Jefferson Station; Yajun Li, Oakdale; Duanfeng He, Ronkonkoma; Joseph Katz, Stony Brook, and Jerome Swartz, Old Field, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation-in-part of Ser. No. 268,913, Jun. 30, 1994, Pat. No. 5,621,203, which is a continuation-in-part of Ser. No. 153,637, Nov. 17, 1993, abandoned, and Ser. No. 66,966, May 25, 1993, abandoned, which is a continuation of Ser. No. 818,731, Jan. 6, 1992, abandoned, which is a continuation of Ser. No. 506,674, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 260,692, Oct. 21, 1988, Pat. No. 4,933,538. This application Jun. 2, 1995, Ser. No. 463,317

Int. Cl.^{6} G06K *7/10*

U.S. Cl. 235—462 **22 Claims**



1. An optical reader for reading an indicia having areas of differing light reflectivity, comprising:

(a) a light source arranged to produce an outgoing light beam which, in use, simultaneously illuminates an elongate region of an indicia to be read, the elongate region including a plurality of areas of differing light reflectivity;

(b) an adjustable image-capture portion for directing the light beam onto the indicia and for receiving light reflected from the indicia, the image-capture portion comprising

(i) an optical scanning element for scanning the beam in a scan pattern over the indicia in a direction transverse to the elongate region;

(ii) an optical detector for receiving light reflected from the indicia and for producing an output signal representative thereof; and

(c) a microprocessor control for adjusting at least one of the size and resolution of the scan pattern in dependence on the indicia to be read.

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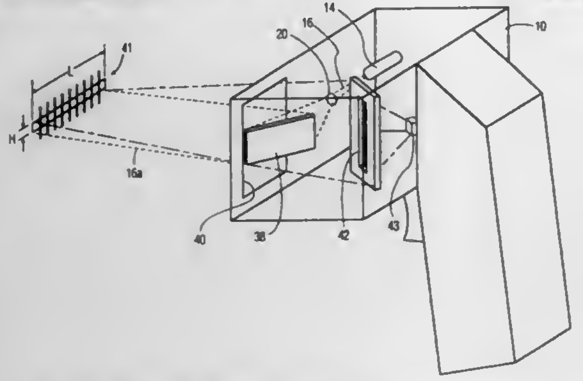
5,710,418
OPTICAL IMAGE SENSOR

Masami Tawara, 28 Westcott St., Old Tappan, N.J. 07675
Filed Nov. 3, 1995, Ser. No. 552,573
Int. Cl.^{6} G06K *7/10*
U.S. Cl. 235—472 **11 Claims**



1. An optical image sensor comprising:

a laser light source for projecting a first beam of radiation having a generally elliptical cross-section, having a major axis d1 and a minor axis d2, along a first path;

means along said first path for reshaping said first beam into a second beam having an elongated rectangular cross-section and directing said second beam through an aperture of said sensor onto a target for simultaneously illuminating an entire rectangular area on said target with a thin line whose length is much greater than d1 and d2; and

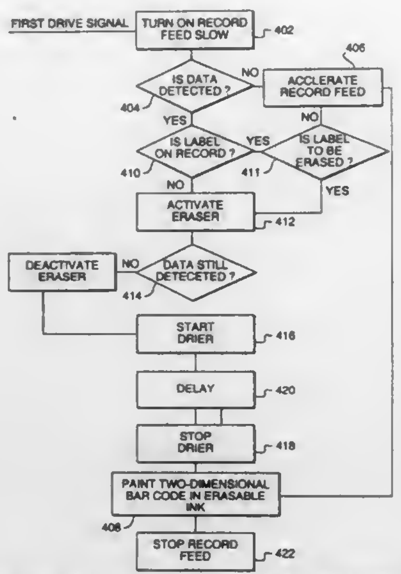
means for focusing an image formed by reflection of said second beam from said rectangular area on said target onto a radiation detector comprised of a linear array of photosensing elements for simultaneously detecting radiation intensity variations within said image, at one and the same time.

5,710,419
RECORD WITH REMOVABLE TWO-DIMENSIONAL CODE

Ynjiun P. Wang, Stony Brook; Jerome Swartz, Old Field, and Daniel R. McGlynn, Brooklyn, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.
Continuation-in-part of Ser. No. 461,881, Jan. 5, 1990, Pat. No. 5,304,786, , which is a continuation of Ser. No. 903,222, Jun. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 851,505, Mar. 16, 1992, Pat. No. 5,243,655, which is a continuation-in-part of Ser. No. 653,822, Feb. 11, 1991, Pat. No. 5,113,445, which is a continuation of Ser. No. 550,023, Jul. 9, 1990, abandoned. This application May 30, 1995, Ser. No. 453,098
Int. Cl.^{6} G06K *7/00*
U.S. Cl. 235—487 **17 Claims**

1. A record printing system comprising:

a detector for detecting the presence of removable information on a record, the record including a printed portion containing text, and an information portion including the removable information encoded in an error-correctable, machine-readable format, said removable information being printed in said information portion of said record in erasable ink to permit said removable information to be removed by erasing the erasable ink;

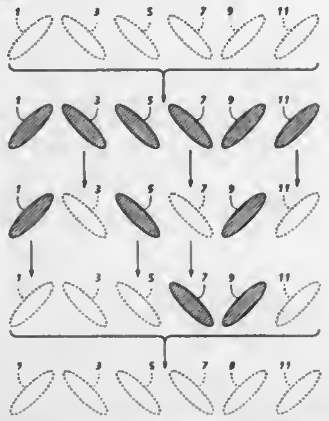


an erasing unit for erasing the removable information from the information portion of the record when the detector detects the presence of the removable information, the erasing unit continues erasing until the detector detects that the removable information has been completely erased; and

a printing unit for printing new removable information in the information portion of the record.

5,710,420
METHOD FOR EMBEDDING AND RECOVERING MACHINE-READABLE INFORMATION

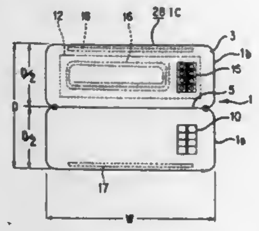
Trevor I. Martin, Burlington, and John F. Oliver, Calgary, both of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 5, 1995, Ser. No. 567,786
Int. Cl.^{6} G06K *19/06*
U.S. Cl. 235—487 **12 Claims**

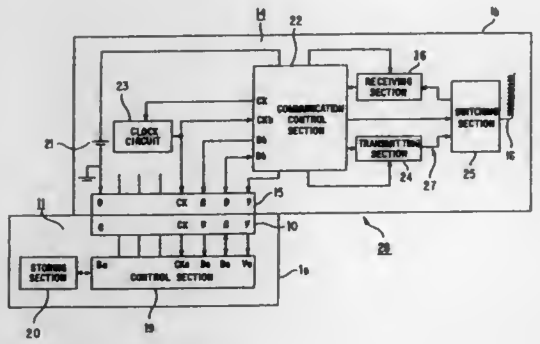


1. A method of embedding and recovering machine readable information on a substrate which comprises (a) writing data in a predetermined machine readable code format on the substrate with a photochromic marking material having a first state corresponding to a first absorption spectrum and a second state corresponding to a second absorption spectrum; and (b) thereafter effecting a photochromic change in at least some of the photochromic marking material from the first state to the second state, wherein a first portion of the photochromic marking material is caused to shift from the first state to the second state and a second portion of the photochromic marking material remains in the first state.

5,710,421
IC CARD

Sadao Kokubu, Niwa, Japan, assignor to Tokai-Rika-Denki-Seisakusho Kabushiki Kaisha, Aichi-Ken, Japan
Filed Mar. 25, 1996, Ser. No. 620,538
Claims priority, application Japan, Mar. 31, 1995, 7-076429
Int. Cl.^{6} G06K *05/00;19/06*
U.S. Cl. 235—492 **15 Claims**





1. An IC card comprising:

a card body;

a contact provided in a surface of the card body;

sorting means for storing various data; and

control means for transmitting data to and receiving data from an external device via the contact and for writing into or reading from the storing means the data to be transmitted or received,

the card body comprising a hinge portion which allows the card body to be folded substantially into halves in such a manner that the surface provided with the contact comes inside,

wherein, of the substantial halves of the foldable card body, a first half is provided with the contact, the storing means and the control means, and wherein a second half is provided with:

transmitting-receiving means for transmitting various data to or receiving various data from the external device by using an air-propagating signal;

a transmission-reception contact provided so as to contact said contact when the card body is folded substantially in halves; and

communication control means for achieving data transmission and reception between the control means and the transmitting-receiving means via the transmission-reception contact.

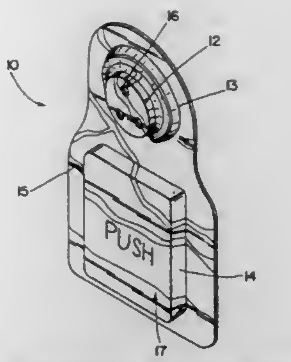
5,710,422
TALKING POSTER

Aaron D. Clark, 7877 Oak Valley Rd., Reynoldsburg, Ohio 43068
Continuation-in-part of Ser. No. 402,195, Mar. 10, 1995, Pat. No. 5,548,272. This application May 22, 1996, Ser. No. 651,332
Int. Cl.^{6} G08B *3/00*
U.S. Cl. 340—384.1 **8 Claims**

1. An assembly, comprising:

a poster comprised of a first material, said poster having poster art on a first surface thereof;

a module cover comprised of a second material, said module cover attached to a portion of said first surface of said poster, said module cover having an inner circle and an outer circle;



a speaker located in said inner circle of said module cover, said speaker being concealed between said module cover and said first surface of said poster;

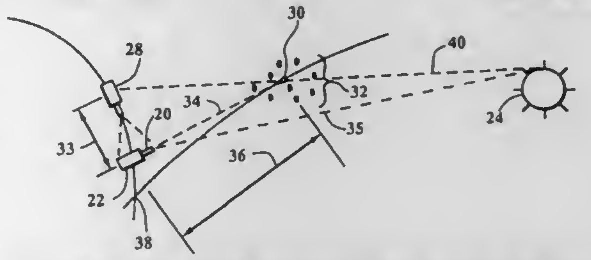
an electric circuit including a sound production component, operatively connected to said speaker and concealed between said module cover and said first surface of said poster;

a trigger attached to said electric circuit and concealed within said module, said trigger adapted to be actuated through said module cover to produce said sound;

wherein a surface of said module cover is prepared with a matching art which is substantially the same as that area of said poster art which appears on said portion of said poster that said module covers when said module is attached to said poster, such that said module artistically blends in with the surrounding poster art that is not covered by said module.

5,710,423
EXO-ATMOSPHERIC MISSILE INTERCEPT SYSTEM EMPLOYING TANDEM INTERCEPTORS TO OVERCOME UNFAVORABLE SUN POSITIONS

Earl U. Biven, Irvine, and James A. Kiefer, San Clemente, both of Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.
Filed Sep. 27, 1996, Ser. No. 721,478
Int. Cl.^{6} F41G *7/00;* **F42B** *15/00*
U.S. Cl. 244—3.1 **20 Claims**



1. A method of guiding interceptors that include only light sensitive sensors for terminal guidance and that are launched from a single geographic area to an object in the presence of predictable light radiators including:

determining when the light sensitive sensor of an interceptor will be pointed toward a light radiator during a terminal phase of an interception;

launching first and second interceptors along respective trajectories at different times, wherein the trajectory of the first interceptor is selected such that the first interceptor will not intercept the object, and wherein the trajectory of the second interceptor is selected such that the second interceptor will intercept the object;

tracking the object with the first interceptor;

providing intercept information to the second interceptor from the first interceptor; and

using the intercept information in the second interceptor to guide the second interceptor to intercept the object.

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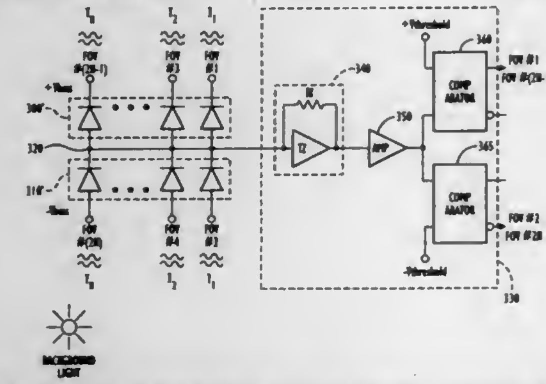
5,710,424
MULTIPLE FIELD OF VIEW DETECTOR WITH BACKGROUND CANCELLATION

James T. Theodoras, II, Ann Arbor, and Salvatore F. Nati, Jr., Dexter, both of Mich., assignors to Imra America, Inc., Ann Arbor, Mich.

Filed Oct. 18, 1995, Ser. No. 544,718

Int. Cl.^{6} G01C *3/08*

U.S. Cl. 250—208.2 **20 Claims**



1. An apparatus for detecting pulses of light energy from at least two fields of view comprising:

a first detector having a first bias for detecting a pulse received at a first point in time;

a second detector having a second bias, different from said first bias, for detecting a pulse received at a second point in time and

a processor for comparing an output of the first detector with a first threshold to produce a signal representing receipt of a pulse from a first field of view, and for comparing an output of the second detector with a second threshold, different from said first threshold, to produce a signal representing receipt of a pulse from a second field of view;

wherein said first bias is of an opposite polarity relative to said second bias.

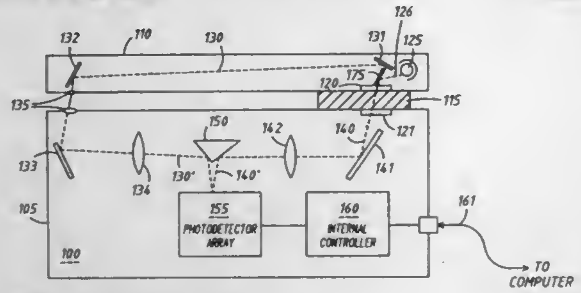
5,710,425
DUAL RESOLUTION SCANNER WITH LIGHT SOURCE AND PIVOTING MIRROR IN LID

Charles H. McConica; Donald James Stavely, both of Fort Collins, and Daniel Maack Bloom, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1995, Ser. No. 551,220

Int. Cl.^{6} H04N *1/04*

U.S. Cl. 250—234 **11 Claims**



10. A scanner comprising:

a scanner base;

a scanner lid attached to the scanner base;

an image area disposed between the scanner base and the scanner lid;

a light source located within the scanner lid, the light generates first and second light paths, the first light path reflects off the image area, the second light path passes through the image area; and

a pivoting mirror located in the scanner lid, the pivoting mirror pivots between at least two positions, the second light path reflects off of the pivoting mirror through the image area.

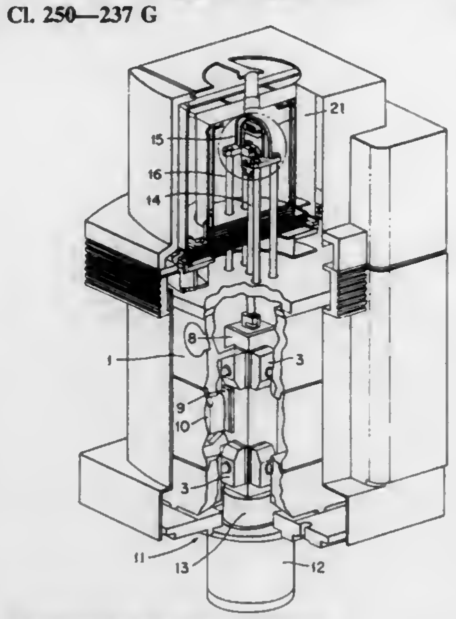
5,710,426
DYNAMIC AND THERMAL MECHANICAL ANALYZER HAVING AN OPTICAL ENCODER WITH DIFFRACTION GRATING AND A LINEAR PERMANENT MAGNET MOTOR

Kevin J. Reed, Landenberg, Pa.; Robert L. Danley, Collingswood, N.J.; John R. Reader, Jr., Newark, and John W. Schaefer, Wilmington, both of Del., assignors to TA Instruments, Inc., New Castle, Del.

Filed Mar. 1, 1996, Ser. No. 609,547

Int. Cl.^{6} H01J *3/14*

U.S. Cl. 250—237 G **53 Claims**



1. A mechanical analyzer comprising:

(a) a frame;

(b) a linear permanent magnet motor comprising a fixed permanent magnet and a moving coil, wherein the fixed permanent magnet is attached to the frame of the mechanical analyzer;

(c) a slide having a first end and a second end, wherein the moving coil is rigidly attached to the second end of the slide, and wherein current applied to the coil causes the moving coil to apply a drive force to the slide;

(d) means for determining the magnitude of the drive force applied to the slide;

(e) an optical encoder comprising a diffraction grating attached to the slide, a light source attached to the frame, and a photodetector system attached to the frame, wherein a light beam produced by the light source is reflected by the diffraction grating back at the light photodetector system, such that the photodetector system detects two maxima and two minima per period of the diffraction grating as the slide moves vertically relative to the frame;

(f) a first plurality of bottom air bearings attached to the frame and a second plurality of top air bearings attached to the frame, wherein the bottom air bearings and the top air bearings cooperate to guide the slide within the air bearings such that it moves only in the vertical direction;

(g) a drive rod having a second end attached to the first end of the slide and a first end;

(h) a moving sample clamp assembly rigidly attached to the first end of the drive rod;

(i) a fixed sample clamp assembly rigidly attached to at least one vertical support, wherein said vertical support is attached to the frame at its second end;

(j) means for receiving electronic signals output by the photodetector system and combining the electronic signals to produce two quadrature output signals;

(k) means for converting the two quadrature output signals into digital angle and magnitude signals;

(l) means for receiving the digital angle signals and counting the maxima that have been detected, and means for keeping track of the direction of movement of the diffraction grating at each maximum;

(m) means for using the magnitude signals to match the magnitude of the two quadrature output signals to each other;

(n) means for interpolating the digital angle signals to calculate an interpolated position for the slide; and

(o) means for calculating material properties of the sample based upon the interpolated positions of the slide as a function of the magnitude of the drive force applied to the slide.

5,710,427
METHOD FOR CONTROLLING THE ION GENERATION RATE FOR MASS SELECTIVE LOADING OF IONS IN ION TRAPS

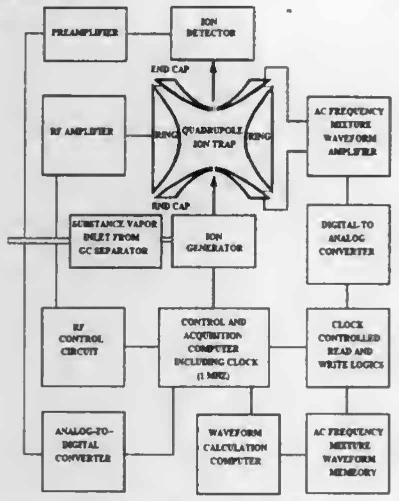
Michael Schubert, and Jochen Franzen, both of Bremen, Germany, assignors to Bruker-Franzen Analytik GmbH, Bremen, Germany

Filed Jan. 19, 1996, Ser. No. 588,059

Claims priority, application Germany, Jan. 21, 1995, 195 01 823.0

Int. Cl.^{6} H01J *49/42*

U.S. Cl. 250—282 **10 Claims**


PREAMPLIFIER
ION DETECTOR
END CAP
RF AMPLIFIER
RING
QUADRUPOLE ION TRAP
RING
AC FREQUENCY MIXTURE WAVEFORM AMPLIFIER
END CAP
SUBSTANCE VAPOR INLET FROM GC SEPARATOR
ION GENERATOR
DIGITAL-TO ANALOG CONVERTER
RF CONTROL CIRCUIT
CONTROL AND ACQUISITION COMPUTER INCLUDING CLOCK (1 MHZ)
CLOCK CONTROLLED READ AND WRITE LOGICS
ANALOG-TO-DIGITAL CONVERTER
WAVEFORM CALCULATION COMPUTER
AC FREQUENCY MIXTURE WAVEFORM MEMORY

1. Method of m/z-selective loading of desired ion species in an ion trap, consisting of the following processes:

(a) generating ions from administered substance vapors inside or outside the ion trap by known methods,

(b) in case of external ion generation, transferring of the ions into the ion trap by known ion-optical means,

(c) ejecting of all undesired ion species in a known manner by resonant excitation of their oscillations inside the ion trap, during ion generation and loading, by an electrical excitation AC field containing a mixture of discrete frequencies which match the oscillation frequencies of the undesired ion species,

(d) controlling the ion generation rate of the ion generation process (a) or the ion transfer rate of the ion transfer process (b) in such a manner that the desired mass resolution of the ejection process (c) remains essentially undisturbed by the space charge of the ion population which is formed as equilibrium of ion generation rate and ion ejection rate.

5,710,428
INFRARED FOCAL PLANE ARRAY DETECTING APPARATUS HAVING LIGHT EMITTING DEVICES AND INFRARED CAMERA ADOPTING THE SAME

Jin-sin Ko, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

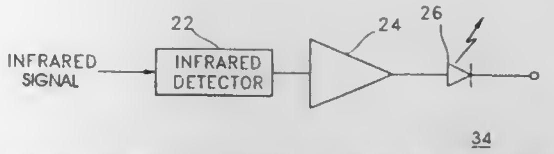
Filed May 17, 1996, Ser. No. 649,446

Claims priority, application Rep. of Korea, Aug. 10, 1995, 95-24701

Int. Cl.^{6} H01L *31/14*

U.S. Cl. 250—332 **20 Claims**

1. A real-time wavelength infrared detection system, comprising:



a plurality of detectors arranged to convert an impingent first image signal into a plurality of parallel electrical signals;

a plurality of electronic amplifiers, each separately connected to correspondingly different ones of said plurality of detectors, to amplify said plurality of electrical signals;

a plurality of emitters of electromagnetic radiation, each connected to correspondingly different ones of said plurality of electronic amplifiers, to convert said plurality of electrical signals into an infrared image having a wavelength that is greater than 1 μm, said infrared image being based upon said first image signal;

optics means for focusing and magnifying said infrared image;

charge coupled device photographing device means positioned to photograph said infrared image, generating a second image signal representative of said infrared image;

image signal processing means for processing in parallel said image signal produced by said charge coupled device photographing device means, using an image interpolation and enhancement method; and

display means for displaying said image signals processed by said image signal processing means.

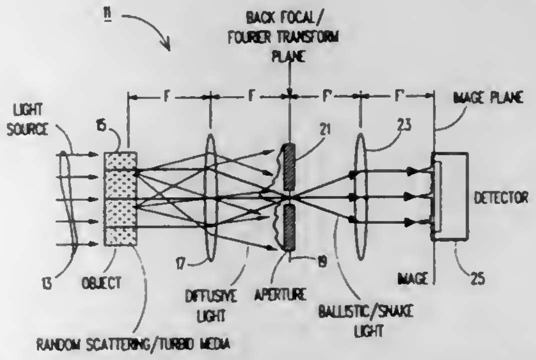
5,710,429
ULTRAFAST OPTICAL IMAGING OF OBJECTS IN OR BEHIND SCATTERING MEDIA

Robert R. Alfano, 3777 Independence Ave.; Feng Liu, 3055 Bailey Ave., Apt. #E2, both of Bronx, N.Y. 10463; Quan-Zhen Wang, 552 Riverside Dr., Apt. 2G, New York, N.Y. 10027; Ping P. Ho, 24 W. Terrace Rd., Great Neck, N.Y. 11021; Leming M. Wang, 134-46 Maple Ave., Apt. 7B, Flushing, N.Y. 11355, and Xiangchun Liang, 2670 Valentine Ave. Apt. #9, Bronx, N.Y. 10458

Filed Apr. 6, 1995, Ser. No. 419,623

Int. Cl.^{6} G01N *21/49;21/59*

U.S. Cl. 250—358.1 **6 Claims**



1. A system for imaging an object in or behind a highly scattering or turbid medium comprising:

a. means for illuminating said highly scattering medium with a beam of light, the light emerging therefrom consisting of a ballistic component, a snake-like component and a diffuse component, and

b. means for forming a temporally gated image of the emerging light, said means including a first lens for focusing the emerging light, said first lens having a back focal plane, a first focal length and an optical axis, a mechanical filter, said mechanical filter being located on said back focal plane in alignment with said optical axis, said mechanical filter being an inverse aperture filter for selectively passing the diffuse component of the emerging light, and a second lens for collimating the light passing through said mechanical filter, said second lens being

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positioned along said optical axis and having a second focal length and a front focal plane, said mechanical filter being positioned at said front focal plane of said second lens, said second focal length of said second lens being the same as said first focal length of said first lens.

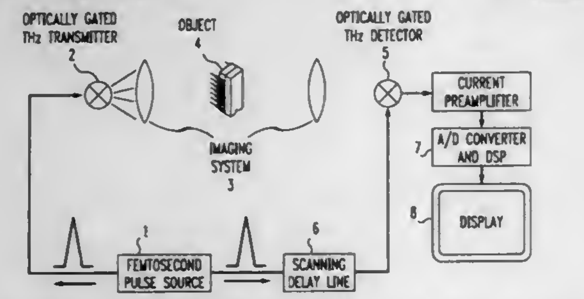
5,710,430
METHOD AND APPARATUS FOR TERAHERTZ IMAGING

Martin C. Nuss, Fair Haven, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 388,933, Feb. 15, 1995, Pat. No. 5,623,145. This application Sep. 10, 1996, Ser. No. 711,823

Int. Cl.^{6} G01N *21/17;21/49*

U.S. Cl. 250—358.1 **12 Claims**



1. A method of inspecting a medium having one or more absorptive, dispersive, or reflective constituents, comprising the steps of:

directing a pulsed sequence of electromagnetic signals that are in the frequency range between 100 GHz to 20 THz at said medium, wherein the pulsed sequence is selected so as to permit observation of frequency dependent variations in the absorption, dispersion, or reflectivity of at least one constituent of the medium; and

detecting the directed pulse signals following propagation through the medium, the detected pulse signals being characterized by temporal distortions related to said frequency dependent variations, to thereby obtain spectral information about said constituents in real time.

5,710,431
OUTDOOR SCENE SIMULATING APPARATUS FOR TESTING AN INFRARED IMAGING DEVICE

Jeffrey William Spindler, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 5, 1996, Ser. No. 706,588

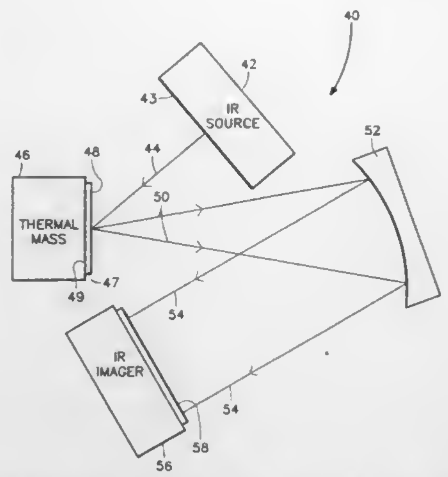
Int. Cl.^{6} H05B *3/26*

U.S. Cl. 250—504 R **5 Claims**

1. An apparatus for testing an infrared imaging device which is sensitive to electromagnetic radiation in a three micron to twelve micron wavelength band, said apparatus comprising:

a blackbody for generating and emitting infrared energy along a first optical path, said infrared energy having a wavelength in a range of between about three microns and about twelve microns;

a metallic substrate positioned downstream from said blackbody on said first optical path, said metallic substrate having a front surface and a rear surface, the front surface of said metallic substrate having a portion thereof coated with an infrared absorbing black ink to simulate thermal emissions from an outdoor scene, the front surface of said metallic substrate reflecting a substantial portion of said infrared energy incident upon the front surface of said metallic substrate, the front surface of said metallic substrate providing a reflecting rate greater than 0.85;



a thermal mass positioned at the rear surface of said metallic substrate, said thermal mass abutting the rear surface of said metallic substrate to cool said metallic substrate; and

a collimator positioned on a second optical path downstream from said metallic substrate, said collimator collecting said infrared energy reflected from the front surface of said metallic substrate, said collimator forming a collimated beam of infrared energy from said infrared energy collected by said collimator, said collimator directing said collimated beam of infrared energy along a third optical path to said infrared imaging device being tested.

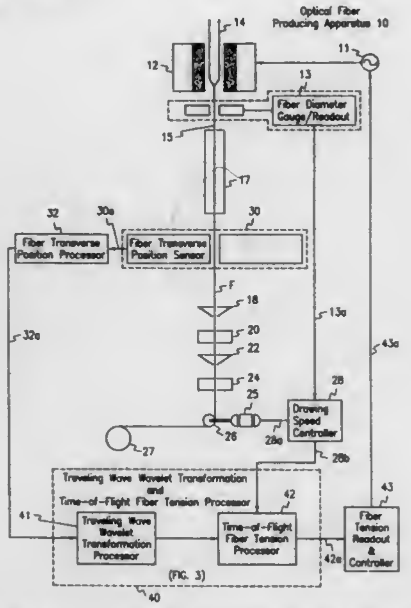
5,710,432
NON-CONTACT TENSION MEASUREMENT OF MOVING FIBER USING TRAVELING WAVE TIME-OF-FLIGHT ANALYSIS

David G. Bell, Newton, N.C., assignor to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Jan. 18, 1996, Ser. No. 588,555

Int. Cl.^{6} G01N *21/00;* **G01L** *5/10;* **C03B** *3/07*

U.S. Cl. 250—559.32 **11 Claims**


14
Optical Fiber Producing Apparatus 10
11
12
13
Fiber Diameter Gauge/Readout
15
17
32
30a
30
Fiber Transverse Position Processor
Fiber Transverse Position Sensor
F
18
13a
32a
20
22
43a
24
28
25
Drawing Speed Controller
26
28a
27
28b
Traveling Wave Wavelet Transformation and Time-of-Flight Fiber Tension Processor
42
43
41
Traveling Wave Wavelet Transformation Processor
Time-of-Flight Fiber Tension Processor
42a
Fiber Tension Readout & Controller
(FIG. 3)
40

1. An optical fiber producing apparatus having non-contact fiber tension monitoring, comprising:

a traveling wave wavelet transformation processor, responsive to a fiber transverse position processor signal representing information relating to a traveling wave propagating in one direction along a moving fiber and a reflection of the traveling wave propagating back in an opposite direction along the moving fiber, for providing a traveling wave wavelet transformation processor signal; and

a time-of-flight fiber tension processor, responsive to the traveling wave wavelet transformation processor signal, and further responsive to a fiber draw speed signal, for providing a time-of-flight fiber tension processor signal indicative of a fiber tension of the moving fiber using traveling wave time-of-flight analysis.

5,710,433
LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE AND LIQUID CRYSTAL APPARATUS

Masataka Yamashita, Chigasaki; Masahiro Terada, Hadano; Shosei Mori, Hiratsuka; Syuji Yamada, Atsugi; Hiroshi Mizuno, Zama; Ikuo Nakazawa, and Koji Noguchi, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,573

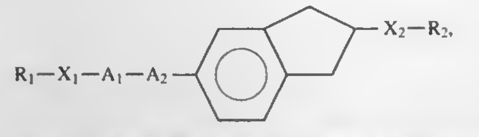
Claims priority, application Japan, Jan. 31, 1995, 7-032946

Int. Cl.^{6} C09K *19/34;19/32;19/30;* **G02F** *1/13*

U.S. Cl. 252—299.61 **15 Claims**

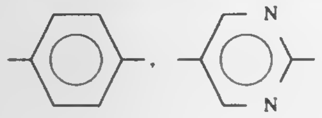
1. A liquid crystal composition, comprising:

a mesomorphic compound represented by the following formula (A):

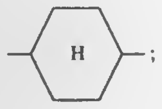


(A)

wherein R_1 and R_2 independently denote a linear or branched alkyl group having 1–18 carbon atoms; X_1 and X_2 independently denote a single bond, —O—, —CO—O— or —O—CO—; and A_1 denotes a single bond,

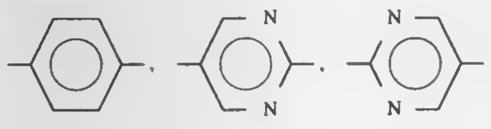


or

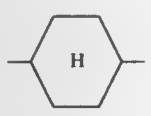


;

and A_2 denotes



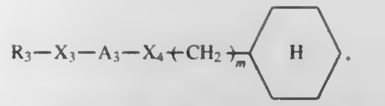
or



;

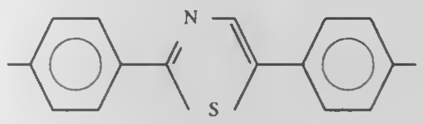
and

a mesomorphic compound represented by the following formula (B):

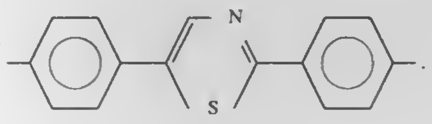


(B)

wherein R_3 denotes a linear or branched alkyl group having 1–18 carbon atoms; X_3 and X_4 independently denote a single bond, —O—, —CO—O— or —O—CO—; m is an integer of 3–16; and A_3 denotes



or



5,710,434
ISOCYANATE IMPREGNATING COMPOSITIONS

David W. Park, Puyallup, and Frank R. Hunter, Bellevue, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 467,498, Jun. 6, 1995, Pat. No. 5,580,922. This application Sep. 19, 1996, Ser. No. 715,977

Int. Cl.^{6} C08K *5/05;5/11*

U.S. Cl. 252—182.2 **2 Claims**

1. An impregnating composition for cellulosic materials consisting essentially of a polyisocyanate at least difunctional in —NCO and from 1–20% by weight of the composition of triethyl citrate.

5,710,435
PHOTOMULTIPLIER HAVING A PHOTOCATHODE COMPRISED OF SEMICONDUCTOR MATERIAL

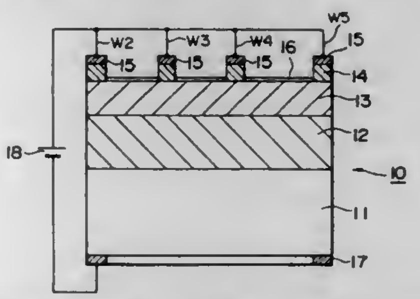
Minoru Niigaki; Toru Hirohata; Tomoko Suzuki, and Masami Yamada, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation-in-part of Ser. No. 507,985, Jul. 27, 1995. This application Dec. 20, 1995, Ser. No. 580,057

Claims priority, application Japan, Dec. 21, 1994, 6-318182

Int. Cl.^{6} H01L *29/06;29/12*

U.S. Cl. 257—11 **23 Claims**



8. A photomultiplier having a photocathode for emitting electrons in correspondence with light incident on said photocathode, wherein said photocathode comprises:

(a) a substrate of a first conductivity type semiconductor, having a predetermined carrier concentration;

(b) a first layer of a first conductivity type semiconductor, having a first carrier concentration, being in contact with said substrate;

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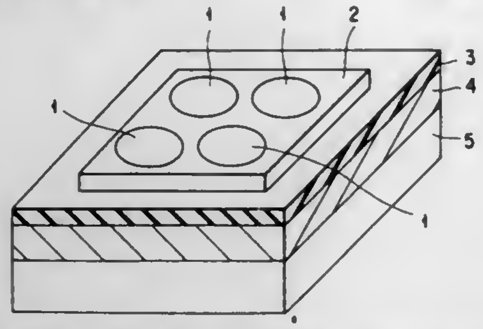
(c) a second layer of a first conductivity type semiconductor, having a second carrier concentration, being in contact with said first layer;
(d) a third layer of a second conductivity type semiconductor, having a third carrier concentration, being in contact with said second layer;
(e) an upper surface electrode being in contact with said third layer;
(f) an active layer for decreasing a work function of said second layer, being in contact with a remaining exposed surface of said second layer; and
(g) a lower surface electrode being in contact with said substrate.

5,710,436
QUANTUM EFFECT DEVICE

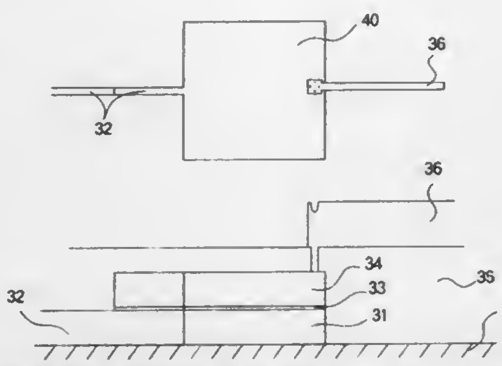
Tetsufumi Tanamoto, Kawasaki; Riichi Katoh, Yokohama; Li Zhang, Tokyo; Tadashi Sakai, Yokohama; Shigeki Takahashi, Kawasaki, and Taketoshi Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 26, 1995, Ser. No. 533,744
Claims priority, application Japan, Sep. 27, 1994, 6-230837; Mar. 22, 1995, 7-062234
Int. Cl.⁶ H01L *29/06;31/0328;31/0336;31/072*
U.S. Cl. 257—14 **20 Claims**



1. A quantum effect device comprising:
a first layer having a plurality of charge confinement regions that respectively confine a charged particle to be retained therein during an operational mode, a selected number of said plurality of charge confinement regions being disposed proximate to each other so as to influence energy levels thereof and relative occupations of said charged particle; and
a second layer opposing and separated from said first layer and having a higher concentration of charged particles than said first layer.

5,710,437
RADIATION DETECTING DEVICE USING SUPERCONDUCTING TUNNEL JUNCTION AND METHOD OF FABRICATING THE SAME

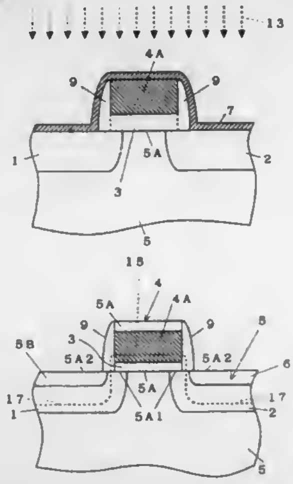
Masahiko Kurakado; Toru Takahashi, both of Kawasaki, and Atsuki Matsumura, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Mar. 2, 1994, Ser. No. 204,563
Claims priority, application Japan, Mar. 5, 1993, 5-070816; Mar. 24, 1993, 5-065158; Mar. 26, 1993, 5-068180; Dec. 28, 1993, 5-349627
Int. Cl.⁶ H01L *29/41;29/88;31/06;31/102*
U.S. Cl. 257—32 **11 Claims**



1. A radiation detecting device comprising:
a superconducting tunnel junction having a three-layer structure formed by depositing a lower electrode, a tunnel barrier layer, and an upper electrode in sequence, said upper electrode, said tunnel barrier layer, and said lower electrode having substantially aligned side walls around substantially their entire perimeters such that a cross-section of said three-layer structure along a plane perpendicular to a direction of said deposition being substantially constant in shape and size along the direction of said deposition and such that no portion of said lower electrode or said upper electrode extends beyond said tunnel barrier layer, wherein at least one of said upper and lower electrode is made of a superconducting material.

5,710,438
SEMICONDUCTOR DEVICE WITH A SILICIDE LAYER

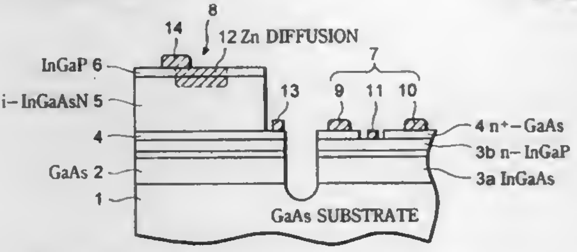
Hidekazu Oda, and Takashi Kuroi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 31, 1995, Ser. No. 550,939
Claims priority, application Japan, Jun. 26, 1995, 7-159443
Int. Cl.⁶ H01L *29/76;27/108;29/94*
U.S. Cl. 257—69 **8 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductive type;
an insulating film formed on a principal surface of said semiconductor substrate;
an electrode layer formed on an upper surface of said insulating film;
a silicide layer formed on an upper surface of said electrode layer; and
an impurity layer distributed inside said silicide layer and distributed also from an interface of said silicide layer and said electrode layer toward an inside of said electrode layer,
wherein said electrode layer and said silicide layer form a gate electrode of a transistor, and
said silicide layer corresponds to a layer of a metal as a nonreducing diffusion seed formed as silicide.

5,710,439
OPTOELECTRONIC INTEGRATED DEVICE HAVING OPTICAL ELEMENTS AND ELECTRONIC ELEMENTS GROWN IN A MONOLITHIC FORM ON A GAAS SSUBSTRATE

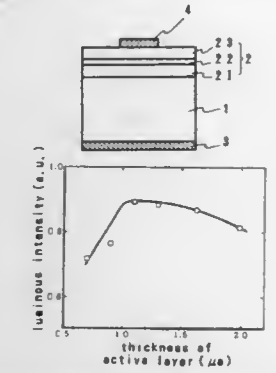
Michio Ohkubo, Fujisawa, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1996, Ser. No. 770,552
Claims priority, application Japan, Feb. 1, 1996, 8-016270
Int. Cl.⁶ H01L *31/0328;31/0336;31/072;31/109*
U.S. Cl. 257—85 **12 Claims**



1. An optoelectronic integrated device comprising:
an optical element section and an electronic element section formed in a monolithic form on a GaAs substrate,
said optical element section including a light receiving element formed on the GaAs substrate, the light receiving element having an optical absorption layer made of GaAsN-series compound semiconductor.

5,710,440
SEMICONDUCTOR LIGHT EMITTING ELEMENT WITH IN GAALP ACTIVE LAYER OF SPECIFIED THICKNESS

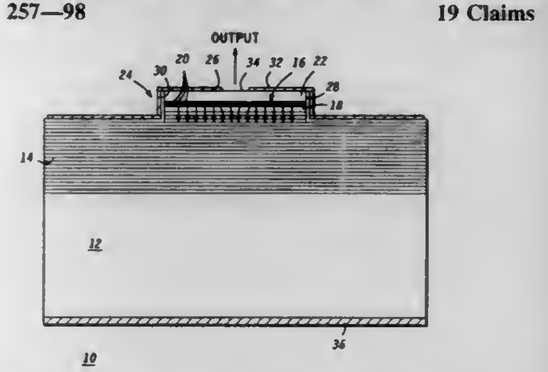
Hiroaki Okagawa, Itami; Takayuki Hashimoto, Kuga-gun; Keiji Miyashita, Itami; Tomoo Yamada, Itami, and Kazuyuki Tadatomo, Itami, all of Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo, Japan
Filed Feb. 12, 1996, Ser. No. 600,295
Claims priority, application Japan, Feb. 15, 1995, 7-026671
Int. Cl.⁶ H01L *33/00*
U.S. Cl. 257—96 **10 Claims**



1. A semiconductor light emitting element comprising an n-type semiconductor substrate and a light emitting part composed of an InGaAlP compound semiconductor material, said light emitting part comprising an n-type cladding layer, an active layer and a p-type cladding layer in this order from the substrate side to form a double heterojunction, and said active layer having a thickness of greater than 0.75 μm and not more than 1.5 μm.

5,710,441
MICROCAVITY LED WITH PHOTON RECYCLING

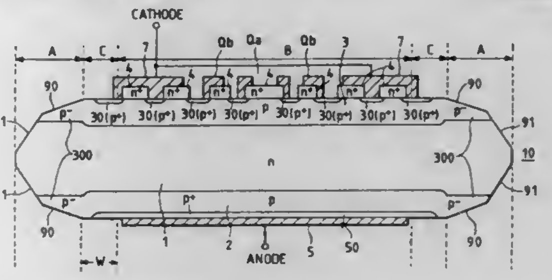
Donald E. Ackley, Lambertville, N.J.; Chan-Long Shieh, Paradise Valley, and Michael S. Lebby, Apache Junction, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 30, 1995, Ser. No. 550,147
Int. Cl.⁶ H01L *33/00;* **H01S** *3/19;3/08*
U.S. Cl. 257—98 **19 Claims**



1. A microcavity LED with photon recycling comprising:
a substrate having at least one layer of material positioned thereon;
a first cladding layer of a first conductivity type positioned on the layer of material;
an active region positioned on the first cladding layer;
a second cladding layer of a second conductivity type positioned on the active region;
the first cladding layer, the active region and the second cladding layer forming a mesa on the layer of material, the mesa having generally vertical sides and an upper surface; and
an electrically conductive and light reflective system positioned on the vertical sides of the mesa and partially covering the upper surface to form a first electrical contact for the LED, the electrically conductive and light reflective system defining a centrally located light emitting opening on the upper surface of the mesa, the mesa having a diametric dimension of the surface greater than one time larger than a diametric dimension of the opening.

5,710,442
SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Atsuo Watanabe, Hitachiohta, and Katsuaki Saito, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 22, 1996, Ser. No. 589,637
Claims priority, application Japan, Feb. 3, 1995, 7-16663
Int. Cl.⁶ H01W *29/74;* **H01L** *31/111*
U.S. Cl. 257—107 **12 Claims**



1. A semiconductor device comprising:
a semiconductor base substrate having a first conductivity type first semiconductor layer, a second conductivity type second semiconductor layer located on the first semiconductor layer, a first conductivity type third semiconductor layer located on the second semiconductor layer and a second conductivity type fourth semiconductor layer located on the third semiconductor layer, the semiconductor base substrate including a first

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region adjacent to an end of said semiconductor base substrate and a second region provided inside the first region;

a first main electrode provided on the first semiconductor layer; and

a second main electrode provided on the fourth semiconductor layer,

said third semiconductor layer in the first region having an average impurity density smaller than that of the third semiconductor layer in the second region, and

said second main electrode being in contact with the third semiconductor layer between the first and second regions,

wherein a parasitic channel preventive region is provided between the first and second regions, the parasitic channel preventive region having a width greater than or equal to a diffusion length of a minority carrier in the second semiconductor layer.

5,710,443

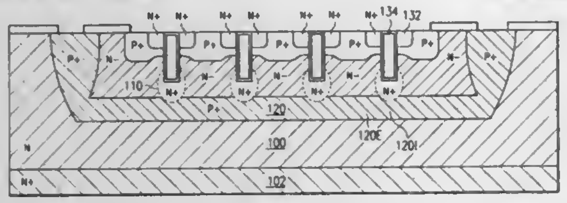
MERGED DEVICE WITH ALIGNED TRENCH FET AND BURIED EMITTER PATTERNS

Richard A. Blanchard, Los Altos, Calif., assignor to SGS-Thompson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 397,710, Feb. 28, 1995, Pat. No. 5,591,655. This application Jun. 7, 1995, Ser. No. 472,337

Int. Cl.⁶ H01L *29/744;29/749*

U.S. Cl. 257—110 **16 Claims**



1. A switched-emitter merged device structure, comprising:

a plurality of field-effect control transistor portions each comprising a source region of a first conductivity type near a first surface of a substantially monocrystalline semiconductor material, and a gate connected to control the flow of carriers of said first conductivity type from said source region through a channel region downwardly into said semiconductor material; and

a plurality of power bipolar transistor portions each comprising an emitter diffusion of said first conductivity type overlying a portion of a single base diffusion of a second conductivity type;

wherein said emitter diffusion include a first buried layer having multiple separate spaced apart minimum-geometry emitter diffusion portions on the order of a respective control transistor portion, and said single base diffusion a second buried layer which extends between and connects with adjacent emitter diffusion portions of said first buried layer; and

wherein individual ones of said emitter diffusions of said bipolar transistor portions are aligned to respective corresponding ones of said control transistor portions for providing an increased emitter diffusion length per unit area such that a current density of said plurality of power bipolar transistor portions is maximized.

5,710,444

INSULATED GATE BIPOLAR TRANSISTOR HAVING A COUPLING ELEMENT

Horst Neubrand, Frankfurt; Jacek Korec, Mörfelden-Walldorf, and Dieter Silber, Obertshausen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

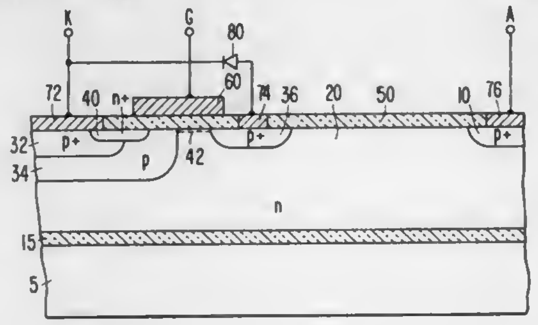
PCT No. PCT/EP93/03688, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO94/15365, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 24, 1993, Ser. No. 448,505

Claims priority, application Germany, Dec. 28, 1992, 42 44 272.9

Int. Cl.⁶ H01L *29/72;29/10*

U.S. Cl. 257—140 **5 Claims**



1. A field-effect-controlled semiconductor component (IGBT), comprising:

a semiconductor body having at least four regions of alternating opposite conductivity types and forming respective p-n junctions between adjoining ones of said four regions, said four regions including an anode-end emitter region, said four regions adjoining first and second base regions and a cathode-end emitter region, wherein the cathode-end emitter region and the first base region form a source and a drain of an MOS field-effect transistor having a channel region formed adjacent the second base region;

an anode contact for the anode end emitter region, a cathode contact for the cathode-end emitter region and a control electrode contact for the MOS field-effect transistor and disposed on an insulating layer formed on a top surface of the semiconductor body and above the source, drain and channel regions;

an additional p-n junction realized by a separately disposed p^+-area which lies adjacent to the second base region and which is placed into the first region, which is an n-type conductivity region; and wherein

the p^+-area is connected only to the cathode contact via a coupling element having a nonlinear current/voltage characteristic, with the coupling element being separated from the structure within the semiconductor body of the semiconductor component; whereby when the IGBT is switched off, a hole current flows from the anode contact to the cathode contact not only via the second base region which is a p-region, but also via the p^+-area and via the coupling element in order to prevent an ignition of a parasitic thyristor structure.

5,710,445

GATE TURN-OFF THYRISTOR FOR HIGH BLOCKING VOLTAGE AND SMALL COMPONENT THICKNESS

Friedhelm Bauer, Suhr, and Simon Eicher, Zürich, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

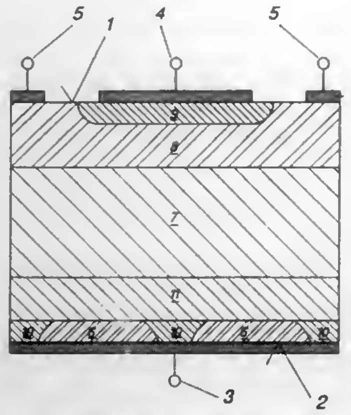
Filed Jun. 27, 1995, Ser. No. 495,080

Claims priority, application Germany, Sep. 2, 1994, P 44 31 294.6

Int. Cl.⁶ H01L *29/74;31/111*

U.S. Cl. 257—147 **13 Claims**

1. A gate turn-off thyristor, comprising:



a) between a first main surface and a second main surface, a number of differently doped semiconductor layers;

b) on the second main surface, an anode electrode and, on the first main surface, a cathode electrode and a gate electrode;

c) the semiconductor layers comprising, viewed from the second main surface, a p^+-doped anode emitter, an n-doped n-base and a p-doped p-base, the anode emitter being in electrical contact with the anode electrode and the p-base being in electrical contact with the gate electrode, and n^+-doped cathode-emitter regions, which are in electrical contact with the cathode electrode, being incorporated in the p-base;

wherein

d) the anode emitter is designed as a transparent emitter;

e) n^+-doped anode short-circuit regions penetrate through the anode emitter, and

f) an n-doped barrier layer is provided between the n-base and the anode emitter, said barrier layer being epitaxially produced and having at least a two-stage doping profile, including a first stage, further away from the second main surface, being more heavily doped, and a second stage, directly adjoining the second main surface, being more lightly doped relative to the first stage.

5,710,446

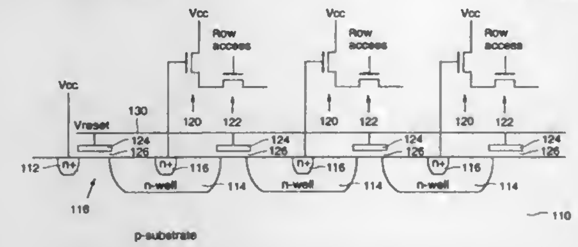
ACTIVE PIXEL SENSOR CELL THAT UTILIZES A PARASITIC TRANSISTOR TO RESET THE PHOTODIODE OF THE CELL

Min-hwa Chi, Palo Alto; Richard Billings Merrill, Daly City, and Albert Bergemont, Palo Alto, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 13, 1996, Ser. No. 647,687

Int. Cl.⁶ H01L *27/148;29/768*

U.S. Cl. 257—225 **9 Claims**



1. A row of active pixel sensor cells formed in a semiconductor substrate of a first conductivity type, the row of cells comprising:

a reset region of a second conductivity type formed in the substrate;

a plurality of spaced-apart photodiode regions of the second conductivity type formed in the substrate, the first photodiode region of the plurality of photodiode regions being formed a distance apart from the reset region, the junctions between each photodiode region and the substrate forming a photodiode;

a first parasitic channel region defined between the reset region and the first photodiode region;

a plurality of second parasitic channel regions defined between the photodiode regions such that a second parasitic channel region is defined between each pair of adjacent photodiode regions;

a layer of insulation material formed over the first parasitic channel region and the second parasitic channel regions;

a plurality of reset gates formed over the layer of insulation material such that a reset gate is formed over the first parasitic channel region and a reset gate is formed over each second parasitic channel region;

a reset line that contacts each of the reset gates; and

a plurality of sense transistors corresponding to the plurality of photodiode regions, each sense transistor having a gate connected to a corresponding photodiode region.

5,710,447

SOLID STATE IMAGE DEVICE HAVING A TRANSPARENT SCHOTTKY ELECTRODE

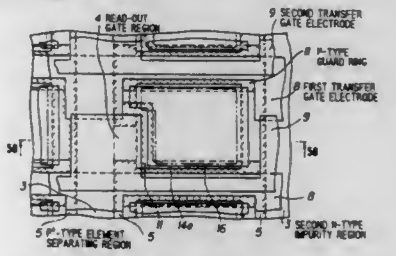
Shigeru Tohyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

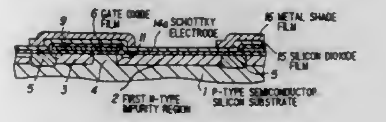
Filed Oct. 27, 1995, Ser. No. 549,435

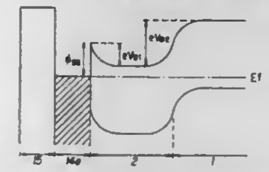
Claims priority, application Japan, Oct. 27, 1994, 6-263745

Int. Cl.⁶ H01L *31/07;31/108;27/148*

U.S. Cl. 257—230 **7 Claims**


4 READ-OUT GATE REGION
9 SECOND TRANSFER GATE ELECTRODE
P-TYPE GUARD RING
8 FIRST TRANSFER GATE ELECTRODE
9
3
8
5 P-TYPE ELEMENT SEPARATING REGION
3 SECOND P-TYPE IMPURITY REGION


GATE OXIDE FILM
SCHOTTKY ELECTRODE
METAL SHADE FILM
SILICON OXIDE FILM
5
3
4
2 FIRST P-TYPE IMPURITY REGION
1 P-TYPE SEMICONDUCTOR SILICON SUBSTRATE



1. A solid state image device, comprising:

a plurality of photosensitive units which are disposed in parallel with each other and each of which includes a row of a plurality of photosensitive devices each of which includes a first N(or P)-type impurity region which is selectively formed on the surface of a P(or N)-type semiconductor region at the surface of a semiconductor substrate, means for executing electronic scanning which is disposed in parallel to said row of photosensitive devices, and a read-out gate in which a signal charge is transferred from said photosensitive devices to said means for executing electronic scanning;

wherein a transparent Schottky electrode is formed on said first N(or P)-type impurity region except a portion adjacent to said read-out gate region, said Schottky electrode is electrically connected to a P^+(or N^+)-type element separating region which surrounds said first N(or P)-type impurity region and has a Schottky barrier that is formed such that a diffusion potential between said Schottky electrode and said first N(or P)-type impurity region is lower than a diffusion potential between said first N(or P)-type impurity region and said P(or N)-type semiconductor region.

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5,710,448

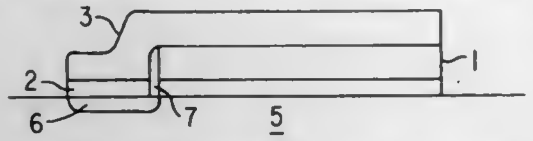
INTEGRATED POLYSILICON DIODE CONTACT FOR GAIN MEMORY CELLS

Wolfgang H. Krautschneider, Hohenthann; Doris Schmitt-Landsiedel, Ottobrunn, and Werner Klingenstein, Kirchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 27, 1995, Ser. No. 549,885

Int. Cl.^{6} H01L *29/76*

U.S. Cl. 257—288 **20 Claims**



1. An integrated polysilicon diode contact, comprising:

a gate oxide layer deposited on a silicon substrate;

a first highly doped layer having a dopant of a first type deposited on said gate oxide layer;

a source region formed in a surface of said silicon substrate, wherein said source region has a dopant of the first type;

a second highly doped layer having a dopant of a second different type deposited on said source region, said second highly doped layer being spaced from said gate oxide layer and said first highly doped layer; and

a third lower doped layer having a dopant of the second type deposited on and interconnecting said first highly doped layer and said second highly doped layer, said third lower doped layer forming a p-n junction with said source region.

5,710,449

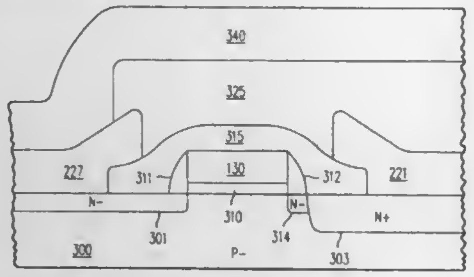
MEMORY CELL HAVING ACTIVE REGIONS WITHOUT N+ IMPLANTS

Chuen-Der Lien, Los Altos Hills, and Pailu D. Wang, San Jose, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed May 22, 1996, Ser. No. 651,231

Int. Cl.^{6} H01L *29/76;27/11*

U.S. Cl. 257—336 **14 Claims**



1. An integrated circuit structure comprising:

a semiconductor material;

a channel region disposed in the semiconductor material;

a gate region positioned to control current flow through the channel region;

a source region disposed adjacent the channel region in the semiconductor material, the source region having a first dopant level; and

a drain region disposed in the semiconductor material on a side of the channel region opposite the source region, the drain region having a second dopant level which differs from the first dopant level.

5,710,450

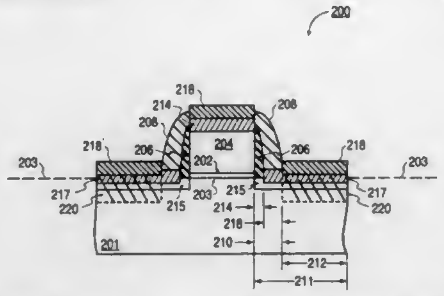
TRANSISTOR WITH ULTRA SHALLOW TIP AND METHOD OF FABRICATION

Robert S. Chau, Beaverton; Chan-Hong Chern, Portland; Chia-Hong Jan, Portland; Kevin R. Weldon, Portland; Paul A. Packan, Beaverton, and Leopoldo D. Yau, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 23, 1994, Ser. No. 363,749

Int. Cl.^{6} H01L *29/06;21/265*

U.S. Cl. 257—344 **30 Claims**



1. A method of forming a transistor comprising the steps of:

forming a gate dielectric layer on a first surface of semiconductor substrate;

forming a gate electrode on said gate dielectric layer;

forming a first pair of sidewall spacers adjacent to opposite sides of said gate electrode;

forming a pair of recesses in said semiconductor substrate beneath said first surface and in alignment with the outside edges of said first pair of sidewall spacers; and

forming a first semiconductor material in said pair of recesses to form a pair of source/drain regions.

5,710,451

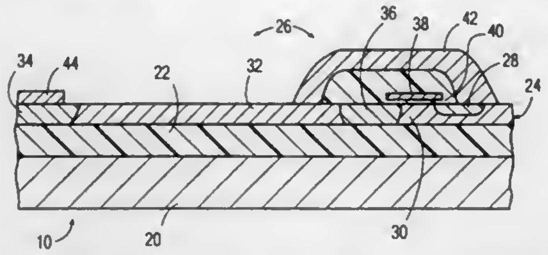
HIGH-VOLTAGE LATERAL MOSFET SOI DEVICE HAVING A SEMICONDUCTOR LINKUP REGION

Steven L. Merchant, Phoenix, Ariz., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Apr. 10, 1996, Ser. No. 629,819

Int. Cl.^{6} H01L *29/74;31/111;27/01;27/12*

U.S. Cl. 257—347 **8 Claims**



1. A Semiconductor-On-Insulator (SOI) device comprising a semiconductor substrate, a buried insulating layer on said substrate, and a lateral MOSFET on said buried insulating layer, said MOSFET comprising a semiconductor surface layer on said buried insulating layer and having a source region of a first conductivity type, a channel region of a second conductivity type opposite to that of the first, an insulated gate electrode over said channel region and insulated therefrom, a lateral drift region of said second conductivity type, and a drain region of said first conductivity type and laterally spaced apart from said channel region by said drift region, characterized in that a semiconductor linkup region of said first conductivity type is provided between said channel region and said drift region and extends substantially through said semiconductor surface layer, and in that said source region is electrically coupled to said drift region.

5,710,452

SEMICONDUCTOR DEVICE HAVING ELECTROSTATIC BREAKDOWN PROTECTION CIRCUIT

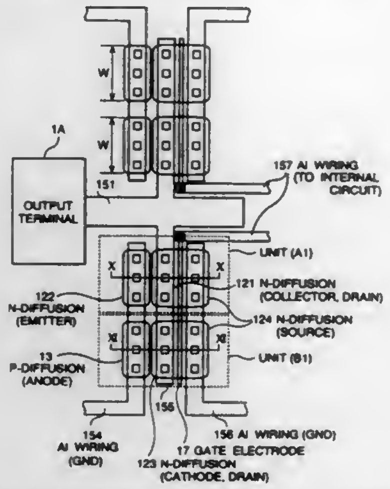
Kaoru Narita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 3, 1996, Ser. No. 627,093

Claims priority, application Japan, Apr. 3, 1995, 7-077001

Int. Cl.^{6} H01L *23/62*

U.S. Cl. 257—355 **6 Claims**



1. A semiconductor device comprising an external metal terminal formed on a semiconductor substrate of a first conductivity type, an internal circuit formed in said semiconductor substrate and connected to said external metal terminal, and a bipolar transistor having a collector region and an emitter region formed in said semiconductor substrate which are separated from each other by a device isolation insulator film formed on said semiconductor substrate, each of said collector region and said emitter region being formed of a second conductivity type opposite to said first conductivity type, and a base of said bipolar transistor being formed of a portion of said semiconductor substrate between said collector region and said emitter region, one of said collector region and said emitter region being connected to said external metal terminal, another one of said collector region and said emitter region being connected to a predetermined common potential, so that when an electrostatic voltage is applied to said external metal terminal, said bipolar transistor is turned on so as to protect said internal circuit, wherein the improvement comprises a plurality of divided transistors connected in parallel which constitute said bipolar transistor as a whole, each of said divided transistors having a predetermined limited width less than the width of said bipolar transistor so as to increase the operating speed of said bipolar transistor, said divided protection transistors having a substantially equal breakdown voltage of a junction between a collector region and said semiconductor substrate.

5,710,453

TRANSISTOR STRUCTURE AND METHOD FOR MAKING SAME

Frank Randolph Bryant, Denton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 159,461, Nov. 30, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,543

Int. Cl.^{6} H01L *29/76;31/062;31/113;31/119*

U.S. Cl. 257—411 **13 Claims**

1. An integrated circuit device comprising:

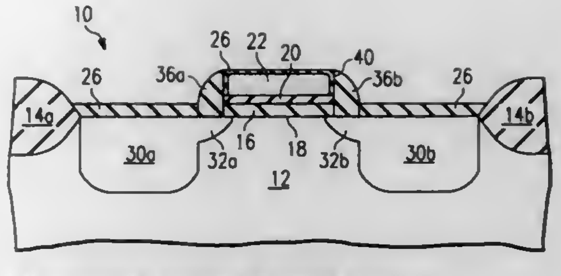
a substrate;

a gate structure, wherein the gate structure includes:

- a gate oxide layer on the substrate, the gate oxide layer having a region thicker than a surrounding portion of the gate oxide layer;
- a nitride layer on the gate oxide layer, the nitride layer approximately coextensive with the thicker region of the gate oxide layer;
- a polysilicon layer over the nitride layer;

a channel region under the gate structure; and

source/drain regions in the substrate adjacent the channel region.



5,710,454

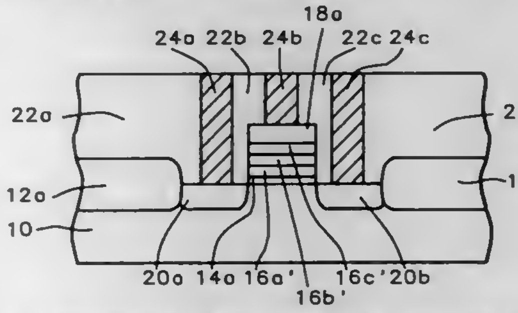
TUNGSTEN SILICIDE POLYCIDE GATE ELECTRODE FORMED THROUGH STACKED AMORPHOUS SILICON (SAS) MULTI-LAYER STRUCTURE.

Shye Lin Wu, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Apr. 29, 1996, Ser. No. 638,671

Int. Cl.^{6} H01L *29/76;21/44*

U.S. Cl. 257—413 **22 Claims**



15. A gate electrode within a Metal Oxide Semiconductor Field Effect Transistor (MOSFET) comprising:

a semiconductor substrate having a gate oxide layer formed thereupon;

a first polysilicon layer formed upon the gate oxide layer;

a second polysilicon layer formed upon the first polysilicon layer; and,

a tungsten silicide layer formed through a Chemical Vapor Deposition (CVD) method upon the second polysilicon layer, wherein the first polysilicon layer and the second polysilicon layer each have a crystallite size of no greater than about 0.3 microns and the first polysilicon layer and the second polysilicon layer each have a dopant concentration of larger than about 1E16 atoms per cubic centimeter.

5,710,455

LATERAL MOSFET WITH MODIFIED FIELD PLATES AND DAMAGE AREAS

Mohit Bhatnagar; Charles E. Weitzel, both of Mesa, and Michael Zunino, Tempe, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jul. 29, 1996, Ser. No. 681,683

Int. Cl.^{6} H01L *23/58;31/108*

U.S. Cl. 257—472 **13 Claims**

1. A field effect transistor comprising:

a substrate including an area with a first conductivity type;

a channel layer positioned on the substrate and defining a surface, the channel layer having a second conductivity type and a first doping concentration;

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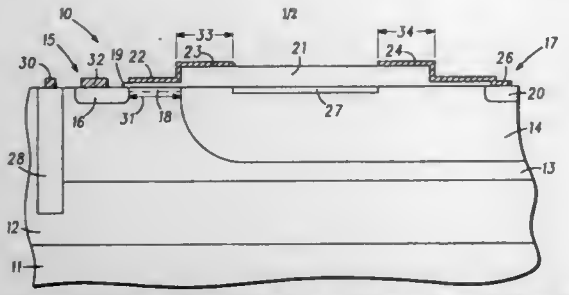


- a laterally extending drift region defined in the channel layer, the drift region having the second conductivity type and a second doping concentration higher than the first doping concentration;
- a first current carrying terminal positioned in electrical contact with the channel layer, the first current carrying terminal including a first contact region having the second conductivity type and a third doping concentration greater than the second doping concentration, the first contact region being defined in the channel layer adjacent the surface thereof and spaced from the drift region so as to define a channel region in the channel layer, the first current carrying terminal further including a first ohmic metal contact on the surface of the channel layer and in electrical contact with the first contact region;
- a second current carrying terminal positioned in electrical contact with the drift region, the second current carrying terminal including a second contact region having the second conductivity type and the third doping concentration, the second contact region being defined in the channel layer adjacent the surface thereof and adjacent the drift region, the second current carrying terminal further including a second ohmic metal contact on the surface of the channel layer and in electrical contact with the second contact region;
- the drift region, the first contact region, the channel region and the second contact region extending laterally, generally parallel with the surface of the channel layer and defining a straight transistor portion and a curved transistor portion;
- a dielectric layer positioned on the channel layer and including a first portion with a first thickness overlying the channel region and a second portion with a second thickness greater than the first thickness overlying the drift region, the second portion extending laterally from the first portion to adjacent the second metal ohmic contact;
- a control terminal including a third metal contact positioned on a surface of the first portion of the dielectric layer overlying the channel region;
- the second ohmic metal contact having a first field plate electrically attached to the second metal contact and positioned on the second portion of the dielectric layer so as to define an edge extending toward the control terminal; and
- a damaged region defined in the drift region and underlying the edges of the first field plate and the third metal contact only in the curved transistor portion to reduce electric fields at the edges of the first field plate and the third metal contact.

5,710,456
SILVER SPOT/PALLADIUM PLATE LEAD FRAME FINISH

Donald C. Abbott, Norton, and Robert M. Fritzsche, Attleboro Falls, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

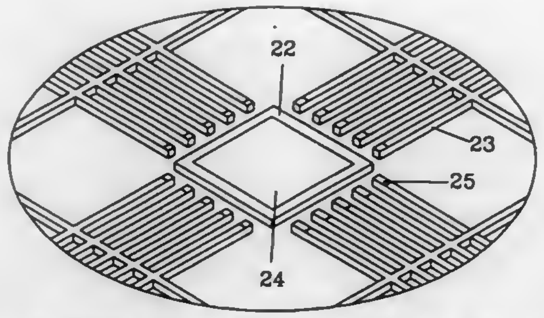
Division of Ser. No. 329,024, Oct. 25, 1994, Pat. No. 5,561,320, which is a division of Ser. No. 893,911, Jun. 4, 1992, Pat. No. 5,384,155. This application Jun. 7, 1995, Ser. No. 483,664

Int. Cl.^{6} H01L *23/495*

U.S. Cl. 257—666 **7 Claims**

1. A lead frame for a semiconductor device including a device mounting pad and lead frame leads, said lead frame comprising:

- a copper base metal;



- an intermediate plating layer plated entirely over said copper base metal comprising nickel or palladium; and
- a plurality of silver spot layers selectively plated over said intermediate plating layer at selected places on said lead frame leads close to the device mounting pad.

5,710,457
SEMICONDUCTOR INTEGRATED CIRCUIT

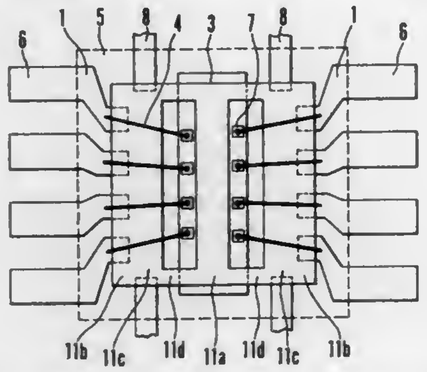
Takayuki Uno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 541,102

Claims priority, application Japan, Oct. 28, 1994, 6-265562

Int. Cl.^{6} H01L *23/495*

U.S. Cl. 257—666 **6 Claims**



1. An integrated circuit (IC) package, for packaging an IC chip with a plurality of bonding pads on one major surface, said IC package comprising:

- a plurality of leads each said lead having an outer portion and an inner portion;
- a plurality of bonding wires, each of said bonding wires electrically connecting a contacting area of one of said leads to a corresponding said bonding pad on said IC chip packaged in said IC package;
- a sheet-like coupling support member having an insulated side and an insulating adhesive side, said sheet-like coupling support member further comprising:
- a chip fixing portion on said insulating adhesive side, said IC chip being fixedly adhered to chip faring portion on said major surface, and
- a lead fixing portion for fixedly adhering a distal end of each of said plurality of leads, each said lead contact area being separated from said chip fixing portion by said lead fixing portion,
- each said bonding wire extending from said corresponding bonding pad, across the insulated side of said lead fixing portion to said lead contacting area on one of said plurality of leads; and
- a sealing resin covering and sealing said packaged IC chip, said bonding wires, said sheet-like coupling support member and said lead contact area on each of said leads.

5,710,458
CARD LIKE SEMICONDUCTOR DEVICE

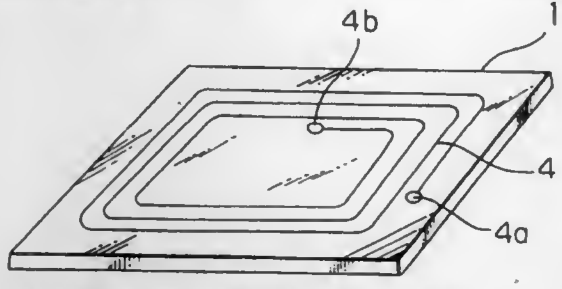
Hiroshi Iwasaki, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 294,354, Aug. 23, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,104

Claims priority, application Japan, Dec. 20, 1993, 5-320243

Int. Cl.^{6} H01Q *11/12;* **H01L** *23/48*

U.S. Cl. 257—679 **5 Claims**



1. A card like semiconductor device comprising:

- a circuit board having a chip region on a main side thereof, said circuit board also including an antenna region separated from said chip region
- an IC chip mounted along said chip region of said circuit board, said IC chip having at least one bump contact extending therefrom for electrically connecting said IC chip to said circuit board along said main side;
- a protective resin layer substantially encapsulating said at least one bump contact;
- a first loop-like antenna pattern for transmitting and receiving a signal, said first loop-like antenna pattern being formed integrally along said antenna region of said circuit board and being spaced from said IC chip for driving said IC chip by inducing power electromagnetically; and
- a second loop-like antenna pattern formed on a rear side of said circuit board, said second loop-like antenna pattern being serially connected to said first loop-like antenna pattern.

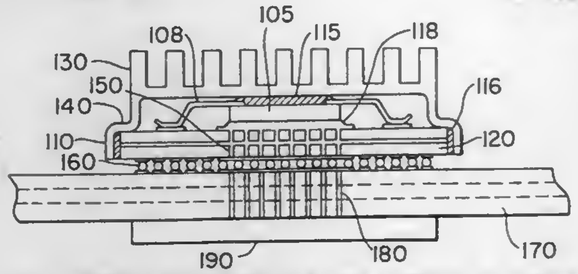
5,710,459
INTEGRATED CIRCUIT PACKAGE PROVIDED WITH MULTIPLE HEAT-CONDUCTING PATHS FOR ENHANCING HEAT DISSIPATION AND WRAPPING AROUND CAP FOR IMPROVING INTEGRITY AND RELIABILITY

Kun-Tang Teng; Shin-Tang Jian, both of Chutung, and Shu-Chen Huang, Young-Mei, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation of Ser. No. 437,408, May 19, 1995, abandoned. This application Aug. 9, 1996, Ser. No. 689,534

Int. Cl.^{6} H01L *23/34;23/12*

U.S. Cl. 257—717 **10 Claims**



1. A printed circuit board (PCB) for receiving an integrated circuit (IC) chip thereon wherein said IC chip including a ball grid array having a plurality of conductive metal balls electrically and thermally connected to said integrated circuit chip, the printed circuit board (PCB) comprising:

- a main board including a plurality of thermal vias penetrating said main board and filled with thermal conductive materials, wherein said thermal vias are in thermal contact with a plurality of said conductive metal balls for dissipating heat generated from said IC chip and wherein said thermal vias filled with said thermal conductive material are electrically insulated from said metal balls and provided only for dissipating heat without providing an active electrical function.

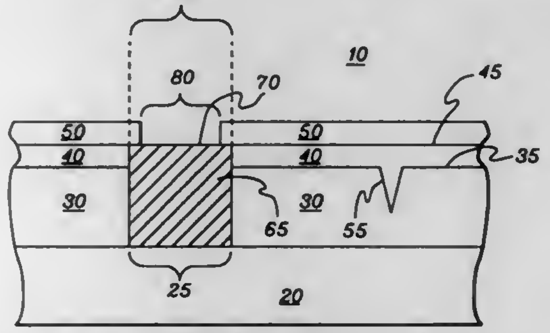
5,710,460
STRUCTURE FOR REDUCING MICROELECTRONIC SHORT CIRCUITS USING SPIN-ON GLASS AS PART OF THE INTERLAYER DIELECTRIC

Robert Kenneth Leidy, Burlington; Jeffrey Scott Miller, Colchester; Jon A. Patrick, Jeffersonville, and Rosemary Ann Previti-Kelly, Richmond, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1995, Ser. No. 426,303

Int. Cl.^{6} H01L *23/48;23/52;* **H01C** *29/40*

U.S. Cl. 257—752 **11 Claims**



1. A semiconductor device comprising:

- (a) a semiconductor substrate having a planar first insulator layer thereon and a polymeric film covering said first insulator layer, said polymeric film having a top surface;
- (b) at least one metal interconnection stud comprising a conductive metal extending through a first via in said polymeric film and said first insulator layer to said semiconductor substrate, said at least one metal interconnection stud having an end planar with said top surface of said polymeric film; and
- (c) a second insulator layer covering said polymeric film and a portion of said end of said at least one metal interconnection stud, said second insulator layer having at least one second via extending from a top surface of said second insulator layer to a corresponding end of said at least one metal interconnection stud.

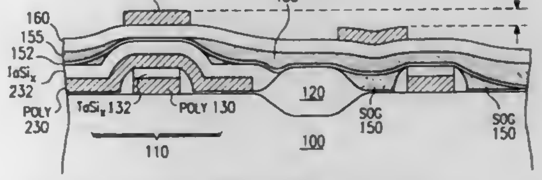
5,710,461
SRAM CELL FABRICATION WITH INTERLEVEL DIELECTRIC PLANARIZATION

Loi Nguyen, Carrollton, and Ravishankar Sundaresan, Garland, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 328,736, Oct. 25, 1995, abandoned, which is a division of Ser. No. 149,338, Dec. 17, 1993, Pat. No. 5,395,785. This application Jan. 10, 1997, Ser. No. 781,429

Int. Cl.^{6} H01L *29/34;23/48;23/522;29/54*

U.S. Cl. 257—754 **18 Claims**



1. An integrated circuit SRAM cell, comprising:

- a substrate which includes at least one substantially monolithic body of semiconductor a first patterned thin-film layer comprising polysilicon;

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- a second patterned thin-film layer comprising polysilicon and overlying said first thin-film layer, said second layer being doped to provide high conductivity;
- a patterned interlevel dielectric overlying portions of said first and second thin-film layers, said interlevel dielectric including multiple independently planarized layers of dielectric material therein, said multiple independently planarized layers including a lower portion of a spin-on glass a middle portion of a dielectric material which is not spin-on glass, and an upper portion of spin-on glass;
- a third patterned thin-film layer comprising substantially undoped polysilicon having a very high resistivity;

wherein said first patterned thin-film layer is configured to provide transistor gates, and said first and second thin-film layers are interconnected to provide an array of latches, and said third thin-film layer overlies said patterned interlevel dielectric and is interconnected through contact holes with said first and second layers to provide resistive loads for each said latch.

5,710,462
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING MULTI-LEVEL WIRING STRUCTURE WITHOUT DOT PATTERN

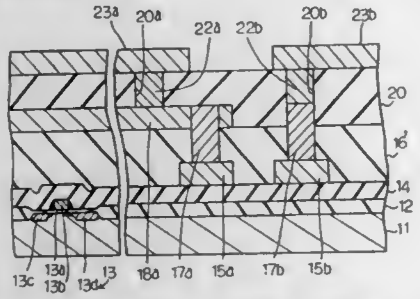
Kazuyuki Mizushima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 16, 1996, Ser. No. 714,564

Claims priority, application Japan, Sep. 14, 1995, 7-262454

Int. Cl.^{6} H01L *23/48;23/522;29/40*

U.S. Cl. 257—758 **3 Claims**



1. A semiconductor integrated circuit comprising:

at least one circuit component forming a part of an integrated circuit; and

a multi-level wiring structure connected to said integrated circuit, and including

lower-level conductive paths,

a first inter-level insulating layer covering said lower-level conductive paths and having first through-holes reaching upper surfaces of said lower-level conductive paths,

first conductive plugs filling said first through-holes so as to be held in contact with said upper surfaces of said lower-level conductive paths and projecting over said first inter-level insulating layer by a certain distance,

at least one middle-level wiring connected to one of said first conductive plugs so as to form an upper surface substantially coplanar with the upper surface of said one of said first conductive plugs,

a second inter-level insulating layer covering said at least one middle-level wiring and said first conductive plugs so that said at least one second through-hole and said another of said first conductive plugs are aligned with each other and having at least one second through-hole reaching the upper surface of another of said first conductive plugs,

at least one second conductive plug filling said at least one second through-hole and held in contact with said upper surface of said another of said first conductive plugs, and

at least one upper-level wiring formed on said second inter-level insulating layer and held in contact with an upper surface of said at least one second conductive plug.

5,710,463
HIGH-VOLTAGE BREAKOVER DIODE

Manfred Vogel, Lerchenstr.; Johann Konrad, Eckenerstr.; Werner Herden, Kappelweg; Richard Spitz, Roemersteinstr., and Herbert Goebel, Spitzaeckerweg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

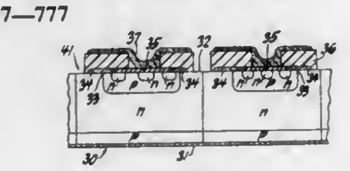
PCT No. PCT/DE95/00615, § 371 Date Jan. 17, 1996, § 102(e) Date Jan. 17, 1996, PCT Pub. No. WO95/31827, PCT Pub. Date Nov. 23, 1995

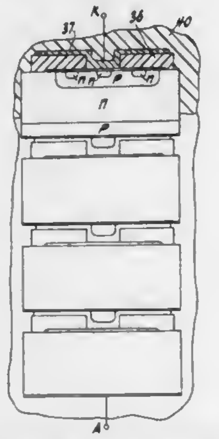
PCT Filed May 10, 1995, Ser. No. 581,585

Claims priority, application Germany, May 17, 1994, 44 17 164.1

Int. Cl.^{6} H01L *23/48*

U.S. Cl. 257—777 **9 Claims**





1. A high-voltage breakover diode comprising:

- a plurality of series-connected breakover diode chips, each of the breakover diode chips having a p-n junction covered by an insulation layer, each of the p-n junctions and each of the insulation layers being disposed on a top side of a corresponding one of the breakover diode chips, the breakover diode chips being produced using planar technology;
- a first electrode disposed on the top side of each of the breakover diode chips;
- a first electrically conductive layer covering each of the first electrodes;
- a second electrode disposed on a bottom side of each of the breakover diode chips;
- a second electrically conductive layer covering each of the second electrodes;
- an electrically insulating plastic layer disposed on the top side of each of the breakover diode chips, each of the electrically insulating plastic layers having a recess in a region of the first electrodes; and
- a connecting layer for electrically and mechanically coupling the breakover diode chips.

5,710,464
POWER DRIVE SYSTEM FOR CONVERTING NATURAL POTENTIAL ENERGY INTO A DRIVING POWER TO DRIVE A POWER GENERATOR

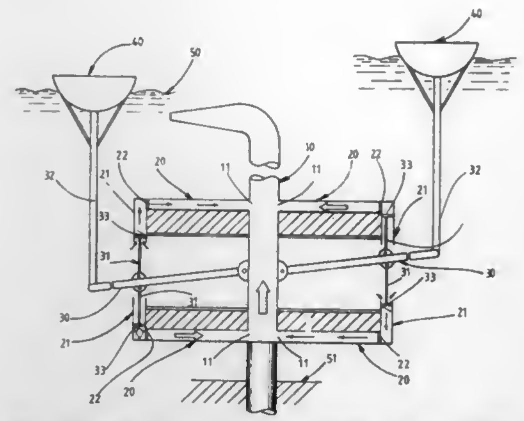
I. Nan Kao; Yee Kon Kao; Yee Jane Kao, and De Ching Lee, all of No. 5, Minchuan St., Hu-Kou Hsiang, Hsinchu, Taiwan

Filed Jan. 17, 1996, Ser. No. 587,520

Int. Cl.^{6} F03B *13/12*

U.S. Cl. 290—53 **7 Claims**

1. A power drive system for converting the potential energy of the rising and falling of the tide into a driving power to drive a power generator, comprising:



- a water collecting barrel vertically fastened to the oceanic crust under the sea level, having two sets of radial through holes circumferentially disposed under said sea level at two elevations on the barrel, and a reduced top end connected to a power input port of a power generator;
- a plurality of water tubes having first and second ends thereof, said first ends being respectively connected to said radial through holes for guiding sea water into said water collecting barrel to move said power input port of said power generator;
- a plurality of rockers, each rocker having a fixed end pivoted to said water collecting barrel between said two elevations and a free end, reciprocating between said second ends of the water tubes at said two elevations;
- a plurality of floating devices floating on the sea level;
- a plurality of connecting rods, disposed beneath the sea level, each having one end fixedly secured to one floating device and an opposite end pivoted to said free end of one rocker; and

water pump means at said second ends of the water tubes distant from respective said radial through holes on the barrel and driven by said rockers to pump water into said water tubes and said water collecting barrel to force said power generator into operation.

5,710,465
APPARATUS FOR DRIVING ELECTRICAL LOADS PROVIDED AT A CAR

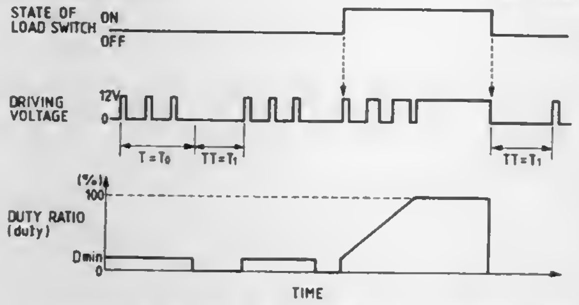
Hiroyuki Saito, and Mitsuru Koni, both of Hitachinaka, Japan, assignors to Hitachi, Ltd., Japan, and Hitachi Car Engineering Co., Ltd., Japan

Filed Aug. 15, 1996, Ser. No. 698,107

Claims priority, application Japan, Aug. 31, 1995, 7-223736

Int. Cl.^{6} B60L *1/00*

U.S. Cl. 307—10.1 **6 Claims**



1. Apparatus for driving electrical loads of a vehicle, comprising:

- a plurality of direction devices, each of said direction devices being provided at each of a plurality of electrical loads arranged at said vehicle, for directing an ON/OFF state of a corresponding one of said electrical loads;
- storage apparatus for storing a preset power feeding increase rate for each of said electrical loads when a corresponding direction devices indicates a state transition from an OFF state to an ON state;
- a plurality of drive devices, each of said driving devices being provided at each of said electrical loads, for feeding power to a corresponding one of said electrical loads and for changing an amount of power fed to said corresponding electrical load from a power source; and
- a control apparatus for checking a switching state of said direction devices provided for each of said electrical loads, and, when said control apparatus has judged that at least one of said direction devices has indicated said state transition, for sending a control signal to a corresponding one of said drive devices such that power is fed to a corresponding one of said electrical loads from said power source in accordance with the preset power feeding increase rate stored in said storage apparatus.

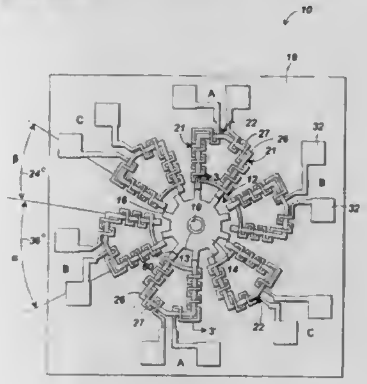
5,710,466
FULLY INTEGRATED MAGNETIC MICROMOTORS AND METHODS FOR THEIR FABRICATION

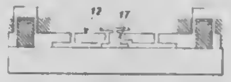
Mark G. Allen, Atlanta, Ga., and Chong-Hyuk Ahn, Cincinnati, Ohio, assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jun. 19, 1995, Ser. No. 492,323

Int. Cl.^{6} H02K *7/00*

U.S. Cl. 310—40 MM **8 Claims**





1. A fully integrated variable reluctance magnetic micromotor, comprising:

- a substrate base;
- a pin fixed to said base and extending in a direction substantially normal thereto;
- a rotor having a plurality of rotor poles radially extending therefrom, said rotor formed in place about said pin, said rotor rotatable about said pin, said rotor surrounded by a gap;
- a rotor cap coupled to the distal end of said pin for securing said rotor;
- a stator including a plurality of stator poles formed on said base and circumferentially arranged about said rotor;
- said poles of said stator configured in pairs electrically connected, each pair of said poles comprising a multilevel core interleaved with a planar meander conductor;
- a plurality of bonding pads formed on said base and connected to said planar meander conductors, said pads adapted for connection to a power source, and

wherein said rotor is on a first level of said multilevel core, said first level adjacent to said substrate base.

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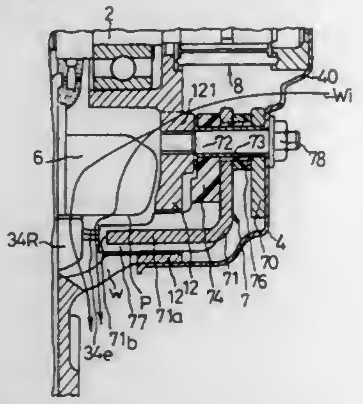
5,710,467
ALTERNATOR

Hitoshi Irie, Nagoya; Hiroshi Ishida, Anjo, and Shin Kusase, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 6, 1996, Ser. No. 597,223
Int. Cl.^{6} H02K *1/32;9/00;11/00*
U.S. Cl. 310—64 **14 Claims**

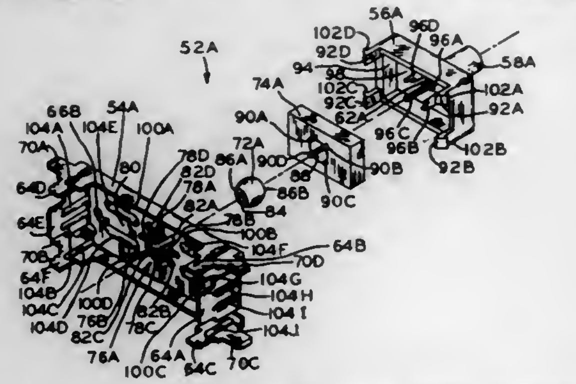


1. An alternator comprising:
- a housing having an end wall and a circumferential wall, said housing having air intakes formed on said end wall thereof and an air outlet formed on said circumferential wall thereof;
- a stator core fixed to said housing and having a stator coil wound therearound, said stator coil having a coil end protruding axially from said stator core;
- a rotor core supported rotatably by said housing inside said stator core;
- a cooling fan located within said housing, radially inwardly of said outlet and fixed on said rotor core to generate cooling wind in a radial direction; and
- a rectifier fixed to said housing and having a radiating plate to cool rectifying elements to rectify AC current generated in said stator coil into DC current, wherein
- said radiating plate of said rectifier has a cylindrical extension extending axially around said cooling fan, said cylindrical extension has an inner diameter larger than an inner diameter of said coil end of said stator coil so that a space is provided between an outer edge of said cooling fan and said cylindrical extension, and a space is provided between said coil end of said stator coil and said cylindrical extension, whereby said cooling wind blows on said cylindrical extension.

5,710,468
END FRAME ASSEMBLY

Ralph E. Church, and Richard W. Shuler, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 23, 1995, Ser. No. 518,256
Int. Cl.^{6} H02K *5/15;5/16*
U.S. Cl. 310—90 **37 Claims**

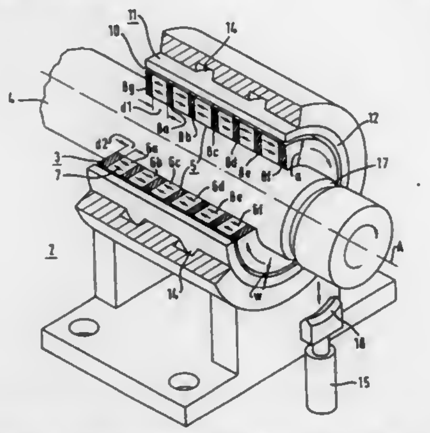


1. An end frame assembly for an electric motor, the motor comprising a stator having a rotor bore and a rotor positioned within the rotor bore, the rotor having a shaft extending therefrom, said assembly comprising:
- an endshield comprising a rotor shaft opening formed therein, said endshield further comprising at least one oil well cover engagement opening and at least one stator core engagement opening;
- a bearing comprising a rotor shaft opening therein, said bearing configured to be aligned with the rotor shaft opening formed in said endshield;
- an oil wick comprising a bearing opening sized to at least partially receive said bearing;
- an oil well cover comprising at least, one endshield engagement tang for aligning with and being secured within the oil well cover engagement opening in said endshield, a rotor shaft opening, and a plurality of bearing alignment fingers radially spaced around the rotor shaft opening in said oil well cover for assisting in maintaining said bearing oriented in a desired position with respect to the rotor shaft; and
- said endshield further comprising a bearing seat for assisting in maintaining said bearing oriented with respect to the rotor shaft and a plurality of bearing alignment finger openings, each of the fingers openings being configured to align with one of said bearing alignment fingers of said oil well cover and to have a portion of said finger pass therethrough.

5,710,469
MAGNETIC BEARING ELEMENT FOR A ROTOR SHAFT USING HIGH-TC SUPERCONDUCTING MATERIALS

Guenter Ries, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

Filed Dec. 13, 1994, Ser. No. 354,295
Claims priority, application Germany, Dec. 13, 1993, 43 42 477.5; Oct. 14, 1994, 44 36 831.3
Int. Cl.^{6} H02K *7/09*
U.S. Cl. 310—90.5 **22 Claims**



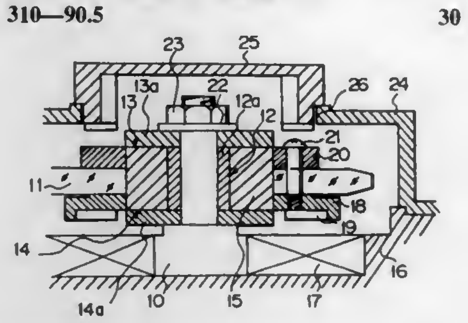
1. A magnetic bearing element for a rotor shaft having radially restoring magnetic forces in the event of a deflection of the rotor shaft from a reference position, said element comprising:
- a) a rotor body containing a first bearing part attached to the rotor shaft;
- b) a second, fixed-position bearing part surrounding said rotor body;
- c) one of the two bearing parts containing an arrangement of a plurality of alternately and axially polarized permanent magnetic elements which are mutually set apart by intervening spaces, said spaces each being completely filled in by an intermediate element made of a ferromagnetic material;
- d) the other of the two bearing parts having a structure including high-T_c superconducting material;
- e) the rotor shaft, in at least one tubular edge area facing the first bearing part, having a non-magnetic material;
- f) the ferromagnetic intermediate elements serving to concentrate the magnetic flux exiting from the permanent magnetic elements on the side facing the superconducting structure;

- g) the superconducting structure having grains made of the high-T_c superconducting material, of which the majority each have an average grain size which is larger than at least the axial thickness of each of the permanent magnetic elements.

5,710,470
HYDRODYNAMIC BEARING ASSEMBLY

Kimio Komata, Saitama-ken; Toshihiro Otani, Kanagawa-ken; Yasushi Hisabe, Kanagawa-ken; Katsutoshi Chiba, Kanagawa-ken, and Akihiro Machida, Kanagawa-ken, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 858,941, Mar. 27, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,907
Claims priority, application Japan, Apr. 4, 1991, 3-099537
Int. Cl.^{6} H02K *7/09*
U.S. Cl. 310—90.5 **30 Claims**

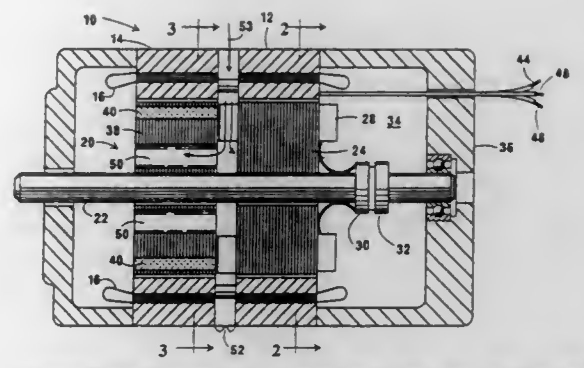


1. A hydrodynamic bearing assembly comprising:
- a support shaft;
- a stationary member on which said support shaft is disposed;
- a rotating member;
- a hydrodynamic radial bearing rotatably mounting said rotating member on said support shaft;
- a lower hydrodynamic thrust bearing supporting said rotating member from below in the axial direction thereof such that the weight of said rotating member acts on said hydrodynamic thrust bearing;
- a magnetic member provided on said rotating member; and
- a magnet disposed on said stationary member opposite said magnetic member so as to exert thereon a magnetic force sufficient to ensure that said magnetic member and said rotating member are attracted by said magnetic force from said magnet to such an extent that said weight of said rotating member acting on said hydrodynamic thrust bearing is offset entirely or reduced.

5,710,471
HYBRID ALTERNATOR WITH FULL OUTPUT AT IDLE

Charles D. Syverson, North Mankato, Minn., and William P. Curtiss, Chelsea, Mass., assignors to Ecoair Corp., New Haven, Conn.

Division of Ser. No. 251,530, Jun. 6, 1994, Pat. No. 5,502,368, which is a continuation-in-part of Ser. No. 77,248, Jun. 14, 1993, Pat. No. 5,397,975. This application Jun. 2, 1995, Ser. No. 460,037
Int. Cl.^{6} H02K *16/00;* **H02H** *7/06*
U.S. Cl. 310—114 **2 Claims**



1. An alternator comprising:
- a rotor mounted for rotation on a shaft; and
- a stator surrounding the rotor and separated therefrom by an air gap, the stator having a first longitudinal region formed of magnetic material and a second longitudinal region formed of magnetic material, the second longitudinal region being magnetically separated from the first longitudinal region by a stator gap having one or more cooling air passages, the cooling air passages allowing radial air flow of ambient cooling air from a point directly outside the alternator to a point within the stator gap between the first and second longitudinal regions of the stator and then into the air gap between the stator and the rotor;
- the rotor including:
  - a wound field rotor portion mounted on the shaft for rotation within the first longitudinal region of the stator, the wound field rotor portion having a rotor winding, and
  - a permanent magnet rotor portion mounted on the shaft in longitudinally spaced relation to the wound field rotor portion for rotation within the second longitudinal region of the stator the permanent magnet rotor portion having a plurality of magnetic poles.

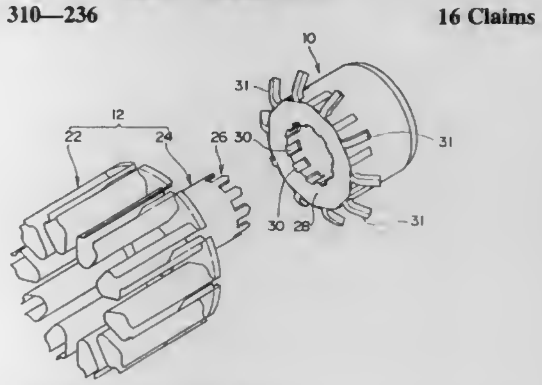
5,710,472

Patent Not Issued For This Number

5,710,473
FIXING STRUCTURE FOR A COMMUTATOR, INSULATOR FOR A MOTOR CORE, AND MOTOR STRUCTURE

Tadahisa Nobe; Takeshi Yanagiya; Katsuhiko Torii, and Yuichi Terada, all of Shizuoka-ken, Japan, assignors to Asmo Co., Ltd., Shizuoka-ken, Japan

Filed Sep. 8, 1995, Ser. No. 525,217
Claims priority, application Japan, Sep. 9, 1994, 6-216376
Int. Cl.^{6} H02K *13/00*
U.S. Cl. 310—236 **16 Claims**



1. A rotor for a motor comprising:
- an armature shaft;
- a commutator that has a core portion formed from an insulating material and that is positioned on said armature shaft;
- a motor core positioned on said armature shaft and around which a winding is wound; and
- an insulator insulating said motor core, wherein
- a plurality of concave insertion portions are formed at predetermined intervals along a peripheral direction on an inner peripheral surface of the core portion of said commutator in which said armature shaft is position, and
- a plurality of convex connecting portions are provided at a commutator side of said insulator, said connecting portions being formed at predetermined intervals along a peripheral

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direction and inserted into said insertion portions positioned between said armature shaft and an inner peripheral surface of the core portion of said commutator so as to connect said commutator and said insulator.

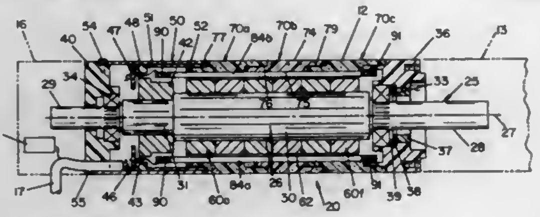
5,710,474
BRUSHLESS DC MOTOR

Robert L. Mulgrave, Sandown, N.H., assignor to Cleveland Machine Controls, Cleveland, Ohio

Filed Jun. 26, 1995, Ser. No. 494,405

Int. Cl.^{6} H02K *37/00*

U.S. Cl. 310—254 **20 Claims**



1. A brushless, slotless motor comprising:
- a rotor having a longitudinally-extending rotatable shaft, an annular permanent magnet affixed to said shaft and rotatable therewith, said magnet having a continuous, magnetized outer cylindrical edge surface defining a plurality of arcuate pole faces juxtaposed one another, each pole face having a polarity opposite that of an adjacent, juxtaposed pole face so as to generate high-intensity, substantially unidirectional magnetic field lines at said pole faces;
- a plurality of coils corresponding in number to said plurality of pole faces and formed in a cylindrical array coaxial with and spaced radially outward from said cylindrical edge surface but closely juxtaposed thereto without any intervening ferromagnetic material between said coils, each coil having electrical conductors formed in an array of a predetermined number of turns and including at least two parallel sides with centerlines arranged generally parallel to said shaft;
- each pole face having a circumferential dimension and each coil having a circumferential dimension between said parallel sides of about two-thirds the circumferential dimension of said pole face;
- a housing surrounding said coils and rotor;
- commutation sensing means for detecting the magnitude and polarity of the magnetic field produced by said magnet; and
- control means for providing power to selected coils in response to said sensing means.

5,710,475
INSULATION OF HIGH THERMAL CONDUCTIVITY AND APPARATUS CONTAINING SAME

Patricia Chapman Irwin, Altamont; Charles Edward Baumgartner, Niskayuna, and Donald Allen Bolon, Charlton, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 22, 1995, Ser. No. 561,997

Int. Cl.^{6} H02K *1/12;* **B32B** *15/08*

U.S. Cl. 310—254 **10 Claims**

1. A turbine generator comprising a plurality of stator bars, each of which is insulated with a coating of a composition comprising a high temperature-resistant thermoplastic resin which is a polyimide, polyphthalamide, polyetherketone, polysulfone, polydiorganosiloxane, polyestercarbonate or liquid crystalline polyester, having uniformly dispersed therein at least one nitride selected from the group consisting of boron nitride and aluminum nitride in a proportion effective to produce a thermal conductivity in said composition of at least 0.35 W/m°K at 180° C.

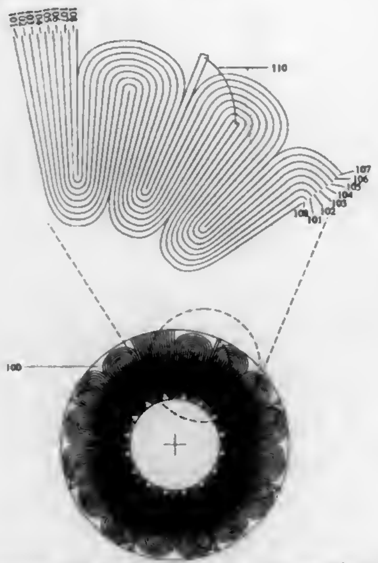
5,710,476
ARMATURE DESIGN FOR AN AXIAL-GAP ROTARY ELECTRIC MACHINE

Michael J. Ampela, Albany, N.Y., assignor to InterScience, Inc., Troy, N.Y.

Filed Jan. 31, 1995, Ser. No. 381,359

Int. Cl.^{6} H02K *3/04*

U.S. Cl. 310—268 **9 Claims**



1. An armature for an axial gap rotary machine comprising a plurality of substantially radial conducting paths on an armature face, where each of said plurality of radial conducting paths are adjacent electrically isolated from one another, and each of the conducting paths traverse said armature face in a radially serpentine fashion and are substantially equal in length to one another by occupying incremental path positions so as to occupy every path position once in traversal of said armature face without overlapping other said conducting paths.

5,710,477

Patent Not Issued For This Number

5,710,478
FIELD EMITTER HAVING SOURCE, CHANNEL, AND DRAIN LAYERS

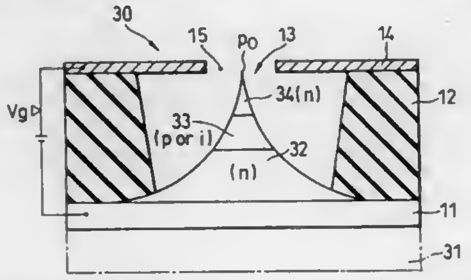
Seigo Kanemaru, and Junji Itoh, both of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 14, 1996, Ser. No. 698,260

Claims priority, application Japan, Aug. 25, 1995, 7-217107

Int. Cl.^{6} H01J *1/30;19/24*

U.S. Cl. 313—336 **17 Claims**



1. A field emission device having a three-dimensional emitter rising from a base fixed on a base member serving as a support member and adapted to emit cold electrons from an electric field concentration formed at a distal end thereof under application of an electric field produced by applying a voltage to an extractor gate provided near the distal end, the field emission device comprising:

- an n-type semiconductor source layer provided on the base side of the emitter;
- an n-type semiconductor drain layer provided on the distal end side of the emitter; and
- a channel region layer provided between the source layer and the drain layer for controlling an amount of current passage in dependence on the magnitude of the applied electric field;

wherein:
- said electric field concentration comprises one of an electric field concentration tip and an electric field concentration edge; and
- said electric field, generated by application of said voltage to the extractor gate in proportion to the voltage applied thereto, also being applied to the channel region layer for controlling the amount of current passage.

5,710,479
COLOR DISPLAY TUBE COMPRISING AN IN-LINE ELECTRON GUN WITH ASTIGMATISM TUNING ELEMENT

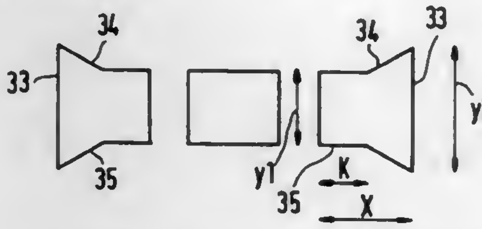
Jan P. Adriaanse; Johannes H. Bohlander, and Willibrordus A.J.A. Van Der Poel, all of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, N.Y., N.Y.

Filed Jan. 2, 1996, Ser. No. 582,007

Claims priority, application European Pat. Off., Jan. 13, 1995, 95200070

Int. Cl.^{6} H01J *29/46*

U.S. Cl. 313—412 **3 Claims**



1. A color display tube comprising a luminescent screen and an in-line electron gun for producing central and first and second outer electron beams, said electron gun including first and second electrodes for producing a main focusing lens field for focusing the electron beans at the screen, characterized in that at least one of the first and second electrodes includes a correction element for tuning astigmatism of the main focusing lens field to correct core haze asymmetry and beam displacement, said correction element comprising central and first and second outer apertures positioned for passing the respective electron beams, each of said first and second outer apertures being funnel shaped and including:
- a. an inner area, closer to the central aperture, shaped for producing a quadrupole field component; and
- b. an outer diverging area, further from the central aperture, shaped for producing a six-pole field component.

5,710,480
COLOR CATHODE RAY TUBE HAVING A SMALL NECK DIAMETER

Go Uchida; Shoji Shirai, and Kazuhisa Oshita, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

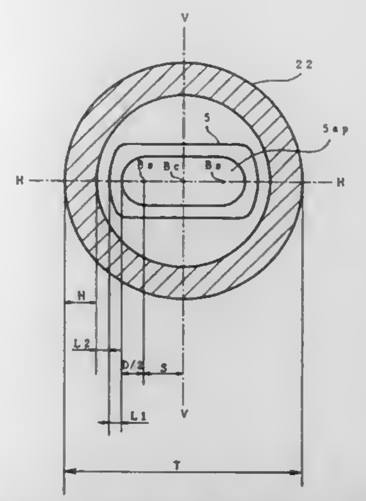
Filed Dec. 28, 1995, Ser. No. 580,529

Claims priority, application Japan, Jan. 9, 1995, 7-001309

Int. Cl.^{6} H01J *29/51;29/62*

U.S. Cl. 313—414 **12 Claims**

1. A cathode ray tube comprising at least an evacuated envelope comprising a panel portion having a phosphor screen on an inner surface thereof, a neck portion, a funnel portion connecting said panel portion and said neck portion,



- a deflection device mounted in a vicinity of a transition region between said funnel portion and said neck portion, and
- an in-line electron gun housed in said neck portion,
- said in-line electron gun including
- an electron beam generating section comprising at least a cathode, a control electrode and an accelerating electrode and for generating and directing three electron beams in a horizontal plane toward said phosphor screen,
- a main lens section comprising
- a focus electrode including
- a sub-electrode having a single opening at one end thereof for passing the three electron beams, said single opening having a diameter larger in a horizontal direction than a diameter thereof in a vertical direction, and
- a plate electrode placed inside said sub-electrode and forming apertures for passing the three electron beams respectively,
- an anode facing said one end of said sub-electrode,
- said sub-electrode and said anode forming a main lens therebetween, and
- an electrostatic quadrupole lens, a lens strength thereof being varied with application thereon of a voltage varying with an increase in a deflection angle of the three electron beams,
- wherein a distance from said main lens to said phosphor screen is not larger than 300 mm, an outer diameter T of said neck portion housing the in-line electron gun satisfies a following inequality:

$$23.2\ \text{mm} \leqq T \leqq 25.9\ \text{mm},$$

and
- a value D of twice a distance from a center of a trajectory of a side electron beam of the three electron beams to a vertical edge of said single opening satisfies a following inequality:

$$5.0\ \text{mm} \leqq D \leqq 6.5\ \text{mm}.$$

5,710,481
CRT ELECTRON GUN FOR CONTROLLING DIVERGENCE ANGLE OF ELECTRON BEAMS ACCORDING TO INTENSITY OF CURRENT

Myung Ho Park, Seoul, and Jin Yeal Choi, Youngcheon, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 300,453, Sep. 2, 1994, abandoned.

This application Nov. 27, 1996, Ser. No. 756,589

Claims priority, application Rep. of Korea, Sep. 4, 1993, 17752/1993

Int. Cl.^{6} H01J *29/50*

U.S. Cl. 313—414 **3 Claims**

1. An electron gun for a cathode ray tube comprising:
- a three electrode part having a part formed of a plurality of inline electron beam emitting means for emitting electron beams and a part formed of control electrodes and accelera-

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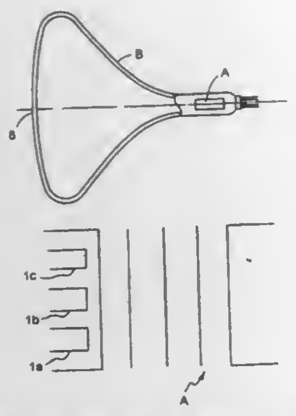


tion electrodes for controlling a quantity of the emission and forming a crossover of the electron beams;

a plurality of focusing electrodes and acceleration electrodes forming a main electrostatic focusing lens for focusing the electron beam onto a screen, said electron beam emitting means and said plurality of electrodes being aligned in line with an axis of the cathode ray tube and spaced in a certain interval successively; and,

a supplementary electrode having a fixed thickness and configured to receive a cathode dynamic voltage synchronized to a cathode signal, said supplementary electrode being positioned between an acceleration electrode and a focusing electrode to form an enlargement electrostatic lens for controlling a divergence angle of an electron beam according to the intensity of a current applied to the supplementary electrode.

5,710,482

Patent Not Issued For This Number

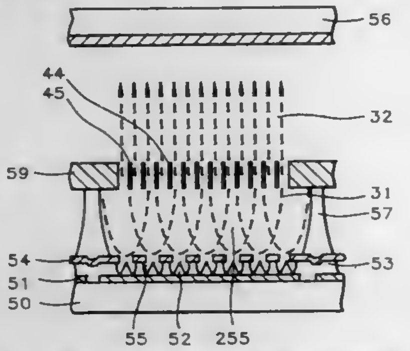
5,710,483
FIELD EMISSION DEVICE WITH MICROMESH COLLIMATOR

Chao-Chi Peng, Chinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 8, 1996, Ser. No. 629,160

Int. Cl.^{6} H01J ***9/02***

U.S. Cl. 313—497 **21 Claims**



1. A cold cathode field emission display comprising:

an insulating substrate;

cathode columns for said display, formed of parallel spaced conductors on said substrate;

a first dielectric layer on said cathode columns;

gate lines on said first dielectric layer, formed of parallel spaced conductors, over and orthogonal to, said cathode columns;

first openings, multiply located at all overlaps of said cathode columns and said gate lines, extending through said gate lines and through said first dielectric layer;

cone shaped field emission microtips on said cathode columns, each microtip being located inside one of said first openings;

a second dielectric layer, on the gate lines;

conductive focus lines, on said second dielectric layer, over said cathode columns;

second openings, in said second dielectric layer, singly located over said overlaps;

meshed electrodes, comprising holes in a membrane, formed from those parts of the focus lines that overlie said second openings; and

a conductive phosphor screen located above the focus lines.

5,710,484
ORGANIC THIN FILM ELECTROLUMINESCENT DEVICE HAVING A CARBON LAYER BETWEEN THE HOLE INJECTION LAYER AND THE ORGANIC THIN FILM LAYER

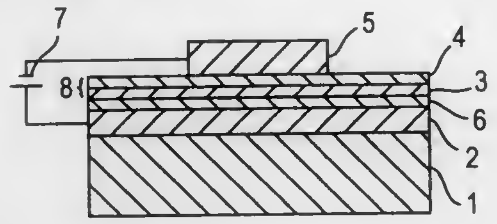
Hideaki Iwanaga, Fukuoka; Akira Gyoutoku, Saga, and Shintarou Hara, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 12, 1995, Ser. No. 501,579

Claims priority, application Japan, Jul. 13, 1994, 6-161185

Int. Cl.^{6} H05B ***33/26***

U.S. Cl. 313—504 **7 Claims**



4. An organic thin film EL (electroluminescent) device comprising:

an organic thin film layer that emits light upon an application of an electric field thereto;

an electron injection electrode disposed on one surface of said organic thin film layer;

a carbon thin film disposed on another surface of said organic thin film layer; and

a hole injection electrode formed on the other side of said carbon thin film.

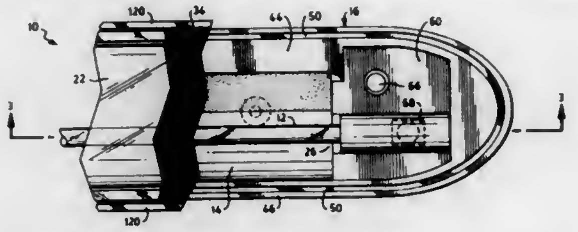
5,710,485
NEON LAMP ASSEMBLY WITH RF NOISE SHIELD

Robert J. Schmitt, Jr., Raymond, N.H., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Nov. 13, 1995, Ser. No. 557,788

Int. Cl.^{6} H01J ***17/16***

U.S. Cl. 313—634 **19 Claims**



1. A gas discharge lamp assembly comprising:

a housing including an interior cavity having a conductive, reflecting surface, a first sealing edge substantially encircling the cavity with the conductive reflecting surface extending onto the sealing edge, the housing further having an aperture for emission of light;

an elongated, tubular, positive column gas discharge lamp mounted within the cavity in said housing for emission of light through said aperture;

a light-transmissive lens covering the aperture in said housing, having a second sealing edge substantially co-extensive with the first sealing edge;

electrical connectors for coupling electrical energy to said gas discharge lamp;

a light-transmissive, conductive mesh with an integral extension, the conductive mesh covering the aperture in said housing, extending to be substantially co-extensive with and between the first sealing edge, and the second sealing edge, and in contact with the reflective, conductive coating, the mesh being retained between said housing and said lens thereby forming with the reflective conductive surface an RF energy enclosure for the gas discharge lamp, substantially blocking RF energy emitted from said gas discharge lamp; the integral extension extending between the first sealing edge and the second sealing edge to the exterior of the housing to electrically connect the conductive mesh and said reflecting surface to a reference potential.

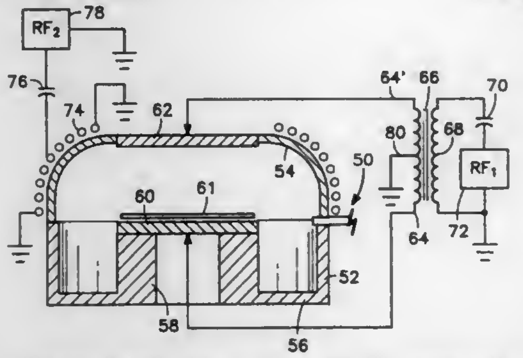
5,710,486
INDUCTIVELY AND MULTI-CAPACITIVELY COUPLED PLASMA REACTOR

Yan Ye, Campbell; Hiroji Hanawa, Sunnyvale; Diana Xiaobing Ma, Saratoga, and Gerald Zheyao Yin, Cupertino, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed May 8, 1995, Ser. No. 436,513

Int. Cl.^{6} H01J ***7/24***

U.S. Cl. 315—111.21 **31 Claims**



1. A capacitively and inductively coupled RF plasma reactor for processing a semiconductor wafer inside a vacuum chamber of said reactor, comprising:

a pair of parallel capacitive electrodes facing each other across at least a portion of the chamber;

an inductive coil wound around a portion of the chamber; and

a common RF source;

means for reactively splitting RF power among at least two of:
  (a) a first one of said capacitive electrodes, (b) a second one of said capacitive electrodes and (c) said inductive coil.

5,710,487
BALLAST CIRCUIT FOR GASEOUS DISCHARGE LAMPS WITHOUT INDUCTIVE ELECTRICAL COMPONENTS OR FILAMENTS

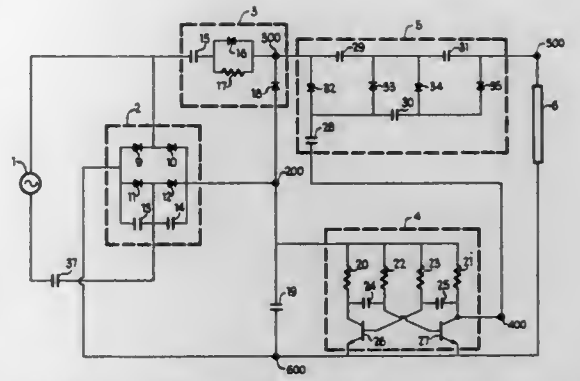
Francisco Javier Velasco Valcke, Carrera 4 A No. 31-79, Cali, Colombia

Filed Aug. 24, 1994, Ser. No. 295,369

Int. Cl.^{6} H05B ***37/00***

U.S. Cl. 315—205 **7 Claims**

1. A ballast circuit for igniting and continually illuminating a gaseous discharge lamp, the ballast circuit being operable without the use of any inductive electrical components, and the ballast circuit being operable without the use of any filaments, the ballast circuit comprising:



(a) means for rectifying and multiplying an initial supply voltage signal from an AC power source;

(b) means for filtering out AC frequency ridges in a rectified and multiplied supply voltage signal;

(c) means for receiving said rectified and multiplied supply voltage signal and outputting a high frequency signal; and

(d) means for amplifying an average of said rectified and multiplied supply voltage signal and said high frequency signal to ignite a gaseous discharge lamp.

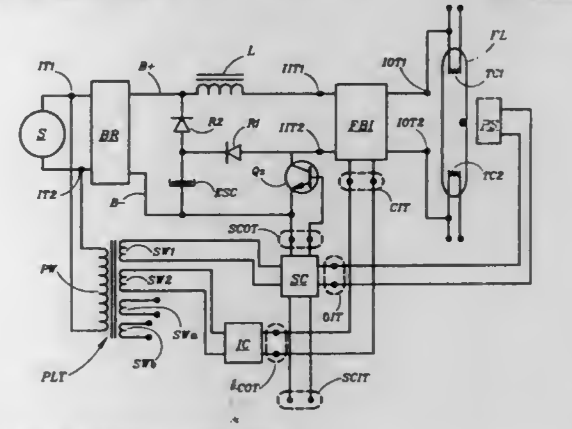
5,710,488
LOW-FREQUENCY HIGH-EFFICACY ELECTRONIC BALLAST

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 503,094, Apr. 2, 1990, abandoned, which is a continuation of Ser. No. 944,191, Dec. 22, 1986, abandoned. This application Mar. 23, 1992, Ser. No. 859,616

Int. Cl.^{6} H05B ***41/36***

U.S. Cl. 315—224 **12 Claims**



1. An arrangement comprising:

a source operative to provide an AC voltage at a pair of AC terminals; and

a circuit connected with the AC terminals and operable to power a gas discharge lamp; the circuit being characterized by:
  (i) providing a conditioned voltage at a pair of terminals; and
  (ii) including a transistor conducting intermittently at a time-varying switching frequency, thereby to maintain the absolute magnitude of the conditioned voltage substantially constant.

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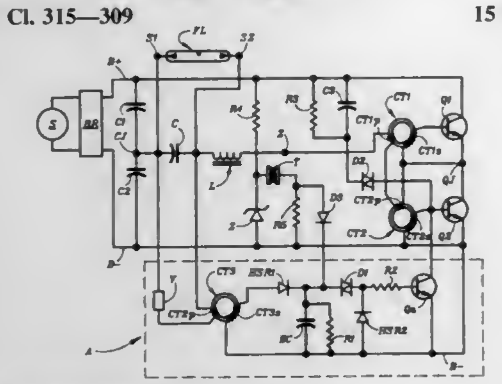
5,710,489
OVERVOLTAGE AND THERMALLY PROTECTED ELECTRONIC BALLAST

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 771,801, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 88,592, Aug. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 720,387, Apr. 5, 1985, Pat. No. 4,663,571, and a continuation-in-part of Ser. No. 720,386, Apr. 5, 1985, Pat. No. 4,675,576, and a continuation-in-part of Ser. No. 691,171, Jan. 14, 1985, Pat. No. 4,644,228, and a continuation-in-part of Ser. No. 686,447, Dec. 26, 1984, Pat. No. 4,638,395, and a continuation-in-part of Ser. No. 677,562, Dec. 3, 1984, Pat. No. 4,698,553, and a continuation-in-part of Ser. No. 612,058, May 18, 1984, Pat. No. 4,667,131, and a continuation-in-part of Ser. No. 605,479, Apr. 30, 1984, Pat. No. 4,626,953, which is a continuation-in-part of Ser. No. 720,387, Apr. 5, 1985, Pat. No. 4,663,571, which is a continuation-in-part of Ser. No. 720,386, Apr. 5, 1985, Pat. No. 4,675,576, which is a continuation-in-part of Ser. No. 691,171, Jan. 14, 1985, Pat. No. 4,644,228, which is a continuation-in-part of Ser. No. 686,447, Dec. 26, 1984, Pat. No. 4,638,395, which is a continuation-in-part of Ser. No. 677,562, Dec. 3, 1984, Pat. No. 4,698,553, which is a continuation-in-part of Ser. No. 612,058, May 18, 1984, Pat. No. 4,667,131, which is a continuation-in-part of Ser. No. 605,479, Apr. 30, 1984, Pat. No. 4,626,953, and a continuation-in-part of Ser. No. 640,240, Aug. 13, 1984, Pat. No. 4,563,719, and a continuation-in-part of Ser. No. 506,420, Jun. 21, 1983, Pat. No. 4,581,562, and a continuation-in-part of Ser. No. 500,841, Jun. 3, 1983, Pat. No. 4,538,095, and a continuation-in-part of Ser. No. 495,540, May 17, 1983, Pat. No. 4,554,487, and a continuation-in-part of Ser. No. 481,714, Apr. 4, 1983, Pat. No. 4,507,698, and a continuation-in-part of Ser. No. 456,276, Feb. 22, 1983, Pat. No. 4,503,363, and a continuation-in-part of Ser. No. 411,263, Aug. 25, 1982, Pat. No. 4,461,980. This application Dec. 2, 1994, Ser. No. 348,327

Int. Cl.^{6} G05F *1/00*

U.S. Cl. 315—309 **15 Claims**



1. An arrangement comprising:

a source operative to provide a DC voltage across a pair of DC terminals;

a lamp holder having a pair of lamp sockets operative to receive and hold a gas discharge lamp; the lamp holder having a pair of socket terminals; and

an assembly connected with the DC terminals and the socket terminals; the assembly being functional: (i) as long as the lamp is connected with the socket terminals, to deliver a lamp current thereto; and (ii) whenever the lamp is not so connected, to provide across the socket terminals a high frequency AC voltage that is amplitude-modulated at a low frequency; high frequency being defined as a frequency higher than 10 kHz; low frequency being defined as a frequency lower than 100 Hz; the assembly being further characterized by not including a thermal circuit breaker functional to make and break connection between two terminals by way of a thermally activated mechanical contactor means.

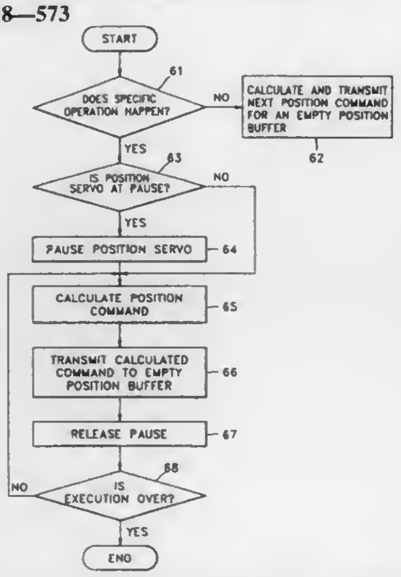
5,710,490
METHOD OF REDUCING EXECUTION TIME FOR POSITION COMMAND IN POSITION SERVO SYSTEM

Sang-jin Choi, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 2, 1996, Ser. No. 581,910

Int. Cl.^{6} G05B *19/25;* **G06G** *7/64*

U.S. Cl. 318—573 **2 Claims**


START
61
DOES SPECIFIC OPERATION HAPPEN?
NO
CALCULATE AND TRANSMIT NEXT POSITION COMMAND FOR AN EMPTY POSITION BUFFER
62
YES
63
IS POSITION SERVO AT PAUSE?
NO
YES
PAUSE POSITION SERVO
64
CALCULATE POSITION COMMAND
65
TRANSMIT CALCULATED COMMAND TO EMPTY POSITION BUFFER
66
RELEASE PAUSE
67
68
NO
IS EXECUTION OVER?
YES
END

1. A method of reducing execution time for a position command in a position servo system, comprising the steps of:

(a) transmitting a position command from a main controller to a position servo at a first predetermined time interval;

(b) interpolating a part of said transmitted position command at a second predetermined time interval which is less than said first time interval;

(c) executing said interpolated position command;

(d) pausing said position servo so as to pause position command execution for a predetermined period of time;

(e) calculating a non-executed part of said position command to provide a calculated position command and buffering said calculated position command in said position servo, during said predetermined pause time period; and

(f) executing said non-executed part of the position command, after said predetermined pause time period.

5,710,491
DRIVING CONTROL DEVICE FOR VIBRATION WAVE MOTOR

Tadao Takagi; Ryoichi Suganuma, both of Yokohama, and Daisuke Saya, Urayasu, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 190,570, Feb. 2, 1994, which is a continuation of Ser. No. 645,329, Jan. 24, 1991, abandoned, which is a continuation of Ser. No. 423,331, Oct. 17, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 476,554

Claims priority, application Japan, Oct. 19, 1988, 63-264726; Dec. 23, 1988, 63-326919

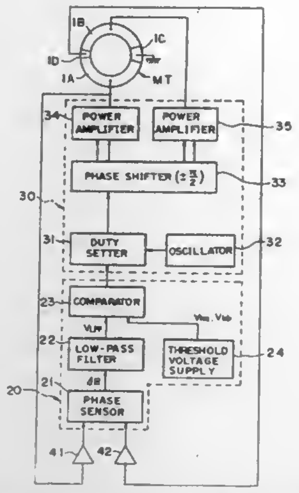
Int. Cl.^{6} H02N *1/00;* **H01L** *41/08*

U.S. Cl. 318—116 **19 Claims**

1. A control device for an ultrasonic vibration motor in which vibrations are generated on an elastic body by at least a pair of alternating voltages applied to an electromechanical transducer provided on the elastic body, said alternating voltages being out of phase to each other, comprising:

a power supply circuit electrically connected to said electromechanical transducer, which applies said at least a pair of alternating voltages to said electromechanical transducer; and

a voltage control system including a state judgement circuit and a voltage control circuit;



wherein said state judgement circuit is electrically connected to said motor and is constructed to judge whether the motor is in an abnormal operating state in which said motor may stop operating, said motor being constructed so that it operates in a normal operating state corresponding to a first frequency characteristic curve and in the abnormal operating state corresponding to a second frequency characteristic curve having frequencies in common with said first frequency characteristic curve so that said motor can operate in either said normal operating state or said abnormal operating state at the same frequency, a predetermined portion of said first frequency characteristic curve defining a normal operating frequency range of said motor,

wherein said voltage control circuit is electrically connected to said power supply circuit and increases the voltage magnitude of said at least a pair of alternating voltages when said state judgement circuit judges the abnormal operating state in order to place said motor in said normal operating state,

wherein said state judgement circuit includes a detecting circuit which detects a monitor voltage generated in response to a deformation of said electromechanical transducer, and a comparing circuit which compares a phase difference between the monitor voltage and said at least a pair of alternating voltages with a reference value, and

wherein said comparing circuit includes a circuit which generates an output voltage corresponding to the phase difference between the monitor voltage and said at least a pair of alternating voltages, and first and second comparators which respectively compare the output voltage with a first threshold voltage and a second threshold voltage.

5,710,492
APPARATUS FOR MONITORING AND STABILIZING POWER SWING IN A POWER SYSTEM BY UTILIZING A POWER ELECTRONICS TECHNIQUE

Hiroo Konishi, Hitachinaka; Masahiko Amano, Hitachioota; Masahiro Watanabe, and Masashi Nishimura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,599

Claims priority, application Japan, Dec. 22, 1994, 6-319745

Int. Cl.^{6} H02P *5/16;* **G05F** *1/00*

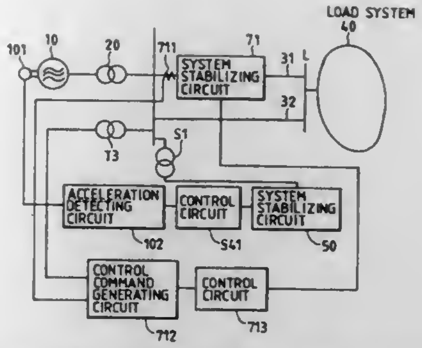
U.S. Cl. 318—156 **38 Claims**

1. A power system stabilizing apparatus for a power system in which generators are connected to load systems, comprising:

at least a semiconductor switch for stabilizing said power system;

means for controlling said semiconductor switch so as to stabilize power swings of said power system, corresponding to operation states of said power system;

an acceleration detecting circuit for detecting an acceleration and deceleration of at least one of said generators, by which


LOAD SYSTEM
40
101
10
20
711
71
SYSTEM STABILIZING CIRCUIT
31
L
32
13
S1
ACCELERATION DETECTING CIRCUIT
CONTROL CIRCUIT
SYSTEM STABILIZING CIRCUIT
102
S41
50
CONTROL COMMAND GENERATING CIRCUIT
CONTROL CIRCUIT
712
713

occurrence of power swings is monitored and detected, based on changes of said detected acceleration and deceleration; and

wherein said controlling means controls said semiconductor switch, corresponding to said detected acceleration.

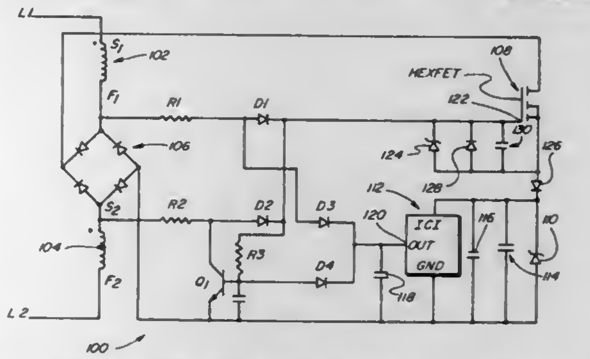
5,710,493
CIRCUIT AND METHOD FOR ALTERNATING CURRENT MOTOR CONSTRUCTIONS

Charles J. Flynn, Greenwood, Mo., assignor to Magnetic Revolutions Limited, L.L.C., St. Louis, Mo.

Filed Aug. 25, 1995, Ser. No. 519,465

Int. Cl.^{6} H02K *29/08;* **H02P** *6/14*

U.S. Cl. 318—254 **28 Claims**



1. A method of controlling the operation of an AC motor having a rotor mounted for rotation about an axis, the rotor having a peripheral portion with at least one pair of north and south poles adjacent to the periphery thereof, and a motor coil,

the method including the steps of connecting the motor coil in series with the input terminals of a full wave rectifier circuit across a source of alternating current energy,

connecting the output terminals of the full wave rectifier circuit across a controllable switch device, and

controlling the opening and closing of the switch device including positioning a sensing member adjacent to the peripheral portion of rotor, the opening and closing of the switch device controlling the direction of current flow through the motor coil.

20. An alternating current motor control circuit comprising.

a rotor mounted for rotation, at least one motor field coil connected in series with the input terminals of a diode bridge circuit across a source of alternating input energy, controllable switch means and means to control the opening and closing of the switch means including a control circuit connected between the input and output terminals of the diode bridge circuit and means for controlling the switch means to cause current to flow through the at least one motor field coil in the same direction on alternate half cycles of the alternating current input.

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5,710,494

SINGLE-MOTOR DRIVE FOR A SHAFTLESS SPINNING ROTOR AND METHOD FOR OPERATING SAME

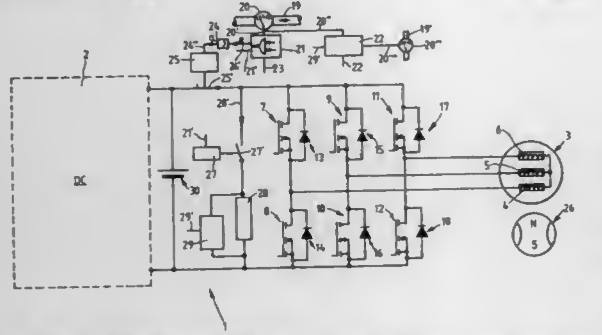
Anton Paweletz, Fellbach, Germany, assignor to SKF Textilmaschinen-Komponenten GmbH, Stuttgart, Germany

Filed Jun. 14, 1995, Ser. No. 490,338

Claims priority, application Germany, Jun. 18, 1994, 44 21 406.5

Int. Cl.^{6} H02K *7/10*

U.S. Cl. 318—366 **14 Claims**



1. In a shaftless spinning rotor assembly for an open end spinning machine, the spinning rotor assembly including an axial field motor having a stator, stator phase excitation circuits, and a permanent-magnetic rotor defining a spinning chamber, the stator and the rotor having respective bearing surfaces facing one another, and a combined magnet/gas bearing having gas outlet openings connected with a gas supply and communicated between the respective bearing surfaces of the rotor and the stator for forming a gas cushion for supporting the rotor spaced from the stator, the improvement comprising means for detecting an interruption of the gas supply, means for braking the rotor and means for actuating said braking means in response to detection of an interruption in the gas supply by said detecting means, said actuating means being operative to connect said braking means to a power supply to the stator, said braking means being operative to slow rotation of the rotor at a rate sufficient to reduce the rotational speed below a predetermined speed which would result in damage to the respective bearing surfaces, said reduction occurring before the beating surface of the rotor engages the bearing surface of the stator.

5,710,495

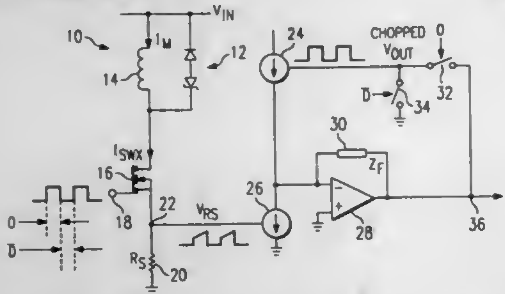
APPARATUS AND METHOD FOR MEASURING AVERAGE MOTOR CURRENT

Dale J. Skelton, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 14, 1996, Ser. No. 702,416

Int. Cl.^{6} H02K *29/04*

U.S. Cl. 318—434 **15 Claims**



1. Apparatus for measuring an average motor current of a motor regulated by a power switch switching at a predetermined duty cycle, comprising:

a sensor coupled to said motor measuring a switch current through said power switch;

a first current source coupled to said sensor and generating a first current substantially proportional to said switch current;

a second current source coupled to said first current source and generating a second current substantially proportional to a chopped output voltage;

first circuitry receiving a difference between said first and second currents and generating an output voltage indicative of said average motor current at an output node in response thereto; and

second circuitry coupled to said second current source for chopping said output voltage into said chopped output voltage having the same predetermined duty cycle as said power switch.

5,710,496

DRIVE INCLUDING PID POSITION FEEDBACK DRIVE AND CONTROL SYSTEM FED BY SPEED CONTROL UNIT AND X-RAY DEVICE COMPRISING SUCH A DRIVE

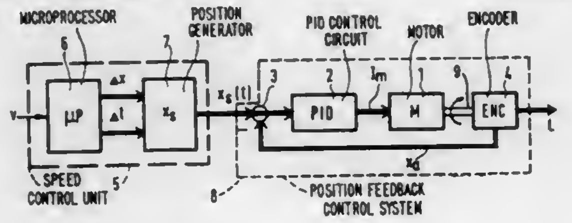
Marcel A.G. Boom, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1995, Ser. No. 521,187

Claims priority, application European Pat. Off., Sep. 1, 1994, 94202500

Int. Cl.^{6} H02B *7/00*

U.S. Cl. 318—610 **20 Claims**



1. A drive, comprising:

a motor with a motor shaft;

a feedback control system for positioning the motor shaft in a nominal position represented by a position command signal, and an input for receiving the position command signal, and

a speed control unit having an input for receiving a velocity command, said speed control unit being arranged to produce the position command signal in response to the velocity command such that the position command signal represents a series of nominal positions which are presented with differences (Δx) between successively presented nominal positions having substantially a same value, and time intervals (Δt) between successively presented nominal positions having substantially a same value, by at least calculating the value of the time intervals (Δt) such that the value of the time intervals (Δt) is changed in response to a change in the velocity control signal, and to supply the position command signal to the input of the feedback control system.

5,710,497

POSITIONING CONTROL DEVICE AND HEAD POSITIONING CONTROL DEVICE

Shigeyuki Yanagimachi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 617,650

Claims priority, application Japan, Mar. 17, 1995, 7-058962

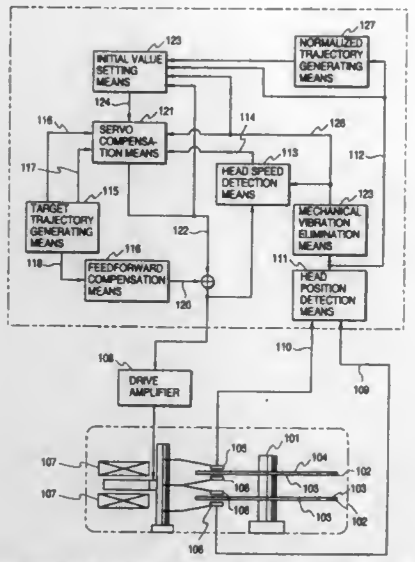
Int. Cl.^{6} G05D *23/275*

U.S. Cl. 318—632 **7 Claims**

1. A positioning control device of a positioning control system, wherein an object of control is secondary and has observable state values, comprising:

position and speed detection means that detects position and speed of said object of control;

target trajectory generating means that generates a target trajectory of a target position and a target trajectory of a target speed of said object of control;


INITIAL VALUE SETTING MEANS
123
NORMALIZED TRAJECTORY GENERATING MEANS
127
124
SERVO COMPENSATION MEANS
121
114
128
116
117
HEAD SPEED DETECTION MEANS
113
112
TARGET TRAJECTORY GENERATING MEANS
115
MECHANICAL VIBRATION ELIMINATION MEANS
122
118
FEEDFORWARD COMPENSATION MEANS
120
111
HEAD POSITION DETECTION MEANS
110
108
DRIVE AMPLIFIER
109
101
105
104
102
103
106
107

servo compensation means that inputs data of said target trajectory of the target position, said target trajectory of the target speed, and detected position and speed, and causes the position and the speed to follow said target trajectory of the target position and said target trajectory of the target speed, respectively;

normalized trajectory generating means that generates an arbitrary normalized trajectory based on detected position data; and

initial value setting means that uses as a performance index a deviation of position and speed of said object of control from said normalized trajectory output from said normalized trajectory generating means, and resets initial values of said servo compensation means to minimize a square-law integral value of the performance index.

5,710,498

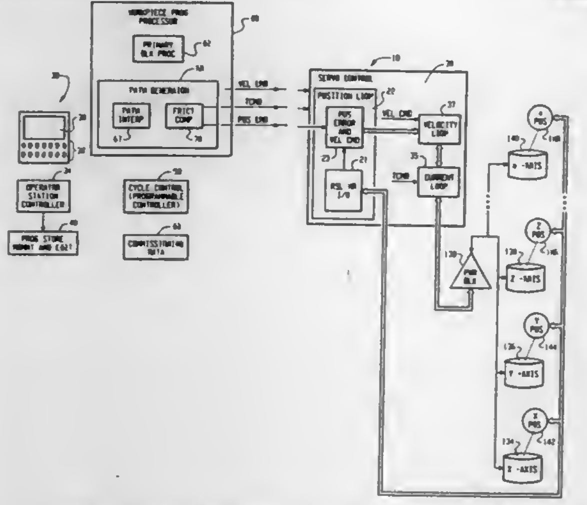
METHOD AND APPARATUS FOR FRICTION COMPENSATION

Stephen J. Yutkowitz; R. William Kneifel, II, and Stephen T. Walsh, all of Cincinnati, Ohio, assignors to Trinova Corporation, Maumee, Ohio

Continuation of Ser. No. 350,302, Dec. 6, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,961

Int. Cl.^{6} G05B *13/00*

U.S. Cl. 318—632 **17 Claims**



1. A method of servomechanism control comprising the steps of:

a) producing a position command which is representative of the desired position of a controlled element;

b) deriving a value of estimated velocity from the position command, wherein the estimated velocity represents actual velocity of the controlled element;

c) determining values for frictional force as a function of estimated velocity and direction;

d) producing a compensation value in response to the value of frictional force, the compensation value changing with time according to a predetermined algorithm; and

e) compensating servomechanism command values in response to the compensation value, the compensated servomechanism command values including a component to oppose frictional forces affecting motion of the controlled element.

5,710,499

STEPPER MOTOR CONTROL CIRCUIT AND METHOD

Fernando D. Carvajal, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1994, Ser. No. 315,647

Int. Cl.^{6} H02P *8/00*

U.S. Cl. 318—696 **19 Claims**

STEPPING MOTOR STEP TRANSITIONS

DEGREES	0°	60°	120°	180°	240°	300°
A	1	1	0	−1	−1	0
B	1	0	−1	−1	0	1
A_1	1	1	Z	0	0	Z
A_2	0	0	Z	1	1	Z
B_1	1	Z	0	0	Z	1
B_2	0	Z	1	1	Z	0
STATE	0	1	2	3	4	5

1. A stepper motor control circuit, comprising:

output driver circuitry for driving the coils of a motor to predetermined potentials, responsive to control signals; and

logic decode circuitry coupled to one or more direction inputs, and outputting control signals to said output driver circuitry to cause the output driver circuitry to drive the coils of the stepper motor to predetermined potentials in a particular sequence so that the stepper motor moves in predetermined steps;

wherein said output driver circuitry selectively drives the coils of said stepper motor to a high impedance state, the output driver circuitry further providing a fast flux discharge path while said coils are in said high impedance state.

5,710,500

MOTOR SPEED CONTROL APPARATUS USING PHASE-ADVANCE BASED ESTIMATED DISTURBANCE SIGNAL

Keisuke Matsuo, Neyagawa, and Toshio Inaji, Mino, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 24, 1995, Ser. No. 429,284

Claims priority, application Japan, Apr. 28, 1994, 6-091412

Int. Cl.^{6} G01M *7/00*

U.S. Cl. 318—799 **16 Claims**

1. A motor speed control apparatus comprising:

comparison estimation means for receiving a first signal indicating a detected rotation of a motor and a target signal indicating a desired rotation value of the motor, the comparison estimation means outputting an error signal in accordance with a difference between the first signal and the target signal and outputting an estimated disturbance signal indicating a degree of disturbance torque applied to the rotation of the motor;

control means for receiving the error signal and outputting a control signal in accordance with the error signal;

correction means for receiving the control signal and the estimated disturbance signal and correcting the control signal based on the estimated disturbance signal so as to reduce

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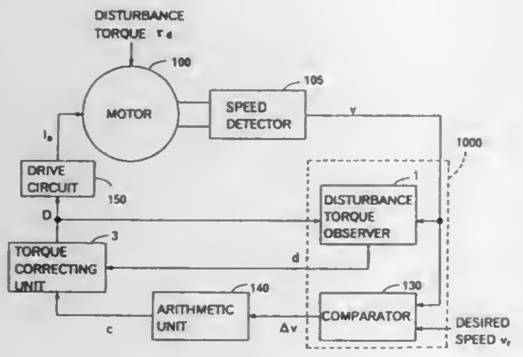
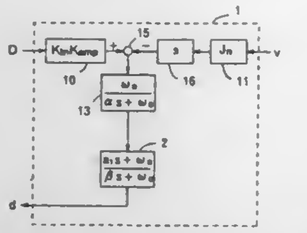




influence of the disturbance torque on the control signal, the correction means outputting the corrected control signal as a drive signal; and

driving means for receiving the drive signal and supplying the motor with electric power in accordance with the drive signal,

wherein the comparison estimation means comprises a second-order low pass filter and outputs the estimated disturbance signal through the second-order low pass filter,

wherein the comparison estimation means further comprises:

first means for multiplying the drive signal by a predetermined first coefficient; and

second means for receiving either the first signal or the error signal, and processing the received signal based on a predetermined first transfer function, and

wherein the second-order low pass filter comprises:

a first filter for receiving output signals from the first means and the second means, and filtering the received signals based on a predetermined second transfer function; and

a second filter for receiving an output from the first filter and filtering the received signal based on a first-order phase-advancing transfer function so as to output the estimated disturbance signal.

5,710,501
BATTERY PACK HAVING A PROCESSOR CONTROLLED BATTERY OPERATING SYSTEM

Duong van Phuoc, Eching; Rudi Wieczorek, Munich; Elmar Zeising, Haindlfing, all of Germany; Louis W. Hruska, Northboro, Mass.; Alwyn H. Taylor, Wellesley Hills, Mass.; Daniel D. Friel, Woburn, Mass., and Matthew P. Hull, Jamestown, R.I., assignors to Duracell, Inc., Needham, Mass.

Division of Ser. No. 336,945, Nov. 10, 1994. This application Jun. 7, 1995, Ser. No. 473,339

Int. Cl.^{6} H01M *10/44;* H02J *7/04*

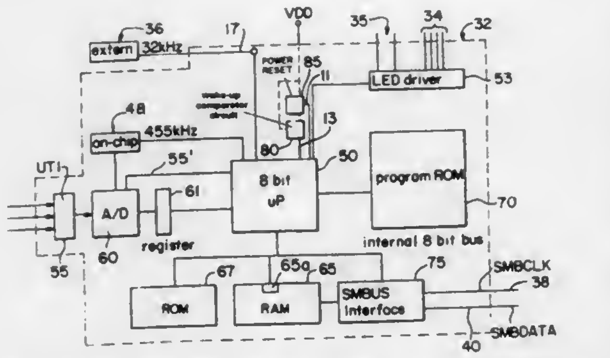
U.S. Cl. 320—2 **11 Claims**

1. A smart battery which provides electrical power and which reports predefined battery parameters to an external device having a power management system, said smart battery comprising:

(a) at least one rechargeable cell connected to a pair of terminals to provide electrical power to an external device during a discharge mode and to receive electrical power during a charge mode, as provided or determined by said remote device,

(b) a data bus for reporting defined battery identification and charge parameters to the external device,

(c) an analog means for generating analog signals representative of battery voltage and current at said terminals, and an analog signal representative of battery temperature at said cell,



(d) a hybrid integrated circuit having a microprocessor for receiving the analog signals and converting them to digital signals representative of battery voltage, current and temperature, and calculating actual charge parameters over time from said digital signals, wherein the integrated circuit comprises a multitude of layers, said multitude of layers including upper and lower layers,

(e) a ROM data memory defined within the upper layers of said hybrid integrated circuit for storing said predefined battery identification parameters, even when nominally fully discharged, said ROM memory including an upper layer custom metal mask for writing identification parameters for a predetermined battery configuration into a generic ROM data memory,

(f) a RAM data memory also defined within said hybrid integrated circuit for storing said calculated actual charge parameters including at least full charge capacity and remaining capacity,

(g) a bus controller defined withing said hybrid integrated circuit for sending battery messages to said remote device over said data bus, said messages including said predefined battery identification and said actual charge parameters.

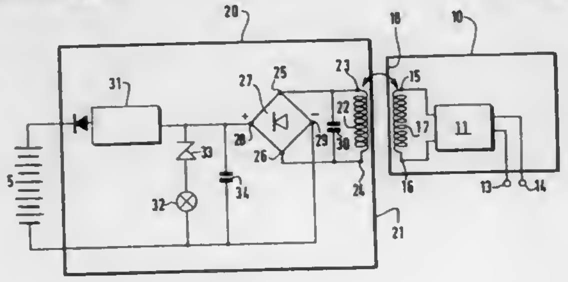
5,710,502
SYSTEM FOR RECHARGING THE STORAGE BATTERIES OF AN ELECTRIC MOTOR VEHICLE

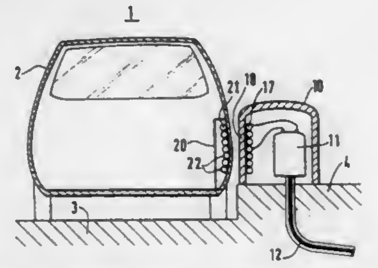
Michel Poumey, Savigny, France, assignor to Cableco and Poumey, France

Continuation of Ser. No. 252,589, Jun. 1, 1994, abandoned. This application Jun. 7, 1996, Ser. No. 660,518

Int. Cl.^{6} H02J *7/00*

U.S. Cl. 320—2 **9 Claims**





5. A system for recharging storage batteries in an electric motor vehicle, comprising:

a stationary unit including a first dielectric case and a high-frequency generator connected on an input side to an electric supply mains and on an output side to at least one inductor positioned proximate a front wall of said first dielectric case;

a second dielectric case being permanently mounted on the vehicle and positionable adjacent said front wall of said first dielectric case, said second dielectric case including a plurality of sensors positioned proximate said exterior wall of said second dielectric case, each sensor connected in parallel to input terminals of a respective rectifier, output terminals of said respective rectifiers of like polarity connected in parallel with a filtering capacitor connected, in turn, in parallel with the storage batteries, said at least one inductor and said sensors formed from respective flat coils capable of being magnetically coupled through air when positioned adjacent each other.

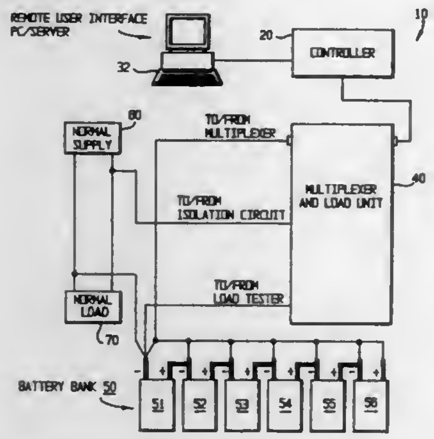
5,710,503
ON-LINE BATTERY MONITORING SYSTEM WITH DEFECTIVE CELL DETECTION CAPABILITY

Antonios G. Sideris, Marietta, Ga., and Paris H. Wiley, Tampa, Fla., assignors to AIMS Systems, Inc., Knoxville, Tenn.

Filed Feb. 1, 1996, Ser. No. 595,304

Int. Cl.^{6} H01M *10/44*

U.S. Cl. 320—6 **28 Claims**



1. A system for on-line monitoring of a plurality of battery cells, comprising:

controller means for designating at least one battery cell to be monitored;

multiplexer means responsive to the designation by said controller means for selecting said at least one battery cell to be monitored, for receiving electrical signals from said at least one battery cell, and for providing said electrical signals as an output; and

analog board means for receiving said electrical signals provided by said multiplexer means, said analog board means being responsive thereto for providing an output representing measurement of a parameter of said at least one battery cell;

said controller means receiving said output, converting said output to measurement data, and displaying said measurement data;

said system further comprising control board means responsive to address information for selectively initiating one of a load test, battery bank charging, and common-mode voltage measurement.

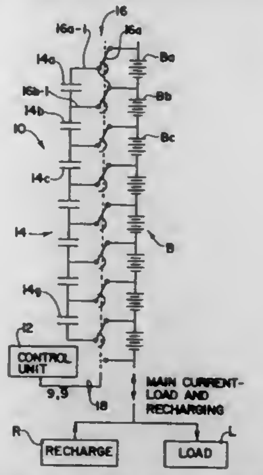
5,710,504
SWITCHED CAPACITOR SYSTEM FOR AUTOMATIC BATTERY EQUALIZATION

Cesar Pascual, and Philip T. Krein, both of Champaign, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed May 20, 1996, Ser. No. 650,490

Int. Cl.^{6} H02J *7/00;* H01M *10/44;10/46*

U.S. Cl. 320—6 **38 Claims**



1. An apparatus for equalizing output voltages of at least two batteries comprising:

a capacitive storage element;

first and second switching circuits coupled to said storage element;

a control circuit wherein said control circuit is coupled to said switching circuits and wherein said switching circuits, in response to said control circuit, couple said storage element to first one battery and then the other thereby equalizing output voltages thereof.

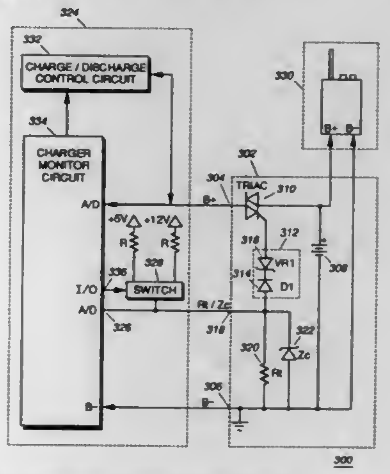
5,710,505
BATTERY CHARGING SYSTEM HAVING MULTIPLEXED CHARGING FUNCTIONALITY

Joseph Patino, Pembroke Pines, Fla., assignor to Motorola, Inc., Schauumburg, Ill.

Filed Dec. 2, 1996, Ser. No. 753,832

Int. Cl.^{6} H01M *10/46*

U.S. Cl. 320—8 **8 Claims**



2. A battery charging system, comprising:

a battery, including:

positive and negative charge terminals;

battery cells operatively coupled between the positive and negative charge terminals;

a triac for conducting current to and discharging current from the battery cells;

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biasing circuitry coupled to the triac for biasing the triac on; and

a battery characteristic indicator terminal selectively providing first and second bias modes of operation, in the first bias mode of operation the battery characteristic indicator terminal provides battery temperature information and in the second mode of operation the battery characteristic indicator terminal provides battery capacity information and turns on the biasing circuitry for biasing the triac on; and

a charger, including:

positive and negative charging contacts for mating with the positive and negative charge terminals of the battery respectively;

a controller for sensing an A/D port, the A/D port for mating to the battery characteristic indicator terminal and the controller switchably providing first and second voltage levels to the A/D port, the first voltage level providing the first bias mode of operation to the battery characteristic indicator terminal and the second voltage level providing the second bias mode of operation to the battery characteristic indicator terminal;

a charging control circuit for charging the battery through the positive charging terminal; and

a discharging control circuit for discharging the battery through the positive charging terminal.

5,710,506

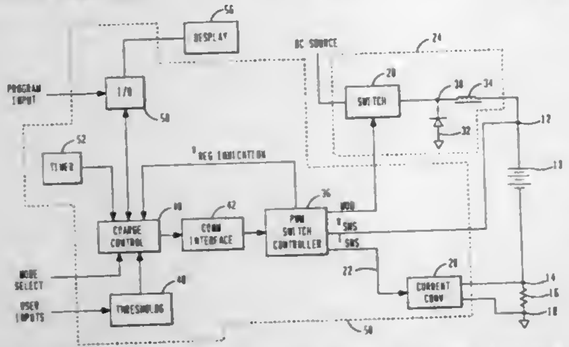
LEAD ACID CHARGER

Frederick Gaudenz Broell, Plano; Jehangir Parvereshi, and Stephen Paul Sacarisen, both of Carrollton, all of Tex., assignors to Benchmarq Microelectronics, Inc., Dallas, Tex.

Filed Feb. 7, 1995, Ser. No. 385,537

Int. Cl.^{6} H02J *7/10;* H01M *10/44*

U.S. Cl. 320—522 **27 Claims**



1. A charge control circuit for controlling a charging operation of a lead acid battery, comprising:

a charging device having an input connected to an external power supply source and an output connected to the positive terminal of the battery and controllable to determine the amount of charge input to the battery;

a control system for controlling said charging device during a charging operation, at least a portion of the charging operation being a fast charge operation;

a voltage monitor for monitoring the voltage across the battery;

a determination device for determining when a change in battery voltage as determined by said voltage monitor as a function of time decreases during at least said fast charge operation by a predetermined amount in a continuous manner from the point at which the decrease is initiated to the point at which the decrease is greater than the predetermined amount, and generating a charge modification command in response thereto; and

said control system having a charge modification device for altering the operation of said charging device in response to generation of said charge modification command.

5,710,507

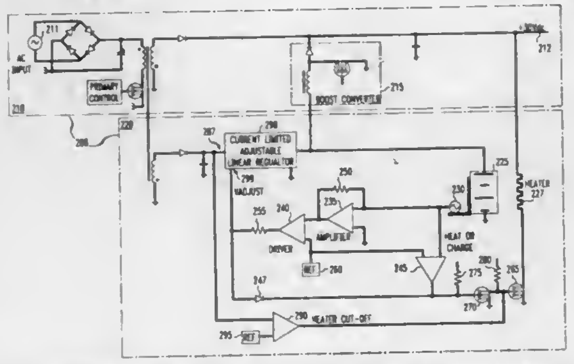
TEMPERATURE-CONTROLLED BATTERY RESERVE SYSTEM AND METHOD OF OPERATION THEREOF

David B. Rosenbluth, Richardson; Apurba Roy, Rockwall, and Gabriel G. Suranyi, Plano, all of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 26, 1996, Ser. No. 638,023

Int. Cl.^{6} H02J *7/00;* H05B *3/60*

U.S. Cl. 320—35 **21 Claims**



1. For use in a battery reserve system having a reserve battery, a charging circuit coupled between a source of electrical power and said reserve battery for charging said reserve battery and a heating element in thermal communication with said reserve battery for increasing a temperature of said battery, a mode selection circuit, comprising:

a temperature transducer, coupled to said reserve battery, for sensing said temperature of said reserve battery; and

a mode-changing circuit, coupled to said temperature transducer, for selecting an alternative one of:

a heating mode wherein said source of electrical power is coupled to said heating element when said temperature of said reserve battery is less than a reference temperature thereby to heat said reserve battery, and

a charging mode wherein said source of electrical power is coupled to said reserve battery when said temperature is greater than said reference temperature thereby to charge said reserve battery.

8. For use in a battery reserve system having a reserve battery, a charging circuit coupled between a source of electrical power and said reserve battery for charging said reserve battery and a heating element in thermal communication with said reserve battery for increasing a temperature of said battery, a method of selecting modes of said battery reserve system, comprising the steps of:

sensing said temperature of said reserve battery with a temperature transducer coupled to said reserve battery; and

selecting an alternative one of:

a heating mode wherein said source of electrical power is coupled to said heating element when said temperature of said reserve battery is less than a reference temperature thereby to heat said reserve battery, and

a charging mode wherein said source of electrical power is coupled to said reserve battery when said temperature is greater than said reference temperature thereby to charge said reserve battery.

5,710,508

SEMICONDUCTOR APPARATUS

Manabu Watanabe, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 15, 1996, Ser. No. 648,405

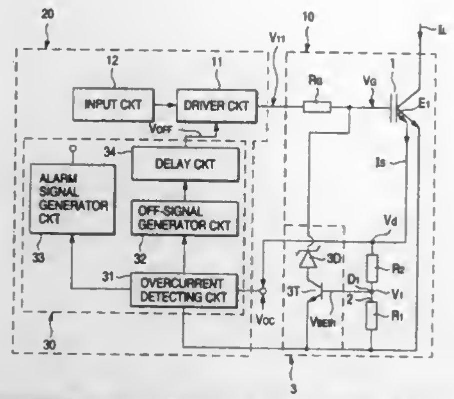
Claims priority, application Japan, May 16, 1995, 7-116775

Int. Cl.^{6} G05F *1/56;* H02H *7/00*

U.S. Cl. 323—284 **5 Claims**

1. A semiconductor apparatus, comprising:

driving means for outputting a driving voltage;



an insulated gate semiconductor device including a semiconductor element for current sensing with a sense terminal, for controlling ON and OFF of a load current according to said driving voltage;

current detecting means connected to the sense terminal of said semiconductor element, for converting a current detected by said semiconductor element into a total voltage drop and a divided voltage;

overcurrent limiting means for reducing said driving voltage to a predetermined value when said divided voltage exceeds a predetermined operating voltage of said overcurrent limiting means; and

protecting means for protecting said insulated gate semiconductor device against overcurrents, said protecting means being connected to the sensing terminal of said semiconductor element;

wherein said protecting means including overcurrent detecting means for comparing the total voltage drop from said current detecting means with a predetermined operation start voltage of said protecting means to detect overcurrents, OFF-signal generating means for outputting an OFF-signal when said overcurrent detecting means detects that the total voltage drop exceeds the predetermined operation start voltage, the OFF-signal commanding said driving means to stop outputting the driving voltage, and delay means for delaying the OFF-signal from said OFF-signal generating means for a predetermined period of time.

5. A semiconductor apparatus according to claim 1, further comprising an alarm signal generator circuit for generating an alarm signal when said overcurrent detecting means detects that the total voltage drop exceeds the predetermined operation start voltage.

5,710,509

PHASE DIFFERENCE DETECTION DEVICE FOR AN INDUCTIVE POSITION DETECTOR

Atsutoshi Goto, Shinmachi 1-77-2, Fuchu-shi, Tokyo-to; Yasuhiro Yuasa, Fuchu; Shuiti Tanaka, Kodaira; Nobuyuki Akatsu, Higashiyamato; Kazuya Sakamoto, Hamura; Hiroshi Sakamoto, Kawagoe, and Akio Yamamoto, Kunitachi, all of Japan, assignors to Atsutoshi Goto, Japan

Filed Oct. 30, 1995, Ser. No. 550,358

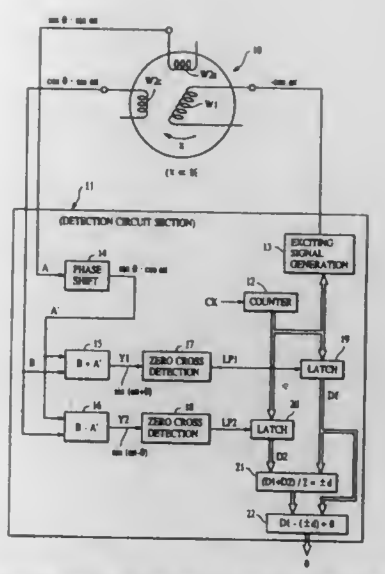
Int. Cl.^{6} G01B *7/30;* G01D *5/20;5/243;* H03M *1/64*

U.S. Cl. 324—207.25 **8 Claims**

7. A method of detecting a position by use of an inductive position detector, said position detector being excited by a predetermined reference signal to generate a first output signal having been amplitude-modulated using, as an amplitude coefficient, a first function value corresponding to a position-to- be-detected and generate a second output signal having been amplitude-modulated using, as an amplitude coefficient, a second function value corresponding to the position-to-be-detected, said method comprising the steps of:

receiving said first and second output signals from said position detector;

forming first and second data signals by combining said received first and second output signals, said first data signal having an



electric phase angle shifted in a positive direction in relation to the position-to-be-detected, said second data signal having an electric phase angle shifted in a negative direction in relation to the position-to-be-detected;

measuring an electric phase difference between said predetermined reference signal and said first data signal to obtain first phase data;

measuring an electric phase difference between said predetermined reference signal and said second data signal to obtain second phase data; and

calculating position detection data corresponding to the position-to-be-detected on the basis of said first and second phase data.

5,710,510

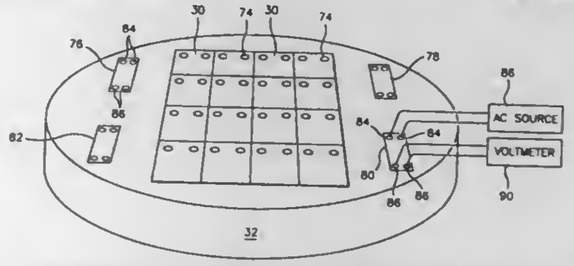
APPARATUS AND METHOD FOR INTRA PROCESS ON WAFER MONITORING OF DEPOSITED LAYER PERMEABILITY

David John Seagle, Morgan Hill, and Joseph Francis Smyth, Los Altos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1996, Ser. No. 692,685

Int. Cl.^{6} G01R *33/12;* G01N *27/72;* G11B *5/127;* H01F *7/06*

U.S. Cl. 324—210 **50 Claims**



1. An apparatus for determining a magnetic property of at least one magnetic head at a wafer level, comprising:

first, second and third substantially identical magnetic heads mounted on a wafer;

each magnetic head having a coil layer and a second pole piece;

the second pole pieces of the second and third magnetic heads being magnetically joined so that the coil layers of the second and third magnetic head are magnetically coupled; and

a magnetic shaping layer disposed on the second pole pieces of the second and third magnetic heads except for an exposed portion of the second pole piece of one of the second and third magnetic heads, the exposed portion corresponding to a selected portion of the second pole piece of the first magnetic head.

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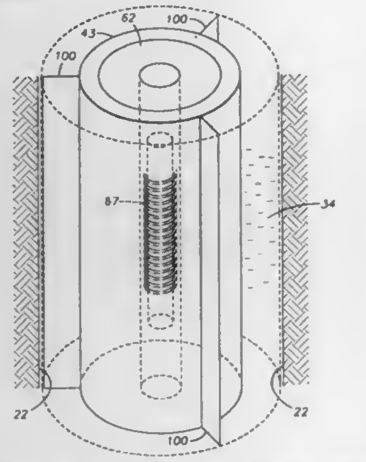
5,710,511
METHOD AND APPARATUS FOR EDDY CURRENT SUPPRESSION

Gersh Taicher, and Arcady Reiderman, both of Rehovot, Israel, assignors to Western Atlas International, Inc., Houston, Tex.

Filed Mar. 14, 1996, Ser. No. 615,426

Int. Cl.⁶ G01V *3/00*

U.S. Cl. 324—303 **21 Claims**



1. A electromagnetic logging tool for logging a wellbore, comprising:
- an elongated sonde adapted for traversing said wellbore;
- a source of alternating current;
- an antenna connected to said source of alternating current;
- a receiver circuit connected to said antenna, said receiver circuit providing an output corresponding to electromagnetic signals induced in said antenna; and
- at least one insulating insert disposed in an annular space between the exterior of said sonde and the wall of said wellbore, said at least one insert extending in a direction so as to segment paths of eddy currents which would otherwise flow in said annular space.

5,710,512
STRUCTURE AND PRODUCTION PROCESS FOR SECONDARY VOLTAGE DETECTOR FOR ENGINE

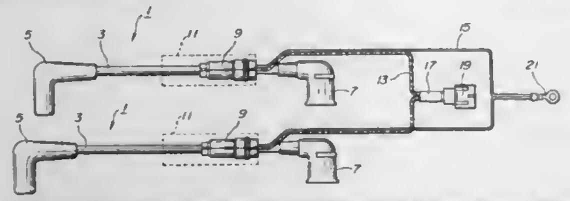
Noriaki Kondo, and Masaru Kondou, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 30, 1995, Ser. No. 550,154

Claims priority, application Japan, Nov. 1, 1994, 6-268749

Int. Cl.⁶ F02P *17/00*

U.S. Cl. 324—402 **28 Claims**



1. A secondary voltage detector, mounted on a high tension cord, for forming a capacitance with the high tension cord and thereby detecting a waveform of a secondary voltage supplied through the high tension cord to a spark plug of a gasoline engine, said secondary voltage detector comprising:
- an insulating tube which is mounted on the high tension cord, and which comprises a plurality of insulating members joined together;
- a detecting electrode embedded in at least one of said insulating members; and
- an electric shielding means enclosing said insulating tube,
- wherein said detecting electrode includes an embedded portion embedded in a first insulating member which is one of said insulating members, and a bare end projecting from a joint surface of said first insulating member, and
- wherein said first insulating member is joined to a second insulating member which is another of said insulating members, said second insulating member including a joint surface, and a groove formed in said joint surface of said second insulating member, said joint surfaces of said first and second insulating members being overlapped and joined together to form said insulating tube, and said bare end of said detecting electrode being received in said groove of said second insulating member when said first and second insulating members are joined together.

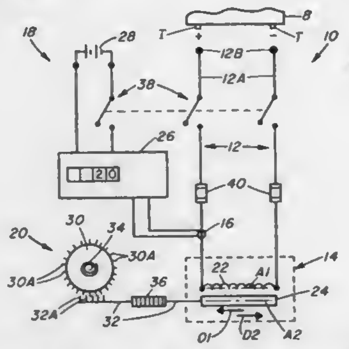
5,710,513
CIRCUIT BREAKER TESTING APPARATUS HAVING ADJUSTABLE INDUCTOR FOR CONTROLLING MAGNITUDE OF CURRENT FLOW

James M. March, 612 Willow, St. Marys, Kans. 66536

Filed Dec. 7, 1995, Ser. No. 568,939

Int. Cl.⁶ G01R *31/02*

U.S. Cl. 324—424 **20 Claims**



1. A circuit breaker testing apparatus, comprising:
- (a) an electrical circuit having leads terminated by electrical connectors for connection to terminals of a circuit breaker for providing a source of electrical power to said electrical circuit from the circuit breaker;
- (b) an adjustable inductor electrically connected in said electrical circuit for producing an adjustable electrical load on the circuit breaker;
- (c) means for sensing current flow in said electrical circuit;
- (d) indicator means electrically connected to said current sensing means for producing a reading of the magnitude of current flow in said electrical circuit and for displaying and holding the reading of the highest magnitude of current flow reached in said electrical circuit and thereby the magnitude of current flow at which the circuit breaker is tripped by the adjustment of the electrical load on the circuit breaker; and
- (e) means for adjusting said adjustable inductor so as to reduce the electrical load produced on the circuit breaker and thereby increase the magnitude of current flow drawn through the circuit breaker circuit to cause tripping of the circuit breaker.

5,710,514
HYDRAULIC CYLINDER PISTON POSITION SENSING WITH COMPENSATION FOR PISTON VELOCITY

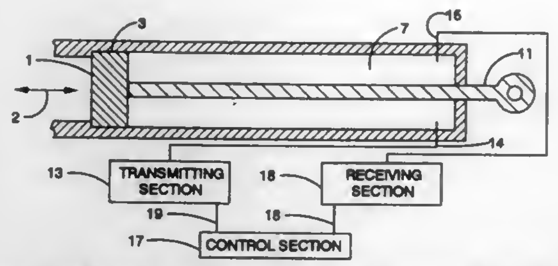
John W. Crayton, Washington; Eric F. Lee, Peoria Heights, both of Ill.; Denny Morgan, San Diego, Calif., and Dennis L. Schumacher, Eureka, Ill., assignors to Caterpillar, Inc., Peoria, Ill.

Filed May 9, 1995, Ser. No. 437,594

Int. Cl.⁶ G01R *33/32*

U.S. Cl. 324—635 **24 Claims**

1. In a hydraulic cylinder piston position sensing system of the type wherein electromagnetic wave resonance signals are correlated with the position of the piston, the improvement comprising:



- the compensation of measured resonance signal identification data by a velocity dependent to a first detected slope intercept period P1 of a said resonance signal.

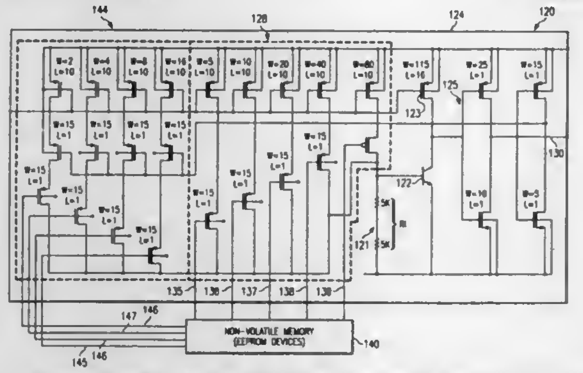
5,710,515
NON-VOLATILE MEMORY IN POWER AND LINEAR INTEGRATED CIRCUITS

Ross E. Teggatz; Joseph A. Devore, both of Dallas; Stephen L. Sutton, McKinney, all of Tex., and Ganapathy R. Subramaniam, Bangalore, India, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 113,575, Aug. 27, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,063

Int. Cl.⁶ G01R *31/02;31/00;* **G08B** *21/00*

U.S. Cl. 324—763 **15 Claims**



1. A temperature warning circuit for testing an integrated circuit without damaging the integrated circuit, comprising:
- a first circuit for generating a temperature warning signal if a temperature of the integrated circuit exceeds a predetermined first temperature;
- a second circuit for generating a temperature warning signal if a temperature of the integrated circuit exceeds a predetermined second temperature, said second temperature being less than said first temperature, said second temperature being related to said first temperature whereby if an extrapolation is made between said first and second temperatures, the first and second warnings can be similarly extrapolated;
- a selection circuit for programmably selecting between said said first and second circuits for operation.

5,710,516
INPUT LOGIC SIGNAL BUFFER CIRCUITS

Chul-soo Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

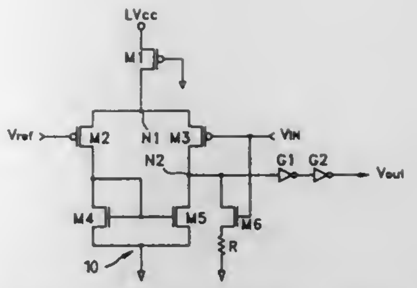
Filed Apr. 24, 1996, Ser. No. 639,922

Claims priority, application Rep. of Korea, Apr. 24, 1995, 95-9639

Int. Cl.⁶ H03K *19/0175*

U.S. Cl. 326—115 **18 Claims**

1. An input logic signal buffer circuit comprising:
- a differential amplifier, responsive to an input logic signal and to a reference signal, to produce an output logic signal at an output node thereof; and



- a bypass amplifier, electrically connected between said input logic signal and said output node, said bypass amplifier supplying additional current to said output node in response to logic level transitions of said input logic signal.

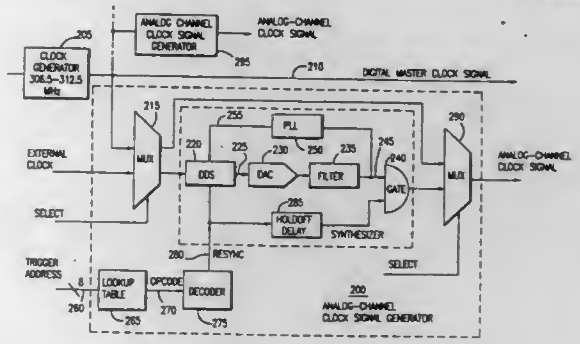
5,710,517
ACCURATE ALIGNMENT OF CLOCKS IN MIXED-SIGNAL TESTER

Dennis Gordon Meyer, Bakersfield, Calif., assignor to Schlumberger Technologies, Inc., San Jose, Calif.

Filed Aug. 1, 1995, Ser. No. 510,396

Int. Cl.⁶ H03L *7/00*

U.S. Cl. 327—163 **8 Claims**


205
CLOCK GENERATOR 306.5–312.5 MHz
ANALOG CHANNEL CLOCK SIGNAL GENERATOR
ANALOG-CHANNEL CLOCK SIGNAL
295
210
DIGITAL MASTER CLOCK SIGNAL
215
255
PLL
290
220
225
230
250
235
245
240
EXTERNAL CLOCK
MUX
DDS
DAC
FILTER
GATE
MUX
ANALOG-CHANNEL CLOCK SIGNAL
285
SELECT
HOLDOFF DELAY
SYNTHESIZER
280
RESYNC
TRIGGER ADDRESS
8
LOOKUP TABLE
OPCODE
DECODER
SELECT
260
270
265
275
200
ANALOG-CHANNEL CLOCK SIGNAL GENERATOR

1. A method of aligning the relative phase of asynchronous clock signals, comprising the steps of:
- a. generating a master clock signal,
- b. generating by direct digital synthesis a second clock signal asynchronous with the master clock signal when enabled by a resynchronization signal;
- c. removing spurs from the second clock signal by means of a phase-locked loop; and
- d. producing said resynchronization signal which enables generation of the second clock signal such that the second clock signal is in a determined phase relationship to the master clock signal.

5,710,518

Patent Not Issued For This Number

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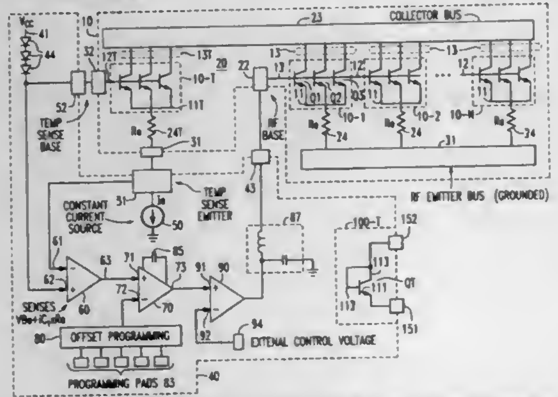
5,710,519
CIRCUIT FOR AUTOMATICALLY BIASING RF POWER TRANSISTOR BY USE OF ON-CHIP TEMPERATURE-SENSING TRANSISTOR

William H. McCalpin, Sunnyvale, Calif.; Donald K. Belcher, Rogersville, Tenn.; David S. Piazza, Santa Clara, and Pierre R. Irissou, Sunnyvale, both of Calif., assignors to Spectrian, Sunnyvale, Calif.

Filed Mar. 29, 1996, Ser. No. 623,961

Int. Cl.^{6} G05F *1/10;* **H01L** *35/00;* **H03K** *17/60*

U.S. Cl. 327—538 **35 Claims**



1. A circuit arrangement for setting collector current bias for an RF power transistor comprising a bias control circuit that is coupled with a collector-emitter current flow path of a temperature-sensing transistor resident in a common support structure for said RF power transistor, said bias control circuit being operative to establish a prescribed quiescent collector current through said temperature-sensing transistor, and wherein a base bias for said RF power transistor is derived in accordance with a differential voltage across the base and the emitter electrodes of said temperature-sensing transistor, thereby providing a collector current through said RF power transistor in accordance with operation of said temperature-sensing transistor.

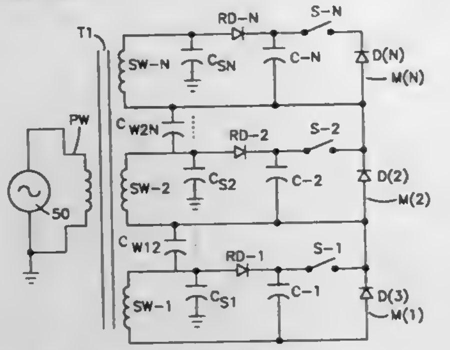
5,710,520
PULSE STEP MODULATOR AND TRANSFORMER

Richard Barry Frey, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 28, 1996, Ser. No. 673,260

Int. Cl.^{6} H03F *3/38*

U.S. Cl. 330—10 **7 Claims**



1. A pulse step modulator comprising:

a plurality of series connected unit step modules, each including a DC voltage source and an associated actuatable switching means for, when actuated, turning on said associated module to provide a unit step voltage;

an output circuit connected to said series connected modules for providing an output voltage to a load wherein the magnitude of the output voltage is equal to the sum of all of the voltage sources of the modules that are turned on;

means for providing a plurality of module turn on signals, each for actuating a said switching means in one of said modules;

a transformer having an elongated core having an axis of symmetry and a primary winding coaxially wound about said core for a substantial portion of the axial length of said core and a plurality of secondary windings coaxially wound about said core;

each said unit step module including one of said secondary windings, each said secondary winding exhibiting an associated stray capacitance between said secondary winding and said primary winding;

means for minimizing said stray capacitance wherein each said secondary winding is wound in radial and axial directions about said core axis wherein the extent of said winding in said radial direction is substantially greater than that in said axial direction.

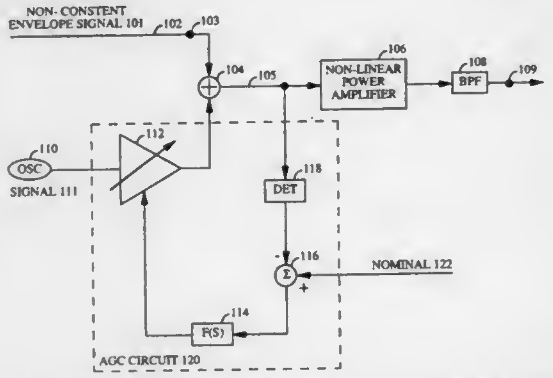
5,710,521
OUT-OF-BAND COMPENSATION FOR NON-LINEAR DEVICE

Brian K. Butler, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Dec. 29, 1995, Ser. No. 580,573

Int. Cl.^{6} H03F *3/66;1/26*

U.S. Cl. 330—52 **15 Claims**



1. A system for reducing nonlinear distortion in a nonlinear device which has a nominal operating point above which it reaches saturation for increased levels of power in an input signal, comprising:

a nonlinear device input;

a signal source to produce a variable magnitude out-of-band signal;

a combiner connected in series with said nonlinear device input and to said signal source to combine said out-of-band signal with said input signal to produce a combined signal for input to said nonlinear device, with the power of said combined signal being maintained at a predetermined level substantially equal to said nominal operating point for said nonlinear device; and

a filter coupled to an output of said nonlinear device to remove said out-of-band signal from said output of said nonlinear device.

5,710,522
AMPLIFIER HAVING AN ACTIVE CURRENT SOURCE

Nelson S. Pass, 21555 Limestone Way, Foresthill, Calif. 95631

Filed Jul. 15, 1996, Ser. No. 679,833

Int. Cl.^{6} H03F *1/34*

U.S. Cl. 330—291 **23 Claims**

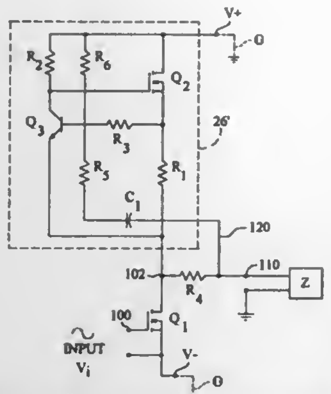
1. An amplifier for amplifying an input signal comprising:

a signal input node for receiving said input signal;

a signal output node;

an input gain device having a control pin coupled to said signal input node, and further having first and second terminals for current flow therebetween;

a load-current sensing resistor coupled between said first terminal of said input gain device and said signal output node;



a first reference voltage terminal coupled to said second terminal of said input gain device for current flow between said signal output node and said first reference voltage terminal;

an active current source having an current output terminal coupled to said first terminal of said input gain device for current flow from said active current source to each of said signal output node and said first reference voltage terminal; and

a feedback path, coupled between said signal output node and said active current source, for detecting the magnitude and direction of current flow through said load-current sensing resistor;

said active current source further having a quiescent current flow in the absence of current flow through said load-current sensing resistor;

said active current source further having a first current flow greater than said quiescent current flow by an amount proportional to the magnitude of a current flow between said load-current sensing resistor and said signal output node flowing in a first direction;

said active current source further having a second current flow less than said quiescent current flow by an amount proportional to the magnitude of a current flow between said load-current sensing resistor and said signal output node flowing in a second direction.

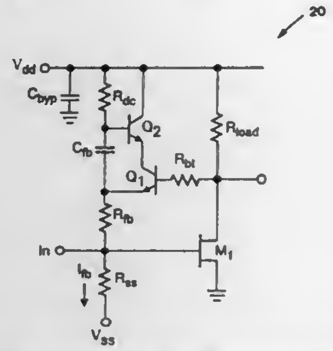
5,710,523
LOW NOISE-LOW DISTORTION HEMT LOW NOISE AMPLIFIER (LNA) WITH MONOLITHIC TUNABLE HBT ACTIVE FEEDBACK

Kevin W. Kobayashi, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 16, 1996, Ser. No. 586,410

Int. Cl.^{6} H03F *1/34*

U.S. Cl. 330—293 **9 Claims**



1. A monolithic microwave integrated circuit (MMIC) comprising:

a high-electron mobility transistor (HEMT) having gate, source and drain terminals;

an active feedback circuit, electrically coupled between said gate terminal and said drain terminal, said active feedback circuit including one or more heterojunction bipolar transistors (HBTs);

means for self-biasing said HEMT;

means for enabling the gain-bandwidth and linearity performance of said MMIC to be adjusted externally from said MMIC, wherein said enabling means includes means for receiving a first DC supply voltage and a second DC supply voltage, one of said first and second DC supply voltages being adjustable.

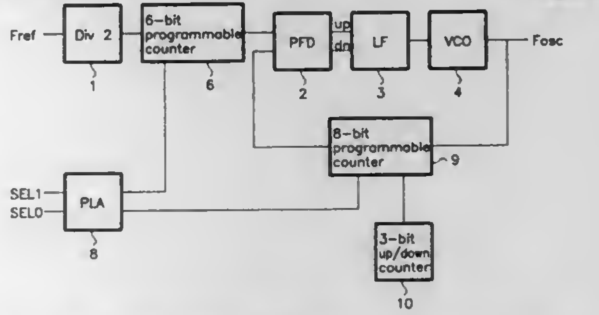
5,710,524
CLOCK SYNTHESIZER FOR LOW EMI APPLICATIONS

Chun-Ming Chou; Jia-Der Hsieh, and Tsen-Shau Yang, all of Hsin-Chu, Taiwan, assignors to Myson Technology, Inc., Taiwan

Filed Apr. 9, 1996, Ser. No. 629,513

Int. Cl.^{6} H03L *7/18*

U.S. Cl. 331—1 A **2 Claims**



1. A clock synthesizer for low EMI applications comprising:

a forward programmable counter for dividing the frequency of input clock signals by M;

a feedback programmable counter for dividing the frequency of input clock signals by N;

a phase-frequency detector for accepting one input signal from said forward programmable counter and another from said feedback programmable counter and outputting two signals whose levels are determined by frequency difference and phase difference of said two input signals respectively;

a loop filter accepting the output signal of said phase-frequency detector and outputting a signal with high-frequency component filtered out;

a voltage-controlled oscillator accepting the output signal of said loop filter and outputting a signal as the input signal of said feedback programmable counter and the output signal of the whole clock synthesizer whose frequency is determined by input voltage;

a programmable logic array for controlling the dividing-number M and N of said forward programmable counter and said feedback programmable counter respectively;

an up/down counter for controlling the dividing-number N of said feedback programmable counter in cooperation with said programmable logic array by way of dividing the binary representation of said dividing-number $D_nD_{(n-1)} \ldots D_1D_0$ into two groups: $D_n \ldots D_k$ and $D_{(k-1)} \ldots D_0$ and controlling them by said programmable logic array and said up/down counter respectively in which a time interval of transition of $D_nD_{(n-1)} \ldots D_1D_0$ is determined by said up/down counter.

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5,710,525
RADIO-FREQUENCY MODULE WITH PHASE LOCK LOOP AND FREQUENCY SETTING

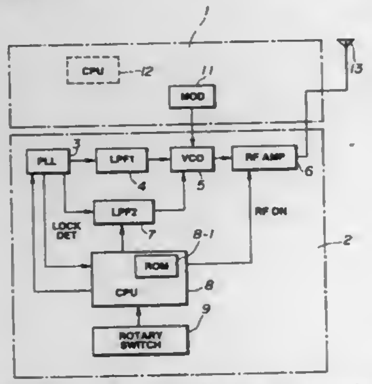
Masahiro Tanaka, and Susumu Sakuma, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Dec. 22, 1995, Ser. No. 577,249

Claims priority, application Japan, Dec. 22, 1994, 6-335409

Int. Cl.^{6} H03L *7/093;7/095;* **H04L** *27/12*

U.S. Cl. 331—16 **3 Claims**



1. A radio-frequency module detachably mounted to a transmitter to apply a high-frequency signal to said transmitter, comprising:

a phase-lock loop (PLL) circuit;

a microprocessor including a lock detection means and a frequency-setting means;

said frequency-setting means being capable of setting and controlling by itself a frequency of a carrier wave generated at said PLL circuit;

said lock-detection means detecting a locked condition of said PLL circuit and generating a lock signal when the locked condition of said PLL circuit is detected;

a voltage-controlled oscillator;

at least one low-pass filter applying an output signal indicative of an error voltage to said voltage-controlled oscillator, wherein a cut-off frequency of said at least one low-pass filter is set to a low level when said lock signal is generated; and

a radio-frequency amplifying means for amplifying an output from said voltage-controlled oscillator,

wherein said radio-frequency amplifying means is activated by a control signal generated from said microprocessor when a predetermined time elapses after the connection between the radio-frequency module and a power source is established.

5,710,526
PHASE-LOCKED LOOP FOR SIGNALS HAVING RECTANGULAR WAVEFORMS

Hendrikus Cornelis Nauta, Berkel en Rodenrijs; Johannes Wilhelmus T. Eikenbroek, Emmen, and Adrianus G. A. van der Arend, Rijswijk, all of Netherlands, assignors to Ericsson Radion Systems B.V., Va Emmen, Netherlands

PCT No. PCT/NL95/00422, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO96/19043, PCT Pub. Date Jun. 20, 1996

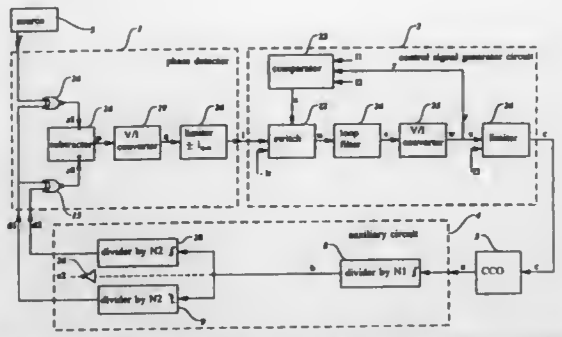
PCT Filed Dec. 15, 1995, Ser. No. 693,281

Claims priority, application Netherlands, Dec. 15, 1994, 9402129; Mar. 13, 1995, 9500491

Int. Cl.^{6} H03L *7/08;7/085;7/10;7/191*

U.S. Cl. 331—25 **42 Claims**

1. Phase-locked loop, comprising, in series, a phase detector, a control signal generator circuit having a loop filter, and a controlled oscillator which delivers an oscillator output signal having oscillator frequency (f_a) between two extreme oscillator frequencies (f_{min}, f_{max}), a first input of the detector receiving from outside the loop a reference signal having a rectangular waveform with a reference frequency (f_r) and with a duty cycle between the values zero and one, a second input of the detector receiving a first comparison signal derived from the oscillator output signal and



having the same form as the reference signal, the detector operating at coincidence or noncoincidence of input signals it receives, the detector deriving a first combination signal by performing a logic combination function for the reference signal and the first comparison signal, the detector delivering an output signal, dependent on the first combination signal of the detector and the detector and the control signal generator circuit being designed so that, with no frequency difference and with a phase difference between the reference signal and another input signal of the phase detector with the loop operating in a state with an immediate capture range of the loop, the control signal generator circuit delivering a control signal to the oscillator which is suitable for setting the phase difference to a predetermined valve operating in a locked state having a predetermined quiescent value of the oscillator control signal after reaching the predetermined phase difference, characterized in that an auxiliary circuit is provided between the oscillator and the detector to receive the output signal of the oscillator and to deliver to the detector the first comparison signal and a third input signal the third input signal is such that if it were to be combined by means of an exclusive OR function with the first comparison signal a waveform results which has twice the frequency of the first comparison signal and a specific duty cycle (N_d) which differs from the duty cycle of the waveform of the reference signal the detector has a third input for receiving the third input signal the detector derives from input signals received from the auxiliary circuit a second combination signal having the waveform with the specific duty cycle (N_d), the detector has a subtracter circuit which subtracts the first combination signal in an analog manner from the second combination signal the output signal of the detector is determined by the difference determined by the subtracter the control signal generator circuit generates at a frequency difference between the reference signal and another input signal of the phase detector an averaged value of the output signal the detector as seen over a number of cycles of the reference signal which is not equal to a value associated with the quiescent value of the oscillator control signal and at the same time alters the oscillator control signal to arrange for the oscillator frequency (f_a) to be altered by the oscillator and the control signal generator circuit adjusts the loop on reaching one extreme oscillator frequency and, in doing so, alters the oscillator control signal so that the oscillator frequency (f_a) is driven in an opposite direction to the other extreme oscillator frequency.

5,710,527
COMPLEMENTARY VOLTAGE TO CURRENT CONVERSION FOR VOLTAGE CONTROLLED OSCILLATOR

Yugi Yaguchi, Dejima-mura, and Hidetoshi Onuma, Matsushiro Tukuba, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

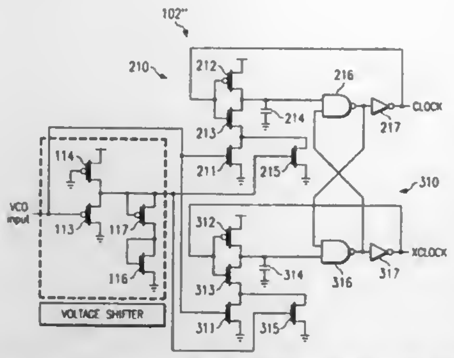
Filed Sep. 19, 1996, Ser. No. 716,075

Int. Cl.^{6} H03B *5/24*

U.S. Cl. 331—57 **25 Claims**

1. A voltage to current circuit comprising:

a first N-type MOSFET having a gate supplied with an input voltage;



a level shifter circuit having an input receiving said input voltage and an output supplying an output voltage which corresponds to said input voltage shifted up by a first predetermined amount;

a clamp circuit connected to said output of said level shifter circuit, said clamp circuit preventing said output voltage from becoming greater than a second predetermined voltage, said second predetermined voltage being greater than said first predetermined voltage;

a second N-type MOSFET having a gate supplied with said output voltage of said level shifter as clamped by said clamp circuit; and

a current mirror circuit having a current input supplied by a source-drain current of said first N-type MOSFET and a source-drain current of said second N-type MOSFET and a current output corresponding to said current input, said current output of said current mirror circuit supplying a current output of said voltage to current circuit.

5,710,528

Patent Not Issued For This Number

5,710,529
SURFACE ACOUSTIC WAVE FILER DEVICE HAVING A CASCADE FILTER STRUCTURE AND A PIEZOELECTRIC SUBSTRATE HAVING MIRROR-POLISHED SURFACES

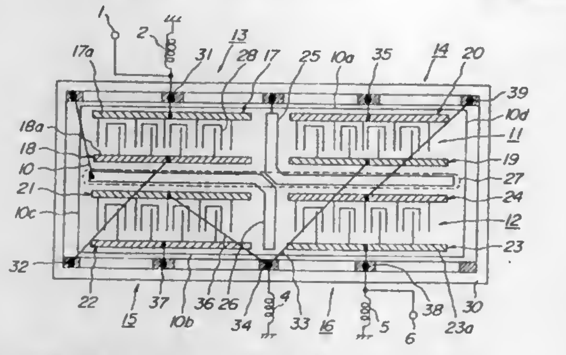
Masahiko Sugiyama; Yasufumi Horio; Masatsugu Oshima, and Kenji Suzuki, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation-in-part of Ser. No. 321,888, Oct. 14, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 539,254

Claims priority, application Japan, Oct. 15, 1993, 5-258402; Dec. 24, 1993, 5-328675; Sep. 14, 1994, 6-220177; Sep. 16, 1994, 6-221953

Int. Cl.^{6} H03H *9/64;9/25*

U.S. Cl. 333—193 **32 Claims**



1. A surface acoustic wave filter device comprising:

a piezoelectric substrate having first and second surfaces opposite to each other, each of said first and second surfaces being mirror-polished; and

first and second filter stages formed on the first surface of the piezoelectric substrate, respectively, each having an interdigital-type unidirectional input side transducer and an interdigital-type unidirectional output side transducer;

said input side and output side transducers of the first and second filter stages being arranged so that surface acoustic waves transmitted from the input side transducers propagate toward the respective output side transducers in a predetermined common direction along respective propagation axes which are in parallel with each other;

said input side and output side transducers of the first and second filter stages each including at least a positive electrode having a plurality of electrode fingers, and a negative electrode having a plurality of electrode fingers which are arranged between adjacent electrode fingers of the positive electrode, the positive electrode of the output side transducer of the first filter stage and the positive electrode of the input side transducer of the second filter stage being connected with each other.

5,710,530
TM DUAL MODE DIELECTRIC RESONATOR APPARATUS AND METHODS FOR ADJUSTING COUPLING COEFFICIENT AND RESONANCE FREQUENCIES THEREOF

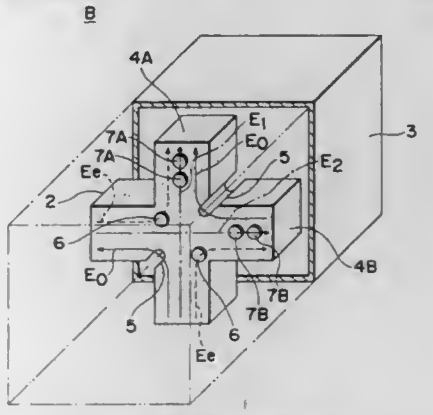
Hidekazu Wada, Ibaraki; Toru Kurisu, Kyoto, and Shin Abe, Mukou, all of Japan, assignors to Murata Manufacturing Co. Ltd., Kyoto, Japan

Continuation of Ser. No. 339,542, Nov. 15, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 636,913

Claims priority, application Japan, Nov. 18, 1993, 5-314224

Int. Cl.^{6} H01P *7/10*

U.S. Cl. 333—219.1 **17 Claims**



7. A dielectric resonator apparatus comprising:

an electrically conductive case;

a cross shaped TM dual mode dielectric resonator provided in said case, said TM dual mode dielectric resonator comprising first and second integral dielectric resonators disposed perpendicular to each other and defining a crossing portion at an intersection thereof;

a mode coupler in said TM dual mode dielectric resonator for coupling an operation mode of said first dielectric resonator with an operation mode of said second dielectric resonator;

at least one first projection of a dielectric material for adjusting a coupling coefficient between the first and second dielectric resonators disposed on a portion of the crossing portion of the first and second dielectric resonators, said at least one first projection representing a defined adjustment amount to the coupling coefficient upon removal of the at least one first projection;

at least one first resonance frequency adjustment projection of a dielectric material for adjusting a resonance frequency of the first dielectric resonator, disposed on a portion of the first dielectric resonator other than the crossing portion of the first and second dielectric resonators, where electric lines of force of the first dielectric resonator pass, said at least one first

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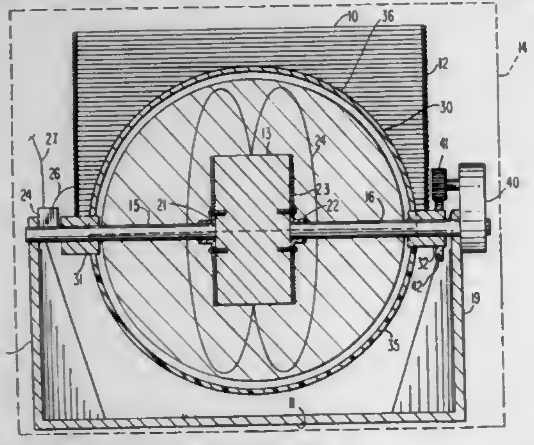
resonance frequency adjustment projection representing a defined adjustment amount to the resonance frequency of the first dielectric resonator upon removal of the at least one first resonance frequency adjustment projection; and

at least one second resonance frequency adjustment projection of a dielectric material for adjusting a resonance frequency of the second dielectric resonator, disposed on a portion of the second dielectric resonator other than the crossing portion of the first and second dielectric resonators, where electric lines of force of said second dielectric resonator pass, said at least one second resonance frequency adjustment projection representing a defined adjustment amount to the resonance frequency of the second dielectric resonator upon removal of the at least one second resonance frequency adjustment projection.

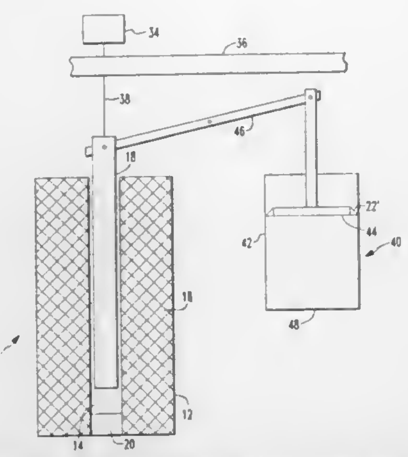
5,710,531
STATIC FIELD CONVERTER
Andrew Abolafia, 301 E. 63rd St., Apt. 2-J, New York, N.Y. 10021
Filed May 29, 1996, Ser. No. 654,699
Int. Cl.^{6} H02K *11/00*
U.S. Cl. 335—216 **13 Claims**



1. A static field converter comprising:
- support means;
- magnetic means for establishing a magnetic field mounted on said support means;
- responsive means which is responsive to the magnetic field established by said magnetic means mounted on the support means;
- superconductive shielding means mounted on the support means, said shielding means being movably mounted on said support means such that it can be moved around said magnetic means and said responsive means to alternately shield and unshield the responsive means from the magnetic field of the magnetic means;
- switching means connected to said responsive means which can be opened and closed as the shielding means moves around the magnetic field produced by the magnetic means; and
- the magnetic means is positioned at least partially within the responsive means.

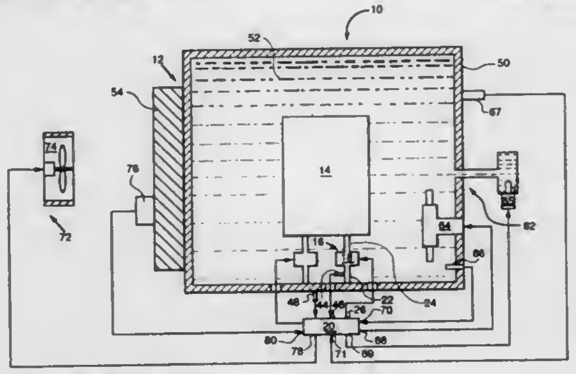
5,710,532
SOLENOID WITH MOVEMENT DAMPENER
Rick Morgan, Arlington Heights, and Robert S. Morrison, Elgin, both of Ill., assignors to Capcom Coin-Op, Inc., Arlington Heights, Ill.
Filed May 12, 1995, Ser. No. 440,534
Int. Cl.^{6} H01F *7/18*
U.S. Cl. 335—239 **2 Claims**

1. A solenoid having a controlled rate of motion, comprising:
- a solenoid housing having a channel disposed therein;



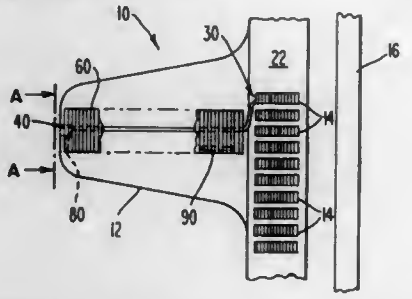
- a coil disposed around said channel for providing an electromagnetic force in response to a current being supplied therethrough;
- a solenoid plunger disposed within said channel and movable between a first position and a second position in response to the presence or absence of said electromagnetic force;
- a dampener housing in which is movably disposed a dampener plunger, said dampener plunger having a seal positioned therearound and cooperative with said dampener housing; and
- a link connecting said solenoid plunger to said dampener plunger whereby movement of said solenoid plunger produces a reciprocal movement of said dampener plunger;
- wherein said movement of said dampener plunger in response to said movement of said solenoid plunger to one of said first position or said second position creates an atmospheric pressure differential within said dampener housing which pressure differential acts to slow the rate of movement of said solenoid plunger.

5,710,533
ELECTRICAL TRANSFORMER WITH REDUCED FAN NOISE
Frederic Ghislain Pla, Clifton Park; Imdad Imam, Schenectady; Robert Arvin Hedeen, Clifton Park, all of N.Y.; Frank Albert Pitman, Jr., Rome, Ga., and Stephen Linwood Smith, Garza Garcia, Minn., assignors to General Electric Company, Schenectady, N.Y.
Filed Jul. 31, 1995, Ser. No. 507,130
Int. Cl.^{6} H01F *15/00*
U.S. Cl. 336—100 **10 Claims**



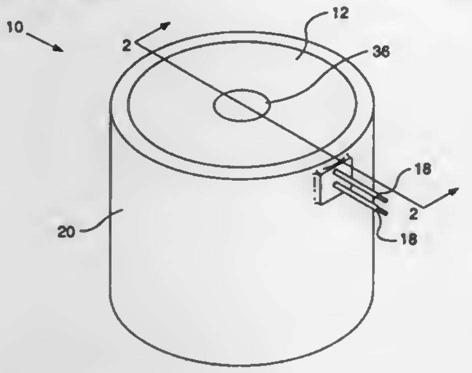
1. An electrical transformer comprising:
- a) a housing;
- b) a transformer core and winding subassembly disposed within and spaced apart from said housing; and
- c) a cooling fan subassembly including:
  - (1) a variable speed fan disposed outside said housing and aligned to move air between said variable speed fan and said housing;
  - (2) a temperature sensor disposed proximate said housing; and
  - (3) a controller having an output port connected to said variable speed fan and having an input port connected to said temperature sensor.

5,710,534
ELECTRICAL APPARATUS INCLUDING ELECTRIC FIELD CONTROL MEANS
Thomas J. Lanoue, Cary, N.C.; Terry D. Barber, Newport News, and Michael E. Haas, Yorktown, both of Va., assignors to ABB Power T&D Company Inc., Raleigh, N.C.
Filed Apr. 25, 1995, Ser. No. 428,392
Int. Cl.^{6} H01F *38/20;27/29*
U.S. Cl. 336—192 **15 Claims**



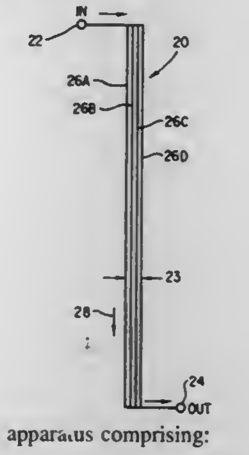
1. A transformer comprising a core and at least one coil winding, said coil winding having a lead, and field control means operatively associated with said lead for controlling the electric field generated when said lead is carrying current said field control means comprising a conductive wire formed into an elongated spiral having a central opening therethrough, said lead passing through said opening.

5,710,535
COIL ASSEMBLY FOR A SOLENOID VALVE
C. Nickolas Goloff, Secor, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Dec. 6, 1996, Ser. No. 759,658
Int. Cl.^{6} H01F *27/29;27/30;* **H02G** *3/18;* **H01B** *19/26*
U.S. Cl. 336—192 **11 Claims**



1. A coil assembly, comprising:
- a bobbin having a cylindrical portion with flanges disposed at opposite ends thereof and an opening defined therethrough;
- an electrical conducting winding disposed around the cylindrical portion of the bobbin with an electrical lead extending outwardly therefrom;
- a sealing member having a sealed cavity defined therein and being disposed around the electrical lead; and
- an encapsulating material pressure molded around the windings and encircling the electrical lead extending therefrom.

5,710,536
ADAPTIVE COIL WRAP APPARATUS
Gerald E. Fastman, Upper Providence, Pa., assignor to Electronic De-Scaling 2000, Inc., Boothwyn, Pa.
Filed Feb. 14, 1996, Ser. No. 601,553
Int. Cl.^{6} A01F *41/02*
U.S. Cl. 336—200 **8 Claims**



1. A coil forming apparatus comprising:
- a flexible base;
- a substantially parallel plurality of conductors disposed on said flexible base, each of said plurality of conductors having a first terminal and a second terminal;
- an input terminal connected to said first terminals of said plurality of conductors;
- an output terminal connected to said second terminals of said plurality of conductors;
- a support;
- said flexible base containing said plurality of conductors being flexed to wrap around said support;
- said plurality of conductors on said flexible base being wrapped around said support by more than one complete first turn and at least a portion of a second turn; and
- an alignment device for aligning one of said plurality of conductors on said second turn with said one of said plurality of conductors on said first turn.

5,710,537

Patent Not Issued For This Number

5,710,538
CIRCUIT HAVING TRIM PADS FORMED IN SCRIBE CHANNEL
Raymond D. Zinn, Atherton; Lawrence R. Sample, and Michael J. Mottola, both of San Jose, all of Calif., assignors to Micrel, Inc., San Jose, Calif.
Filed Sep. 27, 1995, Ser. No. 535,303
Int. Cl.^{6} H01L *10/00*
U.S. Cl. 338—195 **4 Claims**

1. A resistive structure, having a resistance value, formed on a plurality of dice in a semiconductor wafer, said wafer having scribe channels interposed between said dice, said scribe channels identifying locations on said wafer where said wafer is to be sawed to separate said dice from one another, said resistive structure comprising:
- one or more resistive elements formed on said dice;
- a plurality of resistance control elements; and
- a plurality of trim pads, said one or more resistive elements being shunted by respective ones of said resistance control elements and connected between respective pairs of said trim pads, wherein said trim pads are formed in said scribe channels, said resistive structure being formed such that a current

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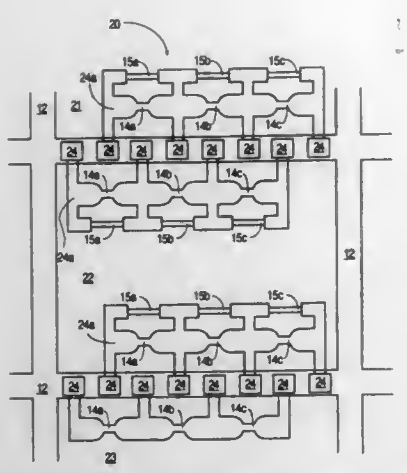


above a predetermined level applied to a pair of said trim pads changes a resistance value of said resistive structure.

5,710,539
TIRE AIR-PRESSURE REDUCTION DETECTING APPARATUS

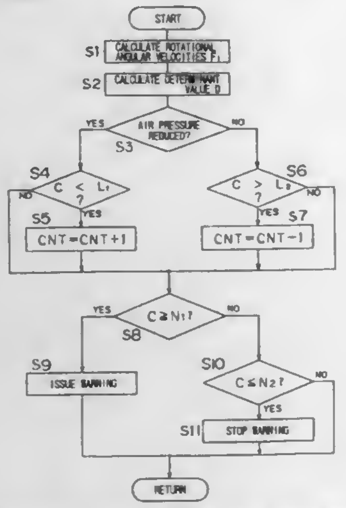
Akiko Iida, Osaka, Japan, assignor to Sumitomo Electric Industrties, Ltd., and Sumitomo Rubber Industries, Ltd., both of Japan

Filed Nov. 30, 1994, Ser. No. 351,169

Claims priority, application Japan, Dec. 7, 1993, 5-306737; Dec. 28, 1993, 5-349994; Dec. 28, 1993, 5-349995

Int. Cl.^{6} B60C *23/00*

U.S. Cl. 340—444 **4 Claims**



1. A tire air-pressure reduction detecting apparatus comprising:

air-pressure reduction judging means for judging whether or not a tire air pressure is reduced;

counting means for incrementing or decrementing a count value depending upon whether a judgement result obtained by the air-pressure reduction judging means indicates that the tire air pressure is reduced or that the tire air pressure is not reduced, the counting means preventing the count value from falling below a predetermined steady-state count which supports a determination that the tire air pressure is not reduced; and

warning means for issuing and stopping a warning in accordance with judgement results obtained by the air-pressure reduction judging means, the warning means issuing a warning when the count value reaches a predetermined warning threshold count which supports a determination that the tire air pressure is reduced.

5,710,540
SECURITY SYSTEM

Richard Marc Clement, 111 Plas Rd., Pontardawe, and Stephen Davles, 3 Kestrel Close, Rhyddings Neath, West Glamorgan, both of United Kingdom

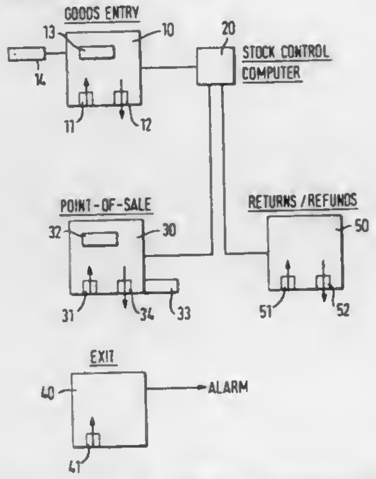
PCT No. PCT/GB93/00287, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO93/17404, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 11, 1993, Ser. No. 284,585

Claims priority, application United Kingdom, Feb. 11, 1992, 9202831; May 20, 1992, 9210734

Int. Cl.^{6} G08B *13/187*

U.S. Cl. 340—572 **22 Claims**



1. A security system for detecting unauthorized removal of goods from a restricted area having at least one goods entry and at least one goods exit, in which each of the goods carries a read/write tag, the security system comprising:

- a) first read/write means at the at least one goods entry;
- b) second read/write means at the at least one goods exit;
- c) stock control computer means linked to said first read/write means for reading/writing first specific data from/to the respective tag of each of the goods entering the restricted area;
- d) at least one point of authorization means having third read/write means, said third read/write means being linked to said stock control computer means and arranged to change second specific data on the respective tag to indicate that the exit of the goods from the restricted area has been authorized;
- f) at least one fixed detector means at the at least one goods exit for reading each tag of the goods to determine if said second specific data have been changed on the tag;
- g) means for initiating an alarm if said fixed detector means determines no change of said second specific data; and
- h) at least one refunds/returns detector means having fourth read/write means, said fourth read/write means for reading the respective tag of each of the goods presented to said refunds/returns detector means and to determine if said second specific data have been changed on the tag, and to change said second specific data.

5,710,541
SMOKE/FIRE DETECTOR

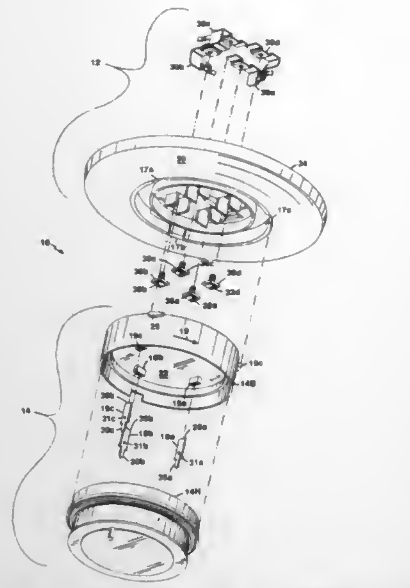
Lawrence G. Stanley, Templeton, and Wayne A. Nelson, Maynard, both of Mass., assignors to Simplex Time Recorder Co., Gardner, Mass.

Filed Aug. 3, 1995, Ser. No. 511,019

Int. Cl.^{6} G08B *17/10*

U.S. Cl. 340—628 **14 Claims**

8. A smoke/fire detection assembly, comprising:



a sensor section having a plurality of electrical contacts, each one of the sensor section electrical contacts having: a first end extending longitudinally externally from the sensor section; and a second end extending into the sensor section and electrically connected to an electrical component within the sensor section;

a base section having a corresponding plurality of electrical contacts, each of such base section contacts comprising:

- a first section having a surface adapted for mounting to a surface of the base section;
- a second section, having a common edge with the first section and a surface extending perpendicular to a surface of the first section; and,
- a pair of finger-like members, extending from a second edge of the second section, the second edge of the second section being perpendicular to the common edge, the finger-like members being laterally spaced along, and cantilevered from, the second edge, the finger-like members extending along a common direction and perpendicular to the first end of the sensor section electrical contacts, distal ends of the finger-like members being spaced from each other laterally in a direction perpendicular to the common direction to receive, and contact, opposing surfaces of the first end of the sensor electrical contact;

the first section, second section, and pair of finger-like members being a single piece.

5,710,542
METHOD OF MEASURING THE A.C. CURRENT IN A CONDUCTOR IN AN A.C. POWER TRANSMISSION NETWORK

Andreas Jurisch, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/00098, § 371 Date Nov. 12, 1996, § 102(e) Date Nov. 12, 1996, PCT Pub. No. WO95/20765, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 18, 1995, Ser. No. 682,656

Claims priority, application Germany, Jan. 26, 1994, 44 02 762.1

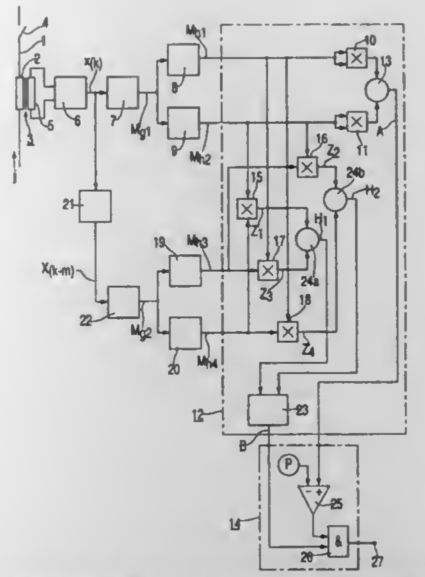
Int. Cl.^{6} G08B *21/00*

U.S. Cl. 340—664 **8 Claims**

1. A method of measuring an AC current in a conductor of an AC power transmission network, the method comprising the steps of:

obtaining a measurement quantity proportional to the AC current using a current transformer;

generating digital samples from the measurement quantity using a sampling device, the digital samples including first digital samples and second digital samples, the second digital samples being generated before the first digital samples by a quarter period of the AC current;



forming first and second initial auxiliary measurement quantities as a function of the first digital samples using first and second FIR filters, the first and second initial auxiliary measurement quantities being normal to each other;

forming third and fourth initial auxiliary measurement quantities as a function of the second digital samples, the third and fourth initial auxiliary measurement quantities being normal to each other;

generating an absolute value signal as a function of an amplitude of the measurement quantity;

generating an angle signal by complex division of a first vector formed from the first digital samples and a second vector formed from the second digital samples, the complex division being performed using the first, second, third and fourth initial auxiliary measurement quantities; and

generating an evaluation output signal as a function of the absolute value signal and the angle signal when the absolute value signal and the angle signal exceed respective predetermined threshold values.

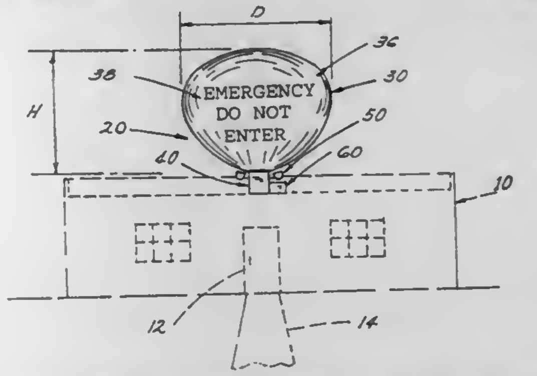
5,710,543
EMERGENCY WARNING DEVICE AND METHOD

George David Moore, 145 E. Mountain Creek Rd., Greenville, S.C. 29609

Filed May 28, 1996, Ser. No. 654,391

Int. Cl.^{6} G08B *3/00*

U.S. Cl. 340—691 **25 Claims**



1. A highly visible emergency warning device for being readily seen by persons approaching an entrance to a commercial building under a distress event, said warning device comprising:

a deployable signalling structure having a storage position in which said structure is stored and a deployed position in which said structure is extended for providing a highly visible display to said persons;

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an enclosure adapted for installation to an exterior portion of said building having an internal compartment with a deployment opening through which access is made for storing and deploying said deployable signalling structure;

a deployment unit for discharging a fluid into said signalling structure to deploy said signalling structure by way of said deployment opening of said enclosure when said deployment unit is activated;

an alarm device connected to said deployment unit for activating said deployment unit from said building in response to said distress event;

said signalling structure being extended from said stored position to said deployed position by discharging said fluid to the inside of said signalling structure for providing a highly visible display area of said signalling structure; and

indicia inscribed on a highly visible display area of said signalling structure for announcing said distress event when said signalling structure is in said deployed position when viewed by said persons, said indicia for warning said person against entrance to said public building.

5,710,544

OPERATION STATE DISPLAY APPARATUS FOR SHUTTLE SWITCH AND DISPLAYING METHOD THEREOF

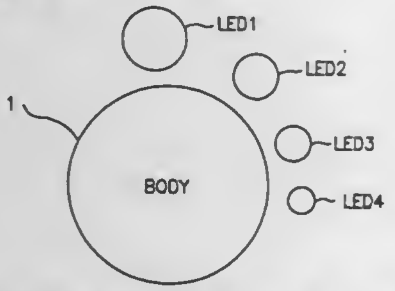
Seog Gweon Choi, Kyungsangbook-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Nov. 30, 1995, Ser. No. 565,549

Claims priority, application Rep. of Korea, Nov. 30, 1994, 31930/1994

Int. Cl.^{6} H04Q *1/00*

U.S. Cl. 340—825.22 **5 Claims**



1. An operation state display apparatus for a shuttle switch, comprising:

a shuttle switch for producing predetermined code signals in accordance with the turning of the shuttle switch in leftward and rightward directions;

a microprocessor for recognizing the predetermined code signals outputted from said shuttle switch, for outputting a control signal corresponding to the recognized code signals, and for controlling a control object; and

display means responsive to the control signal outputted from said microprocessor for displaying an operational state of said control object in accordance with an operational state of the shuttle switch.

5,710,545

DISPLAY PROVIDING REVERSIBLE CONTRASTING INDICIA

Dustin E. Dunn, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

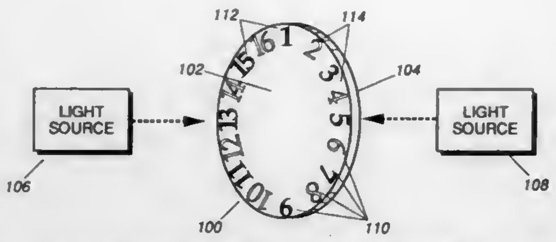
Filed Oct. 10, 1995, Ser. No. 541,998

Int. Cl.^{6} H04B *1/38;* **H03J** *1/02;1/04*

U.S. Cl. 340—825.36 **29 Claims**

1. A display having upper and lower surfaces for receiving both internal and external light sources, comprising:

indicia disposed on the display;



the indicia providing a first contrast mode when the upper surface of the display is submitted to the external light source;

the indicia providing a second contrast mode when the lower surface of the display is submitted to the internal light source; and

all the indicia being visible in either of the first or second contrast modes.

5,710,546

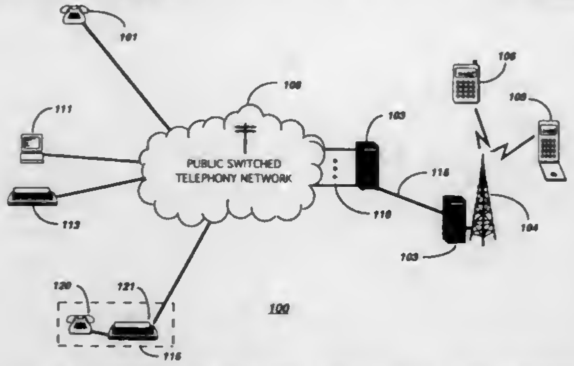
APPARATUS FOR ENCODING AND DECODING A DIGITAL RADIO SIGNAL

Clifford Dana Leitch, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 238,082, May 4, 1994, Pat. No. 5,559,506. This application Nov. 3, 1995, Ser. No. 552,644

Int. Cl.^{6} G08B *5/22;* **H04B** *1/00*

U.S. Cl. 340—825.44 **13 Claims**



1. A radio communication system having two or more transmitters for transmitting data messages intended for at least one selective call receiver using radio signals, comprising:

a system controller for encoding data information to generate the data messages which have periodic error protection at one or more burst error frequencies, wherein the system controller transmits one or more of the data messages to at least two transmitters for simultaneous transmission of one or more of the data messages;

a first transmitter having a first radio carrier frequency for transmitting a first of the one or more data messages; and

a second transmitter for simultaneously transmitting a second of the one or more data messages, wherein said second transmitter has a second radio carrier frequency which is offset from the first radio carrier frequency by an offset frequency substantially equivalent to one of the one or more burst error frequencies.

5,710,547

SELECTIVE CALL TRANSCEIVER AND METHOD OF RE-REGISTERING SAME

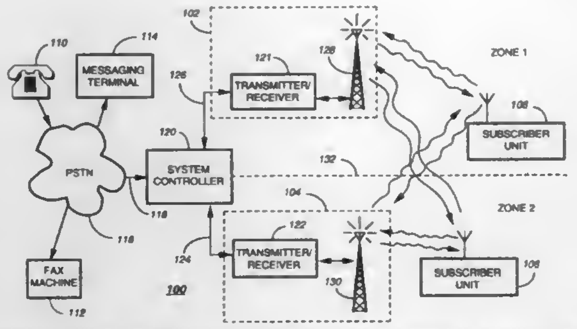
Douglas I. Ayerst, Delray Beach, Fla.; Robert Gary Goodman, Denton, and James A. Starkweather, Grapevine, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1995, Ser. No. 569,813

Int. Cl.^{6} H04Q *1/00*

U.S. Cl. 340—825.44 **4 Claims**

1. In a communication system having a base station transmitter that transmits signals on a forward channel to subscriber units, and



having a base station receiver that receives signals sent by subscriber units on a reverse channel, a method of re-establishing communication with a registered subscriber unit that has temporarily lost the forward channel signal, comprising:

a) transmitting to the registered subscriber unit, on the forward channel, information including a message and a re-registration interval;

b) upon failing to receive from the subscriber unit an acknowledgment that the message was received, determining whether the re-registration interval has been exceeded; and

c) if the re-registration interval has not been exceeded, re-transmitting the message to the registered subscriber unit.

5,710,548

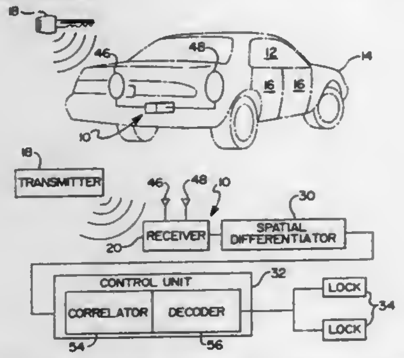
TRANSMITTER DIRECTION IDENTIFIER

Thomas John LeMense, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1995, Ser. No. 433,184

Int. Cl.^{6} G08C *19/00;* **G06F** *7/04*

U.S. Cl. 340—825.69 **18 Claims**



1. A transmitter direction identifying assembly comprising:

a transmitter for sending a coded signal;

a receiver for receiving the coded signal from said transmitter;

a spatial differentiator for locating said transmitter relative to said receiver, said spatial differentiator creating a location signal identifying direction of said transmitter relative to said receiver; and

wherein said spatial differentiator includes a high comparator and a low comparator, said high comparator defining a high threshold and said low comparator defining a low threshold.

5,710,549

ROUTING ARBITRATION FOR SHARED RESOURCES

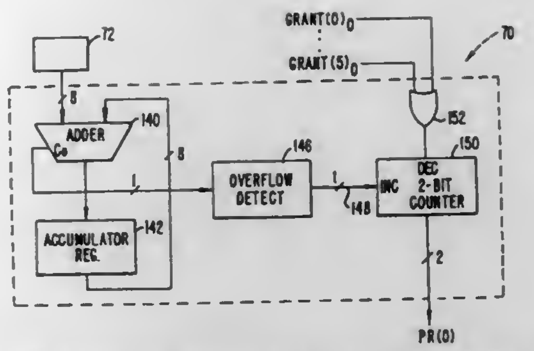
Robert W. Horst, Saratoga, Calif.; William J. Watson, and David P. Sonnier, both of Austin, Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation-in-part of Ser. No. 316,431, Sep. 30, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,663

Int. Cl.^{6} H04Q *1/18*

U.S. Cl. 340—825.5 **13 Claims**

1. In a data communication device having at least a pair of inputs and an output, the device operating to receive message data



at the pair of inputs for communication to and re-transmission from the output, a method for biasing arbitration between the pair of inputs contending for access to the output, including the steps of:

providing each of the inputs with an assigned value;

developing from the assigned value, for each of the inputs, an accumulated value and a priority value, the priority value being a count of the number of times the accumulated values realizes a predetermined value;

selecting a one of the pair of inputs for communication to the output on a first predetermined basis when the priority values of each of the pair of inputs are equal;

selecting a one of the pair of inputs for communication to the output on a second predetermined basis when the priority values of each of the pair of inputs are not equal; and

modifying the accumulated value of each of the pair of inputs having message data for communication to the output using the corresponding assigned value.

5,710,550

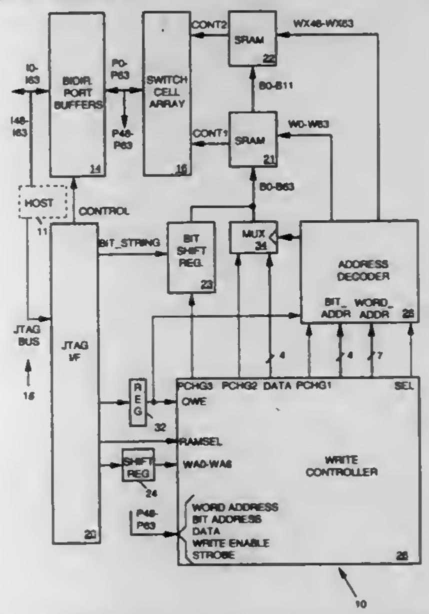
APPARATUS FOR PROGRAMMABLE SIGNAL SWITCHING

Wen-Jai Hsieh; Chi-Song Horng; Chun Chiu Daniel Wong, all of Palo Alto; Gerchih Chou, San Jose, and Shrikant Sathe, Saratoga, all of Calif., assignors to I-Cube, Inc., Campbell, Calif.

Filed Aug. 17, 1995, Ser. No. 516,322

Int. Cl.^{6} H03K *17/0412*

U.S. Cl. 340—825.79 **18 Claims**



7. An apparatus for selectively routing signals between signal ports in response to serial and parallel input commands from a host controller, each serial input command and each parallel input command including an address and data, the apparatus comprising:

a plurality of switch cells, each switch cell receiving input first and second control signals, each switch cell providing a signal

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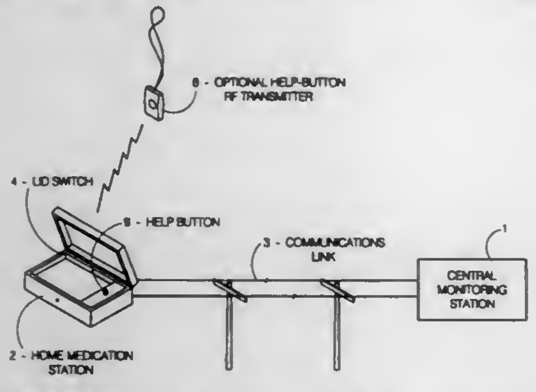
path between a separate pair of said signal ports in response to concurrent assertion of said input first and second control signals;
- a set of first memory cells, each first memory cell storing data and selectively asserting or deasserting the first control signal input to a separate one of the switch cells according to the stored data; and
- a set of second memory cells, each second memory cell storing data and selectively asserting or deasserting the second control signal input to a separate group of the switch cells according to the stored data;
- memory controller means
  - for receiving said serial input commands from said host controller and writing data included in each serial input command into a first subset of said first memory cells upon receipt of said serial input command, the first subset being identified by the address conveyed in the serial input command, and
  - for receiving said parallel input commands from said host controller and writing data included in each parallel input command into a second subset of said second memory cells upon receipt of said parallel input command, wherein the address included in said parallel command identifies the second subset of memory cells, and wherein a number of memory cells included in the particular subset is a variable function of the address.

5,710,551
SELF-MEDICATION MONITORING SYSTEM

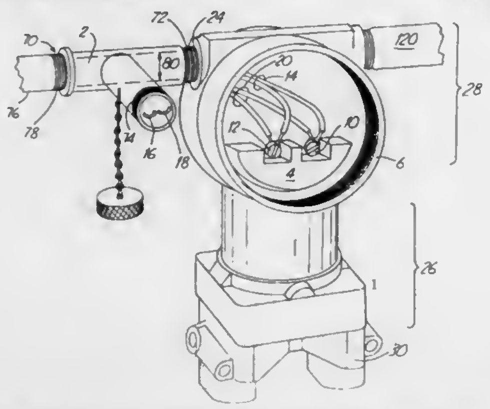
Donald G. Ridgeway, 1852 Blacks Rd., Hebron, Ohio 43025
Filed Jul. 26, 1995, Ser. No. 507,546
Int. Cl.^{6} G08B *19/00*
U.S. Cl. 340—870.09 **15 Claims**


8 - OPTIONAL HELP-BUTTON RF TRANSMITTER
4 - LID SWITCH
9 - HELP BUTTON
3 - COMMUNICATIONS LINK
1
CENTRAL MONITORING STATION
2 - HOME MEDICATION STATION
SUBSCRIBER'S HOME

1. A self-medication monitoring system for monitoring subscriber compliance with uniquely prescribed medication dosage schedules via a communication link, comprising:
- a subscriber remote station for transmission of information corresponding to a subscriber's self-medication activities via said communication link, said subscriber remote station further comprising:
  - a switch means operative to generate predetermined signals corresponding to a subscriber's self-medication activities in response to said subscriber's self-medication activities; and
  - a communicator means operative to be activated by said generated predetermined signals to responsively transmit corresponding predetermined subscriber self-medication activity messages to the central station via said communications link;
- a central monitoring station for receiving, via said communication link, and processing the information corresponding to a subscriber's self-medication activities to alarm monitor subscriber compliance with uniquely prescribed medication dosage schedules, said central monitoring station further comprising:
  - a processor means operative at the central station to uniquely preschedule non-overlapping daily medication dosage time windows of the same or varying time width for each subscriber, one such time window for each of a subscriber's prescribed daily dosages, each said time window bounded by a unique opening time and a unique closing time specified by or for said subscriber, wherein said subscriber's compliance with prescribed medication dosage schedules can be inferred if each of said subscriber self-medication activity messages is received at said central station within its respective prescheduled time window; and
- a processor means operative at said central station to alarm monitor said self-medication activity messages to assure that compliance with the subscriber's prescribed medication dosage schedules is indicated within each of said subscriber's prescheduled time windows, and at no other times.

5,710,552
BARRIER DEVICE

Steven J. McCoy, Eden Prairie; Mark S. Schumacher, Minneapolis; John A. Kielb, Eden Prairie; Donald F. Palan, Chaska; Grant B. Edwards, Blaine; Randy J. Longsdorf, Chaska, and James E. Templin, Burnsville, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Continuation-in-part of Ser. No. 316,059, Sep. 30, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 472,695
Int. Cl.^{6} G08C *19/16*
U.S. Cl. 340—870.21 **20 Claims**

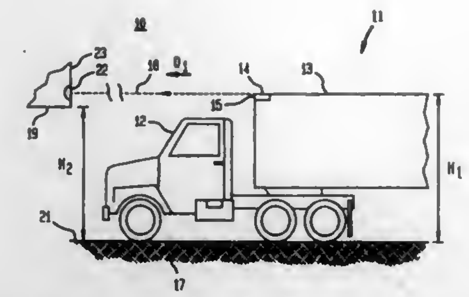


1. A barrier device for mounting in the field, comprising:
- a housing with a first aperture and an open passageway extending from the first aperture to a second aperture to carry cabling to a transmitter through the first aperture;
- a pair of conductors, separate from the cabling, passing through the first aperture for connecting for to a terminal block in a transmitter;
- a pair of signal terminals mounted to the housing and accessible from the field, the signal terminals connectable to a handheld communicator in the field; and
- a barrier circuit mounted in the housing and electrically connected between the signal terminals and the conductors, where the barrier circuit allows frequency encoded signals from the communicator to access the terminal block and limits the power available at the signal terminals.

5,710,553
APPARATUS AND METHOD FOR DETECTING OBSTACLES IN A VEHICLE PATH

Rogerio Soares, 553 Garfield Ave., Belford, N.J. 07718
Filed Jun. 16, 1995, Ser. No. 491,150
Int. Cl.^{6} G08G *1/16*
U.S. Cl. 340—903 **13 Claims**

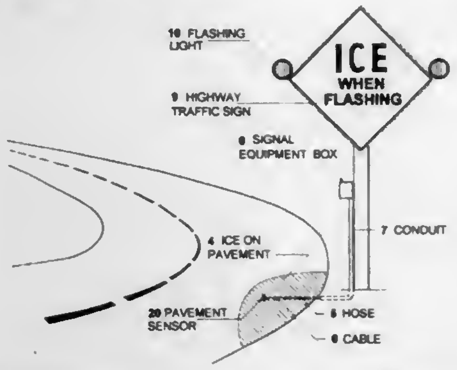
1. An apparatus for detecting an object in a path of a land vehicle comprising;



- light beam source means for sending a collimated light beam transversely towards said object from said land vehicle, the diameter of said collimated light beam is about constant at all distances; and
- mounting means for mounting said light beam source means at an upper most portion of said land vehicle;
- wherein said light beam contacts the object when said object is in the path of said uppermost portion of said land vehicle and the reflection of said light beam on said object is visually observed by a person in said land vehicle, thereby providing an indication that said object is in said path of said land vehicle to determine if there is sufficient clearance for the height of said land vehicle to pass under said object.

5,710,554
PAVEMENT ICE DETECTOR

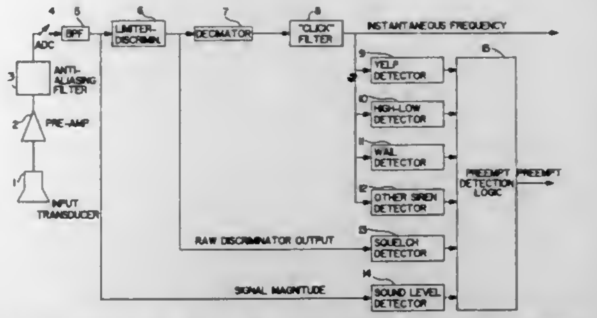
Peter R. Pettler, 10622 Banner Mine Way, Nevada City, Calif. 95959, and Lloyd H. Roberts, 14647 Pammy Way, Grass Valley, Calif. 95949
Filed Feb. 1, 1996, Ser. No. 595,569
Int. Cl.^{6} G08G *1/09*
U.S. Cl. 340—905 **5 Claims**



1. A pavement ice detector comprising: a sensor imbedded in the pavement, a semi-permeable mesh on the top surface of said sensor, a timer and air pump creating a puff of air exhausting through said sensor and a means to signal the buildup of air pressure in said sensor.

5,710,555
SIREN DETECTOR

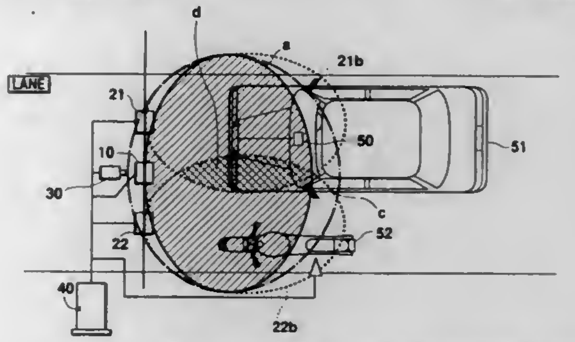
Peter Robert Henderson McConnell, and Patricia Fern Kavanagh, both of Burnaby, Canada, assignors to Sonic Systems Corporation, Vancouver, Canada
Continuation of Ser. No. 204,839, Mar. 1, 1994. This application May 17, 1996, Ser. No. 649,179
Int. Cl.^{6} G08G *1/07*
U.S. Cl. 340—916 **21 Claims**



1. A siren detector for detecting siren sounds which precess at known rates within a selected frequency band to facilitate preemptable control of traffic light signals to enable an emergency vehicle to pass through a traffic intersection on a priority basis, said detector comprising transducer means for detecting said sounds and for producing an electrical sound output signal representative thereof, first filter means for filtering said sound output signal to produce an antialiased output signal to prevent aliasing in a subsequent analog to digital conversion process, and second filter means for producing a band-limited signal by filtering said antialiased output signal to reject signals outside said selected frequency band; and limiter-discriminator means for producing an indication of the frequency of said band-limited signal.

5,710,556
DEVICE FOR LOCATING A MOVING BODY HAVING A RESPONSE UNIT

Yoshihiro Nishimura; Iwao Tanabashi; Kazumasa Nakamura, and Kouichi Yagi, all of Aichi-ken, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan
Filed Nov. 16, 1995, Ser. No. 559,093
Claims priority, application Japan, Nov. 18, 1994, 6-284722
Int. Cl.^{6} G08G *1/00;1/065*
U.S. Cl. 340—928 **20 Claims**



1. A device for locating a moving body having a response unit, said device comprising:
- an interrogation unit having a predetermined communication zone having a width which is perpendicular to a travel path of a moving body which allows a plurality of moving bodies to simultaneously exist in the communication zone, said interrogation unit transmitting a radio signal to said communication zone where said moving body having a response unit for receiving said radio signal passes;
- a receiving device having a plurality of receiving areas at least in a direction perpendicular to the travel path of said moving body so as to cover said communication zone, said receiving device being capable of receiving distinguishably each signal from said plurality of receiving areas, each of said receiving areas having a size which allows only one moving body therein; and
- a processor for determining the position of said moving body in said communication zone based on a reception result of said receiving device.

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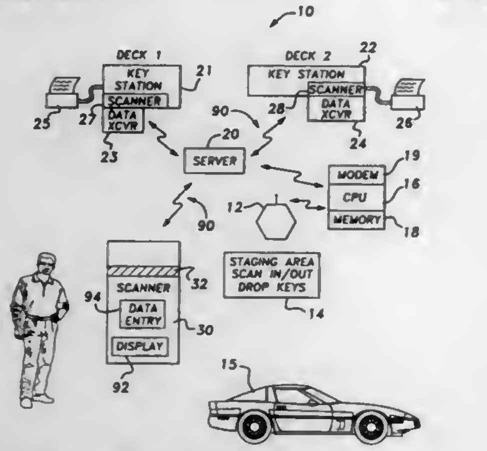
5,710,557
COMPUTERIZED VALET PARKING SYSTEM

Kai Herman Schuette, Detroit, Mich., assignor to HTV, Inc., Southfield, Mich.

Filed Jul. 25, 1996, Ser. No. 687,210

Int. Cl.^{6} B60Q *1/48*

U.S. Cl. 340—932.2 **40 Claims**



1. A valet parking system, comprising:

a ticket associated with a vehicle being parked having unique electronically readable indicia;

a data transceiver for inputting and retrieving a first set of vehicle identification data including said electronically readable indicia from said ticket;

a vehicle parking lot key station located at a vehicle parking facility remote from said data transceiver for inputting and retrieving a second set of vehicle identification data;

a central processor including a file memory for storing said first and second sets of vehicle identification data; and

said vehicle parking lot key station outputting vehicle pick-up data for retrieval purposes in response to a vehicle retrieval command from said central processor.

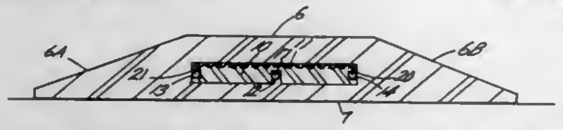
5,710,558
TRAFFIC SENSOR FOR ROADWAY PLACEMENT

Guy P. Gibson, 76433 Alder St., Oakridge, Oreg. 97463

Filed Jan. 16, 1996, Ser. No. 585,702

Int. Cl.^{6} G08G *1/01*

U.S. Cl. 340—933 **10 Claims**



1. A traffic sensor for placement on a roadway having at least one traffic lane and comprising,

an elastomeric strip for placement across the traffic lane,

an elongate carrier of elastomeric material extending lengthwise of and embedded in said strip, said carrier including an inelastic component of woven strands of synthetic material, said carrier defining a groove subjacent said inelastic component and extending in a lengthwise direction of the carrier,

an elongate electrical sensor occupying said groove and of the type actuated by a force imparted to said strip and the carrier by a wheel of a vehicle passing thereover to generate an electrical impulse, and

a conductor in circuit with said sensor and terminating exteriorly of the elastomeric strip.

5,710,559
FLIGHT SAFETY MONITORING DEVICE FOR AIRCRAFT WITH ALARM

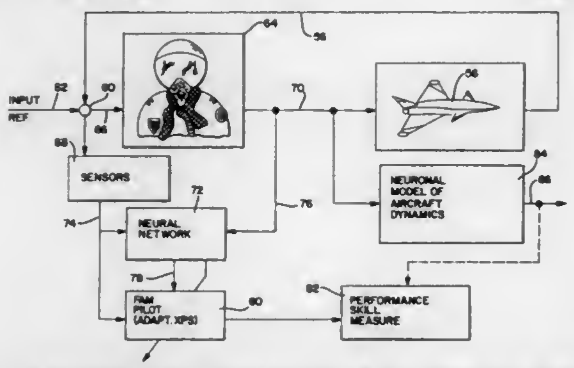
Uwe Krogmann, Überlingen, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Germany

Filed Mar. 10, 1995, Ser. No. 401,960

Claims priority, application Germany, Mar. 28, 1994, 44 10 709.9

Int. Cl.^{6} G08B *23/00*

U.S. Cl. 340—963 **11 Claims**



1. A monitoring device for monitoring flight safety of an aircraft containing sensors for aircraft data, comprising:

(a) a monitoring unit (**24**) adapted to be attached to the aircraft and containing technical equipment;

(b) said technical equipment including sensor means (**26,28,30**) for measuring said aircraft data independently of said aircraft sensors;

(c) means (**36,38**) for automatically monitoring the operability of said technical equipment of said monitoring unit (**24**);

(d) means (**36,38**) for automatically monitoring the pilot's reactions (**64**) on the basis of said aircraft data provided by said independent sensor means (**26,28,30**), said reaction monitoring means (**36,38**) being also mounted in said monitoring unit; and

(e) means for evaluating said monitored reactions to form a measure of the pilot's flying ability thereby indicating whether monitored reactions to particular sensed aircraft data conformed with expected reactions.

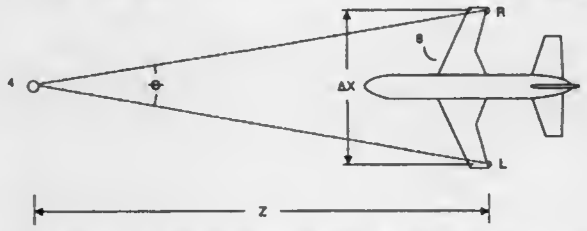
5,710,560
METHOD AND APPARATUS FOR ENHANCING VISUAL PERCEPTION OF DISPLAY LIGHTS, WARNING LIGHTS AND THE LIKE, AND OF STIMULI USED IN TESTING FOR OCULAR DISEASE

Theodore E. Cohn, Kensington, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 232,486, Apr. 25, 1994, Pat. No. 5,499,010. This application Mar. 11, 1996, Ser. No. 613,837

Int. Cl.^{6} B64D *47/06*

U.S. Cl. 340—982 **9 Claims**



1. A method of sequentially operating at least first and second spaced-apart lights in a display system, the method comprising the following steps:

(a) activating said first light for a time T1, wherein 1 ns≦T1≦100 ms;

(b) upon conclusion of said time T1 in after step (a), extinguishing said first light for a time T2, wherein 0≦T2≦150 ms, said time T2 being sufficiently long to exceed a duration of visual effect in a viewer of a said first light during said time T1; and;

(c) after said time T2 in step (b), activating said second light for a time T3, wherein 1 ns≦T3≦100 ms;

(d) after said time T3 in step (c), extinguishing said second light for a time T4, wherein 0≦T4≦900 ms; and

(e) repeating steps (a) through (d);

wherein said first and second lights are spaced apart a distance equivalent to about 1 minute to about 60 minutes of visual arc at a critical viewing distance from said lights.

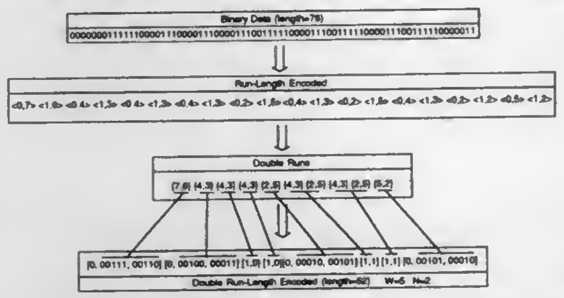
5,710,561
METHOD AND APPARATUS FOR DOUBLE RUN-LENGTH ENCODING OF BINARY DATA

Ken Schmidt, Torrance, and Jeff Horowitz, Sherman Oaks, both of Calif., assignors to Peerless Systems Corporation, El Segundo, Calif.

Filed Jan. 2, 1996, Ser. No. 582,150

Int. Cl.^{6} H03M *7/50*

U.S. Cl. 341—63 **12 Claims**



1. A system for performing lossless compression of binary data comprising:

a) means for run length encoding a stream of binary data as encoded pairs, each encoded pair representing a run of 0's and a run of 1's;

b) means for storing a history of said encoded pairs;

c) means for comparing a current encoded pair with at least first and second prior encoded pairs from said history;

d) means for
  - i) selecting one of:
    - 1) said current encoded pair to which has been added a first prepended code, and
    - 2) one of:
      - a first code indicating that said current encoded pair matched said second prior encoded pair and did not match said first prior encoded pair, and
      - a second code indicating that said current encoded pair matched said second prior encoded pair and said first prior encoded pair, said first and second codes having added thereto a second prepended code, and
  - ii) generating as an output said selected one, and a length of said selected one;

e) means for packing said output into words having a predetermined length.

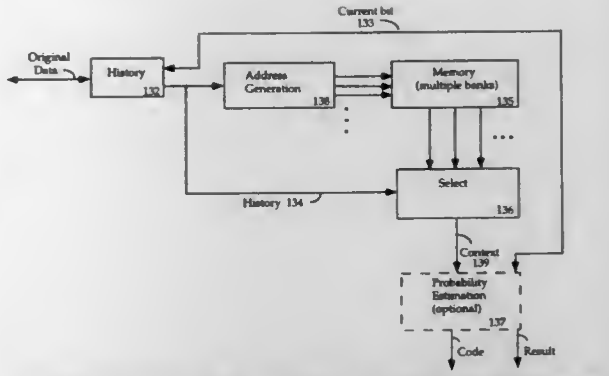
5,710,562
METHOD AND APPARATUS FOR COMPRESSING ARBITRARY DATA

Michael J. Gormish, Los Altos; Edward L. Schwartz, Sunnyvale; Ahmad Zandi, Cupertino, all of Calif., and James D. Allen, J. Uthai Thani THX, assignors to Ricoh Company Ltd., Tokyo, Japan, and Ricoh Corporation, Menlo Park, Calif.

Filed Aug. 31, 1995, Ser. No. 521,750

Int. Cl.^{6} H03M *7/30*

U.S. Cl. 341—107 **81 Claims**



1. An apparatus for compressing an input data stream comprising:

a hardware context model operable to model individual bits of arbitrary types of data, wherein the arbitrary types of data comprises data of a first bit length and a second bit length not equal to the first bit length, said model using various orders to generate a context and a binary decision for each bit in input data stream and further comprising context splitting logic that adaptively activates contexts of orders higher than those active while coding of the input data occurs;

a binary entropy coder coupled to the model to to generate a compressed bit stream in response to contexts and binary decisions from the context model based on probability estimates generated thereby.

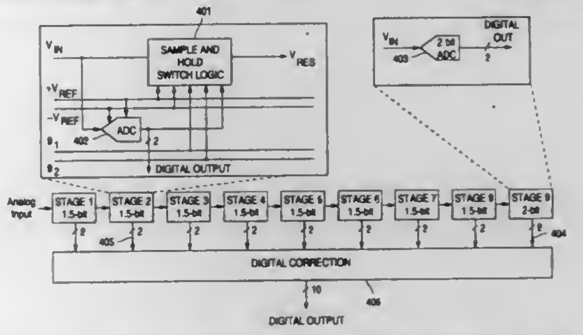
5,710,563
PIPELINE ANALOG TO DIGITAL CONVERTER ARCHITECTURE WITH REDUCED MISMATCH ERROR

Ha Vu, San Jose; Ion Opris, Sunnyvale, and Kevin E. Brehmer, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 9, 1997, Ser. No. 780,991

Int. Cl.^{6} H03M *1/14*

U.S. Cl. 341—161 **15 Claims**



1. An apparatus including a sample and hold circuit for use in a pipelined analog-to-digital converter for sampling and holding an input analog signal and providing an output analog residue signal, comprising:

a logic circuit configured to receive a logic clock signal and a plurality of digital signal bits and in accordance therewith provide a plurality of control signals, wherein said digital signal bits include a plurality of bit patterns and represent an input analog signal which has been quantized in accordance with a plurality of reference signals;

a plurality of reference signal ports configured to receive said plurality of reference signals;

an input signal port configured to receive said input analog signal;

an output signal port configured to receive an output analog residue signal;

a sample signal port configured to receive an analog sample signal;

a first switching port;

a second switching port;

a circuit reference port configured to provide a circuit ground reference;

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a first capacitance, coupled between said sample signal port and said first switching port;
a second capacitance, coupled between said sample signal port and said second switching port;
a signal routing circuit, coupled to said logic circuit and coupled between said sample signal port, said first switching port, said second switching port, said plurality of reference signal ports, said input signal port, said output signal port and said circuit reference port, configured to receive at least one routing clock signal and said plurality of control signals and in accordance therewith selectively couple said sample signal port to said circuit reference port, alternately couple said first switching port to said input signal port, said output signal port and said circuit reference port, and alternately couple said second switching port to said input signal port, said output signal port and individual ones of said plurality of reference signal ports and in accordance therewith provide said analog sample signal; and
an amplifier, coupled between said sample signal port and said output signal port, configured to receive said analog sample signal and in accordance therewith provide said output analog residue signal;
wherein:
one of said plurality of bit patterns represents a range of values of a reference analog residue signal corresponding to a predetermined range of values of said input analog signal and having minimum and maximum reference analog residue signal values which are defined in accordance with said plurality of reference signals;
said output analog residue signal includes a range of values between minimum and maximum output analog residue signal values; and
said minimum and maximum output analog residue signal values are greater than and less than said minimum and maximum reference analog residue signal values, respectively.

5,710,564

SYSTEM FOR ABSORBING ELECTROMAGNETIC WAVES AND METHOD OF MANUFACTURING THIS SYSTEM

Günter Nimtz, 34, Starenweg, 50226 Frechen, and Achim Enders, 16, Rene-Bohn-Strasse, 51061 Köln, both of Germany

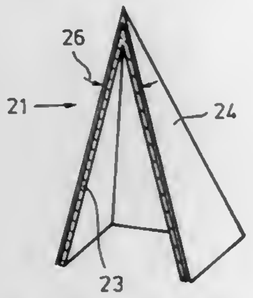
PCT No. PCT/EP94/02073, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO95/00983, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 27, 1994, Ser. No. 569,215

Claims priority, application Germany, Jun. 25, 1993, 43 21 165.8; Feb. 9, 1994, 44 04 071.7

Int. Cl.^{6} H01Q *17/00*

U.S. Cl. 342—1 **36 Claims**



1. A system for the broad band absorption of electromagnetic waves, wherein a plurality of thin surface resistance layers are arranged in a three-dimensional configuration,
each of said surface resistance layers comprising
a) a first layer of a mechanically flexible sheet material having a layer thickness less than 5 mm;
b) at least one second layer composed of a material selected from a group of materials consisting of an electrically conductive material and a semiconductive material,
said at least one second layer being applied to said first layer, said first layer forming a carrier layer for said second layer,
said second layer having a thickness in the range from 5 nm to 1,000 nm and having a uniform and constant surface resistance distribution, said second layer being substantially continuously manufactured by a process selected from the group of powder coating and deposition processes.

5,710,565

SYSTEM FOR CONTROLLING DISTANCE TO A VEHICLE TRAVELING AHEAD BASED ON AN ADJUSTABLE PROBABILITY DISTRIBUTION

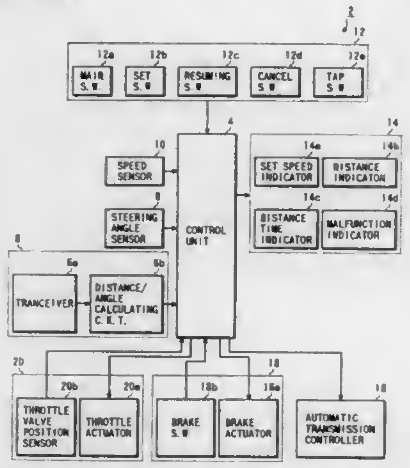
Noriaki Shiral, Oobu; Katsuhiko Hibino, Anjo, and Takao Nishimura, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 5, 1996, Ser. No. 626,140

Claims priority, application Japan, Apr. 6, 1995, 7-081393

Int. Cl.^{6} G01S *13/93*

U.S. Cl. 342—70 **50 Claims**



1. A system for controlling an intervehicle distance between a system vehicle equipped with the system and a preceding vehicle present ahead of the system vehicle comprising:
speed measuring means for measuring a speed of the system vehicle;
beam scanning means for scanning a beam over a given scanning angle in a width-wise direction of the system vehicle and receiving beams reflected from objects present within a forward detection zone defined by the scanning angle to detect the objects;
distance and angular position determining means for determining distances to and angular positions of the objects in the forward detection zone based on the reflected beams:
relative position and speed determining means for determining relative positions and relative speeds of the objects to the system vehicle based on the distances and the angular positions of the objects determined by said distance and angular position determining means;
curve determining means for determining a degree of a curve in a road on which the system vehicle is traveling;
same lane probability determining means for determining same lane probabilities of the objects being present in the same traffic lane as the system vehicle based on the degree of the curve determined by said curve determining means and the relative positions of the objects determined by said relative position and speed determining means;
target preceding vehicle selecting means for selecting a target preceding vehicle out of the objects in the forward detection zone based on the same lane probabilities determined by said same lane probability determining means; and
intervehicle distance control means for controlling an intervehicle distance between the system vehicle and the target preceding vehicle selected by said target preceding vehicle selecting means, said intervehicle distance means controlling the speed of the system vehicle measured by said speed measuring means to control the intervehicle distance.

5,710,566

METHOD FOR IMPLEMENTING A WIRELESS DATA EXCHANGE BETWEEN A FIXED STATION AND MOVING OBJECTS PARTICULARLY VEHICLES

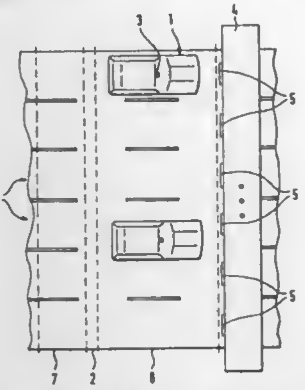
Wilhelm Grabow, Nordstemmen, and Felix Dobias, Lange Trift, both of Germany, assignors to Robert Bosch GmbH, Germany

Continuation of Ser. No. 252,309, Jun. 1, 1994, abandoned. This application Oct. 16, 1996, Ser. No. 734,420

Claims priority, application Germany, Jun. 1, 1993, 43 18 108.2

Int. Cl.^{6} G01S *5/04;* **H03M** *1/60;* **G08G** *1/00*

U.S. Cl. 342—457 **14 Claims**



1. A method of performing a wireless data exchange between a fixed station and an object moving relative to the fixed station, the object moving on a road having a first lane, comprising the steps of:
in a first phase,
sweeping a search territory in the first lane using a single antenna of the fixed station, the single antenna generating an output beam having a profile,
checking for a response signal from a transceiver disposed on the object using the single antenna, and
determining a location of the object with the single antenna based upon a correlation between a time of reception of the response signal and an instantaneous adjustment value of the profile of the single antenna, the instantaneous adjustment value indicating an instantaneous amplitude of the response signal; and
in a second phase,
fixing the profile of the single antenna on the transceiver of the object using the determined location of the object in the first lane in order to perform the data exchange between the single antenna and the transceiver of the object.

5,710,567

ANTENNA LOCKING DEVICE USING MAGNETIC ATTRACTIVE ELEMENTS WHEN ANTENNA IS EXTENDED

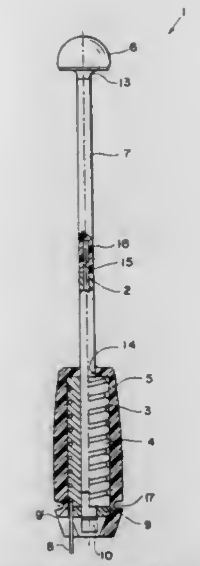
Magnus Funke, Åkersberga, Sweden, assignor to Allgon AB, Akersberga, Sweden

Filed Jan. 24, 1996, Ser. No. 590,911

Claims priority, application Sweden, Oct. 25, 1995, 9503758

Int. Cl.^{6} H01Q *1/24*

U.S. Cl. 343—702 **19 Claims**



1. An antenna device for a piece of equipment for transmitting and/or receiving radio signals, said antenna device comprising a first extendable antenna which is movable between an extended position where the first extendable antenna is coupled to circuitry of the piece of equipment and a retracted position where the first extendable antenna is essentially not coupled to said circuitry, said extendable antenna having a lower portion equipped with first holding means for cooperating with second holding means arranged on a guide means for holding the extendable antenna such that the extendable antenna is releasably locked in the extended position, wherein the extendable antenna is releasably locked by magnetic attraction between the first and second holding means, said first and second holding means comprising mutually magnetically attractive elements.

5,710,568

ANTENNA AND METHOD OF MANUFACTURE OF A RADIO

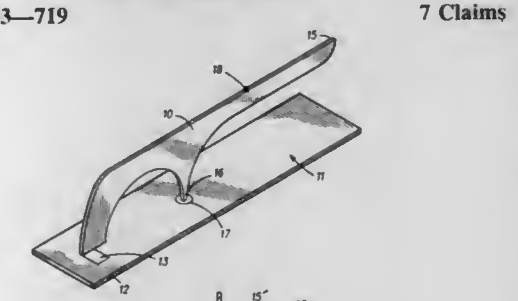
Gadi Shirazi, Ramat-Gan; Uzi Zakai, Reuth, and Shimon Medalsy, Rishon Le Zion, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

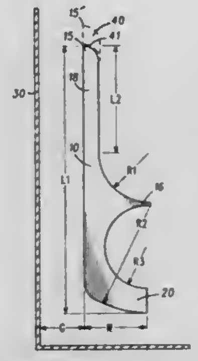
Filed Jun. 8, 1995, Ser. No. 488,713

Claims priority, application United Kingdom, Jun. 11, 1994, 9411771

Int. Cl.^{6} H01Q *1/04*

U.S. Cl. 343—719 **7 Claims**





1. An underground antenna comprising:
a generally elongate and planar radiating part having a free end, a ground connection remote from the free end and a feed connection between the free end and the ground connection

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and connected to radio electronic circuitry having a given impedance and wherein the elongate radiating part comprises an elongate portion extending between the feed connection and the free end, which is dimensioned for impedance matching with the given impedance; and

a reflective plane juxtaposed and generally parallel to the elongate radiating pan with the plane of the radiating part being generally perpendicular to the reflective plane, the ground connection being mounted on the reflective plane, thereby providing electrical ground connection and mechanical support to the elongate radiating part.

5,710,569

ANTENNA SYSTEM HAVING A CHOKE REFLECTOR FOR MINIMIZING SIDEWARD RADIATION

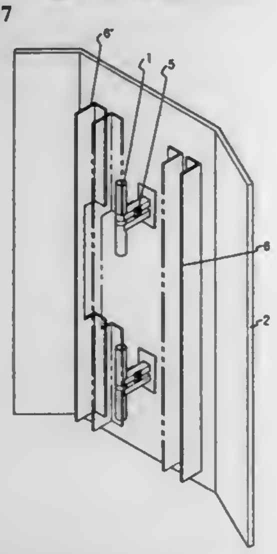
Jung Kun Oh; Yong Hee Lee; Jae Ho Lee; Jung Sik Kim, and Byung Ill Oh, all of Kyunggi-do, Rep. of Korea, assignors to Ace Antenna Corporation, Kyunggi-do, Rep. of Korea

Filed Apr. 25, 1995, Ser. No. 428,012

Claims priority, application Rep. of Korea, Mar. 3, 1995, 95-4409

Int. Cl.^{6} H01Q *21/00*

U.S. Cl. 343—817 **3 Claims**



1. An antenna system comprising:

a radiating means for radiating a radio frequency, which is converted from electric power, and which has an impedance matching unit and a power divider;

a first reflecting means for reflecting and filtering said radio frequency; and

at least one second reflecting means for filtering said radio frequency radiated in a sideward direction of said antenna system, which is vertically attached to said first reflecting means, and is able to be moved in a horizontal direction.

5,710,570

INFORMATION PROCESSING UNIT HAVING DISPLAY FUNCTIONS

Hiroshi Wada, Fujisawa; Jun Kitabara, Yokohama; Yoshiaki Nomura, Kawasaki, and Mariko Hara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,427

Claims priority, application Japan, Aug. 26, 1994, 6-201748

Int. Cl.^{6} G09G *3/36;5/00*

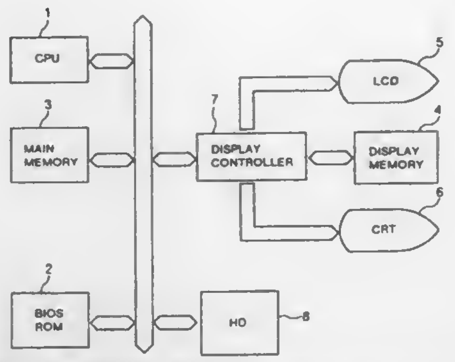
U.S. Cl. 345—3 **18 Claims**

1. An information processing unit comprising:

a central processing unit;

a non-volatile memory for storing a start-up processing of said information processing unit;

a main memory;



a liquid crystal display; and

a display controller for generating at least one of a display signal for said liquid crystal display and a display signal for a cathode ray tube display, and controlling the frequency of the display signals generated; wherein:

said central processing unit displays a setup screen for determining a device specification including an item for allowing a user to select whether or not each of said liquid crystal display and said cathode ray tube display is to be used, on said liquid crystal display during the start-up processing of said information processing unit, controls said display controller in accordance with the result of said selection and changes the frequency of said display signal of at least said liquid crystal display.

5,710,571

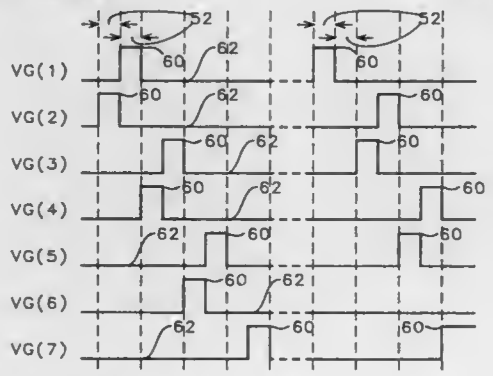
NON-OVERLAPPED SCANNING FOR A LIQUID CRYSTAL DISPLAY

Fang-Chien Kuo, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 13, 1995, Ser. No. 557,653

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—94 **18 Claims**



1. A method of driving a thin film transistor liquid crystal display, comprising the steps of:

providing a thin film transistor liquid crystal display having a matrix array of cells formed in N rows by M columns, where N is an even positive integer and M is a positive integer, wherein each cell comprises a pixel connected to a switching element, each said switching element having a row electrode and a column electrode wherein each cell is selected by applying a selecting voltage to said row electrode or not selected by applying a non selecting voltage to said row electrode;

connecting said row electrodes in each of said N rows of cells to a row select line thereby forming row select lines 1 through N;

connecting said column electrodes being in each of said M columns of cells to a column select line thereby forming column select lines 1 through M;

providing means for selecting rows 1 through N of said cells using N periodic voltages applied to said N row select lines wherein each of said N periodic voltages has a scanning period made up of an odd field followed by an even field, has a voltage level of either said selecting voltage or said non selecting voltage, said means for selecting rows 1 through N comprises sequentially applying said selecting voltage level to said row select lines 2, 1, 4, 3, 6, 5, 8, 7, . . . , N-4, N-5, N-2, N-3, N and N-1 in said odd field of said scanning period or selectively applying said selecting voltage level to row select line 1, no said row select line, said row select lines 3, 2, 5, 4, 7, 6, . . . , N-5, N-6, N-3, N-4, N-1, and N-2 in said even field of said scanning period, and no more than one of said N periodic voltages is said selecting voltage at any one time;

providing video signals 1 through M; and

applying said video signals 1 through M to said column select lines 1 through M.

5,710,572

IMAGE DISPLAY APPARATUS AND METHOD

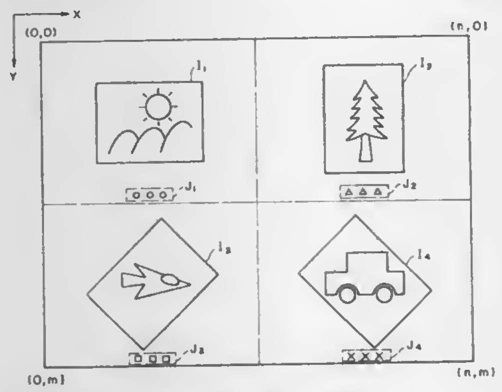
Kaname Nihei, Asaka, Japan, assignor to Fuji Photo Film, Co., Ltd., Kanagawa-ken, Japan

Filed Apr. 7, 1995, Ser. No. 418,375

Claims priority, application Japan, Apr. 8, 1994, 6-093896

Int. Cl.^{6} G09G *5/00*

U.S. Cl. 345—115 **9 Claims**



1. An image display apparatus comprising:

a memory, storing plural items of image data, which represent images of a plurality of frames captured by an image sensing device, having an angle measuring device, in a form correlated with angle data representing obtained from the angle measuring device and an angle of inclination of the image sensing device when each image was captured;

a display device, displaying the images of the plurality of frames simultaneously on a single display screen;

an image size reduction circuit, reducing each of the plural items of image data;

a rotating circuit, rotating the plural items of image data, which have been reduced by said image size reduction circuit, based on the angle data corresponding to each image; and

a display control device, performing control so as to determine a display position, in said display device, of each of the plural items of image data rotated by said rotating circuit, and to display, at respective ones of the display positions decided, the images of the plurality of frames represented by the rotated plural items of image data.

5,710,573

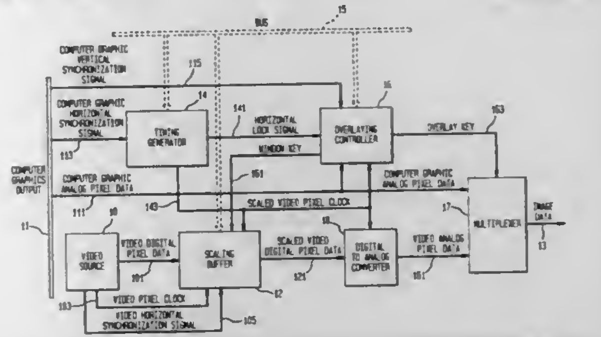
SCALED VIDEO OUTPUT OVERLAID ONTO A COMPUTER GRAPHICS OUTPUT

Chi-Cheng Hung; Jack Chang; Rong-Fuh Shyu, and Wen-I Chu, all of Hsinchu, Taiwan, assignors to Winbond Electronics Corp., Taiwan

Filed May 4, 1995, Ser. No. 434,974

Int. Cl.^{6} G06F *15/66;* **H04N** *5/262*

U.S. Cl. 345—127 **26 Claims**



1. A video scaling apparatus, storing video digital pixel data, for outputting scaled video data which has a scale factor value of N/D with respect to the video digital pixel data, comprising:

control means responsive to a scale control signal, for generating an address increment signal which corresponds to the scale factor value of N/D, the scale control signal being one of a normal signal, a scale-down signal, and a scale-up signal:

output address pointer means, responsive to the address increment signal, an address adjustment signal and a pixel clock of the scaled video data, for generating an output address, the address adjustment signal is enabled each time an accumulated truncation error caused by the scale factor value of N/D is greater than a criterion value; and

a dual port memory, storing the video digital pixel data and, responsive to the output address, for generating the scaled video data; and wherein the control means comprises:

a control register, coupled to a controller bus, for selectively generating the scale control signal,

an address increment register, coupled to the controller bus, for generating the address increment signal;

a criterion register, coupled to the controller bus, for storing the criterion value; and

a remain addend register coupled to the controller bus, the remain addend register has a first input receiving the scale-down signal and a second input receiving the address adjustment signal.

5,710,574

METHOD AND SYSTEM FOR POSITIONING A GRAPHICAL POINTER WITHIN A WIDGET OF A DATA PROCESSING SYSTEM GRAPHICAL USER INTERFACE

William Jaaskelainen, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1995, Ser. No. 557,512

Int. Cl.^{6} G09G *5/08*

U.S. Cl. 345—145 **13 Claims**

1. A method for positioning a graphical pointer displayed within a display device of a data processing system, said data processing system including a graphical pointing device, said method comprising:

displaying a predefined region within said display device, wherein said predefined region is a portion of an output display of said display device;

displaying a graphical pointer within said display device;

defining a first relationship which correlates manipulation of said graphical pointing device and movement of said graphical pointer when said graphical pointer is within a first subregion within said predefined region;

defining a second relationship which correlates manipulation of said graphical pointing device and movement of said graphi-

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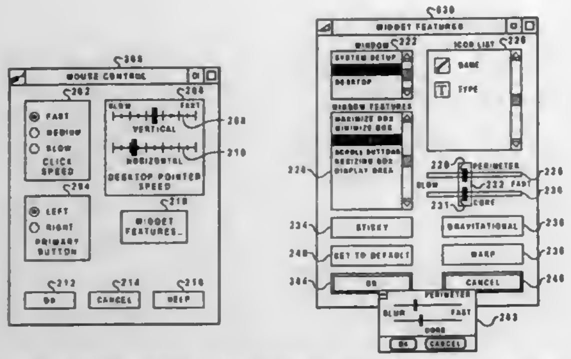


cal pointer when said graphical pointer is within a second subregion within said predefined region; and

in response to a manipulation of said graphical pointing device, moving said graphical pointer in accordance with said first relationship when said graphical pointer is displayed at positions within said first subregion and in accordance with said second relationship when said graphical pointer is displayed at positions within said second subregion, wherein positioning of said graphical pointer within said predefined region is enhanced.

5,710,575

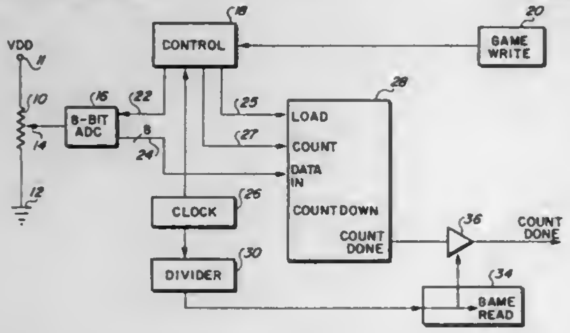
SYSTEM FOR DIGITALLY EMULATING THE ANALOG POSITION OF A PC GAME PORT JOYSTICK

Gary Hicok, Mesa; Kenneth Potts, Gilbert, and Scott Harrow, Scottsdale, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed May 24, 1996, Ser. No. 653,255

Int. Cl.^{6} G09G ***5/08***

U.S. Cl. 345—161 **9 Claims**



1. A system for providing a digital representation of the setting of a potentiometer including in combination:

an analog-to-digital converter having an input coupled with a source of analog signals from a potentiometer and having digital output;

a digital counter coupled to the output of said analog-to-digital converter to receive signals therefrom and having an output;

a sample device coupled with the output of said digital counter;

a control circuit coupled with said digital counter to load said counter with the output from said analog-to-digital converter at a predetermined time;

a clock circuit producing clock signals coupled with said counter to cause said counter to count down to an initial value to produce an output signal on the output thereof when said count down to said initial value is attained; and

a circuit coupled with said clock circuit for causing said sample device periodically to sample said output from said digital counter at a predetermined rate.

5,710,576

PORTABLE ELECTRONIC APPARATUS HAVING PARTIAL DISPLAY FUNCTION

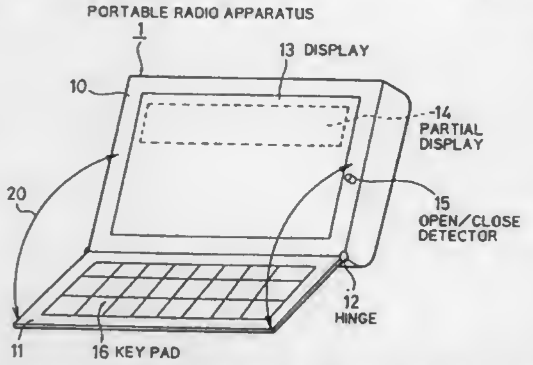
Toshiro Nishiyama, Shizuoka, and Yasuhiro Kobayashi, Tokyo, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 423,857

Claims priority, application Japan, Apr. 18, 1994, 6-077724

Int. Cl.^{6} G09G ***5/00;*** **H04B** ***1/08;*** **H04M** ***1/00***

U.S. Cl. 345—169 **46 Claims**



1. A method for displaying data on a display having a predetermined display area in a portable electronic apparatus which comprises a first housing provided with the display in an inner side of the first housing and a second housing connected to the first housing such that the first housing and the second housing are opened and closed, the method comprising the steps of:

determining a partial display area of the predetermined display area which is visible in a closed state of the first housing and the second housing; and

switching a display area of the display between the predetermined display area and the partial display area.

5,710,577

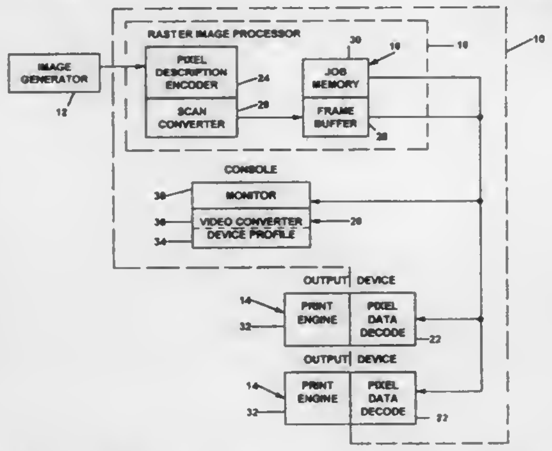
PIXEL DESCRIPTION PACKET FOR A RENDERING DEVICE

Robert A. Laumeyer, Minneapolis, Minn., assignor to Lasermaster Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 319,491, Oct. 7, 1994, Pat. No. 5,572,632. This application Mar. 31, 1995, Ser. No. 414,577

Int. Cl.^{6} G09G ***5/36***

U.S. Cl. 345—189 **10 Claims**



8. A rendering system for rendering of a source image PDL descriptions as an arrangement of pixel packet data, the rendering system comprising:

converting means for rendering image description commands into a plurality of discrete adjacent pixel locations each having color values associated therewith specified in a device independent color system;

a two dimensional memory storage device for storing the color values associated with each said pixel location and for storing a control information set for a digital output device in an unused memory portion of the two dimensional memory storage device; and wherein both a

video display monitor and the digital output device electrically connect to the memory storage device to display a high fidelity image which is accurately representative of the source image.

5,710,578

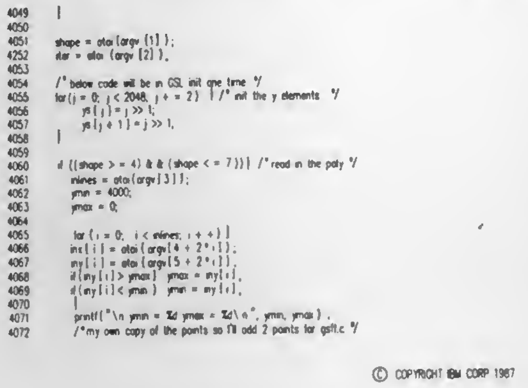
COMPUTER PROGRAM PRODUCT FOR UTILIZING FAST POLYGON FILL ROUTINES IN A GRAPHICS DISPLAY SYSTEM

Gary Michael Beauregard; Larry Keith Loucks; Khoa Dang Nguyen, and Robert John Urquhart, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 130,851, Dec. 9, 1987, Pat. No. 4,962,468. This application May 9, 1990, Ser. No. 521,858

Int. Cl.^{6} G06T ***11/40***

U.S. Cl. 345—429 **10 Claims**



```
}

shape = atoi(argv[1]);
star = atoi (argv [2]).

/* below code will be in GSL init one time */
for(j = 0; j < 2048; j + = 2) { /* init the y elements */
     ys[j] = j >> 1;
     ys[j + 1] = j >> 1,
}

if ((shape > = 4) & & (shape < = 7)) { /* read in the poly */
   nlines = atoi(argv[3]);
   ymin = 4000;
   ymax = 0;

   for (i = 0;  i < nlines; i + +) {
   inx[i] = atoi(argv[4 + 2*i]);
   iny[i] = atoi(argv[5 + 2*i]),
   if(iny[i] > ymax)  ymax = iny[i],
   if(iny[i] < ymin )  ymin = iny[i],
   }
   printf("\n ymin = %d ymax = %d\n", ymin, ymax) .
   /*my own copy of the points so I'll add 2 points for gsft.c */
```

© COPYRIGHT IBM CORP 1987

1. An article of manufacture comprising:

a computer usable medium having computer readable program code means embodied therein for causing a polygon having a boundary definable by a plurality of selectable pels on a graphics display to be filled, the computer readable program code means in said article of manufacture comprising:

computer readable program code means for causing a computer to effect, with respect to one boundary line at a time, a sequential traverse of said plurality of selectable pels of each respective said boundary line;

computer readable program code means for causing the computer to store in an array during said traverse a value of an outer pel of said boundary of said plurality of selectable pels for each one of a plurality of scan lines of said polygon; and

computer readable program code means for causing the computer to draw a fill line, after said traverse, between said outer pels having said stored values, for each said one of said scan lines.

5,710,579

SENSOR SYSTEM FOR PRINTERS

Richard A. Hahs, Anaheim, and August D. Coby, Brea, both of Calif., assignors to CalComp Inc., Anaheim, Calif.

Filed May 4, 1995, Ser. No. 434,214

Int. Cl.^{6} B41J ***2/195;24/393;2/175***

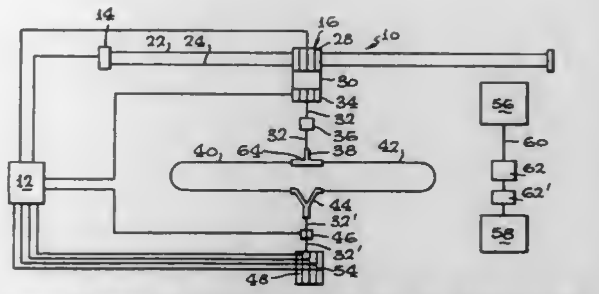
U.S. Cl. 347—7 **3 Claims**

1. Sensor system for a printer having a print carriage comprising:

an ink source;

a print head; and

coupling means for coupling said ink source to said print head, said coupling means including a tube for carrying said ink and



sensor means for detecting voids in said ink carried by said tube, said sensor means being positioned in close proximity to said ink source and said print head; and,

controller means coupled to said sensor means and responsive to signals therefrom to stop said print carriage when voids are simultaneously detected by said sensor means positioned at said ink source and said print head.

5,710,580

INK JET RECORDING HEAD AND INK JET RECORDING APPARATUS PROVIDED WITH THE RECORDING HEAD

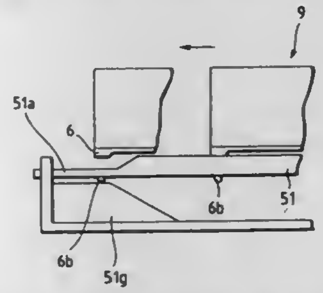
Naoji Otsuka, Kawasaki; Hiromitsu Hirabayashi, Yokohama; Atsushi Arai, Kawasaki; Hirofumi Hirano, Yokohama; Kentaro Yano, Yokohama; Hitoshi Sugimoto, Yokohama, and Masaharu Ikado, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 380,143, Jan. 27, 1995, abandoned, which is a continuation of Ser. No. 104,592, Aug. 10, 1993, abandoned, which is a continuation of Ser. No. 748,824, Aug. 22, 1991, abandoned. This application Jan. 28, 1997, Ser. No. 789,060

Claims priority, application Japan, Aug. 24, 1990, 2-223474

Int. Cl.^{6} B41J ***2/165***

U.S. Cl. 347—32 **91 Claims**



1. An ink jet recording head mountable on a recording apparatus having a cleaning member which moves, relative to the ink jet recording head, into contact with a surface provided with an ink discharge port and having an area provided with said ink discharge port for discharging ink and which serves to clean said area, said recording head comprising:

a recessed portion provided at said area and in a vicinity of said ink discharge port, said recessed portion being positioned in a route of said cleaning member moving in contact with said ink discharge port and upstream of said ink discharge port with respect to a moving direction of said cleaning member as it moves relative to the ink jet recording head and relative to the surface provided with the ink discharge port.

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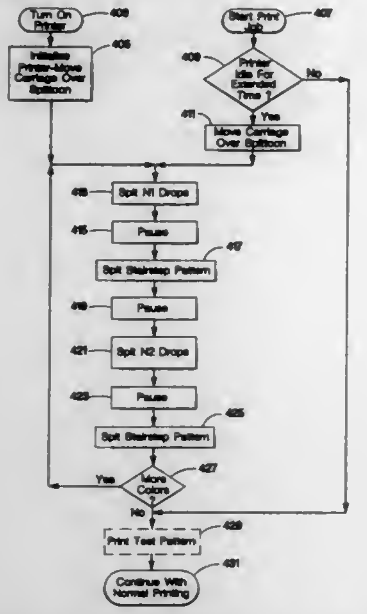
5,710,581
INKJET PRINTHEAD HAVING INTERMITTENT NOZZLE CLEARING

Earl L. Barton, Corvallis, Oreg., and Thomas J. Purwins, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 29, 1994, Ser. No. 283,318
Int. Cl.^{6} B41J *2/165*

U.S. Cl. 347—35 **24 Claims**



1. A method of clearing blocked nozzles in an inkjet printer printhead having a mechanism for expelling ink from nozzles, the method comprising, without interruption or manual intervention, the steps of:

(a) expelling ink in a first time segment from the printhead nozzles in a first pattern of nozzle expulsions for a first number of nozzle expulsions;

(b) pausing from ink expulsion for a period of time immediately following said first time segment, said period of time being equal to or less than said first time segment; and

(c) expelling ink in a second time segment from the printhead nozzles in a second pattern of nozzle expulsions for a second number of nozzle expulsions immediately following said pausing step, each printhead nozzle expelling ink at least once during said second time segment, such expelling of ink in a second time segment further comprising the step of sequentially expelling ink from each printhead nozzle of predetermined nozzles of the printhead nozzles as said second pattern of nozzle expulsions at a duty cycle of no more than 15 percent of that of said expulsion of ink in a first time segment for a first number of nozzle expulsions.

5,710,582
HYBRID INK JET PRINTER

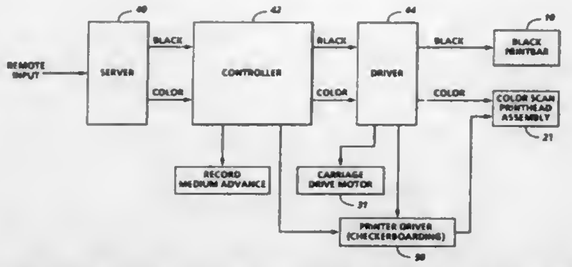
William G. Hawkins, Webster; Ivan Rezanka, Pittsford; Roger G. Markham; Dale R. Ims, both of Webster, and Donald J. Drake, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1995, Ser. No. 569,034
Int. Cl.^{6} B41J *2/155;2/21*

U.S. Cl. 347—42 **9 Claims**

1. A thermal ink jet printer forming part of a shared LAN wherein at least one full page width printbar is positioned adjacent a recording medium to record black images thereon, comprising, in combination,

a partial width color printhead assembly mounted in a scanning mode of operation across the width of the recording medium to record color images thereon and



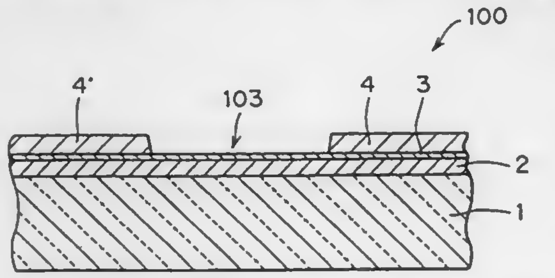
control means for receiving image print signals written in a PDL from a remote source and for adapting these signals to create drive signals for selectively operating said full width printbar and said color printhead assembly in a recording mode of operation and wherein said control means further includes printer server means for decomposing said print signals and generating bitmap signals for operating drive circuitry associated with said full width printbar and said color assembly, said printer server means further examining color header information for said PDL image print signals and, upon identifying color information is present in said header information, decomposing the image and sending the decomposed output signals to the color assembly while, alternately, when noting the lack of color information in the header, decomposing the image print signals and routing the decomposed print signals image directly to the full width printbar.

5,710,583
INK JET IMAGE RECORDER

Masao Mitani, Katsuta, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 68,348, May 28, 1993, abandoned.
This application Dec. 29, 1995, Ser. No. 587,803
Claims priority, application Japan, May 29, 1992, 4-138498; Jul. 3, 1992, 4-176731; Mar. 26, 1993, 5-068257
Int. Cl.^{6} B41J *2/05*

U.S. Cl. 347—62 **32 Claims**



1. A liquid droplet ejecting recording head for ejecting from an orifice a recording liquid filled in a chamber communicated with the orifice in the form of a droplet, to thereby attach the droplet to an image recording medium and record an image thereon, said liquid droplet ejecting recording head comprising:

a wall defining a chamber for being filled with recording liquid, said wall having a portion for defining said orifice communicated with the chamber;

a thin-film resistor provided on a surface of said wall facing the chamber so as to be located in the chamber, said thin-film resistor having one surface facing the chamber with which said thin-film resistor is exposed to the recording liquid contained in the chamber;

means for energizing said thin-film resistor with pulsed electric current for generating pulsed heat to directly heat the recording liquid, to thereby allow the recording liquid to be ejected outside through the orifice from the chamber in the form of a droplet and to be attached onto a surface of an image recording medium positioned in confrontation with the orifice,

wherein said thin-film resistor is made of a thin film of Cr—Si—SiO alloy, said thin film of Cr—Si—SiO alloy producing anti-cavitation and anti-galvanization properties of the thin-film resistor;

said liquid droplet ejecting recording head further comprising a thin-film conductor electrically connected to the thin-film resistor for applying the pulsed electric current thereto,

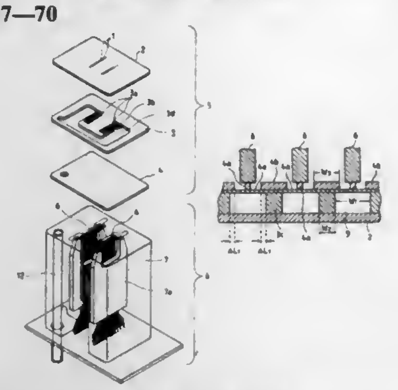
said thin-film conductor being provided on said thin-film resistor so as to have a surface with which said thin-film resistor is exposed to the recording liquid contained in the chamber, said thin-film conductor comprising nickel.

5,710,584
INK JET RECORDING HEAD UTILIZING A VIBRATION PLATE HAVING DIAPHRAGM PORTIONS AND THICK WALL PORTIONS

Kazunaga Suzuki; Minoru Usui; Noriaki Okazawa; Kazuhiko Miura, and Takahiro Naka, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 349,992
Claims priority, application Japan, Nov. 29, 1993, 5-298475; Nov. 29, 1993, 5-298476; Nov. 24, 1994, 6-314109
Int. Cl.^{6} B41J *2/045*

U.S. Cl. 347—70 **13 Claims**



7. An ink jet recording head comprising:

a substrate unit formed by laminating and fixing a flow path forming plate, a nozzle plate, and a vibration plate, said flow path forming plate having at least one pressure producing chamber bounded by partition walls, at least one ink supply inlet, and a common ink chamber; said nozzle plate having at least one nozzle opening communicating with the pressure producing chamber; said vibration plate having at least one diaphragm portion, the diaphragm portion being resiliently deformable in response to a displacement force applied to the diaphragm portion,

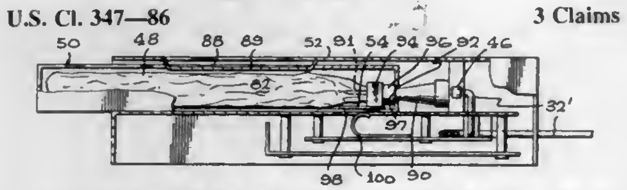
wherein said vibration plate has a frame-like thick wall portion confronting the partition walls bounding the pressure producing chamber, the frame-like thick wall portion is thicker than the diaphragm portion, and the frame-like thick wall portion overhangs the pressure producing chamber at least at a surface of the frame-like thick wall portion facing the partition walls and attached to the diaphragm portion.

5,710,585
INK SOURCE FOR AN INK DELIVERY SYSTEM

Charles J. Sabonis, San Ramon, and Stephen R. Boss, Claremont, both of Calif., assignors to CalComp Inc., Anaheim, Calif.

Filed May 4, 1995, Ser. No. 434,641
Int. Cl.^{6} B41J *2/175*

U.S. Cl. 347—86 **3 Claims**



1. An ink source for an ink delivery system for a printer having a print head comprising:

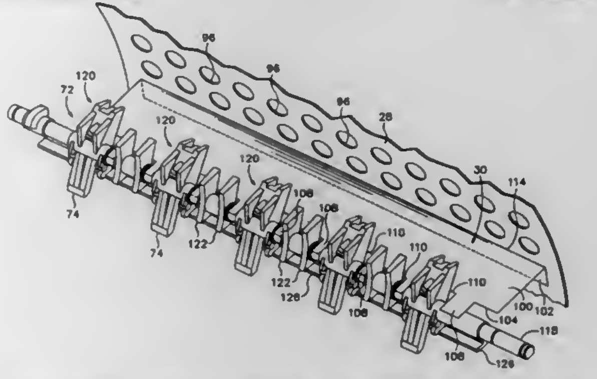
a flexible bag having a selected combined individual volume of ink and individual volume of gas therein, said selected individual volume of gas including a selected volume of dead space for accommodating expansion of said gas and ink in the event of atmospheric and temperature changes, said selected volume of said dead space being 9–9.5% of said combined volume of said bag.

5,710,586
INK JET PRINTER HAVING WEBS BETWEEN STRIPPER FINGERS

Ernest I. Esplin, Sheridan, Oreg.; Jeffrey J. Anderson, Camas, Wash.; Jeffery J. Clark, Tigard, Oreg.; Terry A. Smith, Wilsonville, Oreg.; Mike C. Gordon, Wilsonville, Oreg., and Raul Krivoy, Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 27, 1995, Ser. No. 379,231
Int. Cl.^{6} B41J *2/01;29/13*

U.S. Cl. 347—103 **10 Claims**



1. A computer printer for generating images on media sheets, the printer comprising:

a printer housing including an outlet aperture and at least a first inlet aperture;

a frame contained within the housing and connected thereto;

a printing mechanism connected to the frame, the printing mechanism comprising an ink jet print head operable to expel droplets of ink onto an adjacent receiving surface;

a ventilator connected to the frame and contained within the housing and operable to exhaust air through the outlet aperture;

the housing including an air flow pathway passing between the inlet aperture and the outlet aperture, and the ventilator being disposed in the air flow pathway, such that air flows along the air flow pathway in response to operation of the ventilator, at least a first portion of the air flow pathway passing through a position vertically above at least a first portion of the printing mechanism;

a media transport mechanism connected to the frame and contained within the housing, the transport mechanism including a media pathway having at least a portion passing adjacent to at least a portion of the printing mechanism, such that media passing through the media pathway may be imprinted by the printing mechanism, the transport mechanism including a plurality of stripper fingers positioned adjacent the receiving surface, the fingers including gaps therebetween, each of the gaps being blocked at least partially to prevent debris transmission therethrough by a web spanning between adjacent ones of the fingers, such that debris entrained within the air flow pathway and falling downwardly therefrom tends to rest atop the web spanning between the adjacent fingers.

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5,710,587

PRINTHEAD CARRIAGE MOVEMENT TRIGGERING SYSTEM FOR SHEET CONVEYANCE IN A RECORDING APPARATUS

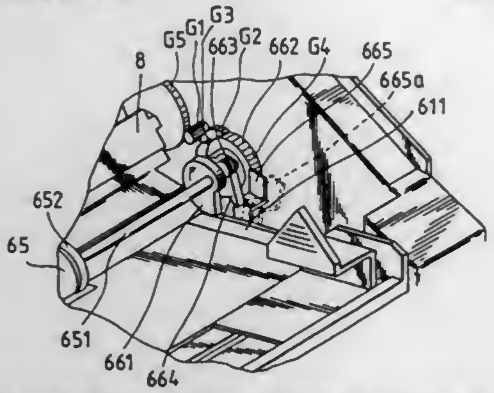
Tetsuo Suzuki, Kawasaki; Tamaki Hashimoto, Yokohama, and Takao Aichi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 348,078, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 915,748, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 417,051, Oct. 4, 1989, abandoned. This application Feb. 26, 1996, Ser. No. 606,683

Claims priority, application Japan, Oct. 7, 1988, 63-254213

Int. Cl.^{6} B41J *2/01*

U.S. Cl. 347—104 **47 Claims**



1. An apparatus having a head member for effecting recording on a sheet member conveyed by a conveying device in a predetermined direction, said apparatus comprising:

a carriage for moving the head member in a direction perpendicular to the predetermined direction;

a drive source;

trigger means provided in a moving route of the head member and outside of a recording area, said trigger means allowing a drive force from said drive source to be transmitted to the conveying device in accordance with movement of said carriage for moving the head member outside of the recording area;

detection means for detecting the sheet member; and

control means for controlling such that said carriage effects actuation of said trigger means plural times so that a drive force of said drive means is transmitted to the conveying device when said detecting means does not detect the sheet member.

5,710,588

SIMULATED PHOTOGRAPHIC-QUALITY PRINTS USING A TRANSPARENT SUBSTRATE CONTAINING A BLACK WRONG READING IMAGE AND A BACKING SHEET CONTAINING A UNIFORM COLOR COATING

Shadi L. Malhotra, Crescent, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,127

Int. Cl.^{6} B41J *2/385;* B42D *15/00*

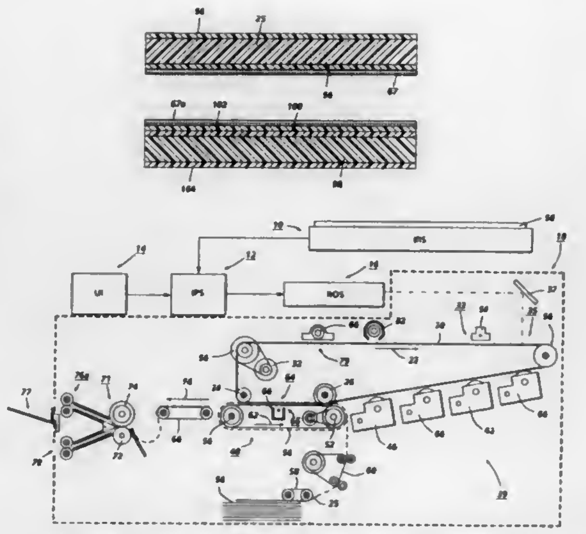
U.S. Cl. 347—153 **14 Claims**

1. A method of creating simulated photographic-quality prints using non-photographic imaging, including the steps of:

providing a coated transparent substrate having dark images formed thereon using a non-photographic imaging process;

providing a coated substrate having a uniform color image layer formed thereon using a non-photographic imaging process; and

adhering an imaged side of said transparent substrate to an imaged side of said coated substrate containing said uniform color image layer whereby a print which simulates a color print is provided.



5,710,589

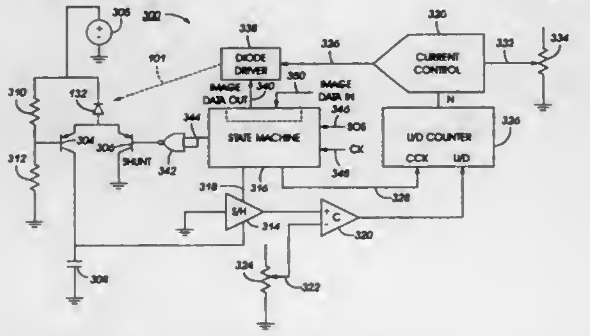
LASER DIODE BEAM INTENSITY REGULATION METHOD AND APPARATUS

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 584,789

Int. Cl.^{6} G02B *26/08;* G01J *1/32;* G11B *7/00*

U.S. Cl. 347—262 **11 Claims**



1. A raster output scanning station comprised of:

a time base generator for generating a sequence of pixel periods;

a laser diode for emitting a laser beam, comprised of a first portion and of a second portion, in response to a laser drive current such that the intensities of said first portion and of said second portion are functions of the laser drive current;

a drive circuit receiving both a drive signal and a current control signal, said drive circuit for applying laser drive current to said laser diode in pixel periods selected by the drive signals and at a magnitude which is a function of the current control signal;

a raster scanner for sweeping the first portion of the laser beam in scan lines, wherein the scan line interval time which is to N pixel periods;

a controller for applying a set of M drive signals to the drive circuit, wherein the M drive signals occurs over a number of pixel periods which is greater than N;

a photosensor illuminated by the second portion of the laser beam, said photosensor for generating a charge current derived from the set of M drive signals, wherein the charge current is dependent upon the beam intensity of the second portion of the laser beam;

a capacitor for receiving the generated charge current and for producing a capacitor voltage from the received generated charge current;

a comparator for comparing the capacitor voltage with a predetermined value and for producing a comparator signal based upon that comparison, wherein the comparison occurs after the set of M selected pixel periods is completed; and

a current control circuit for receiving the comparison signal and for adjusting the current control signal based on the comparison signal such that the intensity of the second part of the beam moves toward a predetermined intensity.

5,710,590

IMAGE SIGNAL ENCODING AND COMMUNICATING APPARATUS USING MEANS FOR EXTRACTING PARTICULAR PORTIONS OF AN OBJECT IMAGE

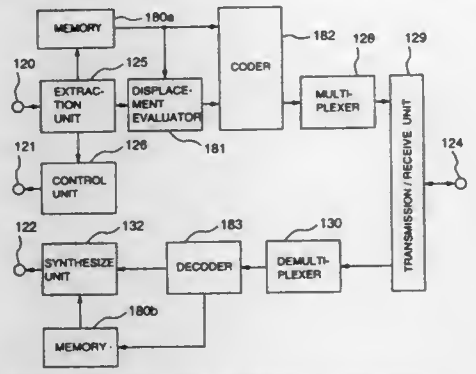
Kenji Ichige, Chigasaki; Takuya Imaide, Fujisawa; Ryuji Nishimura; Norio Yatsuda, both of Yokohama; Hiroyuki Kuriyama, Tokyo, and Mayuko Oda, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,688

Claims priority, application Japan, Apr. 15, 1994, 6-076863; Jul. 7, 1994, 6-155691

Int. Cl.^{6} H04M *11/00;* H04N *7/14*

U.S. Cl. 348—14 **3 Claims**



1. A picture communication apparatus, comprising:

imaging means;

voice input means;

extracting means for extracting at least one portion of an image of a subject from an image produced by said imaging means;

encoding means for respectively encoding the image portion extracted by said extracting means and a voice inputted by said voice input means;

communicating means for communicating via a communication network data obtained by encoding the image portion and the voice by said encoding means;

decoding means for decoding data received from said communicating means and thereby restoring the extracted image portion and the voice;

synthesizing means for composing an image;

a display having a surface including depressions and projections for displaying the image composed by said synthesizing means;

a memory for storing information representing three-dimensional positions and sizes of constituent elements of the image to be displayed on the depressions and projections of said display;

data input/output means for transferring said information from said memory to said synthesizing means, whereby said synthesizing means synthesizes the image according to the information received from said data input/output means and the extracted image portion decoded by the decoding means to produce data representing the synthesized image which is coordinated to the depressions and projections of said display in accordance with said three-dimensional positions and sizes; and

projection means responsive to said synthesized image data for projecting a synthesized image onto said display.

5,710,591

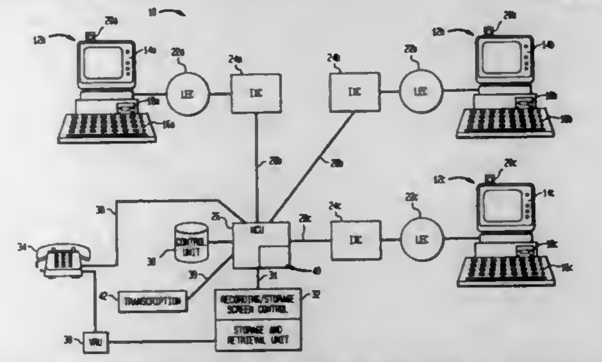
METHOD AND APPARATUS FOR RECORDING AND INDEXING AN AUDIO AND MULTIMEDIA CONFERENCE

Richard F. Bruno, Morristown; David C. Gibbon, Lincroft; Howard P. Katseff, Manalapan; Robert E. Markowitz, Glen Rock; Bethany S. Robinson, Colts Neck; Behzad Shahraray, Freehold; Peter H. Stuntebeck, Little Silver, and Roy P. Weber, Bridgewater, all of N.J., assignors to AT&T, Middletown, N.J.

Filed Jun. 27, 1995, Ser. No. 495,747

Int. Cl.^{6} H04N *7/15*

U.S. Cl. 348—15 **33 Claims**



1. A method for recording and indexing information exchanged during a multimedia conference having a plurality of participants at a plurality of spaced apart terminal devices and interacting through a multimedia bridge connected to a computer, each of the terminal devices having audio input means for inputting an audio signal to the each terminal device, and at least one of the each terminal devices having a video input means for inputting a video signal to the at least one terminal device and a data accessing means for accessing stored data files during the multimedia conference, said method comprising the steps of:

detecting at the computer an audio signal input to the audio input means of the at least one terminal device;

identifying the at least one terminal device from which the detected audio signal originated and generating a location signal representative of the identified terminal device; and

recording the detected audio signal, an address signal identifying any stored data file accessed during the multimedia conference by the at least one terminal device, at least a portion of the video signal and said location signal identifying the at least one terminal device from which the detected audio signal originated to correlate the recorded detected audio signal, the recorded portion of the video signal, the stored data file address signal and the recorded location signal with each other.

5,710,592

DEVICE REALIZING 3-D PICTURE

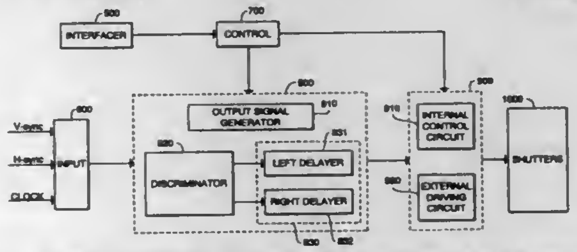
Bong Whan Oh, Kyungki-Do, Rep. of Korea, assignor to Kasan Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 23, 1995, Ser. No. 546,914

Claims priority, application Rep. of Korea, Oct. 29, 1994, 94-28115

Int. Cl.^{6} H04N *9/47;13/04*

U.S. Cl. 348—56 **4 Claims**



1. A device realizing 3-D picture in the interlaced scanning mode, comprising:

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means for detecting starting points of horizontal synchronizing signals and vertical synchronizing signal;

means for calculating a phase difference between the horizontal and vertical synchronizing signals and then discriminating between odd and even lines according to the calculated phase difference to produce a discriminated result;

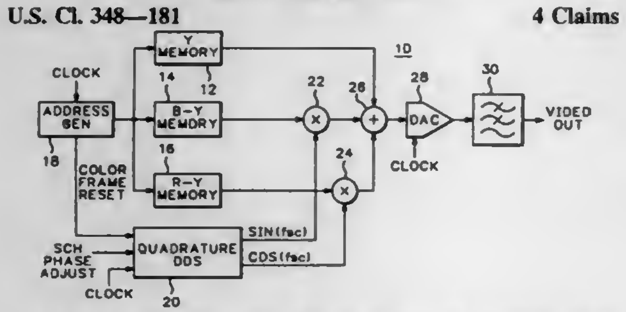
means for shutting a left or a right eye according to the discriminated result and then maintaining the shut state until a next vertical synchronizing signal is detected.

2. A device as recited in claim 1, further comprising:

means for putting a closing delay time(t_{ON}) and an opening delay time(t_{OFF}) of shutters within a vertical blank time which is not displayed onto a screen.

5,710,593
SCH PHASE ADJUSTMENT FOR DIGITALLY SYNTHESIZED VIDEO TEST SIGNALS

John C. Reynolds, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Jan. 22, 1996, Ser. No. 589,695
Int. Cl.^{6} H04N *17/00*
U.S. Cl. 348—181 **4 Claims**



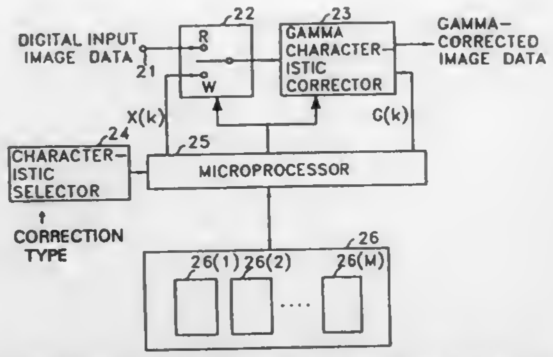
1. A digital test signal generator of the type that includes means for generating digital sine/cosine subcarrier signals at a desired frequency, means for providing digital chrominance component values and luminance values, and means for modulating the sine/cosine subcarrier signals with the digital chrominance component values and for combining the result with the luminance values to produce a digital test signal further comprising:

means for producing a color frame reset signal once per color frame of the digital test signal; and

means for initializing the generating means with a desired SCH phase offset in response to the color frame reset signal.

5,710,594
DIGITAL GAMMA CORRECTION METHOD AND APPARATUS

Ji-ho Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Aug. 4, 1995, Ser. No. 511,596
Claims priority, application Rep. of Korea, Aug. 6, 1994, 94-19408
Int. Cl.^{6} H04N *5/002*
U.S. Cl. 348—254 **23 Claims**



1. A digital gamma correction apparatus comprising:

a gamma characteristic corrector which inputs image data values and outputs gamma-corrected image data values corresponding to said image data values, wherein said gamma characteristic corrector outputs said gamma-corrected image data values according to stored gamma correction information;

storage means for storing differential data values, wherein each of said differential data values correspond to at least one of a plurality of gamma characteristics for gamma correcting said image data values and wherein said differential data values respectively correspond to differences between two values of said gamma-corrected image data values;

characteristic selection means for outputting a gamma characteristic selection signal which represents a particular gamma characteristic of said plurality of gamma characteristics for gamma correcting said image data values; and

control means for reading particular differential data values from said storage means, wherein said particular differential data values correspond to said particular gamma characteristic and wherein said control means generates said gamma correction information based on said particular differential data values and stores said gamma correction information in said gamma characteristic corrector, and wherein said gamma correction information comprises said input image data values and said gamma corrected image data values;

wherein said storage means stores reference data values,

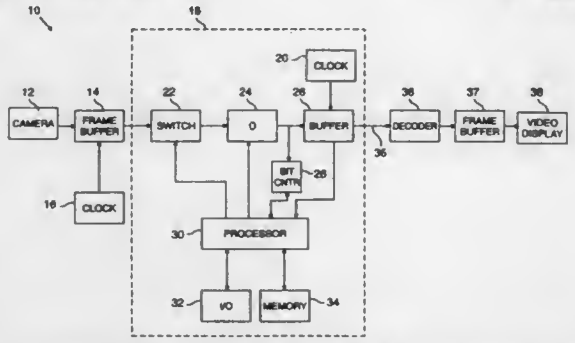
wherein said reference data values respectively equal different values of said gamma-corrected image data values,

wherein said different values of said gamma-corrected image data values are each determined by a different gamma characteristic of said plurality of gamma characteristics, and

wherein said differences between two values of said gamma-corrected image data values are differences between two values of said gamma-corrected image data values which correspond to two adjacent values of said image data values.

5,710,595
METHOD AND APPARATUS FOR CONTROLLING QUANTIZATION AND BUFFERING FOR DIGITAL SIGNAL COMPRESSION

Hsueh-Ming Hang, Hsin-Chu, Taiwan; Barin Geoffry Haskell, Tinton Falls, and Shei-Zein Kiang, Marlboro Township, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 29, 1994, Ser. No. 367,375
Int. Cl.^{6} H04N *7/32;7/30*
U.S. Cl. 348—419 **24 Claims**



1. A method for quantizing and buffering a digital signal for use in a digital signal compression system, said digital signal comprising one or more frames, each frame comprising one or more blocks, the system having a default number of frames to be skipped and a bit budget value for a buffer based on the default number of frames to be skipped, the method comprising:

establishing a maximum allowable step-size value ("maximum Q-step value"), said maximum Q-step value being selected to insure an acceptable frame quality;

determining a quantization step-size value default ("default Q-step value") based on the bit budget value;

determining whether the default Q-step value is greater than the maximum Q-step value, and if the default Q-step value is greater than maximum Q-step value, then

increasing the number of frames to be skipped,

updating the bit budget value, and

updating the default Q-step value to a value based on the updated bit budget value;

selecting an actual Q-step value based on the updated default Q-step value; and

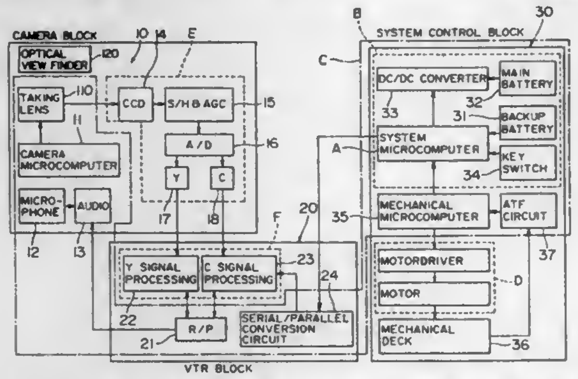
quantizing a block of a frame of an input digital signal based on the actual Q-step value.

5,710,596

Patent Not Issued For This Number

5,710,597
METHOD OF SAVING POWER FOR VIDEO CAMERA

Kenji Tamaki, and Koichi Yahagi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 216,938, Mar. 24, 1994, abandoned.
This application Nov. 14, 1995, Ser. No. 557,897
Claims priority, application Japan, Mar. 31, 1993, 5-074270
Int. Cl.^{6} H04N *5/225*
U.S. Cl. 348—372 **8 Claims**



1. A power saving method for a video camera having an optical view finder, a drum motor, a loading motor, a capstan motor, a power switch, a rotary head drum, loading means for loading a video tape, a circuit for generating image signals, and a signal processing circuit for generating recording signals to be recorded on the video tape based upon the image signals, the method comprising the steps of:

starting the drum motor, the loading motor, and the capstan motor when the video tape is mounted and the power switch is turned on, the drum motor driving the rotary head drum, the loading motor driving the loading means, and the capstan motor being used for delivering the video tape at a fixed speed;

setting a stand-by state for picture recording when a rotational speed of the rotary head drum reaches a predetermined speed and the video tape is located in a predetermined position, the loading motor and the capstan motor being stopped and only the drum motor being driven during the stand-by state;

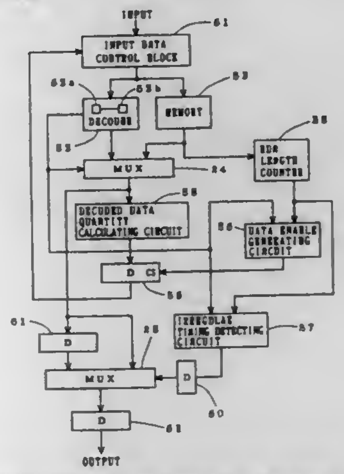
setting a recording state when a user instructs to start picture recording from the stand-by state, the circuit for generating image signals being supplied with electric power and the capstan motor being driven so as to record the image signals onto the video tape during the recording state;

resetting the stand-by state when the user instructs to. stop picture recording, the circuit for generating image signals not being supplied with electric power and the capstan motor being stopped during the stand-by state; and

supplying power to the circuit for generating image signals when picture recording is instructed and, subsequently, power is then supplied to the signal processing circuit for generating recording signals.

5,710,598
PICTURE COMPRESSING AND EXPANDING APPARATUS

Yukihiro Ukai, and Takashi Tsuchitani, both of Suita, Japan, assignors to Mega Chips Corporation, Suita, Japan
Filed Sep. 26, 1995, Ser. No. 534,032
Claims priority, application Japan, Sep. 28, 1994, 6-233094
Int. Cl.^{6} H04N *7/30*
U.S. Cl. 348—408 **5 Claims**


INPUT
INPUT DATA CONTROL BLOCK
MEMORY
DECODER
MUX
RUN LENGTH COUNTER
DECODED DATA QUANTITY CALCULATING CIRCUIT
DATA ENABLE GENERATING CIRCUIT
D
IRREGULAR TIMING DETECTING CIRCUIT
D
MUX
D
D
OUTPUT

1. A picture compressing and expanding apparatus comprising a compression part for compressing a picture signal and an expansion part for decoding and expanding data of variable length codes compressed by said compression part, wherein said expansion part comprises:

a small scale decoder for decoding one piece of compressed data;

a large scale decoder having a processing speed which is approximately half that of said small scale decoder and decodes two or more pieces of said compressed data;

input data control means for supplying said data of variable length codes compressed by said compression part to said small scale decoder and said large scale decoder at the same time;

first switching means for switching and outputting output data supplied from said small scale decoder and output data supplied from said large scale decoder;

delaying means for delaying output data supplied from said first switching means by a unit time;

second switching means for switching and outputting the output data supplied from said first switching means and output data supplied from said delaying means in accordance with a predetermined timing signal; and

timing control means for generating said predetermined timing signal which causes said second switching means to switch from the output data supplied from said delaying means to the output data supplied from said first switching means,

said small scale decoder comprises judging means for determining whether received data are one piece of data or two or more pieces of data, and

said timing means comprises:

irregular timing detecting means for detecting irregular data which are created when said first switching means switches the output data supplied from said small scale decoder and the output data supplied from said large scale decoder in accordance with a judgement signal which is yielded by said judging means for said small scale decoder; and

timing signal output means for said predetermined timing signal to said second switching means in accordance with a signal received from said timing control means.

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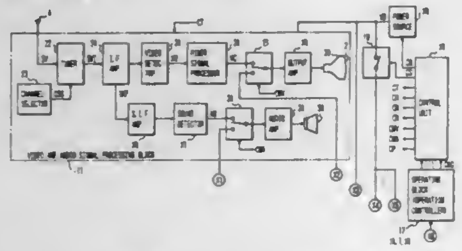
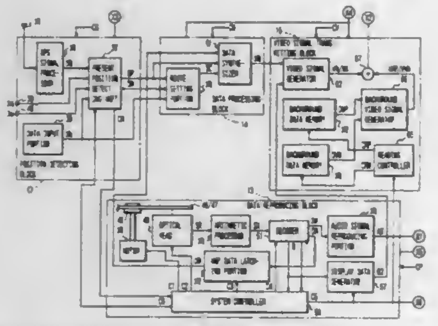
5,710,599

Patent Not Issued For This Number

5,710,600
PORTABLE APPARATUS FOR REAL TIME VIDEO DISPLAY OF LOCATION AND FOR PLAYING BACK AUDIO PROGRAM MATERIAL

Masayuki Ishii, Kanagawa; Isao Takahashi, Saitama, and Hiroyuki Kojima, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 11, 1995, Ser. No. 439,133
Claims priority, application Japan, May 12, 1994, 6-098853
Int. Cl.^{6} H04N *5/775;9/74*
U.S. Cl. 348—563 22 Claims

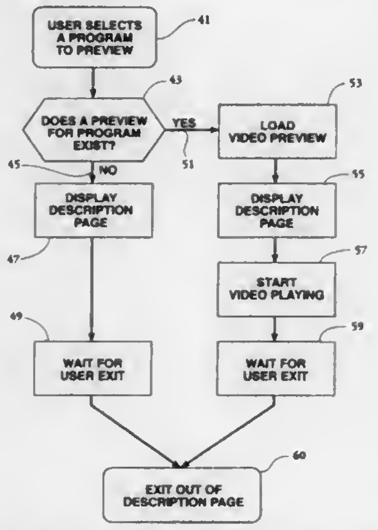




1. A composite electronic apparatus comprising:
a video and audio signal processing portion including image displaying means for displaying images based on a video signal and sound reproducing means for reproducing sounds based on an audio signal,
a position detecting portion including antenna means for receiving a positional information signal from a satellite, positional information signal processing means for processing the positional information signal and generating an output signal, and detecting means to detect a position based on said output signal from said positional information signal processing means and to generate position data representing said position,
a data reproducing portion for reading recorded information from a record medium and for forming an information signal representing the information read from the record medium and for reproducing said information signal into one of a map data or an audio data based on the information signal,
a data processing portion for processing the position data generated by said position detecting portion with the map data reproduced by said data reproducing portion,
a video signal transmitting portion for producing a video signal for image display on the basis of the position data from said data processing portion and the map data from said data reproducing portion and transmitting the video signal for image display to the image displaying means in said video and audio signal processing portion, and
a cabinet for enclosing and supporting said video and audio signal processing portion, said position detecting portion, said data reproducing portion, said data processing portion and said video signal transmitting portion, wherein said data reproducing portion is further used to obtain a reproduced audio signal based on the audio data reproduced from the information signal and supplied to the sound reproducing means in said video and audio signal processing portion for causing the sound reproducing means to reproduce a sound based on the reproduced audio signal.

5,710,601
VIDEO CLIP PROGRAM GUIDE

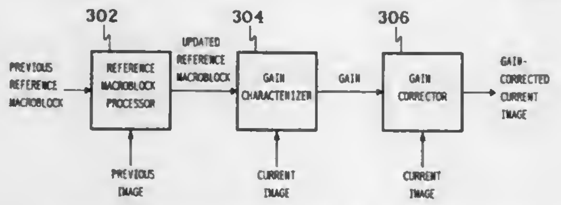
Connie T. Marshall, Muskogee; Thomas R. Lemmons, Coweta, and Donald W. Allison, Tulsa, all of Okla., assignors to Prevue Networks, Inc., Tulsa, Okla.
Continuation of Ser. No. 246,949, May 20, 1994, Pat. No. 5,523,796. This application Feb. 9, 1996, Ser. No. 599,141
Int. Cl.^{6} H04N *5/445*
U.S. Cl. 348—564 22 Claims



1. A system for displaying a video clip for a television program immediately upon viewer selection of the television program from a television program guide displayed on a display screen, comprising:
means for displaying the television program guide on the display screen;
means for allowing a viewer to select a television program from the television program guide; and
means for immediately displaying a video clip for the selected television program on the display screen upon selection of the television program from the television program guide.

5,710,602
GAIN CORRECTION FOR ENCODING VIDEO IMAGES

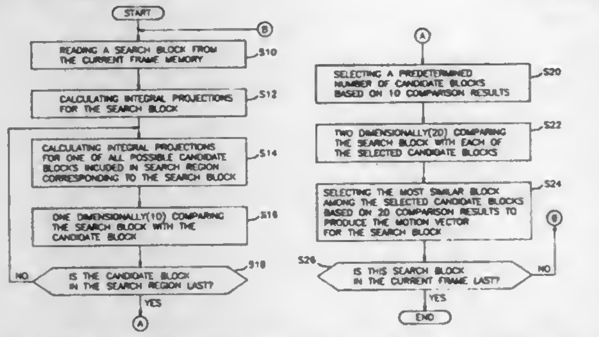
Thomas R. Gardos, Portland, Oreg., and Joe Monaco, Atlanta, Ga., assignors to Intel Corporation, Santa Clara, Calif.
Filed Sep. 29, 1995, Ser. No. 536,619
Int. Cl.^{6} H04N *5/228;9/75*
U.S. Cl. 348—586 18 Claims


302
304
306
PREVIOUS REFERENCE MACROBLOCK
REFERENCE MACROBLOCK PROCESSOR
UPDATED REFERENCE MACROBLOCK
GAIN CHARACTERIZER
GAIN
GAIN CORRECTOR
GAIN-CORRECTED CURRENT IMAGE
PREVIOUS IMAGE
CURRENT IMAGE
CURRENT IMAGE

1. A computer-implemented process for processing video signals, comprising the steps of:
(a) selecting a background region of a current image of a video stream;
(b) generating a reference region using regions corresponding to background regions of one or more images of the video stream;
(c) characterizing gain of the current image based on the reference region and the background region; and
(d) generating a gain-corrected image by correcting the current image based on the gain.

5,710,603
METHOD FOR DETECTING MOTION VECTORS

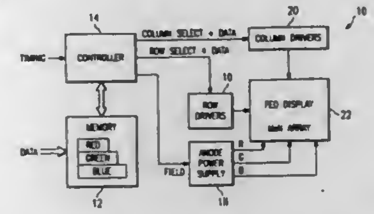
Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Continuation-in-part of Ser. No. 133,666, Oct. 7, 1993, abandoned. This application Jul. 5, 1995, Ser. No. 498,503
Claims priority, application Rep. of Korea, Oct. 7, 1992, 92-18391
Int. Cl.^{6} H04N *7/32*
U.S. Cl. 348—699 3 Claims

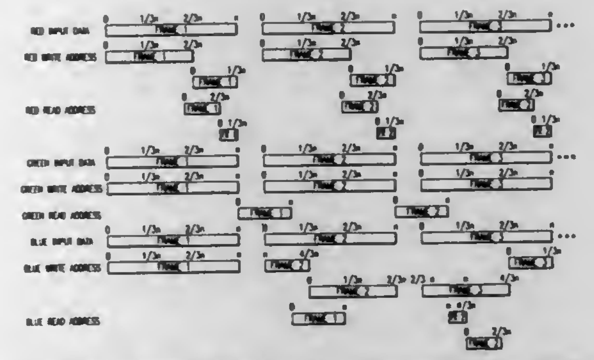

START
B
READING A SEARCH BLOCK FROM THE CURRENT FRAME MEMORY
S10
CALCULATING INTEGRAL PROJECTIONS FOR THE SEARCH BLOCK
S12
CALCULATING INTEGRAL PROJECTIONS FOR ONE OF ALL POSSIBLE CANDIDATE BLOCKS INCUDED IN SEARCH REGION CORRESPONDING TO THE SEARCH BLOCK
S14
ONE DIMENSIONALLY(1D) COMPARING THE SEARCH BLOCK WITH THE CANDIDATE BLOCK
S16
IS THE CANDIDATE BLOCK IN THE SEARCH REGION LAST?
S18
NO
YES
A
SELECTING A PREDETERMINED NUMBER OF CANDIDATE BLOCKS BASED ON 1D COMPARISON RESULTS
S20
TWO DIMENSIONALLY(2D) COMPARING THE SEARCH BLOCK WITH EACH OF THE SELECTED CANDIDATE BLOCKS
S22
SELECTING THE MOST SIMILAR BLOCK AMONG THE SELECTED CANDIDATE BLOCKS BASED ON 2D COMPARISON RESULTS TO PRODUCE THE MOTION VECTOR FOR THE SEARCH BLOCK
S24
S26
IS THIS SEARCH BLOCK IN THE CURRENT FRAME LAST?
NO
YES
END

1. A method determining a set of motion vectors between a current frame and a reference frame of video signals, wherein the current frame is divided into a number of search blocks of an identical size and the reference frame is made to include a corresponding number of search regions, each search region having a plurality of candidate blocks of said identical size, which comprises the steps of:
(a) one dimensionally comparing a search block from the current frame with said plurality of candidate blocks included in a search region corresponding to the search block, on a block-by-block basis, by using a one-dimensional error function using horizontal and vertical integral projections to select a predetermined number of candidate blocks in an ascending order of the one-dimensional error function, wherein said step(a) includes the steps of:
(a1) calculating integral projections of luminance levels of pixels in the search block;
(a2) calculating integral projections of luminance levels of pixels in one of the candidate blocks included in the search region corresponding to the search block;
(a3) comparing the search block with said one of the candidate blocks based on the integral projections calculated in steps(a1) and (a2) above;
(a4) repeating said steps (a2) and (a3) until all of the candidate blocks included in the search region corresponding to the search block are compared with the search block; and
(a5) selecting a predetermined number of candidate blocks in the ascending order of the one-dimensional error function based on the comparisons made in steps (a3) and (a4) above;
(b) two dimensionally comparing the search block with the predetermined number of candidate blocks selected in step(a) above, on a block-by-block basis, by using a two-dimensional error function to thereby select a most similar candidate block and derive a motion vector representing the displacement of pixels between the search block and the most similar candidate block so as to assign the derived motion vector as the motion vector for the search block; and
(c) repeating steps (a) and (b) until all of the search blocks constituting the current frame are searched against an entire reference frame, to thereby derive a set of motion vectors.

5,710,604
VIDEO MEMORY DEVICE FOR COLOR-SEQUENTIAL-TYPE DISPLAYS

Lester L. Hodson, McKinney, Tex.; Ulrich Skowronek, Munich, Germany, and Charles E. Primm, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 9, 1996, Ser. No. 599,568
Int. Cl.^{6} H04N *5/907*
U.S. Cl. 348—717 20 Claims





1. A video memory device for a color sequential type display, comprising:
a first storage area for receiving, storing, and providing a frame of video data corresponding to a first color of the frame, the first storage area operable to simultaneously receive and provide the first color of the frame of video data, wherein the first storage area has a capacity to store less than the first color of the frame;
a second storage area for receiving, storing, and providing the frame of video data corresponding to a second color of the frame, the second storage area operable to simultaneously receive and provide the second color of the frame of video data, wherein the second storage area has a capacity to store the second color of the frame; and
a third storage area for receiving, storing, and providing the frame of video data corresponding to a third color of the frame, the third storage area operable to simultaneously receive and provide the third color of the frame of video data, wherein the third storage area has a capacity to store more than the third color of the frame.

5,710,605
REMOTE CONTROL UNIT FOR CONTROLLING A TELEVISION AND VIDEOCASSETTE RECORDER WITH A DISPLAY FOR ALLOWING A USER TO SELECT BETWEEN VARIOUS PROGRAMMING SCHEDULES

Rickey D. Nelson, 5232 Madella St., Haltom City, Tex. 76117
Filed Jan. 11, 1996, Ser. No. 587,109
Int. Cl.^{6} A04N *5/44*
U.S. Cl. 348—734 3 Claims

2. A universal remote control unit for controlling a television and videocassette recorder, the television and videocassette recorder adapted to perform a function upon receipt of a remote control signal, the universal remote control comprising:
data input means securable to a telephone line for receiving a plurality of signals from an external supplier representing a plurality of television programming schedule items;
display means for displaying television programming schedule items and television and videocassette operating functions and in a hierarchy of textual and scrollable selection lists;

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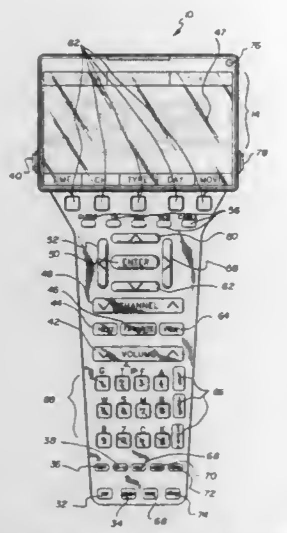


- first user-operable selector means for allowing a user to scroll through the lists and then select one of the television programming schedule items;
- second user-operable selector means for allowing a user to scroll through the lists and then select one of the television and videocassette functions;
- third user-operable selector means for generating a plurality of billing signals signifying a payment to be made in response to the receipt of the television program schedule items from the external supplier;
- data output means securable to a telephone line for transmitting the billing signals to the external supplier;
- processor means coupled to the data input means, the timing means, the selector means, and the data output means, the processor means responsive to the first user-operable selector means for generating a television programming scheduling signal when a television programming data item is selected, the processor means further responsive to the second user-selector means for generating a function control signal when the television and videocassette functions are selected;
- memory means for storing the television programming scheduling signals, the function control signals, and the billing signals; and
- transmitter means responsive to receipt of one of the television programming scheduling signals from the processor means for generating and transmitting via free space one of a plurality of remote scheduling signals for subsequent receipt by the television and videocassette recorder for scheduling each of their operations, transmitter means further responsive to the receipt of one of the function control signals from the processor means for generating and transmitting via free space one of a plurality of remote control signals for subsequent receipt by the television and videocassette recorder for controlling each of their operations.

5,710,606

LCD TFT HAVING TWO LAYER REGION ADJACENT BASE REGION IN WHICH THE LAYERS HAVE OPPOSITE CONDUCTIVITIES AND HAVE TWO DENSITY GRADIENTS

Mitsuo Nakajima, Koshigaya, and Yoshito Kawakyu, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 22, 1995, Ser. No. 517,635

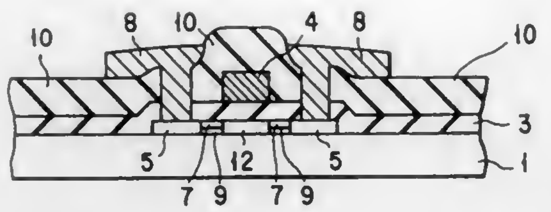
Claims priority, application Japan, Aug. 24, 1994, 6-199265

Int. Cl.^{6} G02F *1/136;1/1345;* **H01L** *29/04;27/01*

U.S. Cl. 349—42 **17 Claims**

1. A thin film transistor comprising:

- an insulating substrate;
- a semiconductor active layer provided on said substrate;



- a base region formed in said active layer having first and second laterally disposed sides and consisting essentially of a substantially intrinsic semiconductor;
- first and second portions of said active layer being provided on respective said first and second sides of said base region with each portion including first impurities of a first conductivity type and second impurities of a second conductivity type, said first impurities having a first peak density position near an upper surface of the active layer and an associated first density gradient extending from the first peak density position into said active layer and said second impurities having a second peak density position that is displaced deeper into the active layer than the first peak density position and an associated second density gradient extending from the second peak density position into said active layer, wherein the first and second portions each have combined densities of said first and second impurities in an upper segment adjacent to the upper surface of the active layer having a resultant conductivity of the first type and combined densities of said first and second impurities in a lower segment of the active layer adjacent to the substrate with a resultant conductivity of the second type;
- a first and a second source/drain region formed in said active layer adjacent to respective of said first and second portions on respective of said first and second sides of said base region, each said source/drain region having a conductivity of the first conductivity type and a resistance lower than a resistance of said upper segment of each of the first and second portions;
- a gate insulating film over said upper surface of said active layer;
- a gate electrode formed on said gate insulating film over said base region in said active layer; and
- first and second source/drain electrodes respectively connected to said first and second source/drain regions.

5,710,607

IMPACT RESISTANT LIQUID CRYSTAL APPARATUS

Hirofumi Iwamoto, Hiratsuka; Hisao Tajima, Yokohama; Makoto Uehara, Yokohama; Yoshihiro Onitsuka, Yokohama; Takao Miyamoto, Chigasaki; Hiroshi Takabayashi, and Satoshi Yoshihara, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 41,875, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 910,433, Jul. 8, 1992, abandoned, which is a division of Ser. No. 634,740, Dec. 27, 1990, Pat. No. 5,150,231. This application Jun. 22, 1994, Ser. No. 264,232

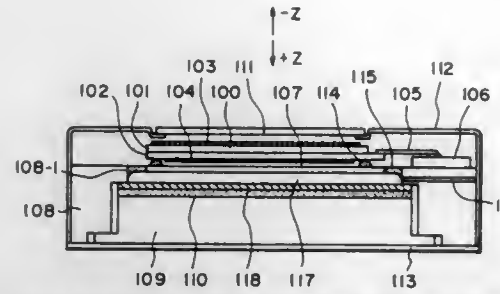
Claims priority, application Japan, Dec. 29, 1989, 1-343132; Aug. 27, 1990, 2-226021; Dec. 12, 1990, 2-401564

Int. Cl.^{6} G02F *1/1333;1/1345*

U.S. Cl. 349—660 **19 Claims**

1. A method for producing a liquid crystal apparatus, comprising the steps of:

- a) providing a liquid crystal panel, a circuit board for driving the liquid crystal panel, and a panel fixing member having an opening;
- b) electrically connecting the circuit board to the liquid crystal panel via a circuit film;



- c) fixing the liquid crystal panel onto the panel fixing member so as to substantially expose the liquid crystal panel through the opening of the panel fixing member;
- d) fixing the circuit board onto the panel fixing member;
- e) disposing an elastic member along a periphery of the panel fixing member;
- f) affixing the elastic member to a supporting member; and
- g) disposing a plate-like member behind the liquid crystal panel in a direction of viewing the liquid crystal panel so as to define an almost closed space with the liquid crystal panel, the panel fixing member, the elastic member the supporting member and the plate-like member, whereby an air damping effect is created to suppress flexural deformation of the liquid crystal panel,

said step (f) being performed immediately after said step (b).

5,710,608

METHOD OF ORIENTATION TREATMENT OF ORIENTATION FILM AND APPARATUS OF ORIENTATION TREATMENT OF ORIENTATION FILM

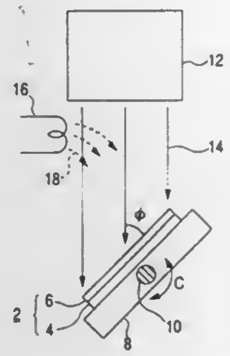
Masahiro Nakabayashi; Norio Asagi; Hajime Kuwahara, all of Kyoto, and Taizou Ehara, Tokyo, all of Japan, assignors to Nissin Electric Co., Ltd., Kyoto, Japan

Filed Dec. 27, 1995, Ser. No. 579,359

Claims priority, application Japan, Dec. 28, 1994, 6-338469

Int. Cl.^{6} G02F *1/1337*

U.S. Cl. 349—125 **6 Claims**



1. A method of orientation treatment of an orientation film of a high molecular weight organic material formed on a substrate for orientating liquid-crystal molecules, comprising the steps of:

- rubbing a surface of said orientation film; and
- radiating ion beams onto the rubbed surface of said orientation film in a vacuum from a direction substantially perpendicular to the surface of said orientation film.

5,710,609

LIQUID CRYSTAL PROJECTION-TYPE DISPLAY DEVICE SPECIFIC LIQUID CRYSTAL LAYER RETARDATION AND TWO ALIGNMENT FILMS HAVING ORIENTATION DIRECTIONS 180 DEGREES DIFFERENT

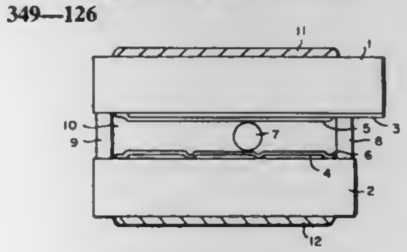
Shinji Shimada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

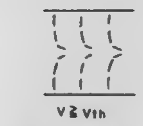
Filed Sep. 29, 1995, Ser. No. 536,357

Claims priority, application Japan, Oct. 19, 1994, 6-253461

Int. Cl.^{6} G02F *1/1337;1/13*

U.S. Cl. 349—126 **18 Claims**





1. A liquid crystal electro-optical device comprising:

- a pair of parallel transparent insulating substrates;
- an electrode and an alignment film formed in this order on each of the insulating substrates; and
- a liquid crystal layer, having a predetermined thickness, interposed between the pair of insulating substrates,

wherein

- each alignment film is a film capable of aligning the liquid crystal molecules in the liquid crystal layer perpendicularly with respect to the insulating substrates,
- the thickness of the liquid crystal layer is 45 to 70% of the twist pitch of the liquid crystal molecules, and
- the product of the thickness of the liquid crystal layer and the birefringence index of the liquid crystal layer is in the range of 200 nm to 350 nm.

5,710,610

APPARATUS AND METHOD FOR CREATING MULTIPLE TILT ANGLES BY RUBBING THE ALIGNMENT LAYER APPLIED TO THIN FILM TRANSISTORS AND COLOR FILTER GLASS PLATES OF A LIQUID CRYSTAL DISPLAY

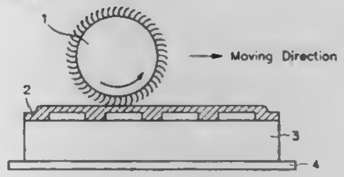
Hyun-dae Kim, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co.,Ltd., Suwon, Rep. of Korea

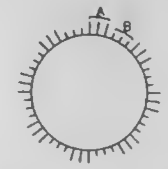
Filed Dec. 21, 1995, Ser. No. 575,875

Claims priority, application Rep. of Korea, Dec. 21, 1994, 94-35630

Int. Cl.^{6} G02F *1/1337*

U.S. Cl. 349—126 **9 Claims**





7. An apparatus for rubbing an alignment layer of a liquid crystal display, comprising:

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a roll having a cylindrical surface;
a fabric which covers said cylindrical surface and includes pile having a plurality of sections, wherein pile contained in each section has different length from pile contained in the other sections, and said sections are arranged regularly.

8. A method of rubbing an alignment layer of a liquid crystal display, the method comprising the steps of:
obtaining a roll having a cylindrical surface covered with a fabric having pile, said pile being divided into at least two alternate sections, one of said sections containing pile of a first length and the other of said sections containing pile of a second length different than said first length; and
moving said alignment layer and said roll relative to each other, said roll rotating while contacting said alignment layer with said pile of said roll to rub said alignment layer with varying strengths.

5,710,611

LIQUID CRYSTAL DISPLAY APPARATUS PREVENTING IMAGE ON SCREEN FROM INFLUENCES OF DISCLINATION LINE

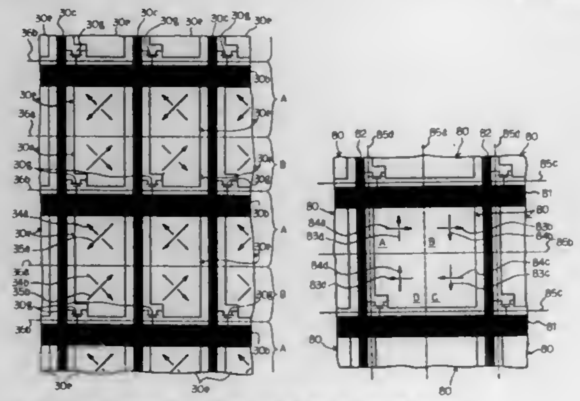
Teruaki Suzuki; Ken-Ichi Takatori; Ken Sumiyoshi, and Masayoshi Suzuki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 559,828

Claims priority, application Japan, Nov. 17, 1994, 6-283398; Nov. 28, 1994, 6-292867; Jan. 25, 1995, 7-009846

Int. Cl.^{6} G02F *1/1343;1/1357*

U.S. Cl. 349—129 **6 Claims**



1. A liquid crystal display apparatus comprising:
a first substrate structure including
a plurality of gate bus lines,
a plurality of drain bus lines electrically isolated from said plurality of gate bus lines and defining a plurality of areas together with said plurality of gate bus lines,
a plurality of pixel electrodes respectively formed in said plurality of areas and electrically isolated from said plurality of gate bus lines and said plurality of drain bus lines,
a plurality of switching transistors respectively associated with said plurality of pixel electrodes, each of said plurality of switching transistors having a source-to-drain path coupled between an associated one of said plurality of pixel electrodes and one of said drain bus lines and a gate coupled to one of said plurality of gate bus lines, and
a first orientation film covering said plurality of gate bus lines, said plurality of drain bus lines, said plurality of pixel electrodes and said plurality of switching transistors and divided into a plurality of sub-areas every adjacent two of which are oriented in different directions, said plurality of sub-areas forming first boundaries extending over said plurality of pixel electrodes and second boundaries each extending over an area between one of said plurality of pixel electrodes and one of the gate bus line and the drain bus line coupled to one of said plurality of switching transistors associated with said one of said plurality of pixel electrodes;
a second substrate structure including a common electrode opposed to said plurality of pixel electrodes, and a second orientation film covering said common electrode and forming a gap together with said first orientation film; and
liquid crystal filling said gap.

5,710,612

LIQUID CRYSTAL DEVICE AND MANUFACTURING METHOD THEREFOR WITH ANISOTROPIC CONDUCTIVE ADHESIVE CONNECTING GLASS SUBSTRATE AND GLASS AUXILIARY SUBSTRATE

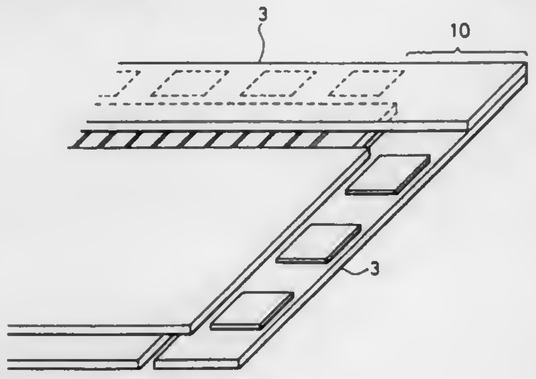
Akira Mase, Atsugi, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 575,442, Aug. 30, 1990, Pat. No. 5,130,833. This application Mar. 16, 1992, Ser. No. 851,659

Claims priority, application Japan, Sep. 1, 1989, 1-226664; Sep. 6, 1989, 1-232308

Int. Cl.^{6} G02F *1/1345;1/1333*

U.S. Cl. 349—149 **8 Claims**



1. A liquid crystal device comprising:
first and second glass substrates;
electrode arrangements respectively formed on inside surfaces of said substrates;
a liquid crystal layer disposed between said first and second substrates; and
circuits respectively formed on at least one glass auxiliary substrate and respectively connected with at least one of said electrode arrangements for supplying driving signals to said one electrode arrangement wherein said electrical connection is made through an anisotropic conductive adhesive fixing said auxiliary substrate in a predetermined position with respect to said electrode arrangement and simultaneously providing an electrical connection between both (a) said circuit formed on the auxiliary substrate and (b) the one electrode arrangement formed on the inside of one of the substrates, wherein at least one of said first and second substrates extends beyond the edge of the other in order to provide terminals of said one electrode arrangement with which said circuit makes electric contact.

5,710,613

MODIFIED VISION ARTIST'S GLASSES

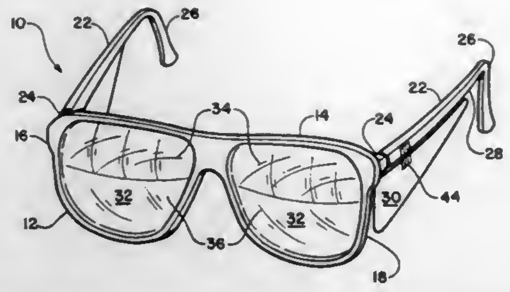
S. Grant Hughes, 5409 Lodi St., San Diego, Calif. 92117

Filed Jun. 5, 1996, Ser. No. 658,359

Int. Cl.^{6} G02C *7/16*

U.S. Cl. 351—45 **17 Claims**

1. Modified vision artist glasses for use by an artist in viewing an object to be painted, said glasses comprising
an eyeglass frame having a first side, a second side, and a top;
a retaining means attached to said frame;
at least one lens attached to said frame, said lens further comprising at least two sections, a first section being substantially diffused yet not blocked to thereby permit objects beyond to be seen in their entirety and a second section being substantially clear,



whereby when viewing an object through the diffused section, an artist sees the object in its most basic form, without definition and detail, and, while fresh in the artist's mind, the artist shifts view to a painting medium, such as a canvass, and simultaneously views the canvass through the clear section, thereby transferring the object as modified onto the canvass.

5,710,614

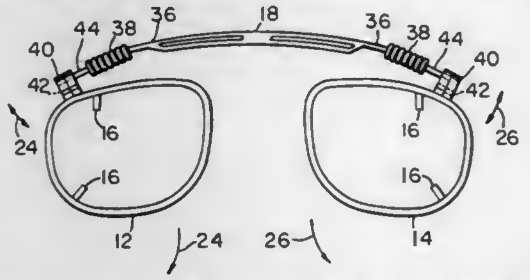
AUXILIARY CLIP-ON FRAMES FOR SPECTACLES

Sergio Cereda, Varese, Italy, assignor to Viva International Group, Fairfield, N.J.

Filed Apr. 17, 1995, Ser. No. 423,542

Int. Cl.^{6} G02C *9/00;7/08*

U.S. Cl. 351—48 **6 Claims**



1. An auxiliary clip-on spectacle frame for detachable attachment to a conventional spectacle frame comprising: an elongate bridge member having opposite axial ends and which is substantially rigid at least in the plane of said auxiliary spectacle frame;
spring members joined at a first end to the opposite axial ends of said rigid bridge member, each of said spring members extending outwardly from the associated ends of said rigid bridge member;
a monocular frame rigidly attached to a second opposite end of each of said springs whereby each of said monocular frames is freely movable omni-directionally relative to the other and relative to said bridge member; and,
clip members carried by each said monocular frame for securement of said monocular frame to said conventional spectacle frame, said springs providing a resilient bias acting to maintain said clip members in secure engagement on said conventional spectacle frame.

5,710,615

PROGRESSIVE POWER MULTIFOCAL LENS

Akira Kitani, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

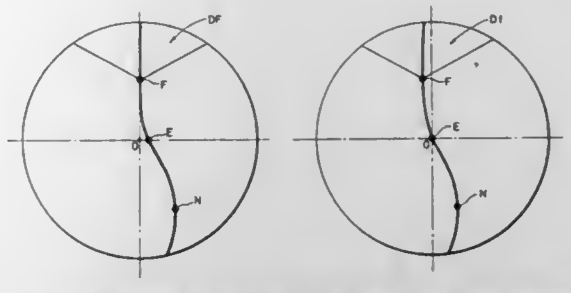
Filed Apr. 16, 1996, Ser. No. 633,073

Claims priority, application Japan, Apr. 18, 1995, 7-092523

Int. Cl.^{6} G02C *7/06*

U.S. Cl. 351—169 **5 Claims**

1. A progressive power multifocal lens having a far vision power measuring position, a near vision power measuring position and an eye-point position, through which a visual line runs when being in a front viewing condition, which are preliminarily located,
wherein an additional surface refractive power between surface refractive powers respectively obtained at the near vision



power measuring position and at the far vision power measuring position is equal to an addition,
wherein the progressive power multifocal lens satisfies the following conditions:
(a) the additional surface refractive power at the eye-point position is not less than 30% and not more than 50% of the addition;
(b) the lens has no axis of symmetry that bisects an entire surface thereof, and the lens for the right eye has a refracting surface which is different from a refracting surface of the lens for the left eye;
(c) the eye-point position is located closer to a nose than the far vision power measuring position: and the near vision power measuring position is further situated closer to the nose thereof than the eye-point position in such a manner that both cases of the lens for the right eye and the lens for the left eye are adapted to a convergence action of the eyes when viewing a near place;
(d) the far vision power measuring position is upwardly deviated from the eye-point position by a distance of 10 to 17 mm; and the near vision power measuring position is downwardly deviated from the eye- point position by a distance of 14 to 21 mm; and
(e) assuming that the far vision power measuring position is used as a center and that a direction, in which a horizontal half-line extends rightwardly from the far vision power measuring position, is determined as a reference direction whose azimuth angle is 0, a nearly sectorial domain corresponding to azimuth angles of 30 to 150 degrees is used as a far viewing distinct vision zone in which astigmatism is not more than 0.5 diopters irrespective of the value of the addition.

5,710,616

FILM POSITION DETECTING DEVICE, FILM IMAGE DISPLAY DEVICE AND MOVIE FILM RECORDING DEVICE

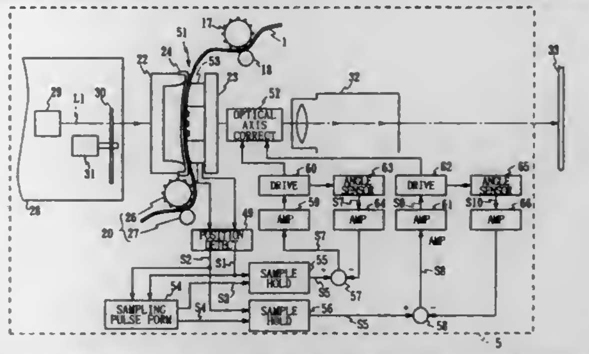
Etsuro Salto, and Kiyoshi Inatome, both of Kanagawa, Japan, assignors to Sony Corportion, Tokyo, Japan

Filed Oct. 25, 1996, Ser. No. 736,604

Claims priority, application Japan, Oct. 31, 1995, 7-308384

Int. Cl.^{6} G03B *21/50*

U.S. Cl. 352—92 **13 Claims**



1. A film position detecting device for detecting the stop position of a movie film for each intermittent forwarding when a film running device is connected with a plurality of perforations formed on said movie film in the longitudinal direction to carry said movie film intermittently, comprising:

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the first and second guide means for holding said movie film driven by said film running device from both sides and on which window holes for transmitting light source light or image light are formed;

the plural number of electrodes provided in said first guide means facing, at least, one of the edges of said movie film containing said perforations; and

a band shaped conducting material provided in said second guide means facing said electrodes having said movie film between; and

position detecting means for detecting the stop position of said movie film with respect to said window holes, based on the amount of change of each electrostatic capacity of a plurality of condensers which are formed making said electrodes and said band shaped conducting material as pole plates respectively and the thickness of said movie film as the distance of said pole plates, said amount of change of electrostatic capacity changing depending on the displacement rate of the stop position of said movie film for each intermittent forwarding.

5,710,617
FILM CARTRIDGE AND FILM IMAGE INPUT SYSTEM THEREOF

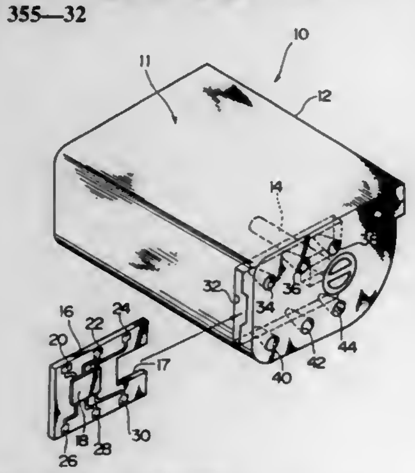
Masafumi Inuiya, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 419,984, Apr. 11, 1995. This application Oct. 18, 1996, Ser. No. 733,430

Claims priority, application Japan, Apr. 15, 1994, 6-077224

Int. Cl.^{6} G03B *17/24;27/72*

U.S. Cl. 355—32 **9 Claims**



1. A film cartridge, comprising:

a main body case for storing a developed photo film of a long band in a roll; and

an image record unit mounted on said main body case, wherein an image signal of each frame image, of which an image quality is adjusted when said photo film is printed, is recorded in said image record unit so as to correspond to a frame number.

5,710,618
PHOTOFINISHING PROCESS CONVERTING OPTICAL DATA TO MAGNETIC DATA

Dale Frederick McIntyre, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1995, Ser. No. 413,680

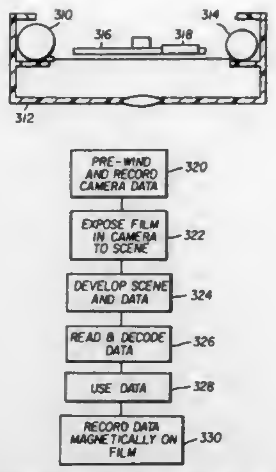
Int. Cl.^{6} G03B *27/52*

U.S. Cl. 355—40 **6 Claims**

1. A method of loading a camera having a film supply chamber and a film take-up chamber, comprising steps of:

loading a photographic filmstrip into the supply chamber;

prewinding the filmstrip from the supply chamber to the take-up chamber;


310
316
318
314
312
PRE-WIND AND RECORD CAMERA DATA
320
EXPOSE FILM IN CAMERA TO SCENE
322
DEVELOP SCENE AND DATA
324
READ & DECODE DATA
326
USE DATA
328
RECORD DATA MAGNETICALLY ON FILM
330

during the prewinding, recording onto the filmstrip information about features and capabilities of the camera; and

after the prewinding and recording, closing the camera.

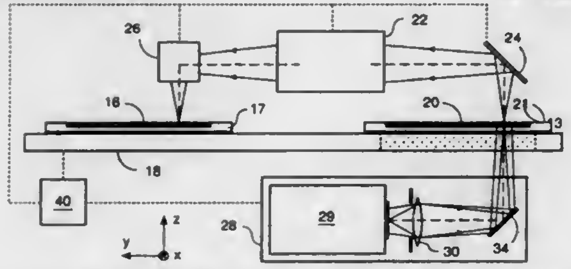
5,710,619
LARGE-AREA, SCAN-AND-REPEAT, PROJECTION PATTERNING SYSTEM WITH UNITARY STAGE AND MAGNIFICATION CONTROL CAPABILITY

Kanti Jain, Briarcliff Manor, N.Y., and Jeffrey M. Hoffman, Stamford, Conn., assignors to Anvik Corporation, Hawthorne, N.Y.

Filed Oct. 31, 1995, Ser. No. 551,134

Int. Cl.^{6} H01L *21/30;* **G03B** *27/52*

U.S. Cl. 355—50 **26 Claims**



1. A large-area, high-throughput, high-resolution, scan-and-repeat, projection imaging system for replicating a pattern on a mask onto a corresponding pattern area segment of a substrate having a set of one or more segments, said system including a projection lens of a known characteristic magnification of substantially unity, characterized by:

(a) a primary stage subsystem (**18**), having mask holding means (**21**) and substrate holding means (**17**), capable of scanning in one dimension, and also being capable of moving laterally in a direction perpendicular to the scan direction so as to position itself for another scan; said primary stage subsystem (**18**) thus being capable of exposing each full substrate segment by configuring each substrate segment into a certain number of parallel strips, and exposing each of said strips by scanning the length of the strip across a fixed illumination region;

(b) an illumination subsystem (**28**) having spectral and intensity characteristics suited for exposure of said substrate (**16**), having an effective source plane of a predetermined shape, and capable of uniformly illuminating on said mask (**20**) a region of said predetermined shape;

(c) a projection subsystem (**22–26**) capable of imaging said illuminated region on the mask onto a selected substrate segment, and having an image field area smaller than the substrate segment area;

(d) optical magnification adjustment means (**74,76–77,91–93**) for variation of the image magnification of said projection subsystem across a small range of values close to unit magnification;

(e) differential motion means (**17/21/48,49,60,61/62–65**) mounted to primary stage subsystem (**18**) for providing limited relative motion between said mask (**20**) and said substrate segment (**16**); and

(f) control means to operatively interrelate said stage subsystem (**18**), said illumination subsystem (**28**), said projection subsystem (**22–26**), said optical magnification adjustment means (**74,76–77,91–93**), and said differential motion means (**17/21/48,49,60,61/62–65**) to provide additive illumination and image placement in certain overlap regions of areas exposed by adjacent strip scans of each substrate segment such that the effect of the exposure dose delivered in said overlap regions is seamless and the effect of the exposure dose delivered across each entire substrate segment is uniform.

5,710,620
PROJECTION EXPOSURE METHOD AND APPARATUS

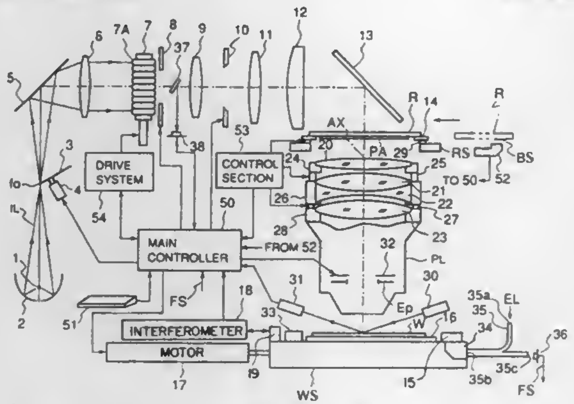
Tetsuo Taniguchi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 212,825, Mar. 15, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 505,996

Claims priority, application Japan, Mar. 16, 1994, 5-055246

Int. Cl.^{6} G03B *27/42*

U.S. Cl. 355—53 **18 Claims**



1. A projection exposure apparatus, comprising:

an illumination optical system for irradiating illuminating light to a mask having a plurality of patterns, of which forming conditions are different from each other;

a projection optical system for projecting images of said plurality of patterns simultaneously onto a photosensitive substrate;

a correcting device for simultaneously correcting imaging errors of said pattern images; and

a controller for controlling an operation of the correcting device such that each of the imaging errors is corrected so as not to exceed a predetermined value.

5,710,621
HETERODYNE MEASUREMENT DEVICE AND METHOD

Nobuhiko Tamura, Pitt sburgh, Pa., assignor to Omron Corporation, Japan

Filed Apr. 25, 1995, Ser. No. 428,014

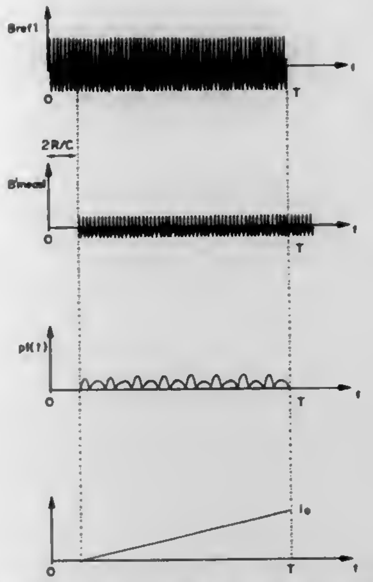
Int. Cl.^{6} G01C *3/08;* **G01S** *13/08*

U.S. Cl. 356—5.15 **17 Claims**

1. A heterodyne measurement system, comprising:

an electromagnetic radiation source, the electromagnetic radiation source providing a continuous measurement beam for a predetermined time period, a continuous reference beam for the predetermined time period, an intensity modulated measurement beam, and an intensity modulated reference beam;

directing means for directing the continuous measurement beam and the intensity modulated measurement beam toward an object to produce a reflected continuous measurement beam and a reflected intensity modulated measurement beam;



combining means for combining the reflected continuous measurement beam and the continuous reference beam to produce a first beat signal and combining the reflected intensity modulated measurement beam and the intensity modulated reference beam to produce a second beat signal;

integrating means for integrating the first beat signal over the predetermined time period to produce a first integration value and for integrating the second beat signal to produce a second integration value; and

distance determining means for determining a distance between the heterodyne measurement device and the object in accordance with the first and second integration values.

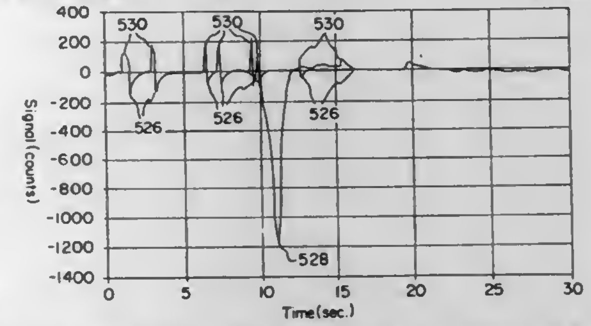
5,710,622
FLUID DOSE, FLOW AND COAGULATION SENSOR FOR MEDICAL INSTRUMENT

Gary T. Neel; James R. Parker, both of Indianapolis; Rick L. Collins, Cicero; David E. Storvick, Indianapolis; Charles L. Thomeczek, Jr., Fishers; William J. Murphy, Cicero; George R. Lennert, Fishers; Morris J. Young, and Daniel L. Kennedy, both of Indianapolis, all of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Division of Ser. No. 114,913, Aug. 31, 1993, Pat. No. 5,522,255. This application Jun. 7, 1995, Ser. No. 478,409

Int. Cl.^{6} G01N *33/48*

U.S. Cl. 356—39 **4 Claims**



1. A method of determining a characteristic of a biological fluid or a control using an instrument, the instrument including a surface upon which a user deposits a sample of biological fluid or control the characteristic of which is to be determined, the instrument irradiating the sample and detecting radiation from the sample to determine the characteristic, the method comprising the steps of monitoring the detected radiation a first time to determine if the detected radiation is increasing or decreasing, forming a first change in detected radiation from said first monitoring, subsequently monitoring the detected radiation a second time to deter-

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mine if the detected radiation is increasing or decreasing, forming a second change in detected radiation from said second monitoring, forming an overall change in detected radiation from the first and second monitorings, establishing a first threshold, establishing a second threshold, comparing the first change to the first threshold, comparing the second change to the first threshold, if the magnitudes of both the first and second changes are greater than the first threshold, comparing the overall change in radiation to the second threshold, and determining the characteristic if the magnitudes of the first and second changes are greater than the first threshold and the overall change is greater than the second threshold.

5,710,623

POINT-TYPE RADIO CONTROLLER USING INFARED RAYS

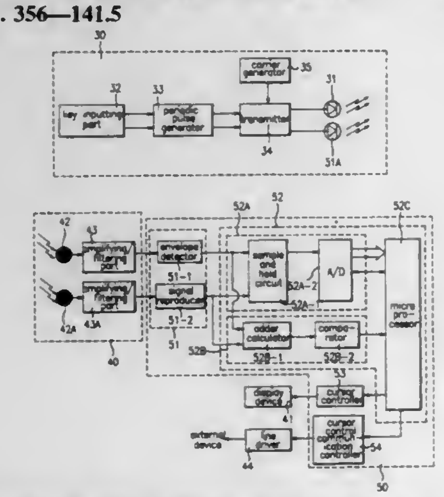
Jeong Yeol Kim, Suwon, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,757

Claims priority, application Rep. of Korea, Apr. 6, 1995, 7968/1995

Int. Cl.^{6} G09G ***5/08;*** **G01B** ***11/26***

U.S. Cl. 356—141.5 **8 Claims**



I. A point-type radio controller using infrared rays, comprising:

a transmitting means for transmitting an infrared signal having a constant period, and having infrared diodes as a plurality of signal generators in the direction of the Y-axis in order to achieve a constant angle;

a receiving means for receiving said infrared signal by mounting infrared receiving sensors on a display device at a right angle to said infrared diodes in the direction of the X-axis; and

a controlling means for calculating a coordinates-position of an indicated point by using an intensity difference between said infrared signals received by said receiving means, and displaying a calculated point on a display screen.

5,710,624

ALIGNER AND CONTAMINATION DETECTING METHOD

Shinji Utamura, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 564,564

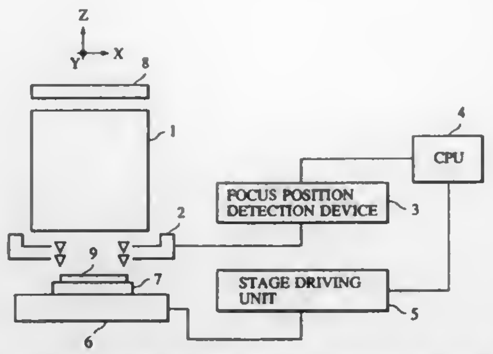
Claims priority, application Japan, Dec. 9, 1994, 6-330953; Jul. 31, 1995, 7-213016

Int. Cl.^{6} G01N ***21/88***

U.S. Cl. 356—237 **12 Claims**

1. An aligner for exposing a pattern image of an original plate by projecting the image onto an exposure surface of a substrate, which is held on a table, in a focused state through a projection optical system, said aligner comprising:

defocusing detection means for detecting a deviation from a focusing position at each of a plurality of points within an



exposure region on the exposure surface of the substrate, which is arranged at an exposure position;

means for determining an approximate plane of the exposure surface of the substrate within the exposure region on the basis of deviation detection values detected at the plurality of points by said defocusing detection means; and

decision means for determining a deviation of the approximate plane of the exposure surface of the substrate, on the basis of the deviation detection values detected at each of the plurality of points and for deciding, on the basis of the determined deviation, whether contamination is present between the table and the back side of the substrate.

5,710,625

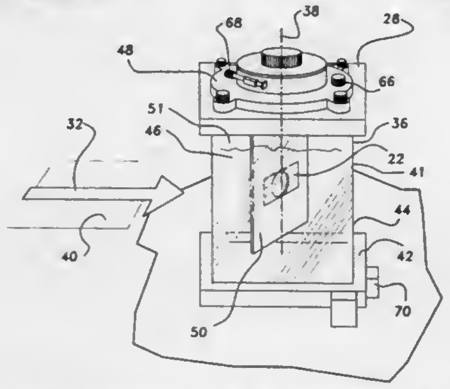
SPECTRAL OIL IMMERSION CELL

Margarete Neumann, Penetanguishene, and Robert Pursel, Victoria Harbor, both of Canada, assignors to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 30, 1996, Ser. No. 641,245

Int. Cl.^{6} G01N ***21/01***

U.S. Cl. 356—244 **20 Claims**



1. A spectral oil immersion cell for holding and positioning a sample during spectral analysis in which a beam is projected at the sample, said spectral oil immersion cell comprising:

an optical cell including a glass cell having a given index of refraction and being substantially filled with an oil having substantially the same index of refraction as said glass cell so that said optical cell effectively functions as a solid block of glass;

a rotary stage device being connected to said optical cell; and

a sample holder for holding said sample, said sample holder being attached to said rotary stage device and projecting into an interior chamber of said optical cell, said interior chamber being formed by said glass cell and a base member, wherein rotation of said sample allows for measurement of a spectral performance of said sample over a range of angles relative to said beam.

5,710,626

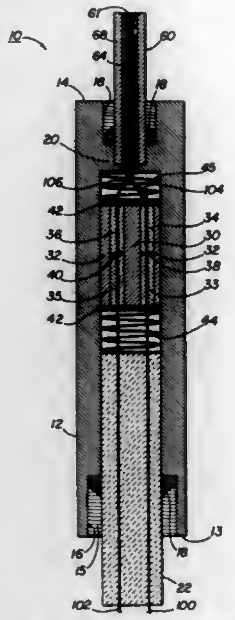
RUGGED FIBER OPTIC PROBE FOR RAMAN MEASUREMENT

Patrick E. O'Rourke, Martinez, Ga.; William R. Toole, Jr., Aiken, S.C., and Stanley E. Nave, Evans, Ga., assignors to Westinghouse Savannah River Company, Aiken, S.C.

Filed Nov. 15, 1996, Ser. No. 746,711

Int. Cl.^{6} G01J ***3/44***

U.S. Cl. 356—301 **32 Claims**



1. An optical probe for use in light scattering analysis of a sample comprising:

a) a housing having a proximal end, a distal end and defining a first cavity;

b) a filter assembly positioned within the first cavity;

c) a probe tip positioned at the distal end of the housing and defining a second cavity which communicates with the first cavity;

d) a fiber assembly positioned within the second cavity and communicating with the filter assembly;

e) a transmitting/receiving line positioned in the first cavity and communicating with the filter assembly; and

f) at least one spring urging the fiber assembly and the transmitting receiving line together thereby holding the filter assembly therebetween.

5,710,627

WAVELENGTH-SCANNING MECHANISM AND METHOD FOR SPECTROMETER

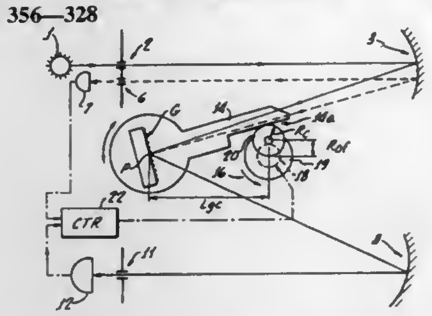
Masaru Inoue, and Juichiro Ukon, both of Miyanohigashimachi, Japan, assignors to Horiba Ltd., Kyoto, Japan

Filed Jun. 1, 1995, Ser. No. 457,267

Claims priority, application Japan, Jun. 4, 1994, 6-145344

Int. Cl.^{6} G01J ***3/28;3/18***

U.S. Cl. 356—328 **15 Claims**



1. A wavelength-scanning mechanism comprising:

a light source for emitting light;

an incident slit through which light emitted by said light source is passable;

a diffraction grating for generating diffracted light from light which has passed through said incident slit;

a diffracted light detector for detecting said diffracted light;

at least one contact bar having a swinging end and a base portion, said contact bar being fixedly mounted to said diffraction grating at said base portion thereof;

an eccentric disc cam slidably contacting said swinging end of said contact bar, said eccentric disc cam having a rotational axis, a distance being defined between said rotational axis and a point of contact between said eccentric disc cam and said swinging end of said contact bar; and

a pulse motor for rotating said eccentric disc cam about said rotational axis:

said eccentric disc cam being configured such that said distance between said rotational axis and said point of contact changes as said eccentric disc cam rotates.

5,710,628

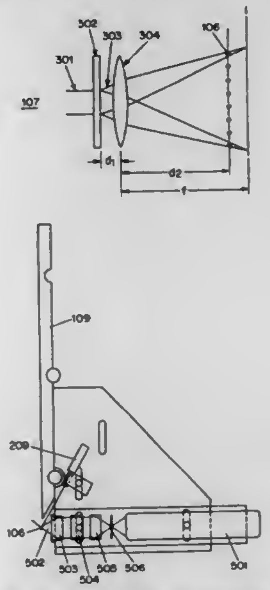
AUTOMATED ELECTROPHORESIS AND FLUORESCENCE DETECTION APPARATUS AND METHOD

Paul Waterhouse, Copetown; John A. Renfrew, Burlington, and John K. Stevens, Toronto, all of Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Dec. 12, 1994, Ser. No. 353,932

Int. Cl.^{6} G01H ***21/00***

U.S. Cl. 356—344 **15 Claims**



1. An apparatus for electrophoretic separation and detection of a plurality of samples, each labeled with a fluorophore and loaded into a lane of an electrophoresis gel, comprising:

(a) a housing adapted to receive an electrophoresis gel holder containing an electrophoresis gel loaded with the samples;

(b) an excitation source for providing an incident beam of coherent radiation of a frequency suitable for excitation of the fluorophore,

(c) a spot array generation grating for dividing the incident beam of coherent radiation into a plurality of excitation beamlets of the frequency suitable for excitation of the fluorophore and directing each excitation beamlet to an excitation/detection site on a different lane of the electrophoresis gel; and

(d) at least one detector for detecting emissions from the excitation/detection sites.

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5,710,629
INTERFEROMETRIC MEASURING DEVICE FORMING A SPACIAL INTERFERENCE PATTERN

Antoine Kevorkian, Grenoble; Isabelle Duport-Schanen, La Tronche, and Pierre Benech, Grenoble, all of France, assignors to Schneider Electric S.A., France

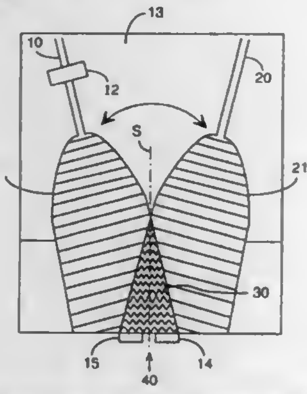
PCT No. PCT/FR93/01194, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/14028, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 6, 1993, Ser. No. 432,118

Claims priority, application France, Dec. 10, 1992, 92 15002

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—345 **9 Claims**



1. A fully integrated interferometric measuring device, comprising:

- a rigid block including first and second waveguides which form respective first and second optical transmission channels for mutually coherent input signals, said rigid block including broadening means for generating first and second spread flat beams respectively in the first and second channels such that each spread flat beam has substantially flat wavefronts, the wavefronts of the first and second beams intersecting each other along an axis of symmetry and forming a preset angle therebetween, the wavefronts creating a spatial interference pattern comprising fringes along an interference zone which extends perpendicular to the axis of symmetry, said broadening means comprising at least one broadening device provided in the first and second optical transmission channels; and
- analyzing means for analyzing said interference fringes, the analyzing means comprising detectors disposed in the interference zone along an output face of the rigid block.

5,710,630
METHOD AND APPARATUS FOR DETERMINING GLUCOSE CONCENTRATION IN A BIOLOGICAL SAMPLE

Matthias Essenpreis, Gauting; Alexander Knuettel, Weinheim, and Dirk Boecker, Heidelberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

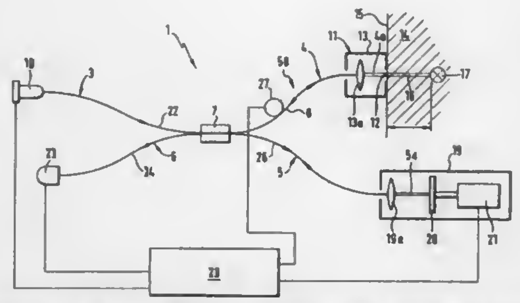
PCT No. PCT/DE95/00573, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO95/30368, PCT Pub. Date Nov. 16, 1995

PCT Filed Apr. 26, 1995, Ser. No. 530,241

Claims priority, application Germany, May 5, 1994, 44 15 728.2; Nov. 8, 1994, 44 39 900.6

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—345 **46 Claims**



1. A method for analytically determining a concentration of glucose in a biological sample, said method comprising the steps of:

- irradiating light along a primary-side measuring light path into the biological sample;
- guiding secondary light emerging from the sample along a secondary-side measuring light path to a photodetector;
- detecting the secondary light with the photodetector, the photodetector providing a signal representative of the secondary light,
- wherein a first portion of the primary light emitted by the light source is guided to the photodetector along a total measuring light path which includes the primary-side measuring light path, an interior light path in which the light travels inside the sample, and the secondary-side measuring light path, wherein a second portion of the primary light emitted by the light source is guided along a reference light path to the photodetector, said reference light path not including an interior light path in which the light travels inside the sample, and wherein the secondary-side measuring light path and the reference light path are combined whereby the secondary light and the reference light interfere with each other such that the photodetector detects an interference signal, said method further comprising the step of
- determining the glucose concentration based on the signal provided in the detecting step, wherein a factor in the determining of the glucose concentration is an optical light path length of the interior light path inside the sample derived from said interference signal.

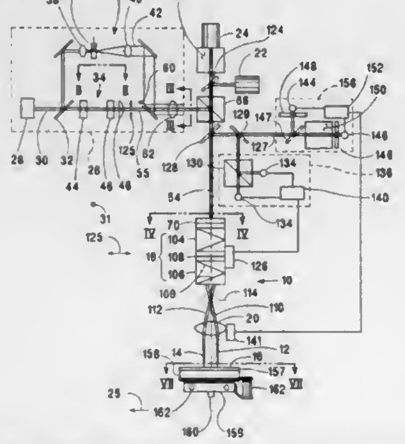
5,710,631
APPARATUS AND METHOD FOR STORING INTERFEROMETRIC IMAGES OF SCANNED DEFECTS AND FOR SUBSEQUENT STATIC ANALYSIS OF SUCH DEFECTS

Akram Aref Bou-Ghannam; Alan David Dorundo, both of Boca Raton; Michael Gerard Lisanke, Boynton Beach; Huizong Lu, Coconut Creek; Lanphuong Thi Pena, Ft. Lauderdale; Ali Reza Taheri, West Palm Beach, all of Fla.; Samuel Sheung-Lok So, San Jose, Calif.; Kenneth Wayne Watts, Boca Raton, Fla., and Darell Smith Whitaker, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 426,778, Apr. 11, 1995, abandoned. This application Jan. 27, 1997, Ser. No. 789,031

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—351 **17 Claims**



1. Apparatus for determining characteristics of a test surface of a test specimen, wherein said apparatus comprises:

- an instrument having an objective section for viewing said test surface, a first optical path directing a first image of said test surface at said objective section to a first sensing means for sensing features of said first image along an image receptive line, said first sensing means operating first output means to provide a first signal responsive to variations in said image, and a second optical path directing a second image of said test surface in said objective section to a second sensing means for sensing features of said second image extending within an area;
- specimen drive means for driving said test specimen so that said test surface is moved past said objective section according to a preferred path of motion;
- defect detection means for detecting variations in said first signal as said test specimen is driven to produce a flowing image on said first sensing means;
- data storage means;
- location sensing means providing location data describing movement of said test surface past said objective section;
- first control means storing said location data within said data storage means in response to said defect detection means; and
- second control means operating said specimen drive means to move said test surface into locations corresponding to said location data stored within said data storage means, wherein said second control means moves said test surface successively between said locations, holding said test surface at said locations as a stationary image of said test surface is projected on said second sensing means.

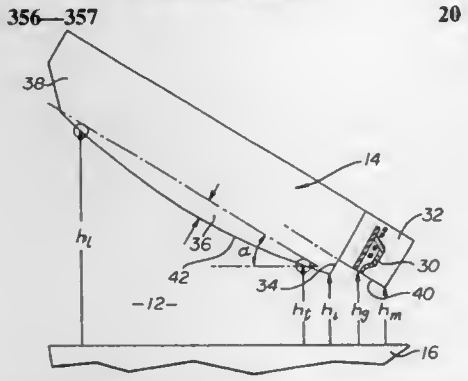
5,710,632
METHODOLOGY FOR THE DETERMINATION OF THE MINIMUM AND GAP FLYING HEIGHT OF A THIN-FILM SLIDER

Yufeng Li, Fremont, Calif., assignor to Samsung Electronics, Inc., Rep. of Korea

Filed Aug. 6, 1996, Ser. No. 692,529

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—357 **20 Claims**



1. A method for measuring a height of an air bearing between a recording head and a rotating disk, wherein the recording head has a read/write element located within a trailing edge that extends from an interface of a head substrate, the trailing edge has an outer tip and an air bearing surface that is recessed from an air bearing surface of the head substrate, comprising the steps of:

- a) rotating the disk so that the interface of the head substrate is separated from the disk by an air bearing height h_i, the read/write element is separated from the disk by an air bearing height h_g, and the trailing edge outer tip is separated from the disk by an air bearing height h_m; and,
- b) measuring the heights h_i, h_g and h_m.

5,710,633
FASTENING AND COUPLING OF AN OPTOELECTRONIC SENSOR TO A PANE AND STRUCTURE OF THE SENSOR

Christoph Klappenbach, Buehl; Guenther Riehl, Buehlertal, and Manfred Burkart, Iffezheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

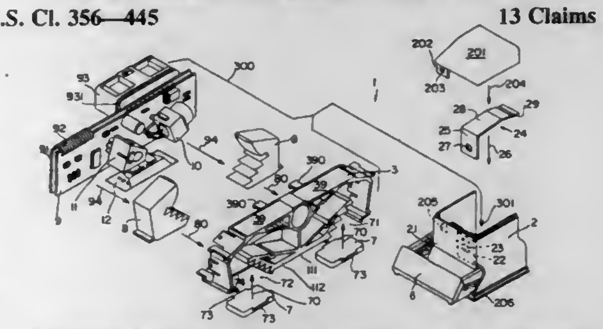
PCT No. PCT/DE95/00401, § 371 Date Aug. 8, 1996, § 102(e) Date Aug. 8, 1996, PCT Pub. No. WO95/25651, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 23, 1995, Ser. No. 687,607

Claims priority, application Germany, Mar. 24, 1994, 44 10 217.8

Int. Cl.^{6} G01N *21/88;* **B60S** *1/02;* **G01W** *1/00*

U.S. Cl. 356—445 **13 Claims**



1. A sensor for optically detecting foreign bodies on a pane, said sensor including a transmitter and a receiver, which are coupled on the inside of the pane and detect foreign bodies on the outside of the pane in the region of a measurement path between the transmitter and the receiver; and, wherein: the sensor includes an outer housing part and an inner housing part as well as a fastening device that is glued to the pane; the functional elements of the sensor are held by the inner housing part, and a fastening means is mounted on the outer housing part and engages the fastening device in order to releasably secure the sensor to the pane; the inner housing part is pressed against the pane by the force of at least one spring which engages the outer housing part; pockets with a detent spring are provided on the outer housing part; and a respective said spring is inserted into each of these pockets so that it locks in detent fashion, and these springs, rest with pressure faces on one face of the inner housing part, and press the inner housing part forward toward the pane.

5,710,634
OUTPUT APPARATUS AND METHOD FOR READING AND RECORDING

Hiroyuki Kuriyama, Kawasaki; Hiraku Sonobe, Yokohama; Kiyoharu Yoshioka, Yokohama; Jun Miyamoto, Yokohama, and Hidehiko Kajiya, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,382

Claims priority, application Japan, Jun. 3, 1992, 4-142668; Jun. 22, 1992, 187534

Int. Cl.^{6} H04N *1/21;1/04*

U.S. Cl. 358—296 **27 Claims**

1. An output apparatus comprising:

- conveyer means for conveying an output medium, said conveyer means having two output medium feed portions including respective feeding convey paths and one output medium ejection portion, wherein the feeding convey paths of said two output medium feed portions join at a joining point into one ejection convey path reaching said output medium ejection portion;
- output means for recording information on the output medium in accordance with output signals, said output means being provided adjacent the ejection convey path downstream from the joining point of the convey paths;
- reader means for reading recorded information which has been recorded on the output medium, said reader means being

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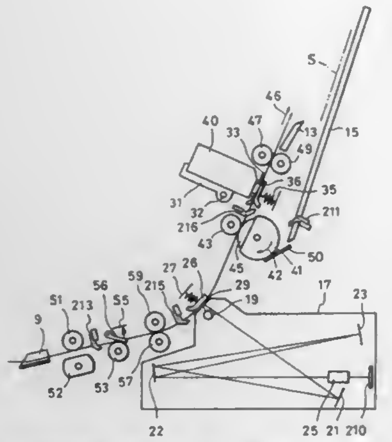


provided adjacent one of the two feeding convey paths upstream from the joining point; and

control means for controlling said conveyer means, said output means and said reader means, wherein the output medium is movable in said conveyer means in only a forward direction.

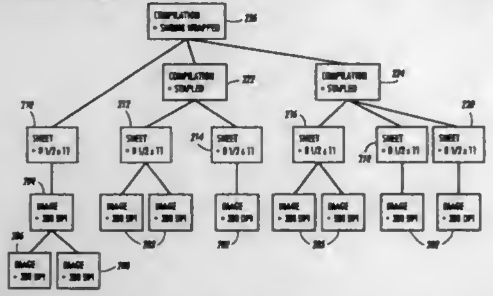
5,710,635
GENERIC ASSEMBLY TREES PROVIDING JOB CONTROL AND MIX AND MATCH OF MODULES

Marc W. Webster; Daniel Lawrence McCue, III, both of Rochester; Paul A. Rulli, Webster, and William K. Stumbo, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1995, Ser. No. 567,819

Int. Cl.⁶ H04N *1/00;* **G06F** *15/00;* **G03G** *15/00*

U.S. Cl. 358—296 **12 Claims**



1. In an electronic image processing apparatus comprising a controller and a plurality of resources, the resources being in an arbitrary configuration, each of the resources including an associated processor including decomposer/print engine protocol, each of the processors storing data related to operational constraints of the associated resource, a bus for interconnecting the processors to the controller for directing the operation of the resources, a method of defining a document in an assembly tree format for processing by the electronic image processing apparatus comprising the steps of:

formulating the document as a plurality of images, some of the images being combinations of other images,

defining a set of sheets, each sheet including one or more of said plurality of images,

specifying compilations of sheets, each compilation being a compilation of sheets, or a compilation of compilations of sheets, or a compilation of sheets and compilations of compilations of sheets, and

providing said assembly tree format to the electronic image processing apparatus for processing independent of timing and print order, the assembly tree format being independent of any particular machine configuration including decomposer/print engine protocol.

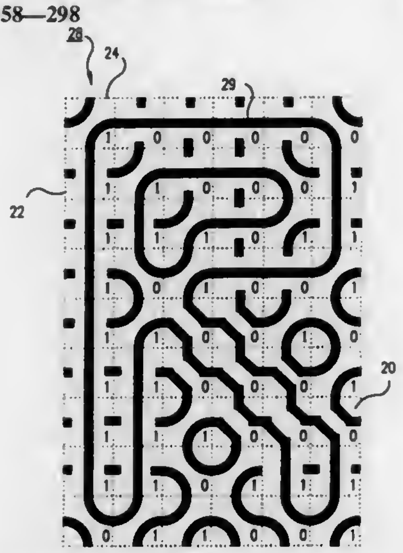
5,710,636
METHOD AND APPARATUS FOR GENERATING HALFTONE IMAGES HAVING HUMAN READABLE PATTERNS FORMED THEREIN

Douglas N. Curry, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 5, 1995, Ser. No. 462,283

Int. Cl.⁶ H04N *1/405*

U.S. Cl. 358—298 **18 Claims**



1. An apparatus for producing a halftone image, comprising:

a bitmap generator that generates bitmap codes based upon at least one human readable pattern to be formed within the halftone image;

a halftone generator for generating halftone cells from the bitmap codes and from grayscale image data, the halftone cells being formed from dot patterns, the halftone generator selecting one of a plurality of predetermined shapes for the dot patterns of each of the halftone cells; and

an output device for writing the halftone cells on a recording medium to produce the halftone image, the halftone image having embedded therein at least one human readable pattern formed by the predetermined shapes of the halftone cells.

5,710,637
CARD ISSUING MACHINE AND A METHOD FOR CONTROLLING THE SAME

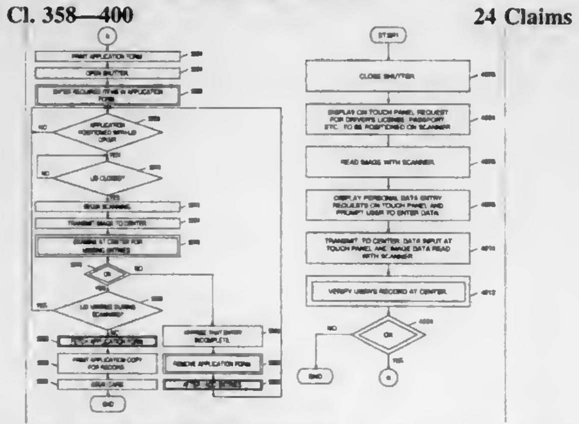
Takeshi Matsumoto, Sagamihara, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1995, Ser. No. 515,884

Claims priority, application Japan, Oct. 20, 1994, 6-255310

Int. Cl.⁶ H04N *1/00*

U.S. Cl. 358—400 **24 Claims**


START
CLOSE SHUTTER
DISPLAY ON TOUCH PANEL REQUEST FOR DRIVER'S LICENSE, PASSPORT ETC. TO BE POSITIONED ON SCANNER
READ IMAGE WITH SCANNER
DISPLAY PERSONAL DATA ENTRY REQUESTS ON TOUCH PANEL AND PROMPT USER TO ENTER DATA
TRANSMIT TO CENTER DATA INPUT AT TOUCH PANEL AND IMAGE DATA READ WITH SCANNER
VERIFY USER'S RECORD AT CENTER
OK
NO
YES
END
PRINT APPLICATION FORM
OPEN SHUTTER
BEGIN SCANNING
TRANSMIT IMAGE TO CENTER
PRINT APPLICATION COPY FOR RECORD
REMOVE APPLICATION FORM
END

1. A card issuing machine comprising:

(a) scanner means for scanning a document and preparing image data for said document;

(b) means for passing said document through said scanner means and transferring said document to a storage position;

(c) shutter means, which is located between said scanner means and said storage position and which is freely shifted between a first position that blocks the transfer of said document from said scanner means and a second position that permits the transfer of said document from said scanner means to said storage position;

(d) means for enabling data transmission via a communication line to a remote center;

(e) means for driving said scanner means while said shutter means is moved to said first position, and transmitting, as data for reference, said data for reference in the form of image data that is read by said scanner means to said remote center via said communication line;

(f) means for, upon receipt of a notice from said remote center via said communication line that a financial state of an applicant is satisfactory according to said data for reference, for driving said scanner means while said shutter means is shifted to said second position, and for transmitting, as card application data, said card application data in the form of image data read by said scanner means to said remote center; and

(g) means for, upon the receipt of a notice from said remote center via a communication line that the contents of said card application data are verified, transferring to said storage position a document that is placed on said scanner by said means for transferring said document, and for performing a card issuing process.

5,710,638
IMAGE PROCESSING SYSTEM WITH A BUFFER MEMORY

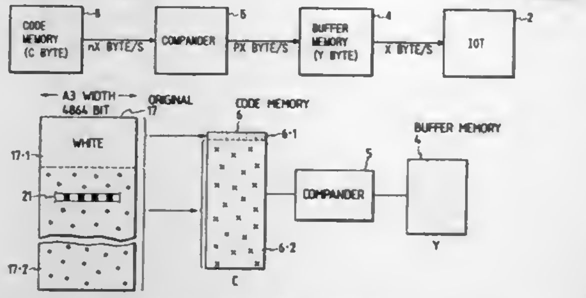
Susumu Yamamoto; Toshio Nakada; Toshifumi Nakamura, and Gen Okabe, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 901,577, Jun. 19, 1992, abandoned. This application Nov. 18, 1994, Ser. No. 345,369

Claims priority, application Japan, Jun. 22, 1991, 3-177515; Jun. 22, 1991, 3-177517; Jun. 22, 1991, 3-177518; Jul. 18, 1991, 3-203912; Jul. 20, 1991, 3-204712

Int. Cl.⁶ H04N *1/00*

U.S. Cl. 358—404 **19 Claims**



1. An image processing apparatus comprising:

image read means for operating continuously to read an image on an original document at a constant speed;

a buffer memory for temporarily storing image data of the image on the original that is read by said image read means;

compressing means for compressing the image data stored in said buffer memory into code data;

buffer memory control means for controlling the operation of writing the image data into said buffer memory and the operation of reading the image data from said buffer memory; and

code storage means for storing the code data, wherein the memory capacity of said buffer memory is determined depending on the memory capacity of said code storage means, the lowest compression rate when said compressing means compresses the image data, and a ratio of a transfer rate of transferring the image data between said image read means and said buffer memory to that of transferring the image data between said compressing means and said buffer memory.

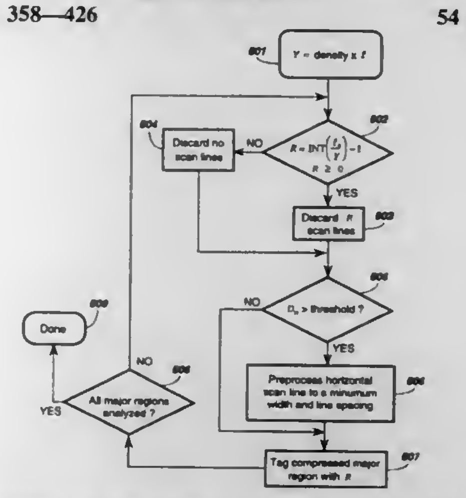
5,710,639
SCAN LINE COMPRESSED FACSIMILE COMMUNICATION SYSTEM

William Joseph Kuznicki, 3681 NW. 100th Ave., Coral Springs, Fla. 33065; Robert John Schwendeman, 590 SE. 10th Ave., Pompano Beach, Fla. 33060, and Gregg Edward Rasor, 1164 SW. 23rd Ave., Boynton Beach, Fla. 33426

Filed Jan. 25, 1996, Ser. No. 591,066

Int. Cl.⁶ H04N *1/41*

U.S. Cl. 358—426 **54 Claims**



1. A method for generating a scan line compressed facsimile message of a quantized image of a source document comprising the steps of:

analyzing the quantized image to locate at least first and second information regions;

determining a height in scan lines of each of the at least first and second information regions;

calculating a scan discard ratio R:1 for at least one of the at least first and second information regions, the scan discard ratio R:1 being a function of at least a vertical dimension limit Y that is a product of a vertical line density associated with the source document and a system loading factor f, and the height in scan lines corresponding with the at least one of the first and second information regions; and

discarding R scan lines in the at least one of the first and second information regions.

5,710,640
WHITE-LEVEL CORRECTION CIRCUIT

Akio Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 128,673, Sep. 30, 1993. This application Jun. 7, 1995, Ser. No. 482,849

Claims priority, application Japan, Feb. 15, 1993, 5-24601

Int. Cl.⁶ H04N *1/40*

U.S. Cl. 358—461 **42 Claims**

1. In an analog-to-digital converter which converts an analog image signal, input thereto and corresponding to a pixel, to output digital image data based on a white-level reference voltage input thereto, a white-level correction circuit comprising:

first storage means for storing therein white-level reference data for the pixel the white-level reference data being output therefrom in synchronization with the input analog image signal;

second storage means for storing therein count data for the pixel the count data being output therefrom in synchronization with the input analog image signal;

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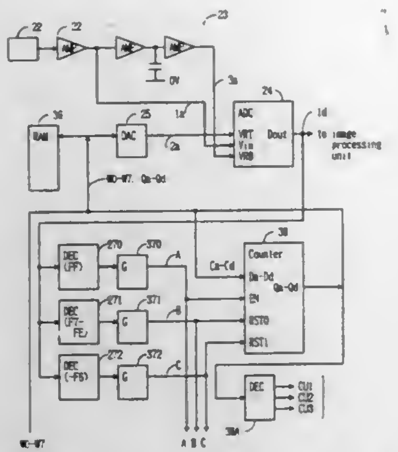
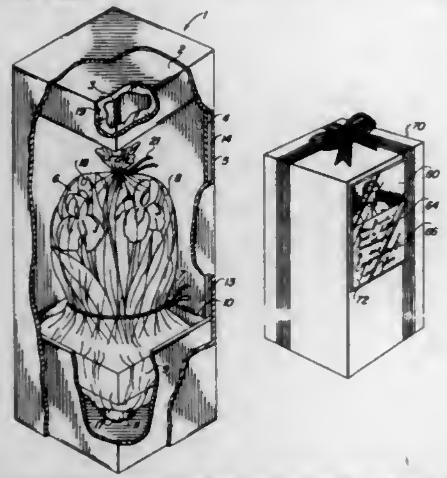


digital-to-analog conversion means for converting the white-level reference data, output by the first storage means, to an analog signal and supplying the analog signal to the analog-to-digital converter as the white-level reference voltage;
decoding means for decoding the digital image data output by the analog-to-digital converter;
update means for updating a count of the read count data in dependence upon the results of the decoding by said decoding means and for storing the updated count data in said second storage means; and
correction means for generating white-level correction data, by correcting the read white-level reference data based on the decoding by said decoding means and the read count data, and for storing the white-level correction data in said first storage means.

5,710,641
METHOD AND SYSTEM FOR PRODUCT COMMUNICATION

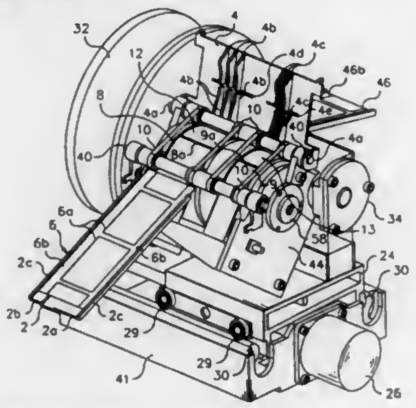
William J. Lowry, 14245 U.S. Hwy. 24 (River Rd.), Grand Rapids, Ohio 43522, and John Carcich, 671 Joette Dr., Gardnervile, Nev. 89410
Continuation-in-part of Ser. No. 950,955, Sep. 25, 1992, Pat. No. 5,379,549. This application Jan. 9, 1995, Ser. No. 369,814
Int. Cl.⁶ H04N *1/40*
U.S. Cl. 358—462 **14 Claims**



1. A system for communicating between a plurality of human individuals comprising:
means for communicating a first information from a first individual to a second individual through a telephone line to thereby direct that a product be produced at a remote location;
means for writing a second information in a personal stylized script onto an information receiving medium thereby producing a first note page;
means for digitizing the first note page into a digital format;
means for digitally combining the second information in the first note page with third information wherein the digitally combined second and third information forms the first note page;
means for transferring the digitally formatted first note page from a first location to a second location;
means for receiving the digitally formatted first note page at the second location;
means for reformulating the digitally formatted first note page as a second note page at the second location;
an exterior box having upper, lower, front, back and sidewall panels forming a rectangular shaped box, wherein said exterior box has an open front;
an open top vase slidably received within said open front of said exterior box;
a fastening member for holding said vase in a stable condition inside said exterior box during shipment; and
a receiving frame disposed on the front of said exterior box to receive the second note page.

5,710,642
MULTI-FORMAT FILM SCANNER DEVICE

Ronald Herbert Kiesow, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 20, 1996, Ser. No. 667,160
Int. Cl.⁶ H04N *1/04;1/46*
U.S. Cl. 358—474 **9 Claims**

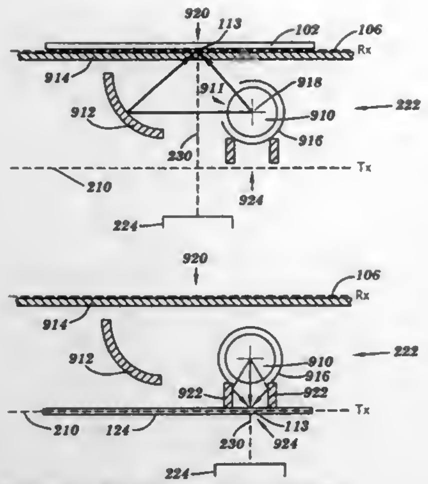


1. A multi-format scanner, comprising:
a) first and second laterally spaced film gates which are dimensioned to accomodate film of respective different widths lengthwise therethrough for scanning, each gate having an aperture through which light can pass;
b) a light source to illuminate film at the aperture of at least a selected one of the gates;
c) a sensor to receive light from the light source which has passed through film at the aperture of the selected gate;
d) a film input and output track set aligned with the selected gate to lengthwise convey elongated film of either width, into and out of the selected gate;
e) drive means to move the film lengthwise through the selected gate;
f) means for laterally moving at least one of: the film gates, the sensor or track set, such that either gate can serve as the selected gate.

5,710,643
OPTICAL PATH FOR A SCANNING SYSTEM

John Depiano, Burlington, Mass., assignor to Agfa Divisionn, Bayer Corporation, Wilmington, Mass.
Filed Jun. 29, 1995, Ser. No. 496,503
Int. Cl.⁶ H04N *1/00;1/04*
U.S. Cl. 358—487 **25 Claims**

1. A flat-bed scanner for scanning an original document to obtain a digitized representation of said original document, said flat-bed scanner comprising:

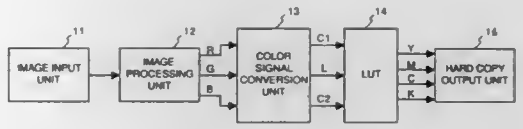


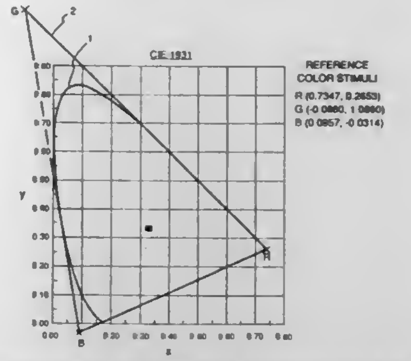
(A) a stationary reflective object focal plane;
(B) a stationary transmissive object focal plane disposed substantially parallel to and at a vertical distance below said stationary reflective object focal plane;
(C) means for selecting between said stationary reflective object focal plane and said stationary transmissive object focal plane;
(D) a scan carriage movably disposed for linear motion along a scanning axis, said scan carriage including an illumination source disposed between said reflective object focal plane and said transmissive object focal plane for illuminating a scan line of said original document located in said selected object focal plane, said scan carriage further including optical imaging and sensor means disposed below said transmissive object focal plane for obtaining a digitized representation of said scan line;
(E) means for moving said scan carriage along said scanning axis to obtain digitized representations of successive scan lines of said original document, said digitized representations of said successive scan lines together comprising said digital representation of said original document; and,
wherein said means for selecting between said stationary reflective object focal plane and said stationary transmissive object focal plane includes a mirror movably disposed between a first and second position, said first position defining a first optical path, said second position defining a second optical path, said first optical path intersecting said reflective object focal plane and extending therefrom to said sensor means and said second optical path intersecting said transmissive object focal plane and extending therefrom to said sensor means, said first and second optical paths having a substantially equal optical path length.

5,710,644
COLOR EXPRESSING METHOD AND IMAGE PROCESSING APPARATUS THEREOF

Ken-ichi Ohta, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 996,647, Dec. 24, 1992, abandoned. This application May 10, 1995, Ser. No. 438,534
Claims priority, application Japan, Jan. 6, 1992, 4-000110
Int. Cl.⁶ G03F *3/08;* **H04N** *1/46*
U.S. Cl. 358—518 **24 Claims**

1. An image processing apparatus comprising:
means for obtaining first color signal data expressed by a combination of three stimulus data corresponding to vertices of a triangle, wherein the triangle formed by connecting these three points circumscribes a spectrum locus on xy chromaticity coordinates approximately at 505 nm and 525 nm, and one side of the triangle includes a purple boundary connecting two points at 380 nm and 780 nm; and

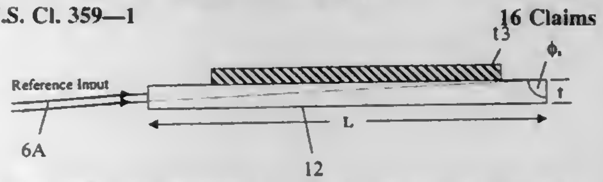




data transform means for obtaining second color signal data by performing a nonlinear transformation on the first color signal data.

5,710,645
GRAZING INCIDENCE HOLOGRAMS AND SYSTEM AND METHOD FOR PRODUCING THE SAME

Nicholas J. Phillips, Loughborough, United Kingdom, and Zane Coleman, Mableton, Ga., assignors to Imedge Technology, Inc., White Plains, N.Y.
Continuation of Ser. No. 373,878, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 11,508, Jan. 29, 1993, abandoned. This application Oct. 23, 1995, Ser. No. 546,709
Int. Cl.⁶ G03H *1/00*
U.S. Cl. 359—1 **16 Claims**



7. A system for illuminating a volume hologram having slanted fringes comprising:
a substrate of thin construction, made from an optically transparent material having an index of refraction n_S, said substrate having front and rear surfaces disposed substantially parallel to each other, and an edge surface disposed between said front and rear surfaces;
a holographic recording medium made from an optically transparent material having an index of refraction n_M greater than n_S with the difference of index of refraction therebetween equal to Δn, said holographic recording medium having front and rear surfaces and a volume hologram with slanted fringes prerecorded therein, and said rear surface of said holographic recording medium being disposed in direct physical contact with the front surface of said substrate along an interface; and
a light source for producing an illumination beam which propagates along a single-pass optical path extending through said substrate at a grazing angle of incidence $Ø_s$ of at least about 80 degrees with respect to the normal to said interface, so that said illumination beam couples into said holographic recording medium and interacts with said slanted fringes, wherein said index of refraction of said substrate n_S is matched to the index of refraction of said holographic recording medium n_M by selecting values for n_S and n_M so that the difference of index of refraction therebetween Δn is functionally related to said grazing angle of incidence $Ø_s$ and the index of refraction of said substrate n_S by the expression:

$$2\frac{\Delta n}{n_S}\tan^2\phi_S << 1$$

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5,710,646
HEAD-UP DISPLAY

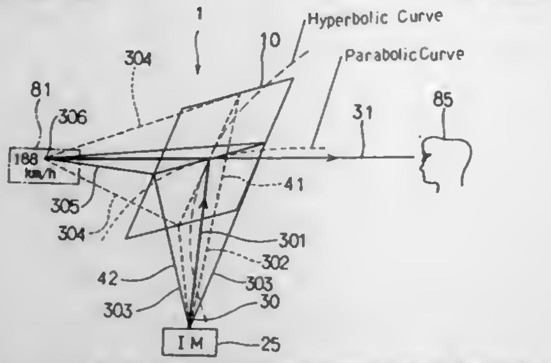
Teiyuu Kimura; Hiroshi Ando, both of Nagoya; Minako Sugiura, Anjyo; Kazumasa Kurokawa, and Suzuo Ban, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 10, 1995, Ser. No. 438,734

Claims priority, application Japan, Jun. 7, 1994, 6-150372; Feb. 10, 1995, 7-046350

Int. Cl.^{6} G03H *1/00;* **G02B** *5/32;27/14*

U.S. Cl. 359—14 **8 Claims**



1. A head-up display for projecting a virtual image ahead of a windshield of a vehicle, comprising:

a projector for projecting an image light; and

a hologram lens, disposed on a curved surface of a windshield of said vehicle, having a first diffraction equivalent to a first concave mirror along a line formed by intersection of the hologram lens and a vertical plane, an optical axis of said image light lying on said vertical plane, and a second diffraction equivalent to a second concave mirror along a line formed by intersection of said hologram lens and a horizontal plane, said optical axis of said image light lying on said horizontal plane, said first and second diffractions respectively having a first focal point and a second focal point so that the virtual images formed by said first and second diffractions are focused at the same position.

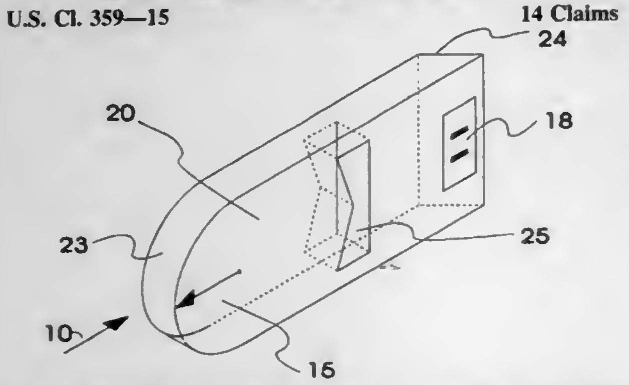
5,710,647
TARGET FOR LASER LEVELING SYSTEMS

Robert M. Perchak, 2354 Wymore Pl., Dayton, Ohio 45459

Filed Aug. 30, 1995, Ser. No. 520,852

Int. Cl.^{6} G02B *5/32;* **G01B** *11/26;* **G01C** *5/00*

U.S. Cl. 359—15 **14 Claims**



6. A target for locating the center of a scanning light beam impinged repeatedly on said target, comprising

said target housing having an input aperture and a viewing aperture spaced apart,

a beam splitting hologram at said input aperture to divide a beam entering said input aperture into equal component beam parts,

a viewing hologram at said viewing aperture receiving the component beam parts in adjacent locations and producing adjacent images thereon,

whereby an observer can discern equality and inequalities of the adjacent images as the position of the target is moved to center said input aperture with respect to the input light beam so as to produce equal images from the component beams.

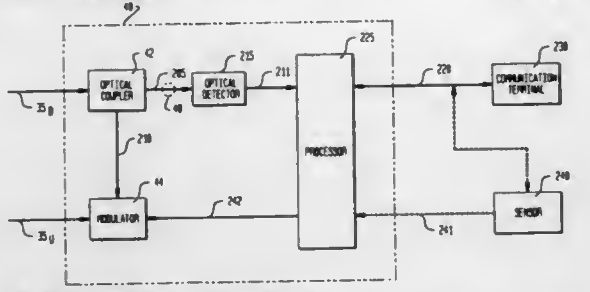
5,710,648
OPTICAL COMMUNICATION SYSTEM AND REMOTE SENSOR INTERROGATION

Nicholas J. Frigo, Atlantic Highlands, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1995, Ser. No. 579,986

Int. Cl.^{6} H04B *10/08*

U.S. Cl. 359—110 **36 Claims**



19. A sensing system comprising:

an optical coupler for receiving at least a portion of a downstream optical signal and for providing a downstream optical sensor interrogation signal and a downstream communication information signal;

a communication device for receiving the downstream communication information signal and for providing an upstream communication information signal;

at least one sensor responsive to an external stimulus for providing sensor information signals;

an optical signal modification device for receiving the downstream optical sensor interrogation signal and for modifying at least a portion of it to provide an upstream sensed signal in response to the sensor information signals; and

an upstream optical coupler for combining the upstream communication information signal and the upstream sensed signal into a composite upstream optical signal.

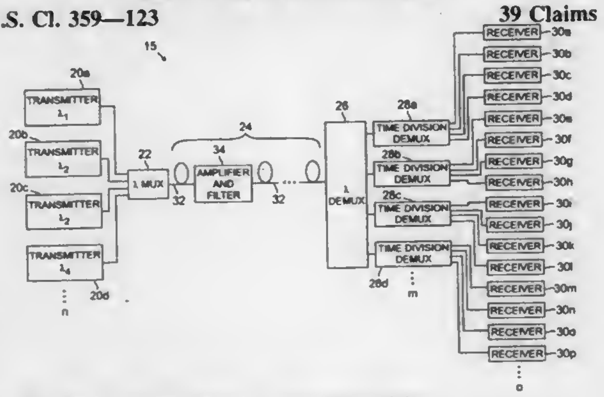
5,710,649
APPARATUS AND METHODS FOR NULLING NON-RANDOM TIMING JITTER IN THE TRANSMISSION OF DIGITAL OPTICAL SIGNALS

Linn Frederick Mollenauer, Colts Neck, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 4, 1995, Ser. No. 566,815

Int. Cl.^{6} H04J *4/00;14/00;14/08*

U.S. Cl. 359—123 **39 Claims**



21. A telecommunications system comprising:

a plurality of transmitters, each transmitter transmitting an optical signal at a different wavelength;

a transmission medium comprising an input and an output;

a wavelength division multiplexer having inputs coupled to the plurality of transmitters and an output coupled to the input of the transmission medium;

a wavelength division demultiplexer having an input and outputs, the input of the demultiplexer being coupled to the output of the transmission medium;

a plurality of time division demultiplexers having inputs and outputs, wherein each of the time division demultiplexers comprises a clock recovery circuit which follows rapid changes in phase of its corresponding optical signal;

a plurality of receivers;

wherein the outputs of the wavelength division demultiplexer are coupled to the inputs of the plurality of time division demultiplexers and the outputs of the time division demultiplexers are coupled to the plurality of receivers.

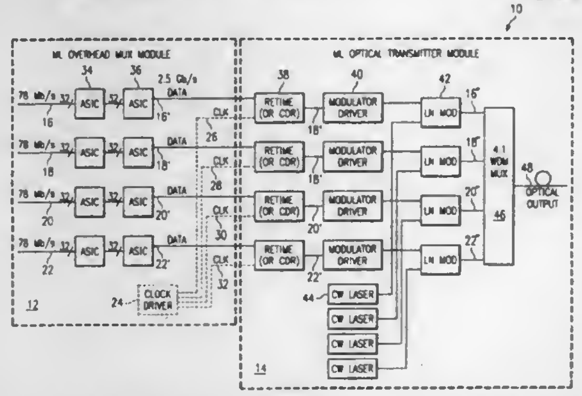
5,710,650
DISPERSION-REDUCING MULTIPLE WAVELENGTH DIVISION MULTIPLEXING OPTICAL FIBER TRANSCEIVER AND METHODS FOR USING AND ASSEMBLING SAME

John Michael Dugan, Richardson, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Mar. 14, 1996, Ser. No. 615,974

Int. Cl.^{6} H04J *14/02*

U.S. Cl. 359—133 **18 Claims**



7. An apparatus for reducing the effects of optical signal dispersion in a high data rate data stream traveling on an optical fiber communications system, comprising:

partitioning circuitry for partitioning the high data rate data stream into a plurality of lower data rate data streams;

separate wavelength transmission circuitry for transmitting each of said plurality of lower data rate data streams along an associated one of a plurality of separate wavelength channels;

multiplexing circuitry for multiplexing each of said lower data rate data streams on said plurality of separate wavelength channels into a single optical fiber assembly to form a multiplexed signal;

lower data rate fiber transmission circuitry for transmitting said multiplexed lower data rate signal along said single optical fiber assembly;

receiving circuitry for receiving said lower data rate data streams from said single optical fiber assembly; and

demultiplexing circuitry for demultiplexing said lower data rate data streams, including the necessary time re-alignment of said lower rate date streams, to form a received high data rate data stream.

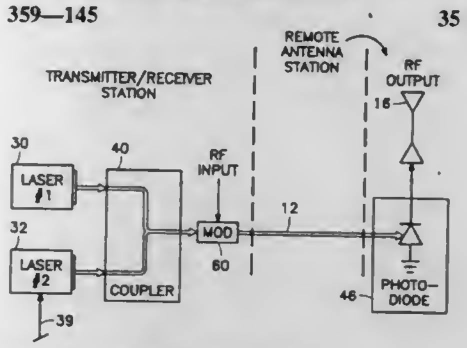
5,710,651
REMOTE MILLIMETER-WAVE ANTENNA FIBER OPTIC COMMUNICATION SYSTEM USING DUAL OPTICAL SIGNAL WITH MILLIMETER-WAVE BEAT FREQUENCY

Ronald T. Logan, Jr., Newtown, Pa., assignor to California Institute of Technology, Pasadena, Calif.

Filed Dec. 13, 1995, Ser. No. 571,368

Int. Cl.^{6} H04B *10/12;10/142*

U.S. Cl. 359—145 **35 Claims**



I. A transmission system comprising:

(A) a transmitter station comprising,

(1) a dual optical signal generator producing a first optical signal and a second optical signal respectively, wherein said first optical signal is offset in frequency from said second optical signal by a difference frequency,

(2) a coupler for combining said first and second optical signals to produce a combined output signal;

(3) an external modulator for modulating, in accordance with a baseband signal, said combined output signal;

(B) an optical fiber having one end coupled to said combined output signal; and

(c) a remote antenna station comprising,

(1) a photodetector coupled to another end of said optical fiber for converting said combined output signal to an electrical signal, and

(2) an antenna coupled to said electrical signal.

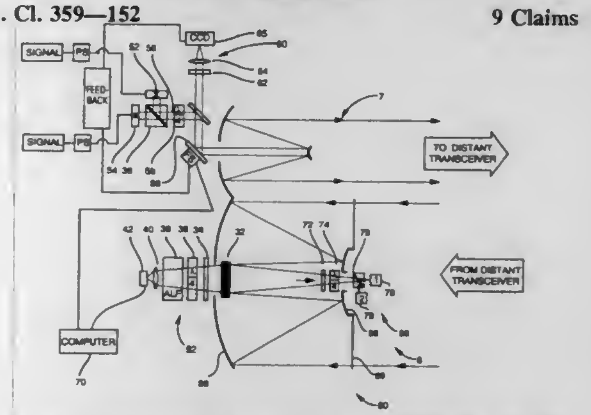
5,710,652
LASER COMMUNICATION TRANSCEIVER AND SYSTEM

Scott H. Bloom; Eric Korevaar; Victor Chan; Irene Chen, all of San Diego; Michael D. Rivers, Santee, and Amy Low, San Diego, all of Calif., assignors to Trex Communications, San Diego, Calif.

Continuation-in-part of Ser. No. 935,899, Aug. 27, 1992. This application Feb. 22, 1994, Ser. No. 199,115

Int. Cl.^{6} H04B *10/00*

U.S. Cl. 359—152 **9 Claims**



1. A laser communication transceiver for transmitting information via laser beams to other laser communication transceivers and for receiving information via laser beams from other similar laser communication transceivers comprising:

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- A) at least one wavelength controlled beacon laser means for producing at least one beacon laser beam at a predetermined narrowband wavelength defining a narrow band beacon wavelength,
- B) a laser transmitter system comprising:
  - 1) at least one laser means for producing a signal laser beam,
  - 2) a signal modulation means for modulating said signal laser beam to impose a communication signal on said laser beam,
- C) a laser receiver means for receiving laser beams transmitted from said other laser communication transceiver comprising:
  - 1) a telescope means for collecting laser beams transmitted from said other laser communication transceiver,
  - 2) a beacon receive means, comprising an atomic line filter matched to said narrow band beacon wavelength, for detecting and determining the direction of beacon laser beams transmitted by said other similar laser communication transceivers,
  - 3) a laser signal receive means for receiving signal laser beams transmitted by said other similar laser communication transceiver,
- D) a gimbal pointing means for pointing said telescope means toward said other laser communication transceiver in the direction determined by said beacon laser means.

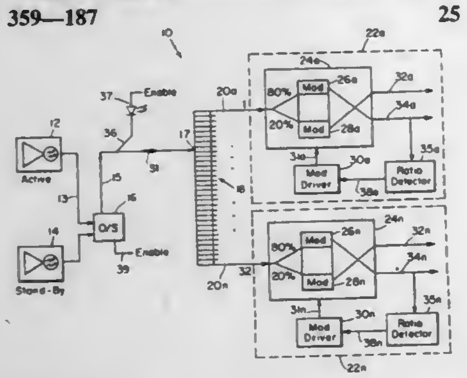
5,710,653
LINEAR MULTI-OUTPUT OPTICAL TRANSMITTER SYSTEM

Joseph E. Nemecek, Worcester; Michael J. Noonan, Shewsbury, and Amaresh Mahapatra, Acton, all of Mass., assignors to Fiber Optic Network Solutions Corp., Northboro, Mass.

Continuation-in-part of Ser. No. 398,987, Mar. 6, 1995. This application Nov. 28, 1995, Ser. No. 563,678

Int. Cl.^{6} H04B *10/18;10/155;* **H04J** *14/02*

U.S. Cl. 359—187 **25 Claims**



1. A multi-octave bandwidth cable television optical transmission system comprising:

- a laser that produces an optical carrier signal having an output power of at least 50 mW;
- an optical splitter having an input coupled to the laser that receives and splits the optical carrier signal into a plurality of splitter outputs;
- a plurality of transmitters, each transmitter being coupled to a splitter output and comprising:
  - a modulator driver for producing an analog driver signal;
  - a modulator having a driver input that receives the driver signal and an optical input for receiving a splitter output signal, the modulator modulating a splitter output signal with the driver signal to produce a pair of modulated output signals;
  - a distortion correction subsystem that corrects for modulator distortion of the splitter output signal; and
- a multi-octave bandwidth cable television fiberoptic transmission system connected to the plurality of transmitters that receives each pair of modulated output signals.

5,710,654
SCANNING LENS AND AN OPTICAL SCANNER USING THE SAME

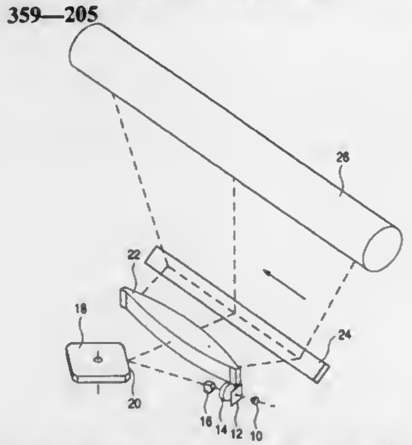
Akira Ota, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1996, Ser. No. 585,564

Claims priority, application Japan, Jan. 12, 1995, 7-003492

Int. Cl.^{6} G02B *26/08*

U.S. Cl. 359—205 **5 Claims**



1. A single-element scanning lens which is located between deflecting means for deflecting a beam of incident light in a specified direction at uniform angular velocity and a surface to be scanned and which allows the beam of incident light to be focused on the surface to be scanned such as to produce a light spot that scans at uniform speed, said scanning lens comprising in order from the deflecting means side:

- a first lens surface such that the geometry in a deflecting plane that is formed by the principal rays of the light beam deflected by said deflecting means is aspheric and paraaxially convex toward the deflector and that the geometry in a plane orthogonal to said deflecting plane and including the optical axis is aspheric and paraaxially concave toward the deflector; and
- a second lens surface that has an axis of rotation located in said deflecting plane and orthogonal to the optical axis of the scanning lens and which is such that curves formed by intersection with said deflecting plane provide an aspheric shape that is paraaxially convex toward the surface to be scanned whereas curves formed by intersection with the plane orthogonal to said deflecting plane provide a circular shape that is convex toward the surface to be scanned, said first and second lens surfaces satisfying the following relationships:

$0.598<R1M/f<1.475$

$-0.128<R2S/f<-0.104$

where R1M is the paraaxial radius of curvature of said first lens surface in the deflecting plane, R1S is the paraaxial radius of curvature of said first lens surface in the plane orthogonal to the deflecting plane, R2M is the paraaxial radius of curvature of said second lens surface in the deflecting plane, R2S is the paraaxial radius of curvature of said second lens surface in the plane orthogonal to the deflecting plane, f is the focal length of the scanning lens in the deflecting plane, and the minus sign means that the lens surface of interest is convex on the side where the incident beam travels on rather than it is launched.

5,710,655
CAVITY THICKNESS COMPENSATED ETALON FILTER

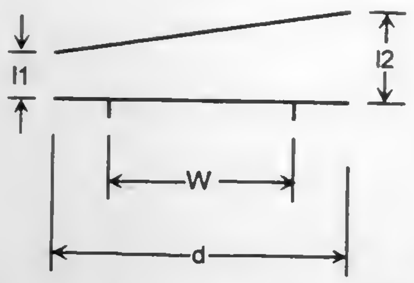
Scott H. Rumbaugh, Lake Oswego, and R. Thomas Hawkins, II, Aloha, both of Oreg., assignors to Apeldyn Corporation, Portland, Oreg.

Continuation of Ser. No. 96,041, Jul. 21, 1993, abandoned. This application Dec. 12, 1995, Ser. No. 571,283

Int. Cl.^{6} G02F *1/03*

U.S. Cl. 359—249 **17 Claims**

1. An etalon filter, comprising:



- a first, generally flat substrate;
- a second, generally flat substrate substantially parallel to said first substrate so as to form a cavity therebetween, said second substrate being substantially transparent to light at a predetermined wavelength;
- a first layer of conductive material disposed in said cavity adjacent said first substrate;
- a second layer of conductive material disposed in said cavity adjacent said second substrate, said second layer of conductive material being substantially transparent to light at said predetermined wavelength;
- a first layer of reflective material disposed in said cavity adjacent said first substrate;
- a second layer of reflective material disposed in said cavity adjacent said second substrate, said second layer of reflective material being partially reflective at said predetermined wavelength;
- a tuning medium disposed in said cavity, said tuning medium being substantially transparent to light at said predetermined wavelength, the index of refraction of said tuning medium being a function of the voltage applied across said tuning medium; and
- compensation means for enabling a non-uniform voltage profile to be applied across said tuning medium between said first layer of conductive material and said second layer of conductive material.

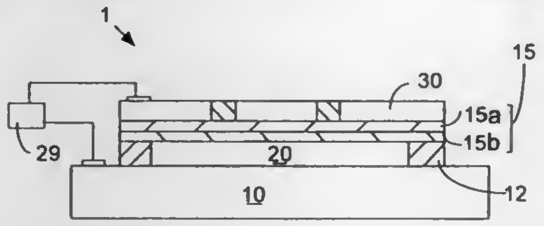
5,710,656
MICROMECHANICAL OPTICAL MODULATOR HAVING A REDUCED-MASS COMPOSITE MEMBRANE

Keith Wayne Goossen, Aberdeen, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 30, 1996, Ser. No. 688,325

Int. Cl.^{6} G02B *26/00*

U.S. Cl. 359—291 **24 Claims**



1. A micromechanical optical modulator for modulating an optical signal, the signal characterized by a wavelength, comprising:

- a substrate characterized by a first refractive index;
- a movable layer comprising an overlayer and an underlayer, wherein
  - the underlayer is characterized by a thickness about equal to one-quarter of the wavelength of the optical signal as measured in the underlayer, and further characterized by a second refractive index; and
  - the overlayer is characterized by a thickness that is less than one-quarter of the wavelength of the optical signal as measured in the overlayer, and further characterized by a third refractive index that is about equal to the first refractive index; and
- a support for positioning the movable layer in a spaced and superposed relation to the substrate defining a gap, wherein, of the overlayer and the underlayer, the underlayer is proximal to the substrate, and wherein,
- the movable layer is movable between a first position wherein the gap is characterized by a first size and a second position wherein the gap is characterized by a second size, wherein, one of either the first size or the second size of the gap is given by $d=m\lambda/4-n_o s+(n_u-n_s^{0.5})\ (\lambda/10)\ \sin\ (4\pi n_o s/\lambda)$, where m is an even integer, λ is the wavelength of the optical signal, n_s is the first refractive index, n_u is the second refractive index, n_o is the third refractive index, and s is the thickness of the overlayer.

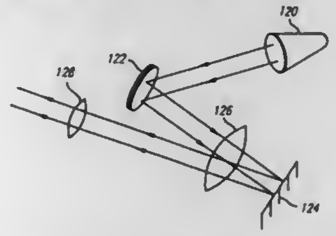
5,710,657
MONOMORPH THIN FILM ACTUATED MIRROR ARRAY

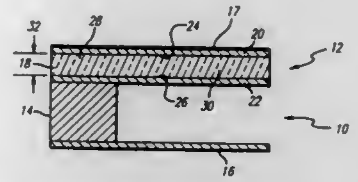
Gregory Um, Torrance, Calif., assignor to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 200,861, Feb. 23, 1994, Pat. No. 5,481,396. This application Apr. 17, 1995, Ser. No. 424,148

Int. Cl.^{6} G02B *26/00*

U.S. Cl. 359—295 **10 Claims**





1. A thin film actuated mirror comprising:

- an active substrate;
- at least one deformable structure mounted to said substrate, said deformable structure further comprising an active material layer, said active material layer having two opposing surfaces, a thickness and a strain constant, and two metal electrodes, each of said electrodes being mounted on a respective one of said opposing surfaces of said active material layer, wherein an electrical field is applied across said active material layer between said electrodes;
- means for varying the electric field applied across the thickness of said active material layer in order to cause deformation of said active material layer; and
- a mirror surface, said mirror surface being interconnected to said deformable structure such that said mirror surface tilts in response to the deformation of said deformable material layer.

5,710,658
ACHROMATIC PHASE-MATCHING SECOND HARMONIC GENERATION FOR A TUNABLE LASER

Alexander Gerson Jacobson, Danville; Scott Bisson, and Rick Trebino, both of Livermore, all of Calif., assignors to Sandia Corporation, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 489,473, Jun. 12, 1995. This application Dec. 13, 1995, Ser. No. 574,607

Int. Cl.^{6} G02F *1/37*

U.S. Cl. 359—328 **8 Claims**

4. A system comprising:

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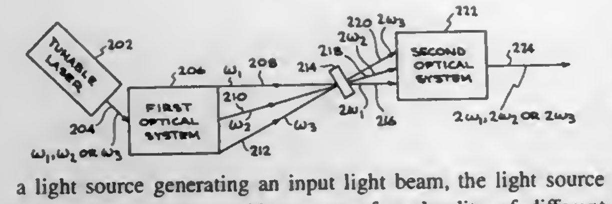


a light source generating an input light beam, the light source being selectively tunable to one of a plurality of different fundamental frequencies;

a second harmonic generation (SHG) crystal having a different acceptance angle for each of the different fundamental frequencies;

a first fixed optical system arranged between the light source and the SHG crystal, wherein said first fixed optical system comprises a plurality of optical elements arranged to provide that each different fundamental frequency of the light beam enters the SHG crystal at the correct acceptance angle; and wherein an output light beam exits the SHG crystal at a frequency twice the fundamental frequency of the input light beam to which the light source is tuned; and

a second fixed optical system comprising a plurality of optical elements and arranged after the SHG crystal to receive the frequency-doubled output light beam from the SHG crystal and output the frequency-doubled light beam at a constant angle regardless of the frequency of the input light beam.

5,710,659

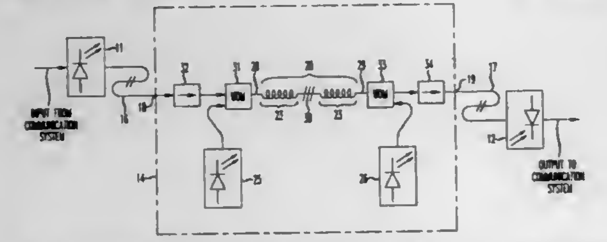
LOW TILT, HIGH GAIN FIBER AMPLIFIER

Terry William Cline, Bethlehem Township, Northampton County, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 19, 1995, Ser. No. 574,472

Int. Cl.^{6} H01S *3/30;* **G02B** *6/34*

U.S. Cl. 359—341 **13 Claims**


INPUT FROM COMMUNICATION SYSTEM
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OUTPUT TO COMMUNICATION SYSTEM

1. An optical amplifier, with an input and an output, for amplifying an information signal, the amplifier having:

a doped fiber amplifying medium having an input coupling to the input of the amplifier and an output coupling to the output of the amplifier and exhibiting a gain characteristic and tilt characteristic as a function of length of the fiber, the tilt characteristic having a minimum value;

a first pump coupling to the input of the amplifying medium, for generating a co-propagating pump signal of a first wavelength;

a second pump coupling to the output of the amplifying medium, for generating a counter-propagating pump signal of a second wavelength;

CHARACTERIZED BY:

a frequency selective reflector, disposed along the amplifying medium to form first and second portion lengths, the reflector being able to reflect substantially all of the counter-propagating pump signal and the ratio of the first portion length to the second portion length being adjusted to shift the tilt characteristic with respect to the gain characteristic so that the minimum value coincides with a region of high gain.

5,710,660

GAIN-CONTROLLABLE OPTICAL AMPLIFIER AND OPTICAL GAIN-CONTROL METHOD

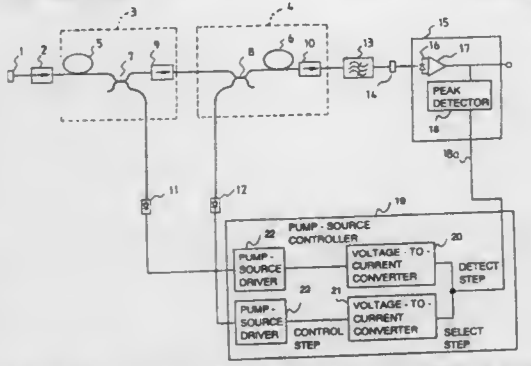
Shu Yamamoto; Hidenori Taga; Noboru Edagawa; Shigeyuki Akiba; Kuniaki Motoshima; Katsumi Takano, and Tadayoshi Kitayama, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 606,653

Claims priority, application Japan, Mar. 8, 1995, 7-048397

Int. Cl.^{6} H01S *3/00;3/131;* **C02B** *6/00*

U.S. Cl. 359—341 **25 Claims**



1. A gain-controllable optical amplifier for amplifying an input signal, comprising:

a plurality of optical amplifying units cascaded each other, having an output side, wherein each of the plurality of optical amplifying units includes an optical fiber and a pump-source;

a signal level detector coupled to the output of the plurality of cascaded optical amplifying units, for detecting a power range of the input signal; and

a pump-source controller, coupled to the pump-source in each of the optical amplifying units, having an output that controls a pump-source of a first optical amplifying unit of the plurality of optical amplifying units to generate a first output when the detected power range of the input signal is less than a first predetermined value, wherein the pump source controller controls a pump source of a second optical amplifying unit of the plurality of optical amplifying units to generate a second output when the detected power range of the input signal is less than a second predetermined value less than the first predetermined value.

5,710,661

INTEGRATED PANORAMIC AND HIGH RESOLUTION SENSOR OPTICS

Lacy G. Cook, El Segundo, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 27, 1996, Ser. No. 671,033

Int. Cl.^{6} G02B *17/00;13/00*

U.S. Cl. 359—364 **20 Claims**

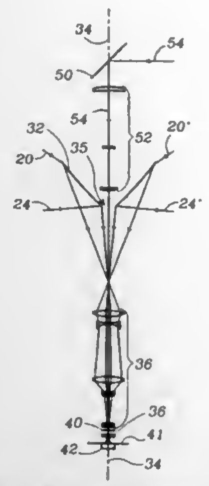
1. An optical apparatus for panoramic field of view observation as well as simultaneous observation of a narrower field of view, said optical apparatus comprising:

an annular convex mirror for collecting photons from said panoramic field of view, said annular convex mirror having a hole therein;

a pointing mirror for collecting photons from said narrower field of view;

a first set of optical components for collecting photons from said pointing mirror, said first set of optical components imaging photons through said hole in said annular convex mirror; and

a second set of optical components for collecting photons both from said annular convex mirror and from said first set of optical components, wherein said first and second sets of



optical components and said annular convex and pointing mirrors are aligned along an axis.

5,710,662

AUTOMATIC FOCUS DETECTION DEVICE FOR MICROSCOPES

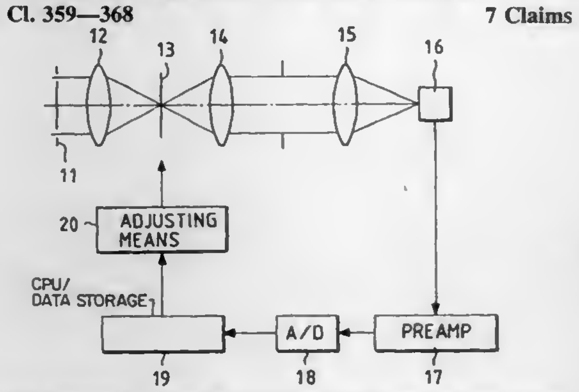
Hiroyuki Nishida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 580,369

Claims priority, application Japan, Dec. 28, 1994, 6-326826

Int. Cl.^{6} G02B *21/00;21/26;* **G01J** *1/20;1/36*

U.S. Cl. 359—368 **7 Claims**



1. An automatic focus detection device for microscopes, comprising:

an optical system for forming an optical image of a sample to be observed, said optical system including:

a stage for holding the sample placed thereon,

an objective lens, and

an imaging lens; and

an automatic focus detection section including:

an image sensor for photoelectrically converting the optical image derived from said optical system into an electric signal;

means for storing image data that is obtained by analog-to-digital conversion of the electric signal from said image sensor and for processing the image data to compute a contrast value,

means for comparing contrast values,

means for moving one of said objective lens and said stage, and

means for storing a position of the one of said objective lens and said stage;

said automatic focus detecting section performing a focus detecting operation in such a manner that a first contrast value measured at a present position of the one of said objective lens and said stage is compared with a second contrast value previously measured where the one of said objective lens and said stage was located at a position shifted from the present position along an optical axis by a predetermined distance, a distance by which the one of said objective lens and said stage is to be moved next is determined from a contrast change obtained by comparison between the first and second contrast values, and if the distance required for next movement and a resultant contrast change predicted are below predetermined constant values, the present position of one of said objective lens and said stage is judged as an in-focus position,

wherein said optical system further includes an illumination system with an annular aperture, and

wherein said automatic focus detecting section proceeds to perform the focus detecting operation in such a manner that the position judged as the in-focus position is redefined as a temporary in-focus position, and the one of said objective lens and said stage is allowed to be moved, for contrast measurement from the temporary in-focus position by a space equal to a distance between a true in-focus position and a false in-focus position to change a distance between said objective lens and the sample,

the distance between the true in-focus position and the false in-focus position being determined by a ratio of a numerical aperture corresponding to an inside diameter of a conjugate image of said annular aperture at a pupil position of said objective lens to a numerical aperture of said objective lens, a ratio of a numerical aperture corresponding to an outside diameter of the conjugate image of said annular aperture at the pupil position of said objective lens to the numerical aperture of said objective lens, and a first frequency which is determined by one value selected among a pixel size of said image sensor and integral multiples of the pixel size, so that a contrast measurement is made at least where the one of said objective lens and said stage is located at one place between the true in-focus position and the false in-focus position and then the true in-focus position is detected by comparison of contrast values.

5,710,663

REFLECTING FLUORESCENCE MICROSCOPE

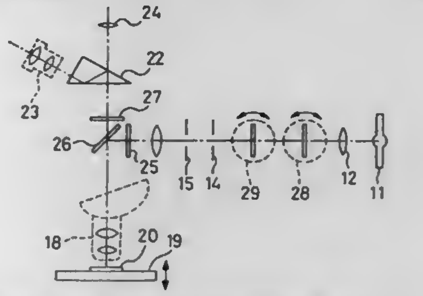
Kenji Kawasaki, Musashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 24, 1996, Ser. No. 653,267

Claims priority, application Japan, May 25, 1995, 7-126636

Int. Cl.^{6} G02B *21/06*

U.S. Cl. 359—389 **4 Claims**



1. A reflecting fluorescence microscope comprising:

an excitation filter for converting a beam of light projected from a reflecting illumination light source into light having wavelength components in a plurality of narrow-band wavelength regions of excitation light;

a dichroic mirror for irradiating a specimen with the light having wavelength components in the plurality of narrow-band wavelength regions of excitation light converted by said excitation filter and for transmitting various kinds of fluorescent light emitted from the specimen;

an absorption filter for absorbing wavelength components in an unwanted wavelength region from the light transmitted through said dichroic mirror and for transmitting wavelength components of light with which a fluorescent image is formed; and

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at least one band-stop filter having at least one absorption band, said band-stop filter being disposed in a reflecting illumination optical path before said dichroic mirror for adjusting amounts of wavelength components in the plurality of narrow-band wavelength regions of excitation light by absorbing wavelength components in said absorption band.

5,710,664

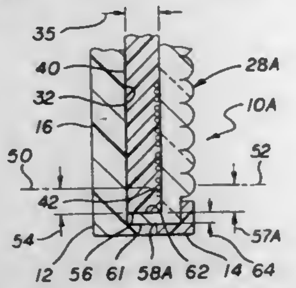
Patent Not Issued For This Number

5,710,665

Patent Not Issued For This Number

5,710,666
SLIDE VIEWER HAVING A LENTICULAR VIEWING LENS

Sean McDonald, Canyon Lake, Calif., assignor to Digital Dimension, A California Limited Liability Co.
Filed Jun. 14, 1996, Ser. No. 663,936
Int. Cl.^{6} G02B *27/22;* **G09B** *29/00*
U.S. Cl. 359—463 **29 Claims**

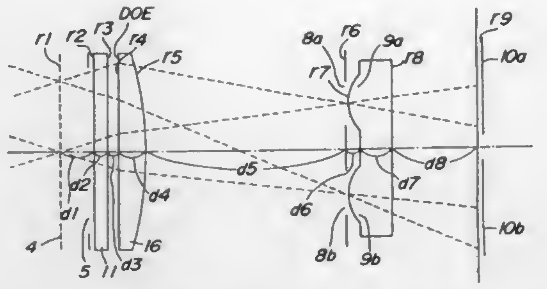


1. A viewer for slides having three-dimensional and/or animation type lenticular images recorded thereon in image line sets, the viewer comprising a frame having front and rear walls; said frame having a slot for receiving the slide therein having an open end and a closed off bottom end, said slot in a planar relationship with said front and rear walls; said front wall having a lenticular lens, having a plurality of lenticules therein, mounted in a planar relation therein, said lens having an internal side forming at least a portion of the wall of the slot; said bottom end of said slot aligned with said lenticules of said lens and positioned within said frame such that a slide positioned in said slot in contact with said end of said slot will have the center of the sets of the lines in substantial alignment with the center of said lenticules of said lenticular lens.

5,710,667
FOCUS DETECTING OPTICAL SYSTEM

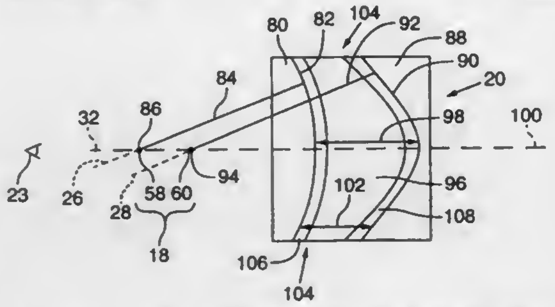
Hisashi Goto, Yokohama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 28, 1995, Ser. No. 412,280
Claims priority, application Japan, Mar. 29, 1994, 6-58958
Int. Cl.^{6} G02B *5/18;27/44;* **H01L** *27/00*
U.S. Cl. 359—569 **18 Claims**

1. A focus detecting optical system for detecting a focus condition of an image of an object, said focus detecting optical system comprising:
- a focus detecting optical means for reforming an image of an object formed on a first predetermined focal plane by an image forming optical system on a second focal plane; and
- a diffractive optical means having at least one optical function and arranged between said first predetermined focal plane and said second predetermined focal plane, said diffractive optical means comprising a surface having a diffraction grating whose pitch is continuously changed in an area in which a light flux having an optical axis is made incident.



5,710,668
MULTI-COLOR HEAD-UP DISPLAY SYSTEM

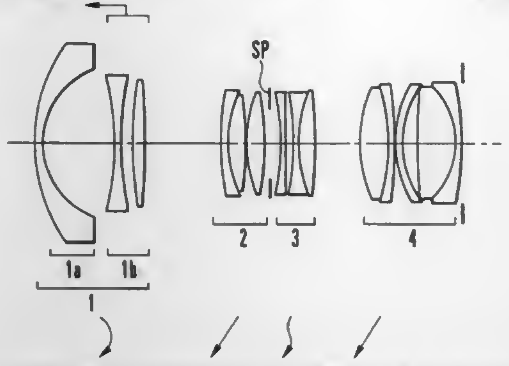
Jeffrey A. Gohman, Hillsboro; Robert D. Brown, Portland, and Robert B. Wood, Beaverton, all of Oreg., assignors to Flight Dynamics, Portland, Oreg.
Filed May 26, 1995, Ser. No. 451,301
Int. Cl.^{6} G02B *17/18;5/28;27/02*
U.S. Cl. 359—634 **9 Claims**



1. A multi-color optical display system for producing longitudinally color-corrected multi-colored images and presenting them for observation in combination with an observer's visual exterior view of an outside world scene, comprising:
- an image source providing a multi-colored image carried by multiple wavelengths of light propagating along an optical path;
- an optical combiner positioned so that an observer can see the exterior view through it and so that at least some of the multiple wavelengths of light reflect off the combiner to provide an image for observation by the observer;
- a lens positioned along the optical path between the combiner and the image source but out of the observer's direct exterior view, the lens receiving the multi-colored image, producing an intermediate image, and introducing longitudinal color aberrations into the multiple wavelengths of light as they propagate through the lens; and
- the combiner receiving the multiple wavelengths of light propagating from the lens, the combiner including multiple substrates having curved surfaces of different shapes and carrying reflective coatings of different wavelength selective properties so that the substrates cooperate to reflect the multiple wavelengths of light propagating from the lens to present to the observer a multi-colored final image superimposed on the outside world scene and substantially free from longitudinal color aberrations.

5,710,669
WIDE-ANGLE ZOOM LENS

Hiroshi Endo, Kanagawa-ken, Japan, asslgnor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1995, Ser. No. 404,330
Claims priority, application Japan, Mar. 17, 1994, 6-047037; Sep. 19, 1994, 6-251345
Int. Cl.^{6} G02B *15/14*
U.S. Cl. 359—686 **6 Clalms**



1. A zoom lens, comprising, from front to rear, a first lens unit of negative refractive power, a second lens unit of positive refractive power, a third lens unit of negative refractive power, and a fourth lens unit of positive refractive power, wherein zooming is effected by changing spaces between said lens units, and said first lens unit has, from front to rear, a negative lens, a negative lens, and a positive lens, and at least one non-spherical lens surface which shows a positive refractive power increasing from center to periphery, and said fourth lens unit has at least one non-spherical lens surface which shows a positive refractive power decreasing from center to periphery, and which satisfies the following conditions:

D1T<D1W

D2W<D2T

D3T<D3W,

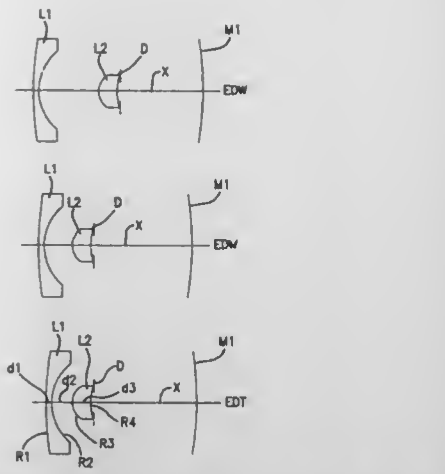
wherein for said first to fourth lens units, DiW denotes the axial air separation for the wide-angle end between the i-th and the (i+1)st lens units, and DiT denotes the axial air separation for the telephoto end between the i-th and the (i+1)st lens unit.

5,710,670
WIDE ANGLE ZOOM LENS SYSTEM

Kazunori Ohno, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan
Filed Apr. 11, 1995, Ser. No. 420,342
Claims priority, application Japan, Apr. 11, 1994, 6-072261
Int. Cl.^{6} G02B *15/14;13/18*
U.S. Cl. 359—691 **4 Clalms**

1. A zoom lens system comprising in order from the object end to the image end a front meniscus lens element of negative power and a rear meniscus lens element of positive power, the front and rear meniscus lens elements being shifted along an optical axis of the zoom lens system to change a relative axial distance between the front and rear meniscus lens elements so as to achieve zooming continuously from a wide angle photographic end to a telephotographic end, the zoom lens system satisfying the following condition:

$$-1.85<f_1/f_2<-1.5$$



where f_1 and f_2 are the focal length of the front and rear meniscus lenses, respectively,

wherein said rear meniscus lens element has an object end aspheric surface and an image end aspheric surface, each aspheric surface being defined by the following relationship:

$$X = Cy^2/(1+\sqrt{1-(1+K)C^2y^2}) + a_1y^4 + a_2y^6 + a_3y^8 + a_4y^{10}$$

where X is the surface sag at a semi-aperture distance y from the optical axis X of the lens system, C is the curvature of a lens surface at the optical axis X equal to the reciprocal of the radius at the optical axis, K is a conic constant, and a1–a4 are aspheric coefficients, said zoom lens system being scaled to an image frame of 24×36 mm substantially as follows:

Element		Radius of Curvature (mm)	Axial Distance Between Surfaces (mm)	Nd	ν
L1	S1	$R_1 = 94.310$			
			$d_1 = 1.5$	1.49116	57.6
	S2	$R_2 = 13.333$			
			$d_2 =$ variable		
L2	S3	$R_3 = 5.258$			
			$d_3 = 4.499$	1.49116	57.6
	S4	$R_4 = 9.628$			

Aspheric Surface: S3 and S4
Aspheric Parameters:

	S3	S4
C	0.190186	0.10386
K	−0.26458	4.53346
a1	-0.22457×10^{-4}	-0.56536×10^{-3}
a2	0.83591×10^{-4}	0.18961×10^{-2}
a3	-0.74073×10^{-5}	-0.10037×10^{-2}
a4	0.34929×10^{-6}	0.19060×10^{-3}

Zooming Parameters:

	FL (mm)	d_2	Ld
EDW	21.00	15.36	45.64
EDM	29.73	7.53	42.64
EDT	35.00	4.69	42.72

where the zoom lens system comprises lens elements LI and L2 having surfaces S1 and S4 and surface radii R1 and R4, d_1 to d_3 are the axial distances, the index of refraction is given by Nd, the dispersion is defined by the Abbe No. as given by ν, FL is the overall focal length of the zoom lens system for the wide angle end (EDW), the middle position (EDM) and the telephoto end (EDT).

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5,710,671

OPTICAL SYSTEM

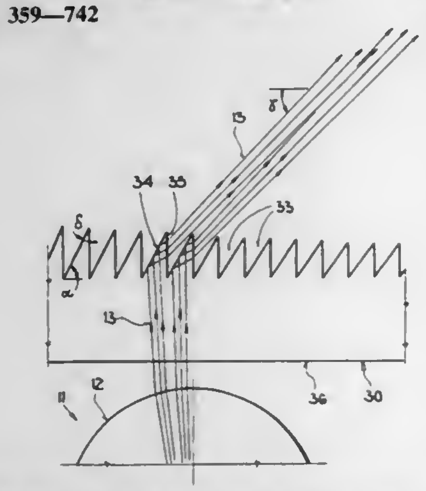
Günther Bichlmaier, Altdorf, Germany, assignor to Temic Telefunken Microelectronic GmbH, Heilbronn, Germany

Filed Sep. 3, 1996, Ser. No. 711,322

Claims priority, application Germany, Sep. 5, 1995, 195 32 680.6

Int. Cl.^{6} G02B *3/08*

U.S. Cl. 359—742 **9 Claims**



1. Optical system with an optical unit comprising:
a) a transmission unit with at least one transmission element for emitting optical radiation;
b) a receiving unit with at least one receiving element for detecting optical radiation;
c) an optical path for transmitting the optical radiation between transmission unit and receiving unit;
wherein:
  d) at least one optical body is located in the optical path to bundle and deflect the optical radiation, with the at least one optical body being assigned either to the transmission unit or the receiving unit;
  e) the at least one optical body is a type of Fresnel lens having an unstructured surface side, and a structured surface side having indentations, with flanks having a slope angle (α) and a prism angle (δ), arranged in concentric circles, with the indentations having a notch shape with the slope angle (α) of the flanks of the indentations increasing in a direction from the edge to the center of the at least one optical body, and with the prism angle (δ) decreasing in a direction from the edge to the center of the at least one optical body; and,
  f) the structured surface side of the at least one optical body with indentations provides a first boundary zone for total reflection and a second boundary zone for refraction of the optical radiation emitted from the transmission unit or of the optical radiation to be detected by the receiving unit and is turned away from either the transmission unit or the receiving unit.

5,710,672

ASSEMBLY FOR POSITIONING THE COMPONENT PARTS OF A LASER DETECTOR GRATING UNIT (LDGU)

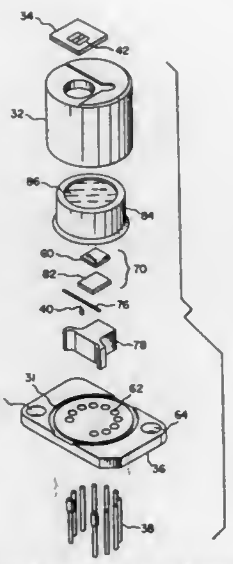
David Anthony Roberts, Olney, Great Britain, and John Charles Brazas, Jr., Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1996, Ser. No. 723,177

Int. Cl.^{6} G02B *7/02;* G11B *7/00*

U.S. Cl. 359—819 **2 Claims**

1. In an optical system including an LDGU having a grating beam splitter and an optical source with an effective aperture for generating a radiation beam to be applied to a data track of an optical storage medium, a detector array and a micro-lens, LDGU(Laser-Detector-Grating Unit) mounting means comprising:



a) a baseplate having a plurality of clearance holes and defining a registration groove;
b) a plurality of contact pins which are aligned in the clearance holes of the baseplate;
c) a pedestal defining a plurality of surfaces for mounting the optical source, the detector array and the micro-lens;
d) a cover including a transparent window fixedly secured to the baseplate to form a hermetic seal; and
e) a grating support barrel for mounting the grating beam splitter which is aligned to the registration groove in the baseplate and which has an opening and a plurality of registration surfaces defined on its uppermost surface.

5,710,673

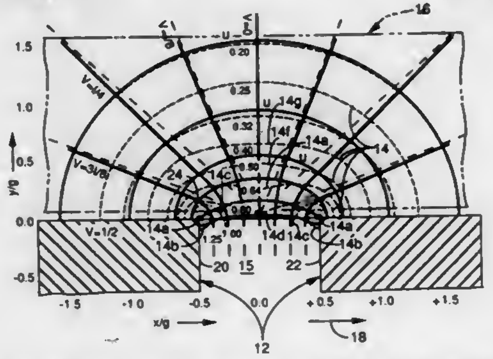
AZIMUTH RECORD HEAD FOR MINIMIZING AND EQUALIZING CROSSTALK BETWEEN TRACKS OF OPPOSITE AZIMUTHS

George R. Varian, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 7, 1996, Ser. No. 660,355

Int. Cl.^{6} G11B *5/02*

U.S. Cl. 360—21 **17 Claims**



1. A record head for providing an azimuth recording format of magnetic tracks of a selected width in a magnetic media while generating minimized and equal crosstalk between the tracks upon subsequent readout of the tracks, wherein over-writing of a previous track is performed by an over-writing side of the head, comprising:
  a first magnetic material core having a first pole face of a preselected width formed therein;
  a second magnetic material core having a second pole face of a second preselected width formed therein;
  said first and second cores being bonded together with the faces thereof in generally confronting relation to define a magnetic gap of selected gap length therebetween, with the second pole face of the second core extending beyond the first pole face of the first core at said over-writing side; and
  said record head being oriented during the recording process with the second pole face of the second core trailing the first pole face of the first core.

5,710,674

IMAGE PROCESSING SYSTEM CAPABLE OF DISCRIMINATING BETWEEN RECORDED AUDIO AND VISUAL SIGNALS

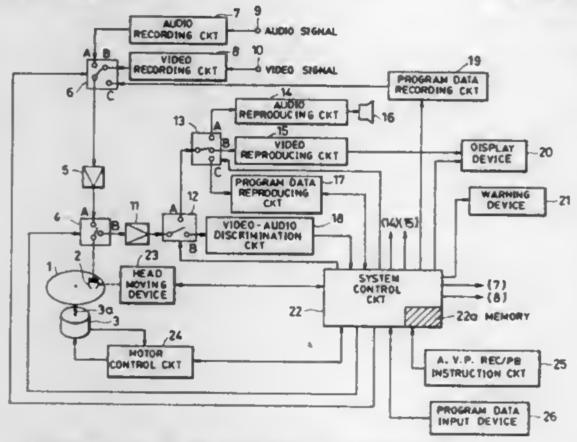
Masahiro Takei, and Tomishige Taguchi, both of Urawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,355, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 754,302, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 431,678, Nov. 3, 1989, abandoned, which is a continuation of Ser. No. 3,770, Jan. 16, 1987, abandoned. This application Nov. 10, 1993, Ser. No. 150,257

Claims priority, application Japan, Jan. 27, 1986, 61-13698

Int. Cl.^{6} G11B *27/36*

U.S. Cl. 360—31 **20 Claims**



1. A signal reproducing apparatus comprising:
movable head means;
moving means for sequentially moving said head means to different recording positions with respect to the recording surface of a record bearing medium;
detection means, responsive to an output of said head means, for detecting a type of information recorded at each recording position on the medium by reproducing the information recorded on the medium, the recorded information including two different types of information comprising video information and audio information;
memory means for storing indicia regarding the type of information detected by said detection means at each recording position;
program setting means for setting a program for sequentially reproducing information from predetermined recording positions on the medium in accordance with a reproducing order manually set in said program setting means;
recording heads for recording the program set by said program setting means onto the medium through said head means;
checking means for comparing the program set by said setting means with the indicia stored in said memory means, before reproducing begins;
reproducing means for reproducing the information recorded on the medium according to the program set by said program setting means; and
reproducing control means for controlling the reproducing operation of said reproducing means based on the comparison performed by said checking means.

5,710,675

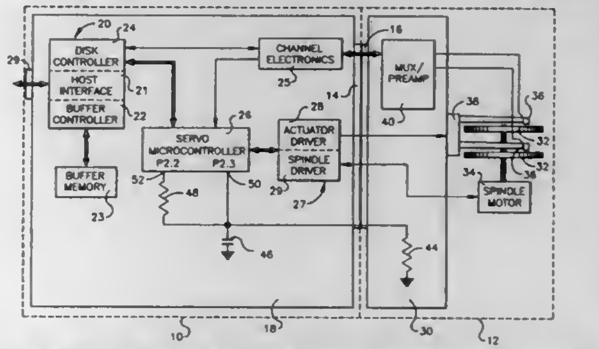
ANALOG-TO-DIGITAL CONVERTER FOR CONFIGURATION CONTROL

Marc B. Goldstone, Irvine; Kenneth D. Donner, Laguna Niguel, and Ralph A. Proud, Jr., Mission Viejo, all of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed May 29, 1996, Ser. No. 657,447

Int. Cl.^{6} G11B *15/18*

U.S. Cl. 360—69 **23 Claims**



1. In a disk drive having a first circuit assembly and a second circuit assembly, wherein the first circuit assembly includes a microprocessor and the second assembly has a configuration, a configuration apparatus for indicating the configuration of the second circuit assembly, comprising:
  a configuration resistor in the second circuit assembly having a resistance R_s corresponding to one of a plurality of predetermined disk drive configurations;
  a connector electrically coupling said configuration resistor to the first circuit assembly;
  a reference resistor in the first circuit assembly having a predetermined resistance R_r;
  a capacitor in the first circuit assembly;
  microprocessor charging means for charging said capacitor;
  microprocessor discharging means for selectably discharging said capacitor through either a first R—C circuit coupled to the microprocessor having a resistance R_f including both said configuration resistor and said reference resistor or a second R—C circuit coupled to the microprocessor having a resistance including said configuration resistor and not including said reference resistor;
  microprocessor measuring means for measuring a discharge time T_f of said capacitor through said first R—C circuit and for measuring a discharge time T_s of said capacitor through said second R—C circuit;
  microprocessor calculating means for calculating the resistance PR_s of said configuration resistor in response to the discharge time T_f and the discharge time T_s; and
  microprocessor configuration means for selecting the one of the plurality of predetermined disk drive configurations corresponding to the resistance R_s.

5,710,676

PRE-FORMATTING OF A STORAGE MEDIA HAVING FIXED-SIZE PARTITIONS

Scott Milton Fry; Steven Douglas Johnson, and Steven Bennett Wilson, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,435

Int. Cl.^{6} G11B *15/18*

U.S. Cl. 360—72.1 **53 Claims**

1. A method of recording partition format information on a storage media, the method comprising the steps of:
  recording partition format information in a first storage media track in a first media direction beginning at an index location of the storage media;
  recording partition information in a second storage media track, parallel to the first storage media track, in a second media direction opposite that of the first media direction;

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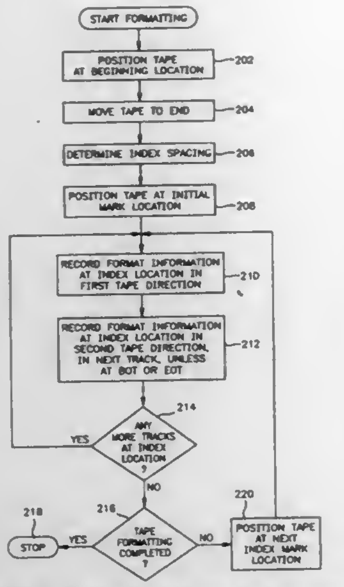

START FORMATTING
POSITION TAPE AT BEGINNING LOCATION
202
MOVE TAPE TO END
204
DETERMINE INDEX SPACING
206
POSITION TAPE AT INITIAL MARK LOCATION
208
RECORD FORMAT INFORMATION AT INDEX LOCATION IN FIRST TAPE DIRECTION
210
RECORD FORMAT INFORMATION AT INDEX LOCATION IN SECOND TAPE DIRECTION, IN NEXT TRACK, UNLESS AT BOT OR EOT
212
214
ANY MORE TRACKS AT INDEX LOCATION ?
YES
NO
216
TAPE FORMATTING COMPLETED ?
218
STOP
YES
NO
220
POSITION TAPE AT NEXT INDEX MARK LOCATION

repeating the steps of recording in the first media direction and then recording in the second media direction in successive parallel tracks across the width of the storage media; and

recording partition format information at the next index location of the storage media in alternating media directions within successive parallel tracks across the width of the storage media.

5,710,677

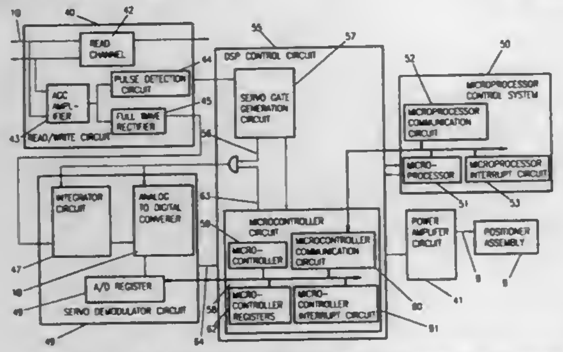
METHOD OF DETECTING AND ISOLATING DEFECTIVE SERVO BURSTS

Jack Ming Teng, and Peng Yeong Loh, both of Singapore, Singapore, assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Dec. 18, 1995, Ser. No. 575,414

Int. Cl.⁶ G11B *5/596*

U.S. Cl. 360—77.08 **14 Claims**



1. A method of determining defective servo burst for a group of recording units on a recording medium, the recording medium having at least one group of recording unit, each group of recording unit having a plurality of tracks, each said track having plurality of position data portions and plurality of user data portions, each said position data portion having a servo burst each servo burst providing a position error information, a servo gate enabling signal enabling and disabling retrieval of said position error information, a method of determining a defective servo burst comprising the steps of:

reading each servo burst and obtaining corresponding position error information;

identifying a servo burst as a first likely defective servo burst;

confirming said first likely defective servo burst or a servo burst before said first likely defective servo burst as a first confirmed defective servo burst including the steps of:

first, while skipping said first likely defective servo burst, rereading plurality of servo bursts occurring after said skipping of said first likely defective servo burst;

determining corresponding position error information as acceptable and concluding said first likely defective servo burst as a first confirmed defective servo burst else

second, repeatedly skipping a servo burst before said first likely defective servo burst and rereading plurality of servo bursts occurring after said skipping of a servo burst before said first likely defective servo burst until

either determining corresponding position error information as acceptable and concluding skipped servo burst as a first confirmed defective servo burst or completing skipping of one or more of servo bursts.

5,710,678

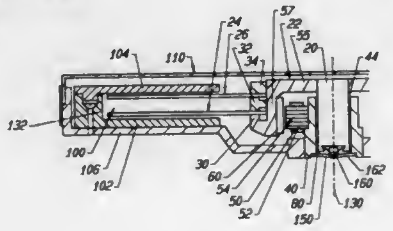
DISC DRIVE WITH SELF-PRESSURIZING FLUID BEARING AND SHAFT-SUPPORTING-BALL RETAINING ELEMENT

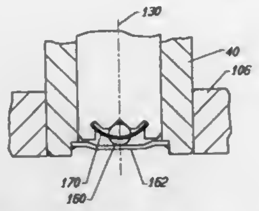
Hans Leuthold; David John Jennings, both of Santa Cruz; Lakshman Nagarathman, Capitola; Steve Gonzalez, Davenport; Dean A. Tarrant, San Jose, and Gunter Heine, Aptos, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 328,493, Oct. 25, 1994, and a continuation of Ser. No. 279,195, Jul. 22, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,975

Int. Cl.⁶ G11B *19/20*

U.S. Cl. 360—99.08 **19 Claims**





1. A magnetic disc drive comprising:

a housing including a cover and a base joined together for providing an enclosing;

a spindle motor provided in said housing and having a shaft with first and second ends; and

a hub mounted on said first end of said shaft, said hub supporting one or more rotatable magnetic discs for rotation by said spindle motor;

wherein said shaft rotates within a sleeve supported within said housing, one of said shaft and said sleeve having a herringbone pattern on an axial surface thereof, said herringbone pattern forcing air through a gap defined between said sleeve and said shaft down against said base to create a self-pressurizing journal bearing for providing stable positioning for said shaft along its vertical axis; and

wherein said second end of said shaft is supported by an axial elastic thrust bearing so that axial position of said one or more rotatable magnetic discs is stable during rotation of said shaft, said axial elastic thrust bearing including a ball rotating in a depression in said base, said ball supporting said second end of said shaft and being retained by a retaining element extending from said second end of said shaft, said retaining element biasing said ball towards said second end of said shaft.

5,710,679

MAGNETIC RECORDING AND REPRODUCING APPARATUS

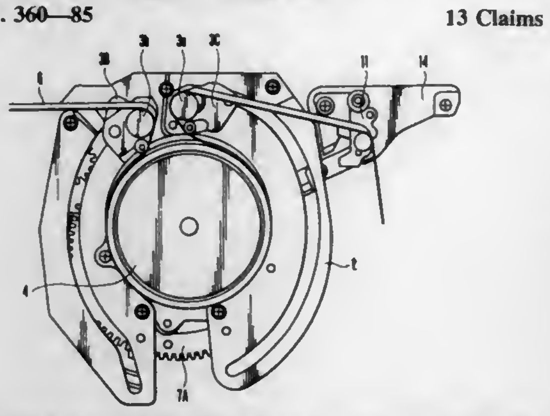
Hidetoshi Matsuoka; Junji Kobayashi, both of Tokyo; Osamu Nagatsuka, Kanagawa-ken; Akira Tomitaka, Kanagawa-ken, and Osamu Morita, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 158,191, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 713,159, Jun. 11, 1991, abandoned. This application Apr. 25, 1995, Ser. No. 430,130

Claims priority, application Japan, Jun. 13, 1990, 2-152768; Sep. 4, 1990, 2-232552; Nov. 15, 1990, 2-307236

Int. Cl.⁶ G11B *5/027*

U.S. Cl. 360—85 **13 Claims**



1. A recording and/or reproducing apparatus for recording and/or reproducing information by pulling out a tape from a cassette by moving a pair of tape pull-out members in opposite directions with a loading mechanism and by wrapping the tape around a rotary drum, comprising:

a) a tape pull-out aiding member for pulling out said tape in combination with one of said tape pull-out members; and

b) differential means arranged between said one of said tape pull-out members and said tape pull-out aiding member to cause said one of said pull-out members and said tape pull-out aiding member to revolve at different angles of revolution, and said differential means including a slide member along said rotary drum, and said tape pull-out aiding member being swingably carried by a fore-end of a slide arm which is carried to be movable in a longitudinal direction of the slide arm and which is swingably carried by said slide member, and every portion of said differential means moving with said one of said tape pull-out members and said tape pull-out aiding member along said rotary drum.

5,710,680

MAGNETIC HARD DISK DRIVE HEAD SUSPENSION APPARATUS

Nicholas J. Bucska, 2135 Meadow St., Apt. 8, Longmont, Colo. 80501, and Robert P. Wing, 3556 Smuggler Way, Boulder, Colo. 80303, assignors to PC Peripherals Inc., Broomfield; Nicholas J. Bucska, Longmont, and Robert P. Wing, Boulder, all of Colo.

Filed Dec. 22, 1995, Ser. No. 577,276

Int. Cl.⁶ G11B *5/48;21/16*

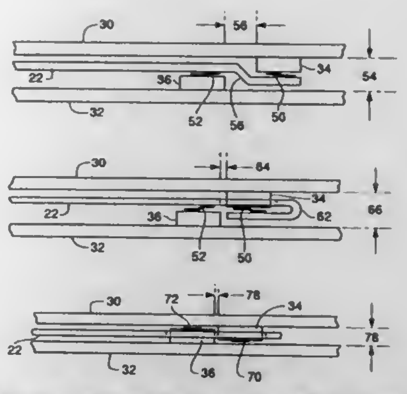
U.S. Cl. 360—104 **3 Claims**

1. A magnetic disk drive apparatus, comprising:

a rotatable stack of magnetic disks each having opposed disk faces, wherein the rotatable stack has an axis of rotation;

a rotatable positioning arm having a longitudinal axis and an axis of rotation which is perpendicular to said longitudinal axis and parallel to the axis of rotation of the rotatable stack, said positioning arm having a first aperture;

first spring means for connecting a magnetic head to said positioning arm;



a first magnetic head mounted on said first spring means, the face of said first magnetic head positioned for reading or writing of information on an adjacent disk face of a first magnetic disk and said first spring means is connected to said positioning arm in a region which is closer to said first magnetic head than to the axis of rotation of said positioning arm, wherein a portion of the first magnetic head is located within said first aperture in said positioning arm;

second spring means for connecting a magnetic head to said positioning arm; and

a second magnetic head mounted on said second spring means such that the second magnetic head is longitudinally displaced from said first magnetic head along the longitudinal axis of said positioning arm and said second magnetic head is farther from the axis of rotation of said positioning arm than said first magnetic head, the face of said second magnetic head positioned for reading or writing of information on an adjacent disk face of a second magnetic disk which is displaced from said first magnetic disk along the axis of rotation of the stack of magnetic disks and said second spring means is connected to said positioning arm in a region which is closer to said second magnetic head than to the axis of rotation of the positioning arm, a portion of the second magnetic head being located within said first aperture in the positioning arm.

5,710,681

PIVOT BEARING HAVING NO MOVING PARTS FOR USE IN A HIGH DENSITY DATA TAPE DRIVE

Eric Alan Eckberg; Gerald Daniel Malagrino, Jr., both of Rochester, and Brian Lee Rappel, Grand Meadow, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 489,462, Jun. 7, 1995, and a continuation-in-part of Ser. No. 474,227, Jun. 7, 1995, and a continuation-in-part of Ser. No. 472,829, Jun. 7, 1995, Pat. No. 5,677,806. This application Jan. 16, 1996, Ser. No. 586,505

Int. Cl.⁶ G11B *5/584;5/55;21/02*

U.S. Cl. 360—106 **9 Claims**

1. A high density data storage tape drive for use with a cartridge containing a length of storage tape, comprising:

a frame;

a drive mechanism supported on said time to spool said tape;

a read/write head disposed adjacent said tape;

an electrical drive having a fixed portion and a movable portion;

said head supported on And movable with respect to a carriage, said carriage displaceable relative to said tape in coarse increments;

a pivotable force transmission member engaged with said head and said movable portion of said electrical drive for transmitting movement of said movable portion of said electrical drive to said head, thereby displacing said head relative to said carriage and the tape in fine increments;

said force transmission member including a leaf spring secured to said carriage and having a scalloped edge defining a pivot bearing said scalloped edge provided in a plane parallel to a plane of a recording surface of the storage tape, said scalloped edge of said leaf spring providing reduced stress per degree of

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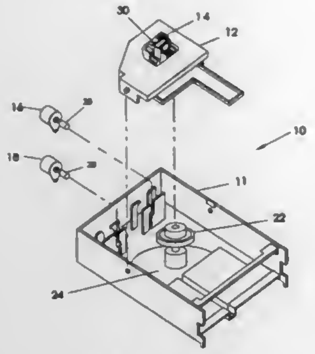
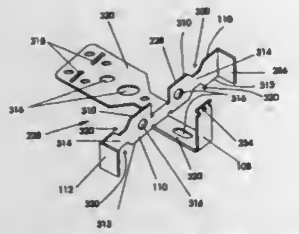




rotation at said pivot bearing with an axis parallel to said plane of the storage tape.

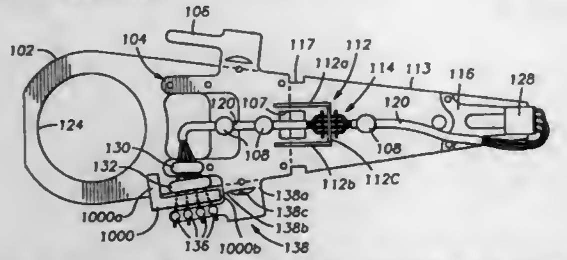
5,710,682
ELECTROSTATIC DISCHARGE PROTECTION SYSTEM FOR MR HEADS

Satya P. Arya, San Jose; Timothy Scott Hughbanks, Morgan Hill, both of Calif.; Steven Howard Voldman, South Burlington, Vt., and Albert John Wallash, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 706,107, Aug. 30, 1996, abandoned, which is a continuation of Ser. No. 613,928, Mar. 11, 1996, Pat. No. 5,644,454. This application Feb. 13, 1997, Ser. No. 799,259

Int. Cl.^{6} G11B *5/48;21/16*

U.S. Cl. 360—106 **16 Claims**



1. An apparatus for protecting an MR head from electrostatic discharge, comprising:
- an actuator arm for mounting to a head disk assembly;
- a load beam having a distal end and a proximal end, said proximal end being flexibly joined at a joint to the actuator arm to permit the load beam to bend with respect to the actuator arm about the joint;
- a flexible flexure having a distal end and a proximal end, said flexure being mounted to the load beam and extending therealong;
- an MR head mounted to the flexure's distal end, said MR head including MR components;
- a side tab having a projection and a base, said base being attached to the proximal end of the load beam and said projection being spaced apart a predetermined distance from the actuator arm, the side tab extending from the load beam and being substantially coplanar therewith;
- multiple MR lead wires, a number of which are coupled to said MR components, said MR lead wires running from the load beam's distal end along the load beam and the actuator arm to the side tab, said MR lead wires being adhered to a first surface of the side tab at predetermined spacings, and said MR lead wires being uninsulated at contact points positioned between the side tab and the actuator arm; and
- a conductive finger breakably connected to the actuator arm and positioned such that the conductive finger electrically shorts the MR lead wires at their contact points by pressing against the MR lead wires between the side tab and the actuator arm, the conductive finger extending from the actuator arm and being substantially coplanar therewith.

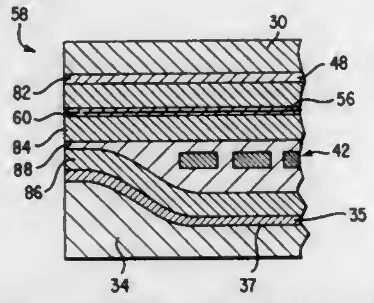
5,710,683
THIN FILM TAPE HEAD WITH SUBSTRATE FOR REDUCED POLE-TIP RECESSION

Ramesh Sundaram, Edon Prairie, Minn., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 18, 1996, Ser. No. 634,212

Int. Cl.^{6} G11B *5/147*

U.S. Cl. 360—126 **14 Claims**



1. A thin film magnetic tape recording head, comprising:
- a substrate having a substantially planar side with a substrate recess defining a recessed portion along said side;
- a closure; and
- a plurality of layers positioned between said substrate and said closure, said plurality of layers comprising,
  - a recessed bottom pole positioned along said side of said substrate, wherein said recessed bottom pole has a pole recess adjacent to said substrate recess in said side of said substrate whereby said pole recess extends into said substrate beyond said substantially planar side,
  - a coil structure deposited in said pole recess,
  - a gap layer deposited between said recessed bottom pole and said closure,
  - a top pole positioned between said gap layer and said closure, and
  - a top layer positioned between said top pole and said closure and having a substantially uniform thickness, wherein said top layer has a thinness sufficient to reduce a distance between said substrate and said closure at an air bearing surface end of the head; and
- wherein said top layer exposed at said air bearing surface between said top pole and said closure is sufficiently thin that a distance between said substrate and said closure is defined substantially by said recessed bottom pole and said top pole.

5,710,684
CLEANING MECHANISM FOR A MAGNETIC HEAD AND A METHOD OF PRODUCING A CLEANING BRUSH HAVING BRUSH PIECES INTEGRALLY MOLDED WITH A RESIN BLOCK

Naoto Inoue, and Kiyotaka Yamaguchi, both of Yamagata, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

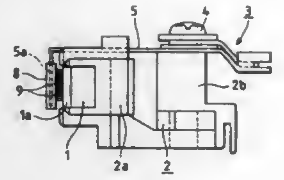
Filed Jan. 18, 1996, Ser. No. 588,353

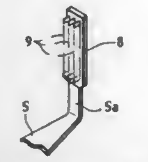
Claims priority, application Japan, Jan. 20, 1995, 7-025916

Int. Cl.^{6} G11B *5/41*

U.S. Cl. 360—128 **11 Claims**

1. A cleaning mechanism for a magnetic head having a recording/reproducing face, said cleaning mechanism for contacting said recording/reproducing face and comprising:





- a basal portion supported by a device fixing portion connected to said magnetic head;
- an L-shaped brush stem connected swingably to said basal portion, said L-shaped brush stem comprising a metal plate and having an end portion;
- a resin block covering and connected to said end portion of said L-shaped brush stem; and
- at least one brush piece molded integrally with said resin block, such that said resin block and said resin brush comprise a single monolithic structure, wherein said brush piece comprises a strip of flexible material positioned along a length of said resin block.

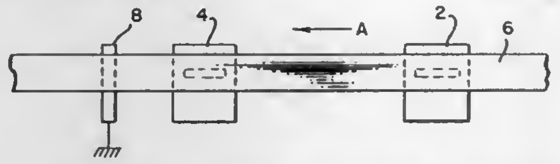
5,710,685
APPARATUS FOR REDUCING DISTORTION DURING RECORDING IN A TAPE RECORDER

Lafayette Ronald Hubbard, deceased, late of East Grinstead, England, and Norman F. Starkey, legal representative, Los Angeles, Calif., assignors to Church of Spiritual Technology, Los Angeles, Calif.

Continuation of Ser. No. 82,808, Jun. 25, 1993, Pat. No. 5,434,734, which is a continuation of Ser. No. 718,507, Apr. 2, 1985, abandoned. This application Jun. 5, 1995, Ser. No. 461,064

Int. Cl.^{6} G11B *15/60*

U.S. Cl. 360—130.21 **6 Claims**



1. An apparatus for reducing distortion during recording on a recording tape having a predetermined width and a magnetic coating face, said recording made in a tape recorder of the type including a recording head, by moving said magnetic coating face over said recording head in a recording direction, said apparatus comprising an electrically conductive member in contact with said magnetic coating face said electrically conductive member being smooth, non-rotatable, and having a length greater than the width of said tape, provided adjacent the recording head downstream of the recording head in the recording direction and being electrically grounded whereby excess electrons present on said magnetic coating face after recordings are removed from the tape;
- and an insulated, electrically conductive wire attached at one of its ends to said member with a nut and screw at a portion adjacent to one end of said member, and attached at its other end to an electrically conductive, grounded component of said apparatus.

5,710,686
TAPE CASSETTE WITH MAIN BODY AND SLIDER LOCK FORMED BY DICHROMATIC MOLDING

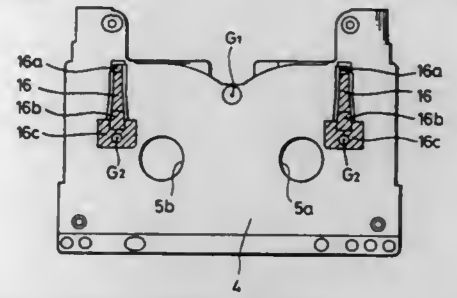
Hiroshi Meguro, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,350

Claims priority, application Japan, Dec. 28, 1994, 6-328760

Int. Cl.^{6} G11B *23/08*

U.S. Cl. 360—132 **5 Claims**



1. A tape cassette assembly comprising:
- a cassette housing formed of a first cast resin including a main body and having formed therethrough a hub drive shaft insertion aperture at a step-shaped bonding portion at a predetermined location therein;
- a slider being slidably mounted on a lower surface of said cassette housing to open and/or close said hub drive shaft insertion apertures; and
- a slider locking piece for locking said slider at a predetermined position, wherein said slider locking piece is formed of a second cast resin selected from one of a resin having excellent abrasion resistance and a resin having good lubricity and is attached to said main body by dichromatic molding at said step-shaped bonding portion for increasing a bonding area between said slider locking piece and said main body.

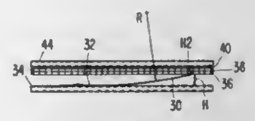
5,710,687
LIFTER DEVICE FOR MAGNETIC DISK CARTRIDGE HAVING A CURVED SPRING STRUCTURE

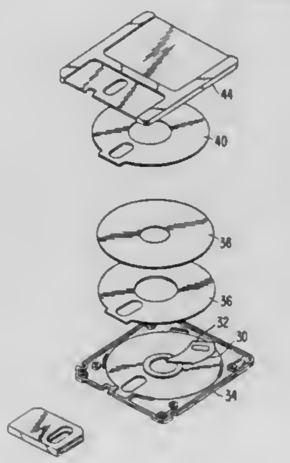
Walter Duane Drebenstedt, Daleville, Ala., assignor to Sony Corporation, Japan, and Sony Electronics Inc., N.J.

Filed Dec. 18, 1995, Ser. No. 574,034

Int. Cl.^{6} G11B *23/02*

U.S. Cl. 360—133 **16 Claims**





1. A disk apparatus comprising:
- a casing;
- a planar, circular shaped recording material rotatably disposed within said casing;
- a pair of pad members disposed on opposing surfaces of said recording material; and
- a spring structure comprising a resilient, flexible, relatively rigid plastic sheeting disposed within said casing, said spring struc-

ture having a lower portion affixed to an inner surface of said casing, said spring structure extending from said inner surface of said casing to contact one of said pair of pad members, thereby providing pressure against the one of said pair of pad members to which said spring structure portion contacts;

wherein said spring structure consists essentially of polyethylene terephthalate; and

wherein said spring structure has a convex curve shape on a side of said spring structure facing away from said pad members and wherein said spring structure has a radius of curvature of approximately 40 mm between an end portion and said lower portion prior to being compressed by the one of said pair of pad members to which said spring structure contacts.

5,710,688
FLOPPY DRIVE SEAL INSERT

Charles P. Cihak, 435 Beaumont Blvd., and Om P. Lal, 520 San Pablo Ter., both of Pacifica, Calif. 94044

Continuation-in-part of Ser. No. 583,336, Jan. 5, 1996, abandoned, which is a continuation-in-part of Ser. No. 385,562, Feb. 8, 1995, abandoned. This application Jan. 6, 1997, Ser. No. 779,210

Int. Cl.^{6} G11B *23/02*

U.S. Cl. 360—137 **6 Claims**

1. An insertable sealing device for insertion into a disk drive when not in operation through a slot in said disk drive through which removable media is inserted and removed from said disk drive, said sealing device when in place in said slot impedes entrance of airborne contaminants into said disk drive through said slot, said sealing device comprising:

- a T-shaped body of a rigid sheet material shaped to mate with a selected disk drive design, said T-shaped body portion defining two regions thereof:
  - a first region that is narrower and thinner than the width and height, respectively, of the slot of said disk drive and that is disposed to be inserted into said disk drive through said slot, said first region being the stem of the T and being shorter than the distance from said slot to the rear of said disk drive; and
  - a second region that is wider than the width of said slot of said disk drive and that is not disposed to be accepted by said disk drive, said second region being the cross-bar of the T-shape with the edge thereof extending away from the intersection of said first and second regions forming a stop surface to limit the distance that said first region can be inserted through said slot into said disk drive; and
- a sealing sleeve surrounding said first region of said body and spaced apart a selected distance from said stop surface of said second region to position said sealing sleeve in said slot of said disk drive to seal said slot when said stop surface contacts said disk drive, said sealing sleeve being elastic and in ample quantity to fill said slot of said disk drive.

5,710,689
OVERCURRENT PROTECTION FOR AN INK-JET PRINTHEAD

Juan J. Becerra, Webster, and Sophie V. Vandebroek, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

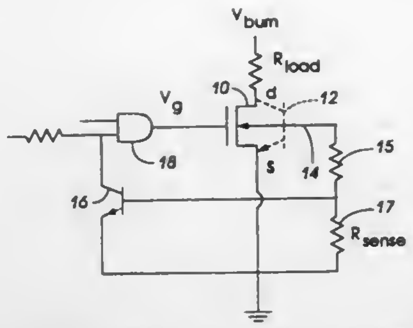
Filed Jun. 24, 1996, Ser. No. 668,807

Int. Cl.^{6} H02H *9/00*

U.S. Cl. 361—57 **3 Claims**

1. A semiconductor device providing overcurrent protection, comprising:

- a MOS transistor defining a drain, a source, a gate, and a bulk electrode;



- a control transistor having a base connected to the bulk electrode, the control transistor being configured to connect the gate of the MOS transistor to a safe potential in response to a current of a predetermined magnitude flowing in the bulk electrode of the MOS transistor; and
- an AND gate having an input terminal connected to the control transistor and an output terminal connected to the gate of the MOS transistor.

5,710,690
METHOD AND APPARATUS FOR PROTECTING AN INTEGRATED CIRCUIT FROM CURRENT OVERLOAD

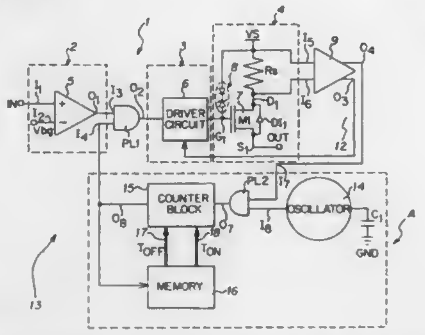
Gregorio Bontempo, Barcellona; Francesco Pulvirenti, Acireale; Paolo Colletti, Messina, and Roberto Gariboldi, Lachiarella, all of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Jun. 9, 1995, Ser. No. 488,885

Claims priority, application European Pat. Off., Jun. 10, 1994, 94830284

Int. Cl.^{6} H02H *3/18*

U.S. Cl. 361—94 **39 Claims**



1. A non-dissipative device for protecting an integrated circuit having multiple independent channels against overloading, the device having an input terminal, an output terminal, and an integrated switch connected therebetween, the integrated switch having an input portion connected to a first input terminal of a first logic gate having two inputs, an output of the logic gate connected to an input of a control portion having an output connected to an output portion, the non-dissipative device comprising: a generating circuit for generating on-times and off-times of the integrated switch, the generating circuit having an input connected to an output of the output portion and an output connected to a second input terminal of said first logic gate:

wherein said generating circuit includes an oscillator connected, through a second logic gate, to a counter block which is in turn connected to an input of the first logic gate.

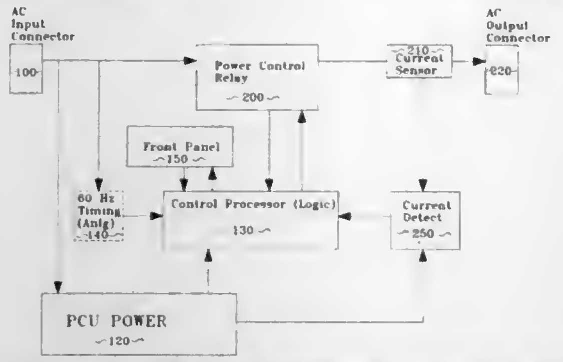
5,710,691
PROGRAMMABLE CONTROL UNIT

David C. Fowler, 210 Oak St., Surgoinsville, Tenn. 37873, and Dale D. Cummings, 5618 Hwy. 52, Dawsonville, Ga. 30534

Filed Apr. 26, 1996, Ser. No. 638,118

Int. Cl.^{6} H02H *3/00;* **G01R** *19/00*

U.S. Cl. 361—94 **18 Claims**



1. A device for protecting an appliance receiving power from a household power socket comprising:

- a modular housing positioned intermediate the household socket and appliance for electrically coupling the appliance to the household power;
- a plug on said housing for connection to the household socket;
- a socket on said housing to electrically couple the appliance to the household power;
- circuit means within said housing and intermediate said housing plug and housing socket for analyzing the power delivered to the appliance, said circuit means comprising:
  - a microprocessor having a program logic therein for analyzing data delivered thereto, said data corresponding to a current produced by the household power and delivered to the appliance;
  - means for providing a first data stream to said microprocessor indicative of an elapsed time of current delivery to the appliance;
  - means for providing to the processor a second data stream indicative of a value of a current flow to the appliance, said program logic utilizing said first and second data streams for calculating at least a time period of operation of the appliance, said logic comparing said time period to a preselected time period of operation;
  - relay means having a normally closed position for controlling the current flow from the household socket to the appliance, said processor opening said relay means upon said calculated time of operation exceeding said preselected time period of operation.

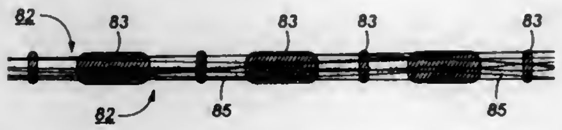
5,710,692
DURABLE COMPACT STATIC ELIMINATION DEVICE FOR USE IN A DOCUMENT PRODUCTION MACHINE

Dennis N. Muck, Rochester; Stefan A. Jasinski; Frank A. Grossi, both of Webster, and Frank R. Papalia, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1996, Ser. No. 673,519

Int. Cl.^{6} H05F *1/00*

U.S. Cl. 361—212 **11 Claims**



1. A static elimination device for removing static charge from a sheet of material being conveyed along a sheet path through a sheet handling machine, the static elimination device comprising:

- (a) a thin flexible support member having a first length for spanning across the sheet path, and a first width defining an area with said first length for supporting a static charge removing member; and
- (b) a static charge removing member mounted to said support member and having a second length substantially equal to said first length of said support member, and a second width greater than said first width, said static charge removing member comprising a conductive fabric including thin fibers forming a sheet of said conductive fabric, each fiber of said thin fibers having a conductive plating, said sheet of said conductive fabric comprising a non-woven innumerable number of said thin fibers piled, compressed and bonded, and said sheet of said conductive fabric having a cross-section including highly random orientations of cut tip ends and uncut longitudinal sections of individual fibers of said thin fibers for maximizing a total available surface area of said thin fibers forming a static eliminating edge of said static charge removing member.

5,710,693
ELECTRONIC DEVICE HAVING A FLAT, CARD-LIKE CASING ENCLOSING COMPONENTS FOR A COMPLETE COMPUTER SYSTEM INCLUDING A SUB-PRINTED WIRING BOARD ATTACHED TO AN INNER SURFACE OF THE CASING AND ELECTRICALLY CONNECTED TO A PRINTED WIRING BOARD BY A FLEXIBLE MEMBER

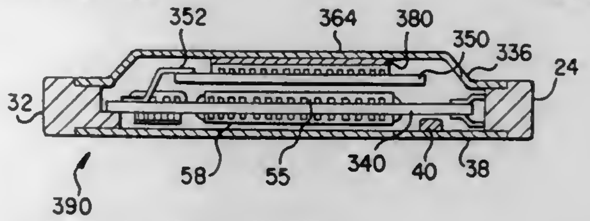
Katsumi Tsukada; Norio Nakamura; Minoru Nimura; Hiroyuki Suemori; Tomio Kamihata, and Mutsuaki Yamazaki, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 151,214, Nov. 12, 1993, Pat. No. 5,481,432. This application May 12, 1995, Ser. No. 439,880

Claims priority, application Japan, Nov. 13, 1992, 4-304060; Nov. 13, 1992, 4-304062; Nov. 13, 1992, 4-304063; Nov. 13, 1992, 4-304064; Feb. 19, 1993, 5-054843; Jun. 15, 1993, 5-169695; Nov. 8, 1993, 5-278643

Int. Cl.^{6} G06F *1/16;* **H05K** *7/10;* **H01R** *13/64*

U.S. Cl. 361—686 **2 Claims**



1. An electronic device comprising:

- a flat, card-like casing encasing computer system component elements including a CPU, memories, and peripheral equipment control ICs electrically coupled to each other; said flat, card-like casing also encasing a printed wiring board, at least one of said system component elements attached to said printed wiring board in a bare form that said at least one system component element assumes before being partially sealed within a package, said at least one system component element being sealed with a resin after being attached to said printed wiring board, and wherein at least one of said system component elements is attached to a sub-printed wiring board that is independent of said printed wiring board, said sub-printed wiring board and said printed wiring board being electrically coupled with each other using a flexible member, and said sub-printed wiring board being attached to an inner surface of the casing using an adhesive.

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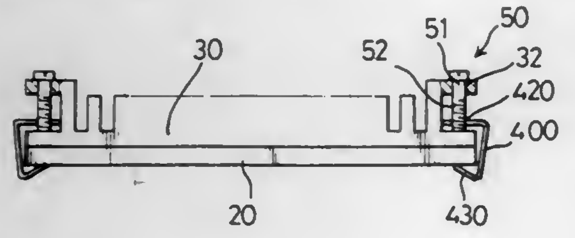
5,710,694
ADJUSTABLE RADIATION FIN FASTENING DEVICE FOR AN INTEGRATED CIRCUIT CHIP

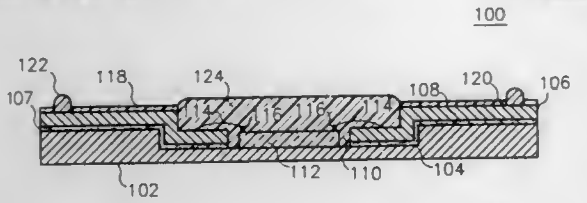
Chien-chang Chen, Chungho, Taiwan, assignor to Evercool Technology Co., Ltd., Chungho, Taiwan
Filed Apr. 30, 1996, Ser. No. 640,158
Int. Cl.^{6} H05K *7/20*
U.S. Cl. 361—703 **6 Claims**

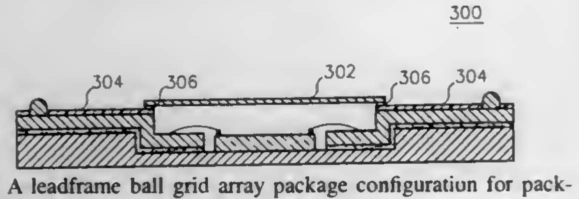


1. An adjustable fastening device for integrated circuit chips of varying thicknesses comprising:
- a base adapted to carry an integrated circuit chip thereon, the base having at least two opposite sides from each of which at least one hook downwardly extends;
- a radiating fin having at least two opposite sides each comprising an upper ledge and a lower ledge spaced from the upper ledge;
- a plurality of screws each passing through the upper ledge to contact the lower ledge of the radiating fin, each screw being guidably rotatable about its own axis on a corresponding side of the radiating fin; and
- a plurality of retaining means each having a slot defined therein for engagingly receiving said hook of the base and responsive to a rotational movement of a corresponding screw to adjustably pull the radiating fin toward the integrated chip.

5,710,695
LEADFRAME BALL GRID ARRAY PACKAGE

Kamran Manteghi, Manteca, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Nov. 7, 1995, Ser. No. 553,113
Int. Cl.^{6} H05K *1/03;5/04;* **H01L** *23/495*
U.S. Cl. 361—813 **14 Claims**

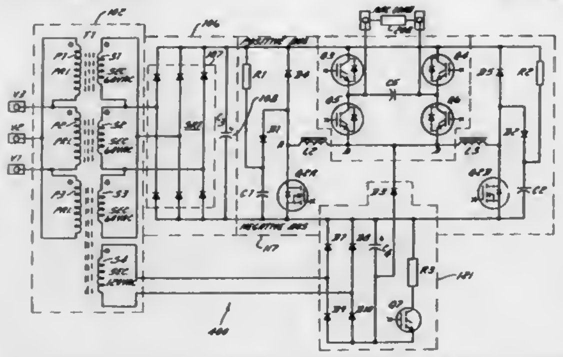




1. A leadframe ball grid array package configuration for packaging an integrated-circuit die comprising:
- a metallic substrate having a central recessed portion;
- a leadframe having a plurality of inwardly-extending bonding fingers and a centrally-located open portion;
- said leadframe being directly attached onto said metallic substrate by a non-conductive adhesive so that the open portion thereof overlies the central recessed portion of said metallic substrate;
- an integrated-circuit die being mounted in the central recessed portion of said metallic substrate, said plurality of bonding fingers being disposed peripherally surrounding said integrated-circuit die;
- bonding wires interconnected between bonding pads formed on said integrated-circuit die and said plurality of bonding fingers;
- a solder mask being disposed over the top surface of said leadframe so as to form selective solderable areas; and
- solder balls being attached to said selective solderable area.

5,710,696
CONTROLLABLE CONVERTER POWER SUPPLY

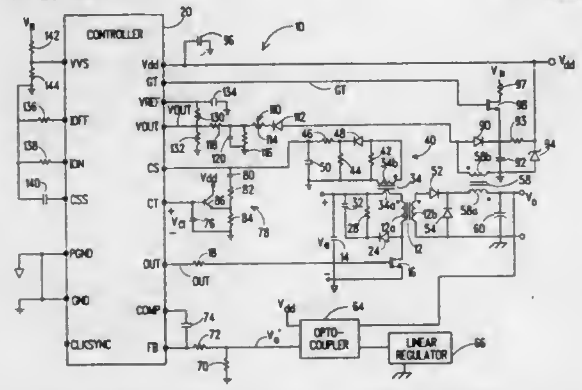
Jon O. Reynolds, and Michael D. Madsen, both of Appleton, Wis., assignors to Illinois Tool Works Inc., Glenview, Ill.
Continuation of Ser. No. 206,057, Mar. 3, 1994, Pat. No. 5,444,356. This application Jun. 7, 1995, Ser. No. 483,732
Int. Cl.^{6} H02M *5/45;3/24;7/5387*
U.S. Cl. 363—37 **14 Claims**



1. A power supply for providing an output to a load comprising:
- a first source of dc power having a first non-zero voltage;
- a converter in electrical communication with the source of dc power and capable of being connected to the load;
- a second source of dc power having a second non-zero voltage; and
- at least one controllable switch, capable of connecting the first and second sources of dc power, in an additive, and non-parallel arrangement across the input of the converter, wherein the voltage applied to the converter input is the sum of the voltages of the first and second non-zero voltages.

5,710,697
POWER SUPPLY CONTROLLER HAVING FREQUENCY FOLDBACK AND VOLT-SECOND DUTY CYCLE CLAMP FEATURES

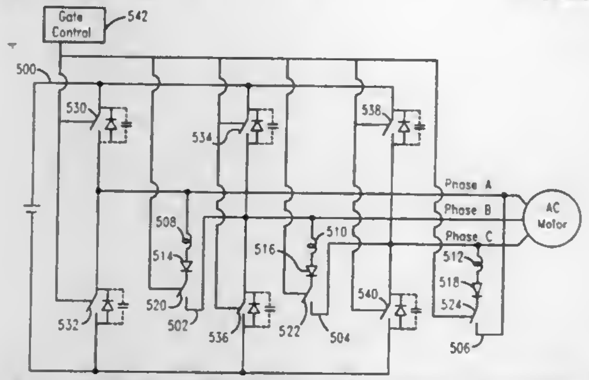
Philip R. Cooke, Nashua, N.H., and John R. Wiggenhorn, Cary, N.C., assignors to Unitrode Corporation, Merrimack, N.H.
Filed Mar. 26, 1996, Ser. No. 622,009
Int. Cl.^{6} H02M *3/335*
U.S. Cl. 363—21 **21 Claims**



1. A power supply controller for controlling the duty cycle of a power supply switch as a function of an oscillator ramp signal generated across a timing capacitor in order to provide a regulated output voltage, said power supply controller comprising:
- a first current source for charging the timing capacitor with a first fixed current; and
- a second current source for discharging the timing capacitor with a second fixed current when the regulated output voltage is greater than a predetermined level and for discharging the timing capacitor with a variable current when the regulated output voltage is less than said predetermined level.

5,710,698
DELTA CONNECTED RESONANT SNUBBER CIRCUIT

Jih-Sheng Lai, Knoxville; Fang Zheng Peng; Robert W. Young, Sr., both of Oak Ridge, and George W. Ott, Jr., Knoxville, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.
Continuation-in-part of Ser. No. 316,612, Sep. 30, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,302
Int. Cl.^{6} H02H *7/122*
U.S. Cl. 363—56 **19 Claims**

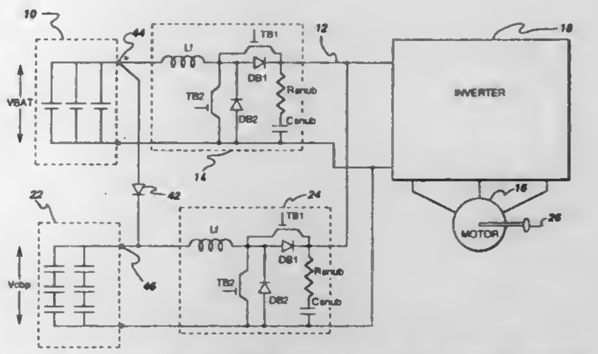


8. A resonant snubber-based, soft switching, multi-phase, inverter circuit for achieving lossless switching of circuit components, comprising:
- a main inverter circuit having a plurality of main switches and sources of capacitance in parallel with said main switches, said main circuit producing a plurality of current phases;
- an auxiliary resonant snubber circuit connected to said inverter circuit in a delta configuration and having a plurality of resonant snubber branches for repetitively producing zero voltage across each of said main switches and sources of capacitance, each of said snubber branches comprising an inductor and an auxiliary switch connected in series with said inductor; and
- a controller for controlling said main and auxiliary switches to achieve lossless switching by switching said auxiliary switches to produce zero voltage conditions across said main switches and by switching said main switches during said zero voltage conditions.

5,710,699
POWER ELECTRONIC INTERFACE CIRCUITS FOR BATTERIES AND ULTRACAPACITORS IN ELECTRIC VEHICLES AND BATTERY STORAGE SYSTEMS

Robert Dean King, Schenectady, N.Y., and Rik Wivina Anna Adelson DeDoncker, Malvern, Pa., assignors to General Electric Company, Schenectady, N.Y.
Filed May 28, 1996, Ser. No. 654,479
Int. Cl.^{6} H02M *7/5387*
U.S. Cl. 363—132 **15 Claims**

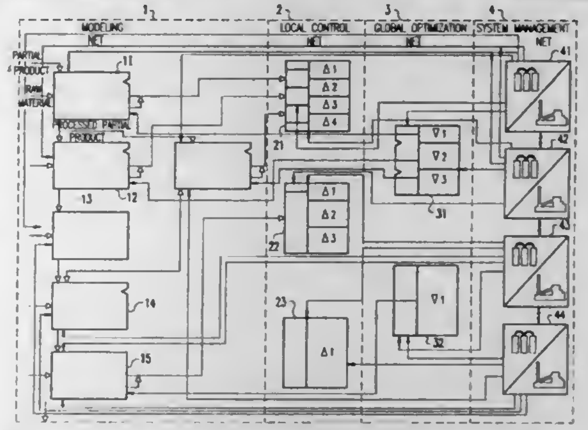
1. A battery load leveling arrangement for an electrically powered system in which battery loading is subject to intermittent high current loading, the system including a battery coupled to supply electric power to a DC link, a load, and a system controller coupled in circuit between the DC link and load for controlling application of power to the load, said battery load leveling arrangement comprising:



- a passive energy storage device;
- a first bidirectional converter coupled in circuit with the passive energy storage device and the DC link for transferring electrical power between the DC link and the energy storage device;
- a second bidirectional converter coupled in circuit between the battery and the DC link for transferring electrical power between the battery and DC link; and
- unidirectional conducting means coupling the battery to the energy storage device and poled to conduct conventional current from the battery to the energy storage device whereby battery current can be coupled to the DC link through each of the first and second converters when battery terminal voltage is greater than voltage on said passive energy storage device by an amount at least equal to a voltage drop across said unidirectional conducting means.

5,710,700
OPTIMIZING FUNCTIONAL OPERATION IN MANUFACTURING CONTROL

Jerome M. Kurtzberg, and Menachem Levanoni, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 18, 1995, Ser. No. 574,610
Int. Cl.^{6} G06F *19/00*
U.S. Cl. 364—149 **9 Claims**



1. A computer implemented method of minimal model representation of a manufacturing process which describes process behavior for real-time manufacturing process control comprising the steps of:
- acquiring parameters from the manufacturing process;
- evaluating the acquired parameters as process variables in the manufacturing process;
- partitioning the process variables into primary and secondary sets according to said evaluating step;
- generating a model of the manufacturing process based on the process variables in said primary set, the process variables in the primary set being sufficient for full manufacturing process representation;
- testing the model against sensor-based data from the manufacturing process for continual model verification and adjustment to improve process control and product optimization; and

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generating real-time process state evaluations of the manufacturing process which identify current process status, current targets and optimal targets and an optimization path based on sensor-based data.

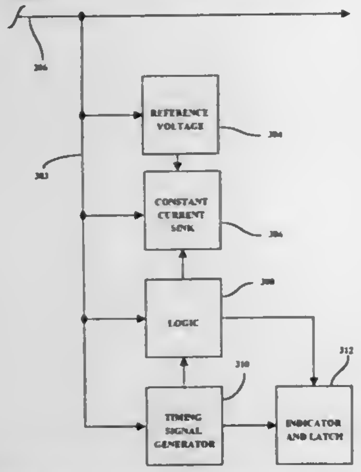
5,710,701
METHOD AND APPARATUS FOR POWER SUPPLY TESTING

Alan E. Brown, Georgetown, Tex., assignor to Deli USA, L.P., Austin, Tex.

Filed Jul. 31, 1995, Ser. No. 509,264

Int. Cl.^{6} G05B ***9/02;*** **G01R** ***31/36***

U.S. Cl. 364—185 **4 Claims**



1. A testing device arranged for connection between a power supply apparatus and electronic application circuitry, said power supply apparatus having input terminals thereof arranged for connection to an external power source, said power supply apparatus being selectively operable to provide at least one supply voltage at output terminals thereof for application to the electronic application circuitry, said testing device comprising:

- a timing signal generating device coupled to the input terminals of the power supply apparatus, said timing signal generating device being responsive to a signal received from the external power source for providing a first timing signal after attainment of a first predetermined voltage level at a selected node within said power supply apparatus following a connection of said power supply apparatus to the external power source;
- simulated load current generating means coupled to said timing signal generating device, said simulated load current generating means being responsive to said first timing signal for applying a simulated load current across the output terminals of the power supply apparatus and providing an indicium signal, said indicium signal being representative of a relationship between said one supply voltage across the output terminals of the power supply apparatus during an application of said simulated load current, and a predetermined output voltage specification.

5,710,702
APPARATUS FOR TRANSMITTING INFORMATION FOR VEHICLE

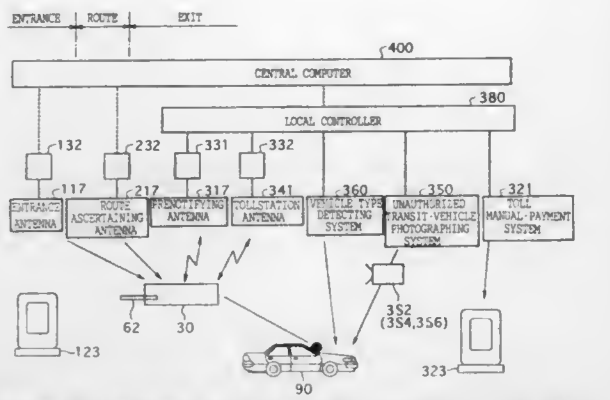
Hironao Hayashi, Gifu-ken, and Ken Goto, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 6, 1995, Ser. No. 467,998

Claims priority, application Japan, Jun. 16, 1994, 6-134608

Int. Cl.^{6} G07B ***15/00***

U.S. Cl. 364—423.098 **21 Claims**



1. An apparatus for use with a portable storage medium having balance information representing a remaining amount of prepaid toll and for notifying an occupant of a vehicle of a toll based reachable range of the vehicle, comprising:

- reading means for reading said portable storage medium to develop a signal representing said balance information;
- a calculating means responsive to said signal for calculating the toll based reachable range which can be reached by the vehicle on the basis of a predetermined toll information and said balance information as represented by said signal; and
- a notifying device for notifying the occupant of the vehicle of the calculated reachable range.

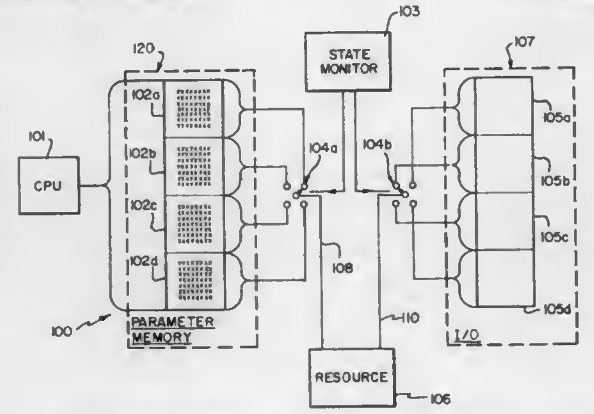
5,710,703
METHOD AND SYSTEM FOR SHARING A HARDWARE RESOURCE

Larry Joseph Kirn, West Bloomfield; John Merritt, Farmington Hills, and Gary K. Lowe, Troy, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 476,617

Int. Cl.^{6} F02D ***29/00***

U.S. Cl. 364—424.034 **33 Claims**



1. A method for sharing a hardware resource in a multistate system comprising the steps of:

- monitoring changes in state in the multistate system using a pickup device;
- accessing a memory containing control parameters required by the hardware resource in response to a state signal from the pickup device;
- applying a control signal that is related to the accessed control parameters to the hardware resource; and
- connecting the hardware resource to a selected one of several output devices, the output device being selected in relation to the state signal.

5,710,704
SYSTEM FOR DRIVING STABILITY CONTROL DURING TRAVEL THROUGH A CURVE

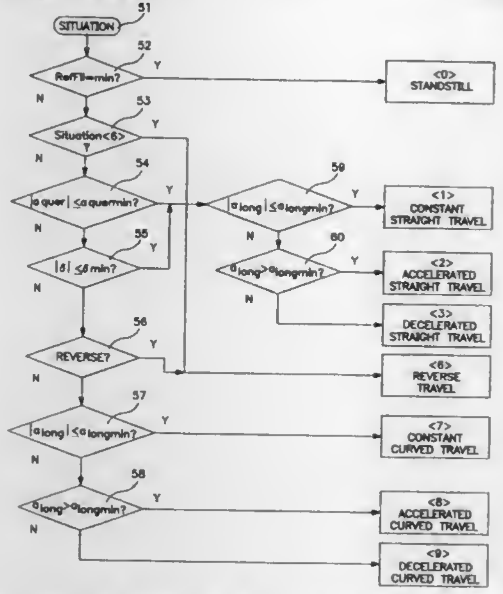
Johannes Gräber, Eschborn, Germany, assignor to ITT Automotive Europe GmbH, Frankfurt, Germany

Division of Ser. No. 475,389, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 479,630

Claims priority, application Germany, Nov. 25, 1994, 44 41 956.2; Nov. 25, 1994, 44 41 958.9; Nov. 25, 1994, 44 41 957.0; Nov. 25, 1994, 44 41 959.7; Dec. 31, 1994, 44 47 313.3; Apr. 27, 1995, 195 15 058.9

Int. Cl.^{6} B60T ***8/32;*** **G01P** ***3/44***

U.S. Cl. 364—426.027 **8 Claims**



1. A system for improving the driving stability of a vehicle during travel through a curve, comprising:

- means for measuring a yaw rate of the vehicle;
- means for calculating a desired yaw rate;
- means for determining a difference between the desired yaw rate and the measured yaw rate;
- situation recognition means for determining whether the vehicle is travelling in a curve, and whether the vehicle is travelling in reverse; and
- logic means responsive to the difference determining means and the situation recognition means for initiating a corrective yawing moment if the difference exceeds a predetermined threshold value and the vehicle is not traveling in reverse.

5,710,705
METHOD FOR DETERMINING AN ADDITIONAL YAWING MOMENT BASED ON SIDE SLIP ANGLE VELOCITY

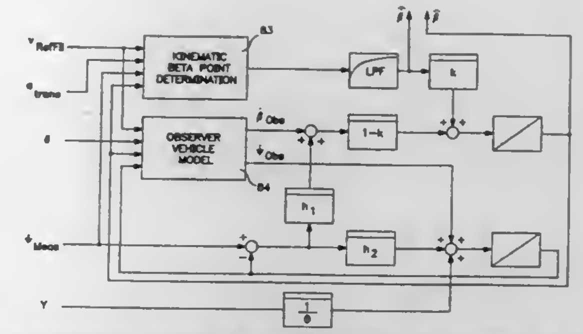
Alfred Eckert, Bodenheim, Germany, assignor to ITT Automotive Europe GmbH, Frankfurt, Germany

Division of Ser. No. 475,389, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 475,678

Claims priority, application Germany, Nov. 25, 1994, 44 41 956.2; Nov. 25, 1994, 44 41 958.9; Nov. 25, 1994, 44 41 957.0; Nov. 25, 1994, 44 41 959.7; Dec. 31, 1994, 44 47 313.3; Apr. 27, 1995, 195 15 051.1

Int. Cl.^{6} B60T ***8/00;*** **G01P** ***3/44***

U.S. Cl. 364—426.028 **17 Claims**



1. A method for improving the driving behavior of an automotive vehicle, the vehicle having a plurality of wheels, each wheel having a brake, said vehicle having a plurality of sensors for generating signals representing a vehicle velocity, a vehicle steering angle and a measured yaw rate of the vehicle, comprising the steps of:

- determining a desired yaw rate based on the vehicle velocity and the vehicle steering angle;
- generating a yawing moment adjustment value based on the desired yaw rate and the measured yaw rate;
- determining a velocity of the side slip angle kinematically, based on the vehicle velocity and the measured yaw rate;
- calculating an observer model velocity of the side slip angle based on the steering angle of the vehicle; and
- correcting the yawing moment adjustment based on the kinematically determined velocity value of the side slip angle and the observer model velocity of the side slip angle, said yawing moment adjustment value being applied to control the yaw rate of the vehicle.

5,710,706
METHOD FOR ENTERING DATA INTO A SCALE

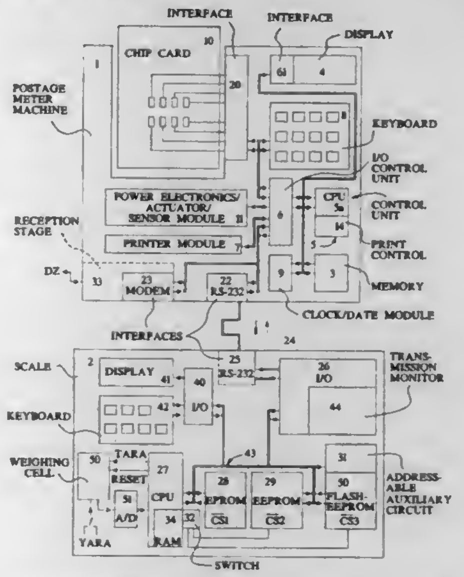
Katrin Märkl; Claus Freytag; Stephan Günther; Ralf Kubatzki, and Wolfgang Thiel, all of Berlin, Germany, assignors to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Dec. 26, 1995, Ser. No. 579,059

Claims priority, application Germany, Dec. 23, 1994, 44 47 404.0

Int. Cl.^{6} G07B ***17/00***

U.S. Cl. 364—464.19 **32 Claims**



1. A method for entering data into a scale of a mail processing system, said mail processing system also containing a postage meter machine, said method comprising the steps of:

- providing a postage meter machine;
- providing a modemless scale having means for manually entering data into said scale;
- connecting said scale and said postage meter machine via a cable and respective interfaces, and allowing data entry into said scale exclusively by using said cable and said means for manually entering data;
- initializing said postage meter machine and said scale for permitting said scale to execute routines for calculating postage, for communicating a postage amount to said postage meter

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machine via said cable in a normal mode, for communicating check data to the postage meter machine via said cable, and for mode switching;

automatically checking a most recent status of data content stored in said scale after activation of said scale and said postage meter machine by communication, via said cable, of said check data from said scale to said postage meter machine containing information regarding a data modification which is to become effective at a future validity date, and including transmitting said validity date;

compiling location-specific data at least for said scale from an external memory; and

location-specific initializing said scale and data internally stored therein after a mode switching, and transmitting updated data via said cable from said postage meter machine to said scale from said external memory within a predetermined time window after activation of said scale.

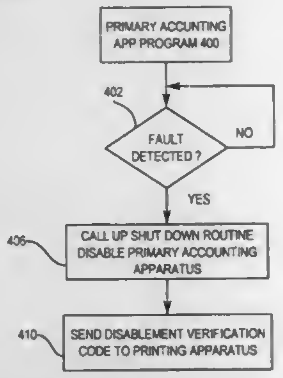
5,710,707
POSTAGE METERING SYSTEM INCLUDING PRIMARY ACCOUNTING MEANS AND MEANS FOR ACCESSING SECONDARY ACCOUNTING MEANS

Gary M. Heiden, Shelton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 21, 1995, Ser. No. 560,223

Int. Cl.^{6} G07B *17/04*

U.S. Cl. 364—464.2 **11 Claims**


PRIMARY ACCUNTING APP PROGRAM 400
402
FAULT DETECTED ?
NO
YES
406
CALL UP SHUT DOWN ROUTINE DISABLE PRIMARY ACCOUNTING APPARATUS
410
SEND DISABLEMENT VERIFICATION CODE TO PRINTING APPARATUS

1. A postage metering system comprising:

(a) primary accounting means including primary computer means, the primary computer means including means for sequentially metering respective postage values for printing on respective sheets, the primary computer means including means for detecting a plurality of fault conditions, the primary computer means including means for disabling the metering means when the detecting means detects a selected fault condition;

(b) printing means including a printing module and printing computer means, the printing module including printing apparatus and means for sequentially feeding thereto each sheet of a batch thereof having a predetermined plurality of sheets, the printing computer means including means for transmitting a first request for connection of the printing means in communication with the primary accounting means for receiving therefrom respective postage values for printing on respective sheets;

(c) the primary computer means including means responsive to the first connection request for causing connection of the accounting means in communication with the printing means if the metering means is not disabled. the primary computer means including means for causing disconnection of the accounting means from communication with the printing means if connected in communication therewith when the metering means is disabled; and

(d) the printing computer means including means for transmitting a second request for connection of the printing means in communication with secondary accounting means for receiving therefrom respective postage values for printing on respective sheets if the metering means is disabled.

5,710,708
BACKPLANE CONTROL SYSTEM FOR SPINNING MACHINES

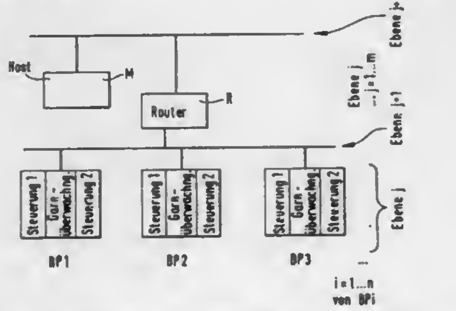
Jens Wiegand, Reiterweg, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Jun. 6, 1995, Ser. No. 467,165

Claims priority, application European Pat. Off., Oct. 25, 1994, 94116825

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—470.1 **6 Claims**



1. A control system for a group of spinning mill machines connected in combination for carrying out coordinated spinning operations. said system comprising:

a plurality of hierarchy communication levels, a lowest said communication level comprising at least one multiprocessor bus backplane assigned to each of said spinning mill machines, each said bus backplane comprising a plurality of deterministic microprocessors connected thereto for carrying out deterministic tasks associated with said respective spinning mill machine:

a next higher communication level, said next higher communication level comprising a local bus connecting together said multiprocessor backplanes:

a common deterministic data communications protocol for said multiprocessor backplanes and said local bus so that multiprocessors of each said backplane and different said backplanes can communicate bi-directionally with said deterministic data communications protocol;

said local bus coupled to a higher superimposed communication level which includes a host control system for said entire group of spinning mill machines, said local bus and said higher superimposed communication level coupled together through a common network communications protocol.

5,710,709
NC MILLING SIMULATION AND DIMENSIONAL VERIFICATION VIA DEXEL REPRESENTATION

James H. Oliver, and Yunching Huang, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 19, 1993, Ser. No. 109,781

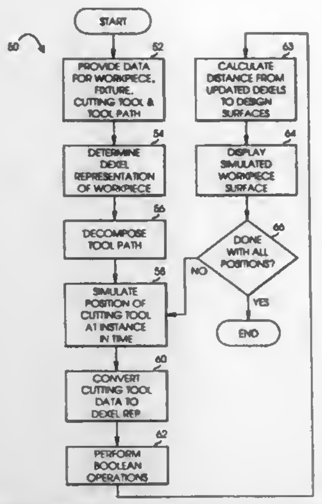
Int. Cl.^{6} G05B *19/4097;* G06T *17/00*

U.S. Cl. 364—474.26 **20 Claims**

1. A method for visualization of a five-axis NC milling process simulation to determine the ability of a NC milling operation to produce a desired design surface of a designed object, said method using a computer having an output display device, comprising the steps of:

(a) providing the computer with data representing a solid object representation of a workpiece, a cutting tool, and a surface of the designed object;

(b) converting, using the computer, the data to provide a dexel representation of the workpiece, the dexel representation of the workpiece comprising a plurality of workpiece dexels;


80
START
52
PROVIDE DATA FOR WORKPIECE, FIXTURE, CUTTING TOOL & TOOL PATH
54
DETERMINE DEXEL REPRESENTATION OF WORKPIECE
56
DECOMPOSE TOOL PATH
58
SIMULATE POSITION OF CUTTING TOOL AT INSTANCE IN TIME
60
CONVERT CUTTING TOOL DATA TO DEXEL REP
62
PERFORM BOOLEAN OPERATIONS
63
CALCULATE DISTANCE FROM UPDATED DEXELS TO DESIGN SURFACES
64
DISPLAY SIMULATED WORKPIECE SURFACE
66
DONE WITH ALL POSITIONS?
NO
YES
END

(c) providing the computer with five-axis tool path data representative of a tool path to be used in milling the workpiece with the cutting tool;

(d) decomposing the tool path into a series of tool motions and discretizing each tool motion into a plurality of discrete positions, wherein the tool motions are represented by tool motion data;

(e) using the tool motion data, simulating on the computer the position of the cutting tool relative to the workpiece at a particular position, and for that position converting the solid model data of the cutting tool to a corresponding dexel representation of the cutting tool comprising a plurality of cutting tool dexels;

(f) using the computer and the cutting tool dexels, determining a simulated shape of the workpiece by performing Boolean difference operations between the workpiece dexels and the cutting tool dexels to produce a set of updated workpiece dexels comprising those workpiece dexels that intersected with the cutting tool dexels at the position;

(g) using the computer to determine the distance between one or more of the updated workpiece dexels and the design surface, the distance determined by finding a point on the design surface near a dexel for which the distance to the design surface is being determined; and

(h) repeating steps (e), (f) and (g) to process a plurality of successive cutting tool positions; and

(i) using the computer and the distances determined in step (g), generating, on the output display device, a graphical display in at least two dimensions of the difference between the desired design surface and the simulated shape of the workpiece.

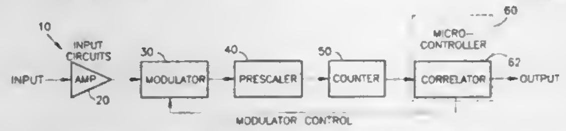
5,710,710
FREQUENCY COUNTER WITH REDUCED FALSE CORRELATIONS

William P. Owen, Fort Lauderdale, and Judd Sheets, St. Petersburg, both of Fla., assignors to Optoelectronics, Inc., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 310,228, Sep. 21, 1994, Pat. No. 5,471,402. This application Nov. 22, 1995, Ser. No. 561,692

Int. Cl.^{6} G01R *23/00;* G06F *17/00*

U.S. Cl. 364—484 **19 Claims**



1. A frequency counter for accurately determining the frequency of a valid periodic RF input signal of interest, said frequency counter distinguishing the frequency count of said valid periodic RF input signal from undesired self-oscillations, said frequency counter comprising:

(a) signal input means for receiving successive signal samples, the signal samples including the valid periodic RF input signal and the undesired self-oscillations;

(b) frequency measuring means, electrically associated with said signal input means, for measuring the frequency of the signal samples over a predetermined period of time so as to obtain a plurality of frequency counts;

(c) means for separating the signal samples to obtain successive frequency counts and to facilitate isolation of the valid periodic RF input signal from the undesired self-oscillations, said separating means being in electrical communication with said signal input means and said frequency measuring means,;

(d) correlating means, electrically communicated with said frequency measuring means and said separating means, for calculating a difference in frequency measurements between said successive frequency counts and for comparing said difference in said frequency counts to a preselected value. wherein a valid periodic RF input signal is deemed measured when said preselected value exceeds said difference; and

(e) frequency display means, electrically associated with said correlating means, for displaying said frequency measurement of said valid periodic RF input signal.

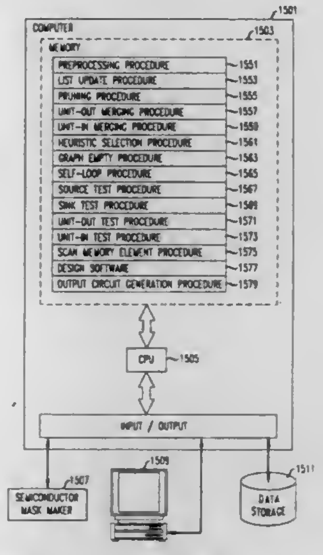
5,710,711
METHOD AND INTEGRATED CIRCUIT ADAPTED FOR PARTIAL SCAN TESTABILITY

Kwang-Ting Cheng, and Jing-Yang Jou, both of Edison, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 964,163, Oct. 21, 1992, abandoned. This application Oct. 30, 1995, Ser. No. 550,421

Int. Cl.^{6} G06F *17/50*

U.S. Cl. 364—491 **11 Claims**



10. An integrated circuit, comprising:

a plurality of memory elements each having a performance characteristic interconnected by a plurality of signal paths in a topology; and

scan testing circuitry associated with at least one of said memory elements, said memory element selected by processing an electronically stored representation of a first design of said integrated circuit with a computer to select said memory element based on said respective performance characteristics of said semiconductor elements, said topology and a performance criterion of said integrated circuit such that associating said scan testing circuitry with said memory element produces an acceptable level of said performance criterion for said integrated circuit.

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5,710,712

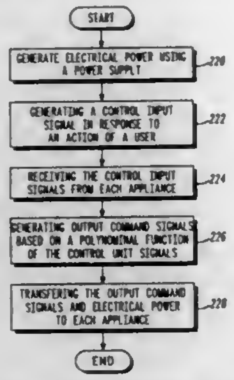
PROCESSOR SYSTEM AND METHOD FOR APPLIANCES

Nicholas Mikulas Labun, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 22, 1994, Ser. No. 343,314

Int. Cl.^{6} G05B *13/02*

U.S. Cl. 364—492 **24 Claims**


START
GENERATE ELECTRICAL POWER USING A POWER SUPPLY
220
GENERATING A CONTROL INPUT SIGNAL IN RESPONSE TO AN ACTION OF A USER
222
RECEIVING THE CONTROL INPUT SIGNALS FROM EACH APPLIANCE
224
GENERATING OUTPUT COMMAND SIGNALS BASED ON A POLYNOMINAL FUNCTION OF THE CONTROL UNIT SIGNALS
226
TRANSFERING THE OUTPUT COMMAND SIGNALS AND ELECTRICAL POWER TO EACH APPLIANCE
228
END

1. In a processor system for a plurality of electrical appliances, a method of operating the electrical appliances, comprising the steps of:

receiving a plurality of control input signals from the plurality of electrical appliances;

generating an output command signal in response to the control input signals, the output control signal being generated as a nonlinear polynomial function of the control input signals, the nonlinear polynomial function including a plurality of control coefficients and a polynomial term that includes at least one of the control signals raised to a power greater than one; and

transferring the output command signal to the plurality of electrical appliances over a bus.

5,710,713

METHOD OF CREATING STANDARDIZED SPECTRAL LIBRARIES FOR ENHANCED LIBRARY SEARCHING

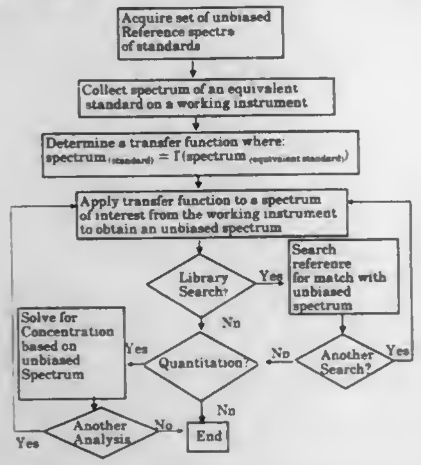
Larry G. Wright; Mark A. LaPack; Wayne W. Blaser; Kenneth R. Beebe, and Mary A. Leugers, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 407,338, Mar. 20, 1995, Pat. No. 5,545,895. This application Jan. 18, 1996, Ser. No. 588,192

The portion of the term of this patent subsequent to Mar. 15, 2015, has been disclaimed.

Int. Cl.^{6} H01J *49/00*

U.S. Cl. 364—498 **11 Claims**


Acquire set of unbiased Reference spectra of standards
Collect spectrum of an equivalent standard on a working instrument
Determine a transfer function where: spectrum (standard) = Γ(spectrum (equivalent standard))
Apply transfer function to a spectrum of interest from the working instrument to obtain an unbiased spectrum
Library Search?
Yes
Search reference for match with unbiased spectrum
No
Another Search?
Yes
No
Quantitation?
Yes
Solve for Concentration based on unbiased Spectrum
No
Another Analysis
No
Yes
End

1. A method of creating a library of standardized spectral data comprising the steps of:

(a) acquiring at least one reference spectrum over a spectral region of interest wherein each reference spectrum is representative of the spectrum of a standard, each reference spectrum being referred to as unbiased reference spectrum, said unbiased reference spectrum being stored and retrievable;

(b) acquiring at least one working spectrum over a corresponding spectral region on a working instrument, each working spectrum being representative of the spectrum of an equivalent standard and each being referred to as a biased working spectrum;

(c) deriving a transfer function from the unbiased reference spectra and the biased working spectra, the transfer function mathematically equates the biased working spectra to the unbiased reference spectra;

(d) during the same time interval as step (b), acquiring a spectrum of an additional standard on the working instrument over the corresponding spectral region, the spectrum of the additional standard being referred to as a biased spectrum of the additional standard;

(e) applying the transfer function of step (c) to the biased spectrum of the additional standard to obtain an unbiased reference spectrum of the additional standard; and

(f) storing at least a portion of the unbiased reference spectrum of the additional standard in the library.

5,710,714

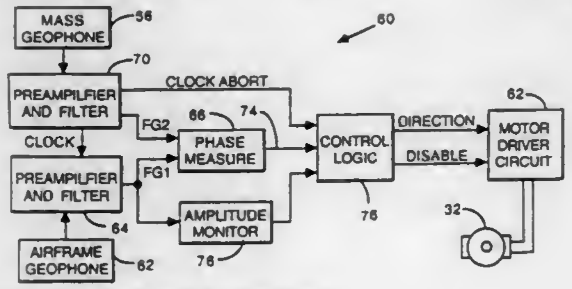
ELECTRONIC CONTROLLER FOR AN ADAPTIVELY TUNED VIBRATION ABSORBER

Mathieu Mercadal, Fontenay aux Roses, France; Kelvin B. Scribner, and Andreas H. von Flotow, both of Hood River, Oreg., assignors to Applied Power Inc., Butler, Wis.

Filed Nov. 15, 1995, Ser. No. 559,519

Int. Cl.^{6} F16F *13/00*

U.S. Cl. 364—508 **22 Claims**



1. A vibration absorber comprising:

a mechanical resonator having a member for attachment to a body in which a vibrational disturbance occurs, a mass, and a spring connected between the member and the mass, said resonator further having a mechanism which adjusts stiffness of said spring in response to a control signal;

a first sensor which produces a first signal indicating the vibrational disturbance;

a second sensor which produces a second signal indicating movement of the mass; and

a control circuit comprising:

(a) a first filter circuit which receives the first signal and produces a first filtered signal, said first filter circuit has a filter frequency that is tuned by a clock signal;

(b) a second filter circuit which receives the second signal and produces a second filtered signal, said second filter circuit has a filter frequency that is tuned by the clock signal;

(c) a first phase comparator which produces a phase output signal indicating a phase comparison of the first and second filtered signals;

(d) a mechanism control circuit which produces the control signal for the mechanism in response to the phase output signal from said first phase comparator; and

(e) a clock signal generator which responds to one of the first and second signals and one of the first and second filtered signals by producing the clock signal.

5,710,715

VIBRATION ANALYSIS METHOD

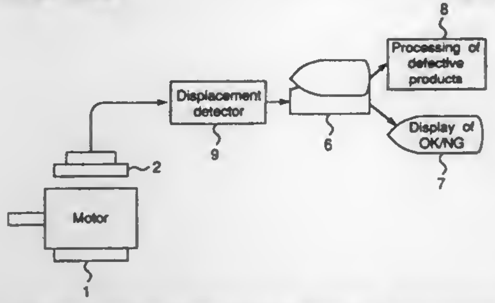
Motoshi Shitanda, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed Jul. 27, 1995, Ser. No. 507,925

Claims priority, application Japan, Jul. 28, 1994, 6-176738

Int. Cl.^{6} G01H *17/00;* G01M *19/00;* G05B *23/02*

U.S. Cl. 364—508 **14 Claims**



1. A vibration analysis method for detecting abnormalities by analyzing a vibration waveform, said method comprising the steps of:

detecting displacements of a vibration waveform f_j (j=1 to n) at a set of observation time points $\{t_j\}$, wherein the set of observation time points $\{t_j\}$ are of a specified number n wherein t_j (j=1 to n) with a start time point of t_0;

calculating α which is a characteristic quantity of the vibration waveform by substituting ψ(t), which is a function of time t and is descriptive of a specified phenomena, into a following equation with ξ_+, ξ_0, and ξ_- being values such that $\xi_+ + \xi_0 + \xi_- = 0$:

$$\alpha = \sum_{j=1}^{n-1} \frac{\xi_+ t_{j+1} + \xi_0 t_j + \xi_- t_{j-1}}{t_n - t_0} f_j \psi(t_j)$$

where $\psi(t_j)$ is a function of time t_j;

limiting an allowable range in the n-dimensional space based upon α;

comparing points in an n-dimensional space of the displacements detected at the set of observation time points at said detecting step with points in the n-dimensional space of a vibration waveform that is designated as being normal; and

determining whether points in the n-dimensional space compared at said comparing step are abnormal, wherein a point is determined to be abnormal when the comparison falls outside the allowable range.

5,710,716

VEHICLE LOAD MEASURING SYSTEMS

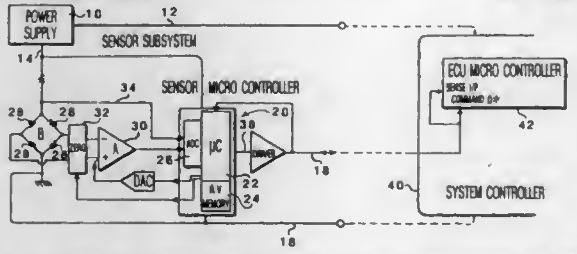
David Charles Hurst, West Midlands; Kenneth Vincent, Alcester, and James Henton Wilson, West Midlands, all of United Kingdom, assignors to Lucas Industries Public Limited Company, West Midlands, England

Filed Dec. 12, 1995, Ser. No. 571,233

Claims priority, application United Kingdom, Dec. 23, 1994, 9426220

Int. Cl.^{6} G01G *19/40;19/02*

U.S. Cl. 364—508 **19 Claims**



1. A system for measuring loads in a vehicle comprising at least one sensing element selected from any of strain and displacement sensing elements and a respective electronic interface disposed locally to each said sensing element, said sensing element and said respective local electronic interface being adapted to be linked to a main electronic control unit disposed in a vehicle with which the load measuring system is associated at a location remote from said local interface, the load measuring system further comprising internal micro-controller means within said local interface which is adapted to receive signals from said main electronic control unit to switch elements of the load measuring system into both zero setting and calibration modes, said micro-controller in said local electronic interface having electrically alterable, non-volatile memory which is adapted to store zero setting and calibration data for subsequent use in a normal operating, load measurement mode of the system.

5,710,717

METHOD FOR PREDICTING AND ADJUSTING THE DISTRIBUTION OF TWO-PHASE FLUIDS FLOWING THROUGH A PIPING NETWORK

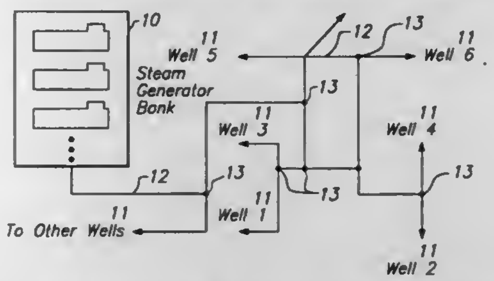
Ki Choong Hong, and Suzanne Griston, both of Bakersfield, Calif., assignors to Chevron U.S.A. Inc., Richmond, Calif.

Filed Mar. 22, 1995, Ser. No. 408,827

Int. Cl.^{6} G05D *16/00*

U.S. Cl. 364—510 **13 Claims**

Schematic of Impacting Tee Steam Distribution Manifold



1. A method for managing the mount of heat injected into a reservoir in a steam flood project comprising the steps of:

a. measuring the pressure, quality and rate of a two-phase fluid entering an impacting tee junction;

b. determining the flow cross-sectional area of a pipe inlet to the tee junction;

c. determining the vapor-phase and liquid-phase specific volumes at measured inlet pressure, or obtaining said specific volumes from steam tables when the two-phase fluid is wet steam;

d. determining the vapor velocity entering the tee junction;

e. determining the liquid volume entering the tee junction;

f. determining the vapor velocity in a first tee branch or arm;

g. computing coefficients, a and b, wherein

$$a = a1 + a2 * \ln(LVF_{in} * V_{in}) + a3 * (LVF_{in} * V_{in})^{0.5}$$

and

$$b = b1 + b2 * (LVF_{in} * V_{in}) + b3 * \ln(LVF_{in} * V_{in}) + b4 * (LVF_{in} * V_{in})^{0.5}$$

and

$$a1 = 0.2088;\ a2 = -0.2541;\ a3 = 0.3928;$$

$$b1 = -3.0662;\ b2 = -0.4052;\ b3 = -1.0381;\ b4 = 2.7228;$$

h. calculating the liquid volume fraction of fluid exiting the first tee branch wherein

$$LVF_{arm} = a * LVF_{in} * (V_{arm}/V_{in})^{b}$$

i. computing vapor mass fraction of fluid exiting the first tee branch, wherein

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$$x_{arm}=\{1+(LVF_{arm}*v_g)/[(1-LVF_{arm})*\_v_L]\}^{-1}$$

j. determining the vapor velocity in a second tee branch or arm;
k. calculating the liquid volume fraction of fluid exiting the second tee branch;
l. computing`vapor mass fraction of fluid exiting the second tee branch; and
m. controlling the amount of heat injected into the reservoir based on the vapor mass fraction of the fluid exiting the first tee branch and the second tee branch.

5,710,718

METHOD OF DESIGNING A PNEUMATIC TIRE TO ACHIEVE A BEST MODE UNDER GIVEN CONDITIONS

Tatsuhiko Kamegawa, Kodaira; Yukio Nakajima, Akigawa, and Akihiko Abe, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

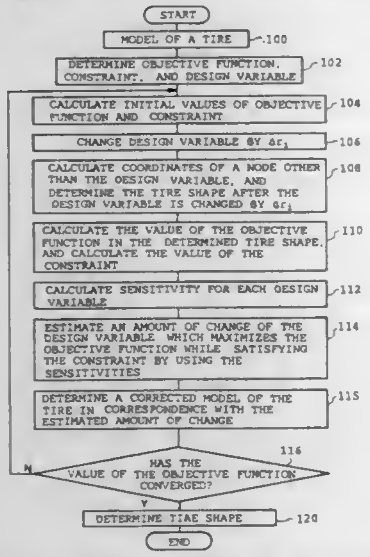
PCT No. PCT/JP94/00110, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO94/16877, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 27, 1994, Ser. No. 302,841

Claims priority, application Japan, Jan. 27, 1993, 5-011669

Int. Cl.^{6} G06F *15/00;* **B60C** *3/04*

U.S. Cl. 364—512 **13 Claims**


START
MODEL OF A TIRE
100
DETERMINE OBJECTIVE FUNCTION, CONSTRAINT, AND DESIGN VARIABLE
102
CALCULATE INITIAL VALUES OF OBJECTIVE FUNCTION AND CONSTRAINT
104
CHANGE DESIGN VARIABLE BY Δr
106
CALCULATE COORDINATES OF A NODE OTHER THAN THE DESIGN VARIABLE, AND DETERMINE THE TIRE SHAPE AFTER THE DESIGN VARIABLE IS CHANGED BY Δr
108
CALCULATE THE VALUE OF THE OBJECTIVE FUNCTION IN THE DETERMINED TIRE SHAPE, AND CALCULATE THE VALUE OF THE CONSTRAINT
110
CALCULATE SENSITIVITY FOR EACH DESIGN VARIABLE
112
ESTIMATE AN AMOUNT OF CHANGE OF THE DESIGN VARIABLE WHICH MAXIMIZES THE OBJECTIVE FUNCTION WHILE SATISFYING THE CONSTRAINT BY USING THE SENSITIVITIES
114
DETERMINE A CORRECTED MODEL OF THE TIRE IN CORRESPONDENCE WITH THE ESTIMATED AMOUNT OF CHANGE
115
116
HAS THE VALUE OF THE OBJECTIVE FUNCTION CONVERGED?
N
Y
DETERMINE TIAE SHAPE
120
END

1. A computer implemented method of designing a pneumatic tire, comprising the steps of:
(a) defining a basic model of a tire representing a cross-sectional shape of the tire including an internal structure, an objective function representing a physical amount for evaluating tire performance, a design variable for determining at least one of the cross-sectional shape of the tire and a tire structure, and a constraint other than the design variable for constraining at least one of the cross-sectional shape of the tire, the tire structure, the physical amount for evaluating tire performance, and a tire size;
(b) varying a value of the design variable while taking the constraint into consideration and carrying out an optimization computation until an optimum value of the objective function is obtained; and
(c) designing the tire on the basis of the design variable which gives the optimum value of the objective function.

5,710,719

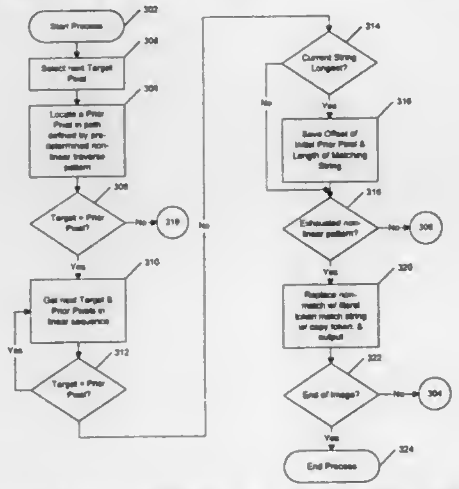
APPARATUS AND METHOD FOR 2-DIMENSIONAL DATA COMPRESSION

Paul Houle, Costa Mesa, Calif., assignor to America Online, Inc., Dulles, Va.

Filed Oct. 19, 1995, Ser. No. 545,513

Int. Cl.^{6} G06F *17/00*

U.S. Cl. 364—514 R **121 Claims**



1. A method for compressing an original image, the original image having a pixel array, the pixel array having target pixels and prior pixels, each prior pixel being located in a position within the pixel array prior to each target pixel, the method comprising the steps of:
(a) compressing the original image to obtain a compressed image, including repeatedly:
  (1) traversing the pixel array according to a predetermined non-linear traversing pattern to locate a prior pixel, if any, matching a target pixel;
  (2) if such a matching prior pixel is located, then comparing corresponding target pixels and prior pixels linearly following the matched target pixel and prior pixel to locate a matching prior pixel string, if any;
  (3) repeating steps (1) and (2) to locate a longest matching prior pixel string;
  (4) generating a copy token as a compressed representation of each such longest matching prior pixel string; and
  (5) generating a literal token for each target pixel having no matching prior pixel.

5,710,720

PHASE LOCK LOOP BASED SYSTEM AND METHOD FOR DECOMPOSING AND TRACKING DECOMPOSED FREQUENCY COMPONENTS OF A SIGNAL, WITH APPLICATION TO VIBRATION COMPENSATION SYSTEM

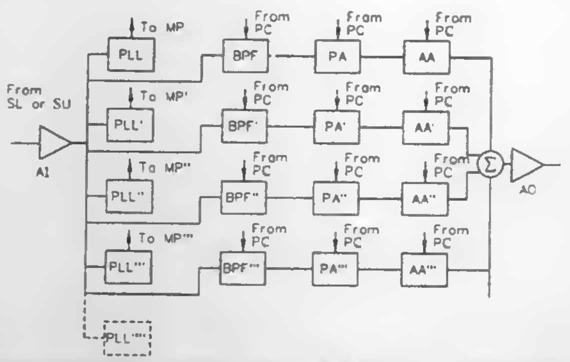
Marcelo C. Algrain; Steven L. Hardt, and Douglas E. Ehlers, all of Lincoln, Nebr., assignors to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Aug. 1, 1996, Ser. No. 691,927

Int. Cl.^{6} G01M *7/00;* **H04L** *7/08*

U.S. Cl. 364—574 **26 Claims**

1. A system for decomposing an original signal of arbitrary frequency content into a user determined plurality of signals, each of which plurality of signals is centered about a variable center frequency, said system comprising a bank of a plurality of combination phase lock loop and associated band pass filter bank components, the center frequency of a frequency pass band of each of said band pass filters being effected by use of a signal input thereto, and output by, an associated phase lock loop, each of which phase lock loops is set to provide user desired capture and lock-in frequency ranges; such that in use each of said combination phase lock loop and associated band pass filter bank component is provided the original signal at inputs of said phase lock loop and associated band pass filter, and such that in use a well defined phase lock loop output signal is caused to be provided by a phase lock loop and utilized by an associated band pass filter to set a passband center frequency thereof, and enable utilized band-pass filter output therefrom, if said original signal presents with a frequency component within the capture and lock-in ranges of said associated phase lock loop, and said phase lock loop is locked thereonto; each said band pass filter center frequency, once set, being, in use, continuously caused to vary if, and when, the frequency component in said original signal which effects a well defined output signal from an associated phase lock loop, which output is input to an associated band pass filter, and which frequency component of said original signal which said associated band pass filter is passing, varies within its associated phase lock loop's lock-in range.



5,710,721

INTERNAL POSTAGE METER MACHINE INTERFACE CIRCUIT

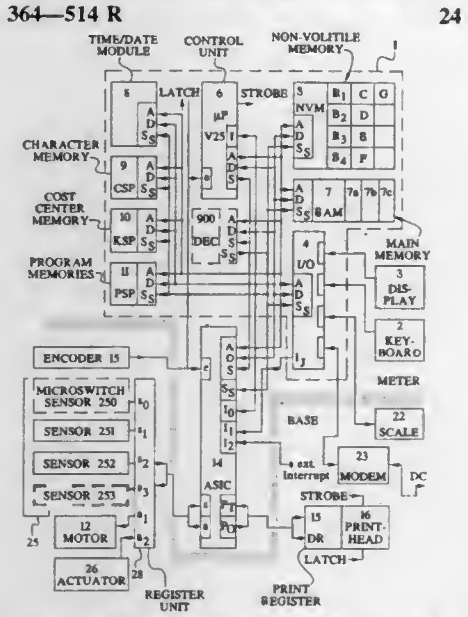
Peter Rieckhoff, and Michael Sperling, both of Berlin, Germany, assignors to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Dec. 6, 1995, Ser. No. 568,019

Claims priority, application Germany, Dec. 7, 1994, 44 45 053.2

Int. Cl.^{6} G06F *13/10;3/06;* **G07B** *17/00;* **H04L** *12/02*

U.S. Cl. 364—514 R **24 Claims**



1. In a postage meter machine containing a plurality of sensors which respectively generate sensor signals respectively identifying a status of different postage meter machine components, said postage meter machine components being connected to and controlled by a control unit, the improvement of an internal interface circuit connectable between said sensors and said control unit comprising:
an actuator/sensor controller containing a transmission register for transmitting data in parallel, a reception register for storing said data, a shift register connected between said transmission and reception register for serial-to-parallel and parallel-to-serial conversion of said data, said shift register having control inputs, a mode register group, and a first state machine having an input side connected to said mode register group for setting an operating mode and having an output side connected to said control inputs of said shift register;
an external register unit connected to said output side of said first state machine for loading said sensor signals from at least some of said sensors into said shift register for shifting therein controlled by said first state machine;
a sensor status register group for at least one of said sensors connected to said shift register with sensor signals from said sensor status register group being fetchable in parallel;
an interrupt control register having an input; and
watchdog circuit means connected to an input of at least one sensor status register in said sensor status register group and to said input of said interrupt control register for monitoring said sensor signals for a status change and connected to said control unit for triggering an interrupt of said control unit as warranted.

5,710,722

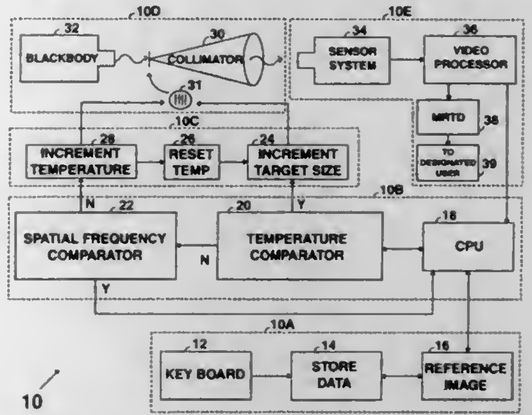
AUTOMATED MINIMUM RESOLVABLE TEMPERATURE DIFFERENCE TEST FOR IMAGING INFRARED SYSTEMS

Samuel B. Wood, Hartselle, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1996, Ser. No. 653,568

Int. Cl.^{6} G01K *5/48*

U.S. Cl. 364—525 **3 Claims**



1. An automated minimum resolvable temperature difference determination device for imaging infrared systems comprising:
(A) a first subsystem which comprises an input section, a store data section, and a reference section, said input section having means for inputting initial data to said store data section, said store data section in communication with said reference section, said store data section and said reference section having input and output means for inputting and receiving reference target images of a plurality of targets;
(B) a second subsystem which comprises a computer section with a central processing unit, a temperature comparator section, and a spatial frequency comparator section, said computer section with a central processing unit having input and output means between said reference section, said temperature comparator section, and said spatial frequency comparator section to achieve comparing an incoming target image with a selected said stored reference target image;
(C) a third subsystem which comprises an increment target size section, an increment temperature section, and a reset temperature section, said increment target size having input means from said temperature comparator for a temperature

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difference detected between stored reference target image and an incoming target image, said increment temperature section having an input means from said spatial frequency comparator section for a no temperature difference detected between stored reference target image and an incoming target image, said increment temperature section having output means to said reset temperature section and to a collimator section, said reset temperature section having output means to said increment target size section, and said increment target size section having output means to a collimator section to achieve resetting temperature and increment spatial frequency;

(D) a fourth subsystem which comprises a collimator, said collimator having inputs from said increment temperature section and said increment target size section, said collimator aligned for receiving an image from a live scene and said inputs from said increment temperature section and said increment target size section, said collimator providing a combined signature of a received image and a stored reference image for processing by a sensor section and a correlation tracker section; and,

(E) a fifth subsystem which comprises a sensor section and a correlation tracker section, said sensor system aligned with said collimator and having output to said correlation tracker section, said correlation tracker section having a video processor with an algorithm output to said computer section with a central processing unit and a minimum resolvable temperature difference output to a designated user of the required measurement to define the range at which a given task can be accomplished by said designated user.

5,710,723

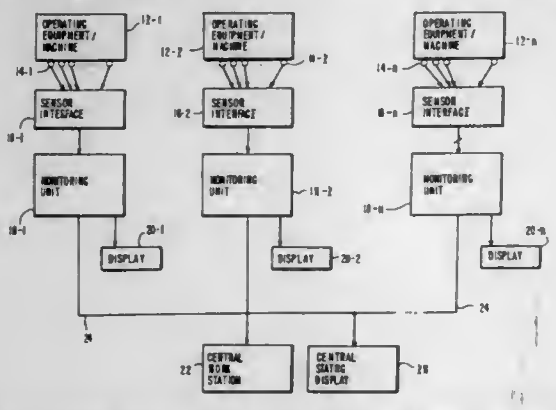
METHOD AND APPARATUS FOR PERFORMING PREEMPTIVE MAINTENANCE ON OPERATING EQUIPMENT

Donald K. Hoth, Setauket, and C. Kenneth Morrelly, Centerport, both of N.Y., assignors to Dayton T. Brown, Bohemia, N.Y.

Filed Apr. 5, 1995, Ser. No. 417,116

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 364—551.01 **28 Claims**



1. A system for providing future failure probability information for operating equipment, comprising:

a plurality of sensors arranged proximate the operating equipment and including a primary intrinsic parameter sensor, a dependent operational load parameter sensor, a dependent operational parameter sensor, and an independent operational parameter sensor;

monitoring means located at a same location as the operating equipment and connected to receive data signals produced by said plurality of sensors and including a control processor operating an artificial intelligence algorithm for processing said data signals initially according to a learning procedure and subsequently according to a monitoring procedure whereby energy contents in discrete portions in the data signals produced by said plurality of sensors are evaluated and producing evaluation signals; and

work station means connected to receive said evaluation signals from said monitoring means and including a display for providing a visual display representing said evaluation signals.

5,710,724

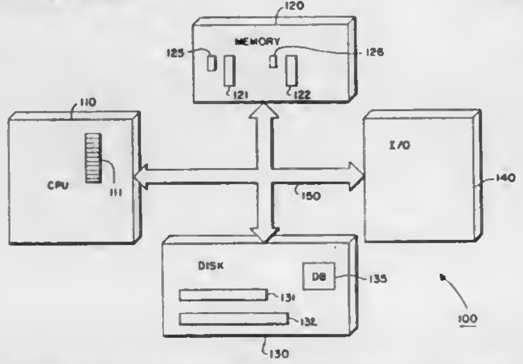
DYNAMIC COMPUTER PERFORMANCE MONITOR

Michael Burrows, Palo Alto, Calif., assignor to Digital Equipment Corp., Maynard, Mass.

Filed Apr. 20, 1995, Ser. No. 425,562

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 364—551.01 **17 Claims**



1. A method for monitoring the performance of computer systems, comprising:

storing an uninstrumented program in a memory of a computer system, the uninstrumented program having a first paging table and instructions stored in addresses;

storing an instrumented program in the memory, the instrumented program having a second paging table, the instrumented program including a plurality of instrumentation points for routing the execution flow to a plurality of instrumentation procedures, the instrumented program having instructions stored at identical relative addresses as the instructions of the uninstrumented program;

activating the first paging table to execute the uninstrumented program; and

in response to a signal, activating the second paging table to execute the instrumented program.

5,710,725

PROCESS FOR THE POSITION DETECTION OF A LINEARLY DRIVEN DRIVE SYSTEM

Klaus Bott, Durmersheim, and Eckhard Schwendemann, Bühl, both of Germany, assignors to Landis & Gyr Technology Innovation AG, Switzerland

Filed Dec. 12, 1995, Ser. No. 571,149

Claims priority, application Switzerland, Dec. 20, 1994, 3830/94

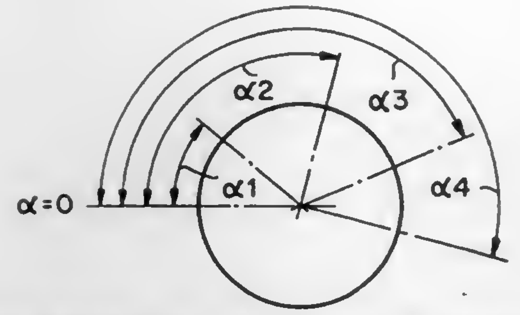
Int. Cl.^{6} G01P *3/36*

U.S. Cl. 364—559 **6 Claims**

1. A process for detecting the angular position of a linearly driven drive system, of the type where the angular position change ($\Delta\alpha$) is proportional to its particular running time (Δt) and which has a processing means and associated memory, and at least two limit switches adapted to operate at respective known predetermined angular positions, the process comprising the steps of:

determining a desired value (Δt_S) for the running time (Δt) of the drive system corresponding to the desired angular position value (α_S);

starting the drive system and measuring its running time (Δt); and,



stopping the drive system when a measured value of the running time (Δt) is equal to a determined desired value (Δt_S) of the running time (Δt).

5,710,726

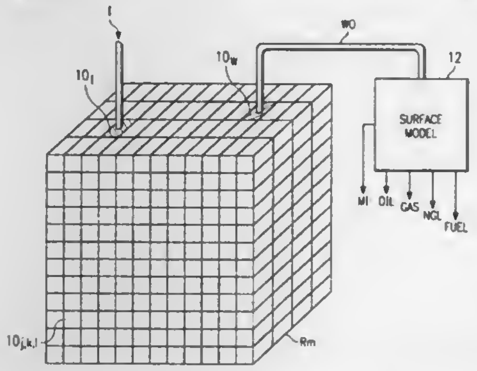
SEMI-COMPOSITIONAL SIMULATION OF HYDROCARBON RESERVOIRS

John D. Rowney, Plano, and Michael D. Clonts, Dallas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 10, 1995, Ser. No. 541,778

Int. Cl.^{6} G06T *17/50*

U.S. Cl. 364—578 **19 Claims**



1. A method of operating a computer system to determine the hydrocarbon output of a subsurface reservoir in mass units for a plurality of components of the contents of the reservoir, the plurality of components comprising at least first and second liquid hydrocarbon components and first and second gaseous hydrocarbon components, comprising the steps of:

retrieving, from computer-readable memory, data corresponding to geometry of the reservoir;

generating a computer representation of the reservoir as a plurality of cells arranged adjacent to one another so as to have boundaries therebetween;

assigning temperature and pressure values to each of the cells;

associating, with each of the plurality of cells, a density value for each of the plurality of components in each of the vapor and liquid phases;

performing a black oil simulation to determine a vapor flux volume and a liquid flux volume across each of the boundaries of cells in the computer representation of the reservoir over a time step, wherein one of the boundaries of cells corresponds to the output from a well location of the reservoir;

after the performing step, for each of the plurality of boundaries, transforming the vapor flux volume and liquid flux volume into the mass quantity of each of the components using the density values associated with the corresponding cells; and

repeating the performing and transforming steps for a series of time steps.

5,710,727

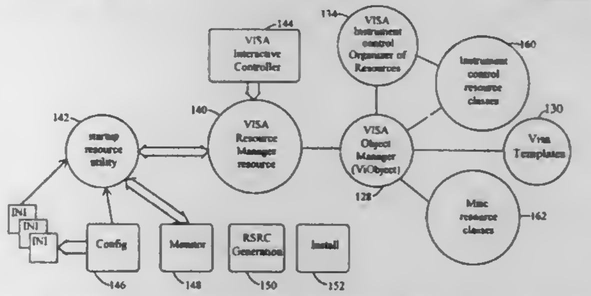
SYSTEM AND METHOD FOR CREATING RESOURCES IN AN INSTRUMENTATION SYSTEM

Bob Mitchell; Hugo Andrade, both of Austin; Jogen Pathak, Dallas; Samson DeKey, Austin; Abhay Shah, Austin, and Todd Brower, Austin, all of Tex., assignors to National Instruments Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 238,480, May 4, 1994, and Ser. No. 438,438, May 10, 1995. This application Oct. 17, 1995, Ser. No. 544,286

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—579 **44 Claims**


VISA Interactive Controller
144
134
VISA Instrument control Organizer of Resources
160
Instrument control resource classes
142
startup resource utility
140
VISA Resource Manager resource
VISA Object Manager (ViObject)
130
Visa Templates
128
Misc resource classes
162
INI
Config
Monitor
RSRC Generation
Install
146
148
150
152

1. A method for creating an instrument driver resource for controlling an instrument in an instrumentation system, wherein the instrumentation system comprises a computer system and one or more instruments coupled to the computer system, the method comprising:

providing one or more resource templates which comprise functionality used in controlling and communicating with resources;

providing a plurality of instrument control resources for controlling instrument device capabilities of said one or more instruments, wherein each of said plurality of instrument control resources derive functionality from one or more said resource templates;

providing a resource manager resource for providing user control, communication and access to said plurality of instrument control resources, wherein said resource manager resource derives functionality from at least one of said one or more resource templates;

determining if an instrument driver resource being created can inherit functionality from one or more of said plurality of instrument control resources;

the instrument driver resource inheriting functionality from one or more of said plurality of instrument control resources in response to said determining that the instrument driver resource can inherit from one or more of said plurality of instrument control resources; and

constructing the instrument driver resource after said inheriting from said one or more of said plurality of instrument control resources, wherein the instrument driver resource provides instrumentation system control of at least one of said one or more instruments, wherein said instrument driver resource uses one or more of said plurality of instrument control resources to control the instrumentation system, wherein said constructing is in response to user input.

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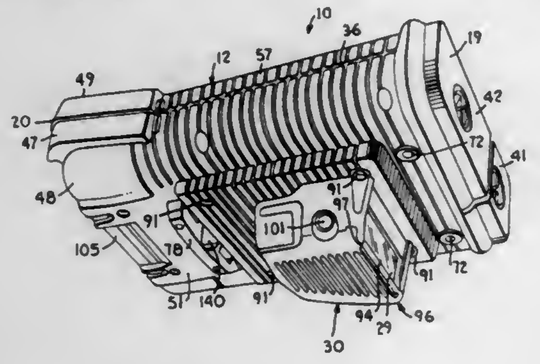
5,710,728
PORTABLE WORK STATION-TYPE DATA COLLECTION SYSTEM

Arvin D. Danielson, Solon; Darald R. Schultz, Cedar Rapids, both of Iowa; Dennis Silva, San Jose, Calif.; Darrell L. Boatwright, Cedar Rapids, Iowa; Rickey G. Austin, Lisbon, Iowa; Daniel E. Alt, Cedar Rapids, Iowa; Steve Darren Friend, Felton, and Paul Beard, Milpitas, both of Calif., assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 389,830, Feb. 16, 1995, which is a continuation-in-part of Ser. No. 307,950, Sep. 16, 1994, abandoned, and Ser. No. 309,003, Sep. 19, 1994, said Ser. No. 389,830is a continuation-in-part of Ser. No. 226,516, Apr. 12, 1994, Pat. No. 5,488,575, and Ser. No. 48,873, Apr. 16, 1993, abandoned, said Ser. No. 307,950is a continuation-in-part of Ser. No. 226,516, and Ser. No. 48,873, Apr. 16, 1993, abandoned, said Ser. No. 309,003is a continuation-in-part of Ser. No. 226,516, and Ser. No. 48,873, which is a continuation-in-part of Ser. No. 23,840, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,667, Jul. 11, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 488,406

Int. Cl.⁶ G06F *1/32*

U.S. Cl. 364—707 **45 Claims**



1. Data terminal apparatus comprising:
(a) power means for operating said apparatus;
(b) a housing including, in the face thereof, a first portion having a display screen and a second portion having a keyboard having a plurality of keys, said housing further including an accessory panel having a handgrip portion, which has a width less than that of said first portion and which has a remote scanner adapted to read indicia disposed on a surface external and separate from said apparatus such that the apparatus does not contact the surface external and separate from said apparatus during scanning thereof;
(c) pen activated digitizing data input structure means, including an underlay disposed adjacent to said display screen; and
(d) circuit means including:
  (1) means for shutting down said apparatus during periods of inactivity, said circuit means including non-volatile memory means and further including means for trapping input-output instructions of said apparatus and for storing said input-output instructions in said non-volatile memory means, and
  (2) means for recognizing, after said shutting down, a first attempted input through any one of said plurality of keys as a command to resume operation instead of recognizing said first attempted input as an input of the function normally executed by the respective one of said plurality of keys.

5,710,729
FILTERING METHOD AND DIGITAL OVER SAMPLER FILTER WITH A FINITE IMPULSE RESPONSE HAVING A SIMPLIFIED CONTROL UNIT

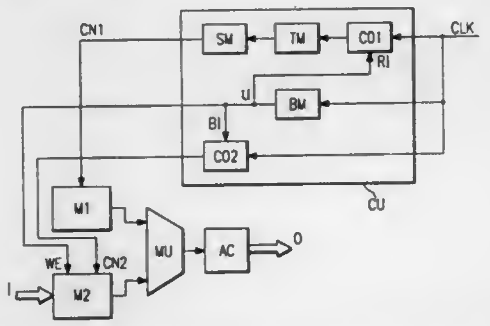
Sandro Delle Feste, Novara; Marco Bianchesi, Sergnano, and Alessandro Cremonesi, S. Angelo Lodigiano, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed May 31, 1995, Ser. No. 451,029

Claims priority, application European Pat. Off., Jun. 30, 1994, 94830322.7

Int. Cl.⁶ G06F *17/10:17/17*

U.S. Cl. 364—724.01 **11 Claims**



1. A digital filter designed to receive at an input a flow of input samples and generate at an output a flow of oversampled output samples, said digital filter comprising:
  a) first memory means designed to memorize a sequence of 2^N filtering coefficients having a data output and a first control input.
  b) second memory means designed to memorize at least 2^M consecutive samples of said input flow, M being less than N, having a data input connected to said input of said filter and having a data output and a second control input,
  c) a multiplier having data inputs connected to the data outputs of said memory means and having a data output,
  d) an accumulator having a data input connected to the data output, of said multiplier and a data output connected to said output of said filter and designed to add the content of itself with the value present at the data input and present at the data output the result of said sum, and
  e) a control unit comprising addressing means connected to said control inputs;

wherein said addressing means comprise a first counter modulus 2^N receiving at input a clock signal generating at output a first word made up of N bits and wherein said filtering coefficients are memorized in said first memory means;

wherein said addressing means comprise additional translation means designed to read said first word and generate a third word made up of N bits of which the N–M least significant bits correspond to the N–M most significant bits of said first word and the M most significant bits correspond to the M least significant bits of said first word and are designed to supply to said first control input said third word.

5,710,730
DIVIDE TO INTEGER

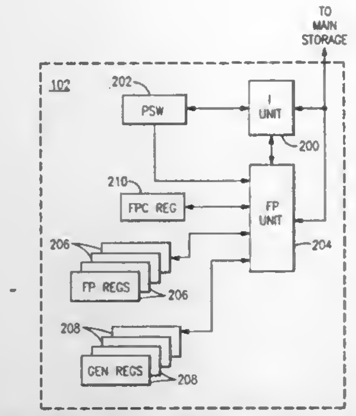
Ronald Morton Smith, Sr., Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,255

Int. Cl.⁶ G06F *7/52:7/38*

U.S. Cl. 364—761 **11 Claims**

1. In a computer system having a floating point processor, a method for computing an integer quotient and a remainder resulting from the division of a floating point dividend by a divisor, said integer quotient representing the integer value nearest an infinitely exact quotient of said dividend divided by said divisor, said dividend having a number of original dividend digits, comprising the steps of:



a) using said floating point processor to compute a first value equal to the quantity of individual digits contained in a quotient represented by said dividend divided by said divisor;
b) using said first value and said floating point processor to compute a second value equal to the quantity of individual digits in a partial quotient, said second value having a maximum value equal to a predetermined partial quotient fraction number of digits;
c) using said floating point processor to divide the dividend by the divisor to provide said partial quotient having a quantity of digits equal to said second value, and to provide a partial remainder;
d) storing said partial quotient in a memory;
e) assigning a new value to the dividend, said new value being equivalent to said partial remainder; and
f) repeating steps a through e until all of said original dividend digits have been used to form partial quotients, thereby providing the floating point quotient and the floating point remainder.

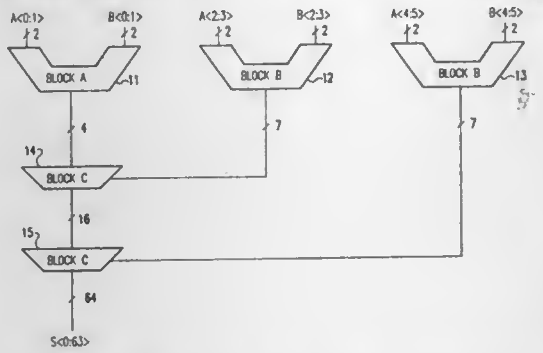
5,710,731
COMBINED ADDER AND DECODER DIGITAL CIRCUIT

Michael Kevin Ciraula, Round Rock; Sang Hoo Dhong, and Joel Abraham Silberman, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1996, Ser. No. 646,194

Int. Cl.⁶ G06F *7/50*

U.S. Cl. 364—786.01 **4 Claims**



1. A combined adder/decoder circuit which combines the functions of addition and decoding, comprising:
  a first decoder logic circuit for decoding a group of N binary bits of a first operand to a first one-out-of-2N output;
  a second decoder logic circuit for decoding a group of N binary bits of a second operand to a second one-out-of-2N output; and
  a shifter logic circuit for receiving said first one-out-of-2N output and shifting an active bit position of said first one-out-of-2N output left by a number of positions according to said second one-out-of-2N output thereby generating a decoded and summed one-out-of-2N output of said first and second operands, wherein said first and second operands are divided into several subgroups of a few adjacent bits and said first and second decoder logic circuits and said shifter logic circuit are divided into a tree-based decoder in which subgroups are decoded and added in a merged shifting and decoding operation, subgroups are divided from most significant bits to least significant bits and the shifter logic circuit of each subgroup, except for the most significant bits subgroup, is extended so that circular shifting does not occur in the event of a carry within in the subgroup, decoded and added subgroups are combined to generate said decoded and summed output of said first and second operands.

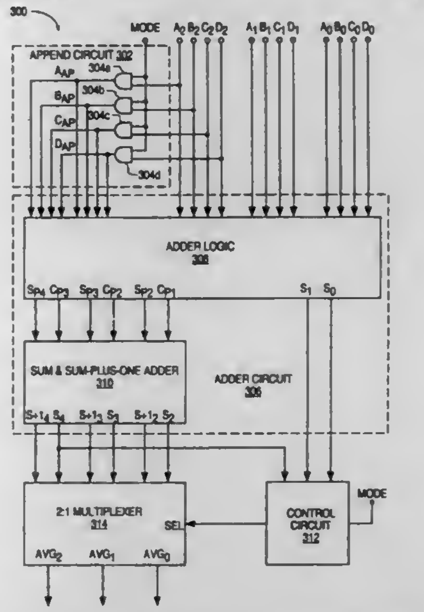
5,710,732
CALCULATING THE AVERAGE OF FOUR INTEGER NUMBERS ROUNDED AWAY FROM ZERO IN A SINGLE INSTRUCTION CYCLE

Roney S. Wong, Sunnyvale, Calif., assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Apr. 22, 1996, Ser. No. 635,999

Int. Cl.⁶ E06F *7/38*

U.S. Cl. 364—734 **20 Claims**



1. A method of operating a circuit to obtain an average of four unsigned operands, such that the average is an integer rounded away from zero, comprising:
  appending two zero's to a left end of each of the operands to provide extended operands;
  summing the extended operands to provide an intermediate result;
  removing a lowest significant bit and a second lowest significant bit from the intermediate result to provide a shortened intermediate result;
  incrementing the shortened intermediate result to provide the average when the removed second lowest significant bit is a one; and
  providing the shortened intermediate result as the average when the removed second lowest significant bit is a zero.

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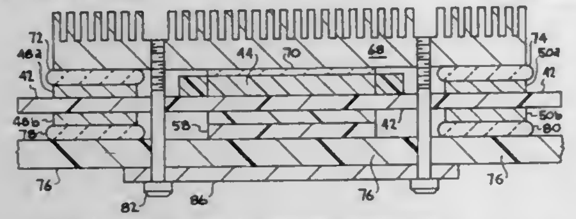
5,710,733
PROCESSOR-INCLUSIVE MEMORY MODULE

David P. Chengson, Aptos; William L. Schmidt, Los Gatos; Unmesh Agarwala, San Jose; Alan D. Foster, Los Altos; Edward C. Priest, San Jose; John C. Manton, Mountain View, and Ali Mira, San Jose, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Jan. 22, 1996, Ser. No. 589,532

Int. Cl.^{6} H03H *11/00;* **H05K** *7/02*

U.S. Cl. 365—52 **22 Claims**



1. A processor and memory module comprising:
a substrate having first and second opposing surfaces; said substrate having an electrically conductive path formed therein;
a first memory component mounted on said first surface of said substrate, said first memory component coupled to said electrically conductive path;
a second memory component mounted on said second surface of said substrate, said second memory component coupled to said electrically conductive path;
a processor mounted on said first surface of said substrate, said processor coupled to said electrically conductive path, said processor having a plurality of contact pads disposed thereon; and
electrical connectors disposed on said second surface of said substrate, said electrical connectors electrically coupleable to respective said contact pads of said processor, said electrical connectors removably attachable to a mother board such that said substrate, with said first and second memory components and said processor mounted thereto, is removably attachable to said mother board.

5,710,734
SEMICONDUCTOR MEMORY DEVICE AND DATA WRITING METHOD THEREOF

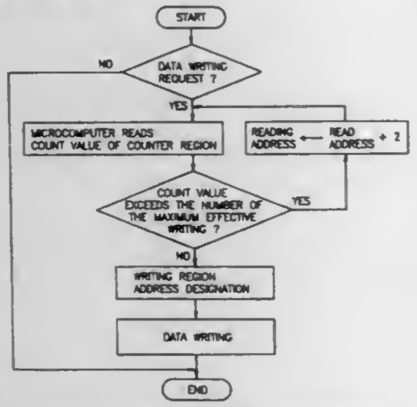
Jun Bae Park, Kyungsangnam, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Jan. 22, 1996, Ser. No. 589,536

Claims priority, application Rep. of Korea, Jan. 24, 1995, 1172/1995

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—185.09 **8 Claims**


START
DATA WRITING REQUEST ?
NO
YES
MICROCOMPUTER READS COUNT VALUE OF COUNTER REGION
READING ADDRESS ← READ ADDRESS + 2
COUNT VALUE EXCEEDS THE NUMBER OF THE MAXIMUM EFFECTIVE WRITING ?
YES
NO
WRITING REGION ADDRESS DESIGNATION
DATA WRITING
END

1. A semiconductor memory device, comprising:
a memory location having a pair of regions;
the pair of regions comprising a data region at a first address for storing data which is written thereinto and a counter region corresponding to the data region, the counter region being adjoined to the data region and having a second address which immediately follows the address of the data region, said counter region serving for storing therein a count value indicating the number of times that data has been written in the data region.

5,710,735
EEPROM AND METHOD FOR FABRICATING THE SAME

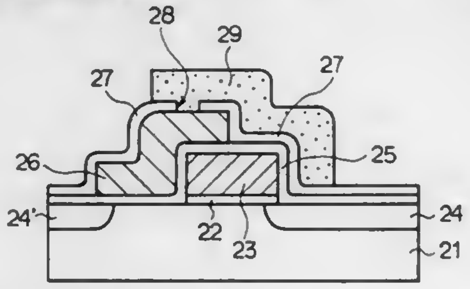
Ki Soo Shin, and Soo Han Chol, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Division of Ser. No. 503,246, Jul. 17, 1995, Pat. No. 5,614,429. This application Dec. 12, 1996, Ser. No. 764,245

Claims priority, application Rep. of Korea, Jul. 18, 1994, 94-17297

Int. Cl.^{6} G11C *16/02*

U.S. Cl. 365—185.26 **4 Claims**



1. An EEPROM, comprising:
a gate oxide film and a floating gate stacked on a semiconductor substrate;
a first interlayer insulating film formed on all exposed surfaces of the floating gate and the semiconductor substrate;
a selecting gate overlapping with the first interlayer insulating film from an upper surface of the floating gate to a portion of the semiconductor substrate;
a drain electrode and a source electrode formed in the semiconductor substrate which overlap with a portion of the floating gate and a portion of the selecting gate, respectively;
a second interlayer insulating film formed on all exposed surfaces of the first interlayer insulating film and the selecting gate;
a contact hole formed in the second interlayer insulating film, exposing the selecting gate; and
a control gate which is in touch with the selecting gate through the contact hole and shields a surface portion of the floating gate which is not overlapped by the selecting gate.

5,710,736
SEMICONDUCTOR STORAGE DEVICE

Shinichi Masuda, and Takashi Hashimoto, both of Tokyo, Japan, assignors to Mitsubishi Electric Engineering Co., Ltd., and Mitsubishi Denki Kabushiki Kaisha, both of Chiyoda-ku, Japan

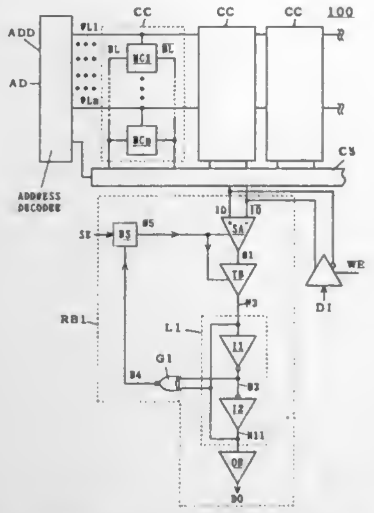
Filed Nov. 26, 1996, Ser. No. 756,822

Claims priority, application Japan, Jul. 17, 1996, 8-187613

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—139.07 **10 Claims**

1. A semiconductor storage device comprising data reading means for reading data held in a memory cell,
wherein said data reading means comprises,
sense amplifying means responsive to a read control signal periodically provided for amplifying and outputting said data,
data holding means receiving an output of said sense amplifying means for temporarily holding said data and then outputting said data to an external output terminal,
data comparing means for comparing held data outputted from said sense amplifying means in a first cycle of said read control signal and held in said data holding means and before-held data outputted from said sense amplifying means in a second cycle of said read control signal and not held in said data holding means yet to output its comparison result, and
signal changing means connected to said data comparing means for changing said read control signal according to said comparison result,
wherein said read control signal includes, in its one cycle, an activating signal for activating said sense amplifying means so that said data is amplified and outputted, and a deactivating signal for deactivating said sense amplifying means, and
said signal changing means forces said activating signal to change to said deactivating signal when said comparison result exhibits a predetermined result.



5,710,737
SEMICONDUCTOR MEMORY DEVICE

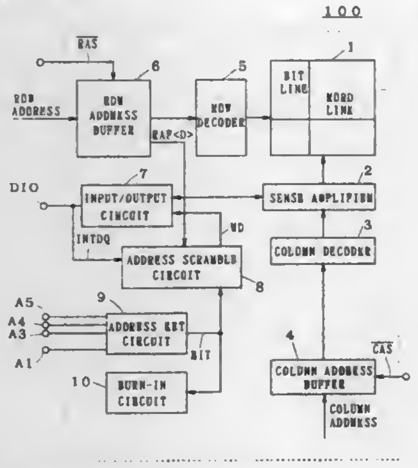
Yulchiro Komiya; Kiyohiro Furutani; Tsukasa Ooishi, and Kei Hamade, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1996, Ser. No. 652,035

Claims priority, application Japan, Nov. 28, 1995, 7-309608

Int. Cl.^{6} G11C *7/00;29/00*

U.S. Cl. 365—201 **10 Claims**



1. A semiconductor memory device, comprising:
input means for supplying a first bit line with a first signal of a first potential which is the equivalent of a potential of input data and supplying a second bit line with a second signal of a second potential which is the reverse of said potential of said input data;
a first memory cell provided on an intersection of said first bit line and a word line of a first type which is a word line assigned either odd number or even number; and
a second memory cell provided on an intersection of said second bit line and a word line of a second type opposite to said first type, wherein
said first signal is written into said first memory cell when said first bit line and said word line of said first type are selected and said second signal is written into said second memory cell when said second bit line and said word line of said second type are selected,
said semiconductor memory device further comprising:
burn-in mode signal output means for outputting a burn-in mode signal which is brought into an active state when a burn-in test is performed; and
input data inverting means provided in an ante-stage of said input means to receive said burn-in mode signal, for automatically inverting said input data when said word line of said second type is selected while said burn-in mode signal is active.

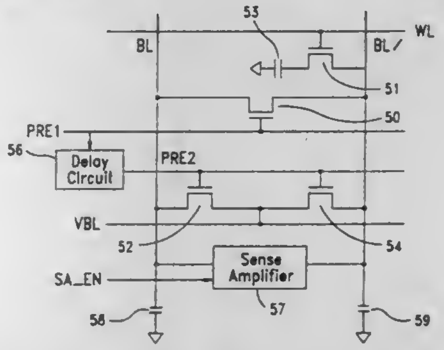
5,710,738
LOW POWER DYNAMIC RANDOM ACCESS MEMORY

Jy-Der David Tai, Hsinchu, Taiwan, assignor to Powerchip Semiconductor Corp., Hsinchu, Taiwan

Filed Dec. 17, 1996, Ser. No. 768,983

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—203 **13 Claims**



1. A low power dynamic random access memory having a plurality of memory cells therein, said random access memory comprising:
equalization means connected to a pair of bitlines for allowing electric charge on the bitline having higher voltage to flow to the bitline having lower voltage, said equalization means being activated by a first precharge control signal;
delay means for generating a second precharge control signal, said second precharge control signal being delayed compared to the first precharge control signal;
precharge control means connected to the pair of bitlines and to a constant voltage source for setting the voltages on the bitlines to the voltage of the constant voltage source in response to the second precharge control signal; and
sense amplifying means connected to the pair of bitlines for amplifying the voltages of the bitlines so that the voltage of one bitline is complementary to the voltage of the other bitline.

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5,710,739

READING CIRCUIT FOR MEMORY CELLS

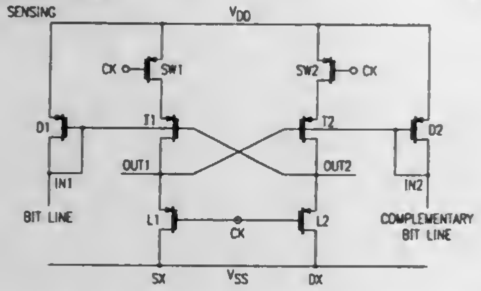
Cristiano Calligaro, Torre D'Isola; Roberto Gastaldi, Agrate Brianze; Paolo Rolandi, Volpedo, and Guido Torelli, S. Alessio, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Jun. 6, 1995, Ser. No. 476,547

Claims priority, application European Pat. Off., Aug. 31, 1994, 94830415

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—205 **6 Claims**



1. A memory read circuit for developing an output signal from a complementary pair of signal inputs, comprising:

two legs each connected between a positive supply voltage and a ground voltage;

each said leg consisting of a series connection of a clocked PMOS switch, an active element, and a switched PMOS load element; both said PMOS switches, and both said PMOS load elements, having gates thereof connected to a common clock signal;

said legs having said respective active elements thereof cross-coupled in a latch configuration to form a voltage amplifier; and

first and second input circuit elements, each connected to provide a load to one of the pair of complementary signal inputs, and to provide a corresponding voltage to a gate terminal of a respective one of said active elements.

5,710,740

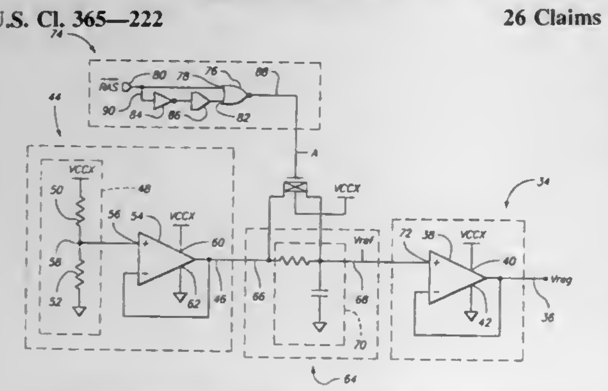
CIRCUIT INCLUDING DRAM AND VOLTAGE REGULATOR, AND METHOD OF INCREASING SPEED OF OPERATION OF A DRAM

Troy A. Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 495,338, Jun. 27, 1995, Pat. No. 5,596,534. This application Sep. 23, 1996, Ser. No. 717,836

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—222 **26 Claims**



1. A circuit comprising:

a reference voltage generator having an output configured to provide a DC reference voltage;.

a dynamic random access memory having a memory cell which is selectively refreshed in response to a signal;

a voltage regulator having an input, and having an output which supplies an operating voltage to the dynamic random access memory; and

a selectively engageable filter having an output coupled to the input of the voltage regulator, and having an input coupled to the output of the reference voltage generator, the filter being engaged to filter the reference voltage during refreshing of the memory cell.

5,710,741

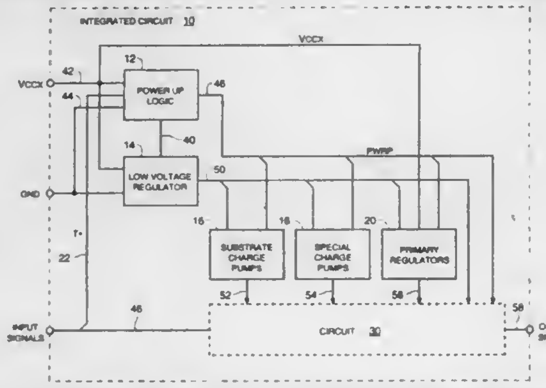
POWER UP INTIALIZATION CIRCUIT RESPONDING TO AN INPUT SIGNAL

Loren L. McLaury, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 209,658, Mar. 11, 1994, abandoned. This application Jun. 9, 1995, Ser. No. 489,176

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—226 **19 Claims**



1. An integrated circuit device responsive to a power signal and a control signal, the integrated circuit device comprising:

a. an initialization circuit, powered by the power signal, for asserting an initialization signal in response to a transition of the power signal, and for deasserting the initialization signal in responses to the control signal; and

b. a memory circuit, powered by the power signal and initialized in response to assertion of the initialization signal, said memory circuit responsive to the control signal after deassertion of the initialization signal.

5,710,742

HIGH DENSITY TWO PORT SRAM CELL FOR LOW VOLTAGE CMOS APPLICATIONS

Eric Lee Carter; Roger Paul Gregor; Moon Ho Lee, all of Endicott, N.Y., and Michael Richard Ouellette, Westford, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1995, Ser. No. 440,285

Int. Cl.^{6} G11C *11/00*

U.S. Cl. 365—230.05 **18 Claims**

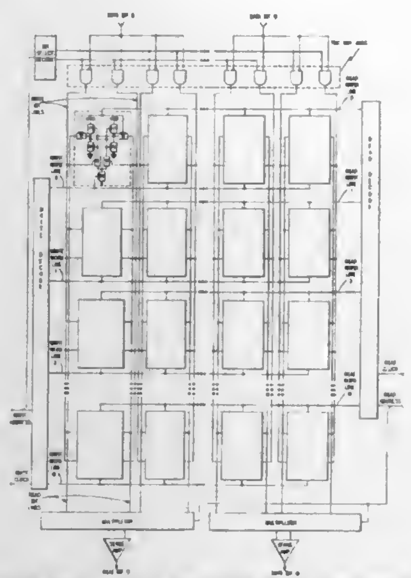
1. An apparatus, comprising:

a plurality of memory cells each including latch means for storing a data bit;

receiving means coupled to each of the memory cells for transmitting data bits to be stored in selected ones of the memory cells, the receiving means comprising write bit lines and a write word line; and

the memory cells each further including:

input means having only three transistors for transmitting the data bit from the receiving means to the latch means, wherein only one of said only three transistors is directly connected both to the write word line and to ground.



5,710,743

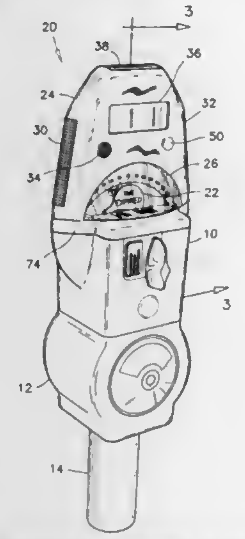
ELECTRONIC MODULE FOR CONVENTIONAL PARKING METER

Mark R. Dee, New Maryland, and James J. Richard, Fredericton, both of Canada, assignors to MeterVision. Com Inc., Mt. Juliet, Tenn.

Filed Jun. 11, 1996, Ser. No. 661,470

Int. Cl.^{6} G04F *1/00;* G07F *17/24*

U.S. Cl. 368—90 **50 Claims**



1. An electronic module for enhancing an operation of a conventional parking meter having at least one of a time expiry indicator and a violative condition indicator; said electronic module comprising:

a shell defining a hollow conformation and having mounting means attachable to said conventional parking meter;

a first sensor affixed to said shell for detecting from a distant point, said at least one of said indicators when said shell is mounted on said conventional parking meter, and when said at least one of said indicators is in an indicating mode;

a second sensor affixed to said shell for detecting from a distant point a vehicle parked in a parking space at proximity of said conventional parking meter when said shell is mounted on said conventional parking meter and;

an electronic circuitry mounted inside said shell and having a power source for an operation thereof, for receiving a first signal from said first sensor and a second signal from said second sensor, for processing said first and second signals and for transmitting a coded message to a remote receiver, said coded message comprising at least an identification relative to a location of said conventional parking meter;

whereby when said electronic module is mounted on said conventional parking meter and said coded message is transmitted to said remote receiver, a law enforcement officer in communication with said remote receiver may be effectively dispatched to said location of said conventional parking meter.

5,710,744

TIMING GENERATOR FOR IC TESTERS

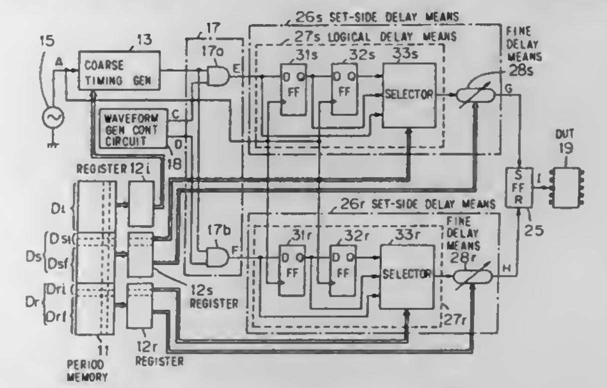
Masakatsu Suda, Ageo, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed May 23, 1996, Ser. No. 652,344

Claims priority, application Japan, May 26, 1995, 7-127883

Int. Cl.^{6} G04F *8/00;* H03K *5/135;* G06F *11/00*

U.S. Cl. 368—120 **7 Claims**



1. A timing generator for IC testers which is provided for each pin of an IC device under test, comprising:

coarse timing generating means for generating pulses of a period which is an integral multiple of a fundamental period corresponding to an integral part of timing set data expressed in terms of said fundamental period;

distributing means for distributing said pulses to set- and reset-sides in accordance with the output from a waveform generation control circuit;

set-side delay means for delaying said pulse distributed to said set-side by a time interval corresponding to data obtained by adding a fractional part of said timing set data and data which is generated at a post-stage of said timing generator for compensating for set-side propagation delay variations; and

reset-side delay means for delaying said pulse distributed to said reset-side by a time interval corresponding to data obtained by adding said fractional part of said timing set data and data which is generated at said post-stage of said timing generator for compensating for reset-side propagation delay variations.

5,710,745

ASSEMBLY HAVING FLUX-DIRECTING RETURN YOKE FOR MAGNETO-OPTICAL DRIVE

Kurt W. Getreuer, Colorado Springs, Colo., assignor to Discovision Associates, Irvine, Calif.

Filed Apr. 7, 1995, Ser. No. 418,697

Int. Cl.^{6} G11B *11/00;5/127;* H01F *27/24*

U.S. Cl. 369—13 **35 Claims**

1. A bias coil assembly for use in a magnetomotive generator, said assembly comprising:

a return yoke having a body portion and a tip having a predetermined thickness and extending beyond said body portion substantially perpendicular thereto;

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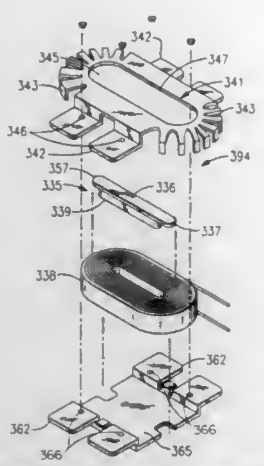


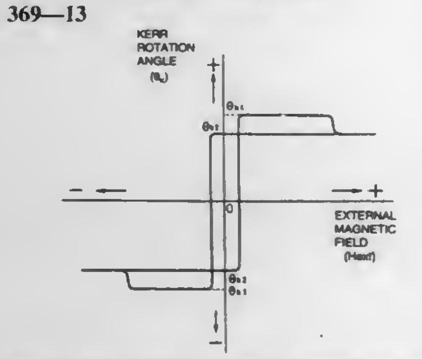
- a winding for receiving electric current, said winding being wound around said body portion of said return yoke so that said winding is contained below said tip;
- a first plate disposed on said winding, said first plate having at least one heat-radiating finger extending substantially around said winding to thereby maintain a minimum height of the bias coil assembly;
- a second plate disposed on said winding in a magnetic circuit with said first plate and said return yoke so that when said winding is connected to a source of power, said tip receives lines of magnetic flux that are channeled through said body portion while said at least one finger radiates thermal energy thereby produced.

5,710,746
MAGNETO-OPTICAL RECORDING MEDIUM AND READING METHOD WITH MAGNETIC LAYERS OF DIFFERENT COERCIVITY

Kenji Uchiyama; Hajime Utsunomiya; Isamu Kuribayashi; Masanori Kosuda, and Hiroyasu Inoue, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 18, 1995, Ser. No. 574,138
Claims priority, application Japan, Dec. 22, 1994, 6-336564
Int. Cl.⁶ G11B *11/00*

U.S. Cl. 369—13 **17 Claims**



1. A method for reading recorded magnetization information from a magneto-optical recording medium comprising at least a first magnetic layer and a second magnetic layer having different coercivities,

said medium including a number of sites at which magnetization reversal occurs along a polar Kerr hysteresis curve in a temperature range from room temperature to the temperature of reading light irradiation and said first and second magnetic layers meeting the following relationship:

$$|\theta_{k1}|>|\theta_{k2}|$$

wherein θ_{k1} is an apparent Kerr rotation angle when the first magnetic layer has not undergone magnetization reversal and the second magnetic layer has undergone magnetization reversal and θ_{k2} is an apparent Kerr rotation angle when both the first and second magnetic layers have undergone magnetization reversal,

said method comprising the steps of:

applying an external magnetic field to the magneto-optical recording medium for at least one of a period before and a period during reading, and

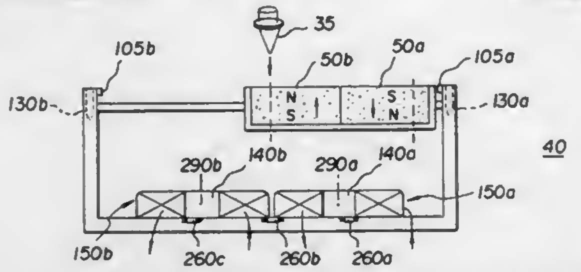
irradiating reading light onto the first magnetic layer for reading.

5,710,747
DUAL COIL, TRANSLATIONAL BIAS-FIELD DEVICE FOR A MAGNETO-OPTICAL SYSTEM

Edward P. Furlani, Lancaster; Bijan Barzideh, Rush; Svetlana Reznik, and Christopher C. Williams, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 12, 1996, Ser. No. 766,195
Int. Cl.⁶ G11B *11/00*

U.S. Cl. 369—13 **9 Claims**



1. A translational, bias-field device for a magneto-optical system having a magneto-optical recording element moving through a first magnetic field created by the bias-field device so that information is selectively recorded on or erased from the recording element, the device comprising:

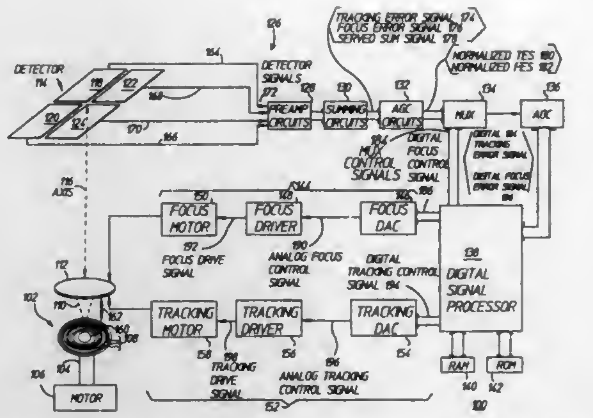
(a) a housing;
(b) a first rail for enabling translational movement attached to said housing;
(c) a permanent magnet structure polarized through its cross-section and having a first set of north and south poles on a first surface positioned adjacent the magneto-optic recording element for providing the first magnetic field to the recording element, and a second set of north and south poles on a second surface, and said permanent magnet structure attached to said first rail which enables translational movement of said magnet structure;
(d) a first coil positioned adjacent to said magnet structure which, when energized, imparts a second magnetic field to said permanent magnet structure for imparting motion to said permanent magnet structure; and
(e) a second coil positioned adjacent to said magnet which, when energized, imparts a third magnetic field to said permanent magnet structure for also imparting motion to said permanent magnet structure.

5,710,748
OFF TRACK DETECTION SYSTEM AND METHOD FOR RUGGEDIZED OPTICAL DISK DRIVE

Gregory V. Hofer, Boise, Id., assignor to Hewlett-Packard Company, Palo, Calif.

Division of Ser. No. 222,972, Apr. 5, 1994. This application Jul. 19, 1995, Ser. No. 504,004
Int. Cl.⁶ G11B *7/095*

U.S. Cl. 369—44.35 **7 Claims**



1. In an optical detector positioned to detect a laser beam reflected from the optical disk and configured to generate a plurality of detector signals related to the radial distribution of energy of the laser beam after reflection, a tracking servo system configured to drive and position an objective lens about a tracking axis so as to center said laser beam on a desired servo track, a focus servo system configured to drive and position said objective lens about a focus axis to attain a zero focus error point wherein said laser beam is optimally focused onto the optical disk at said zero focus error point and summing circuitry for generating a tracking error signal and a focus error signal, a method for controlling tracking of the laser beam relative to a track in the optical disk having servo tracks at which data is written to and read from, comprising the steps of:

(1) normalizing said tracking error signal and said focus error signal to obtain a normalized tracking error signal and a normalized focus error signal to compensate for variations in media reflectivity;
(2) converting said normalized tracking error signal and said normalized focus error signal into a digital tracking error signal and a digital focus error signal;
(3) summing said digital tracking error signal with a tracking offset correction value to generate a corrected tracking error signal wherein said tracking offset correction value compensates for electrical and mechanical characteristics of said tracking servo system;
(4) summing said digital focus error signal with a focus offset correction value to obtain a corrected focus error signal wherein said focus offset correction value compensates for electrical and mechanical characteristics of said focus servo system; and
(5) compensating for loss in the gain of said tracking error signal as a result of said objective lens traveling out of focus, thereby causing a loss of image contrast, and for head optics astigmatism by using said normalized focus error signal and a best read offset wherein said best read offset represents the difference between an optimum focal point for generating a maximum tracking error signal and an optimum focal point for generating a maximum read signal.

5,710,749
METHOD AND APPARATUS FOR DETERMINING AN OPTICAL DISC TYPE

Yoshiyuki Tsukai, and Masanori Suzuki, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 613,206
Claims priority, application Japan, Mar. 10, 1995, 7-051453
Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—58 **10 Claims**

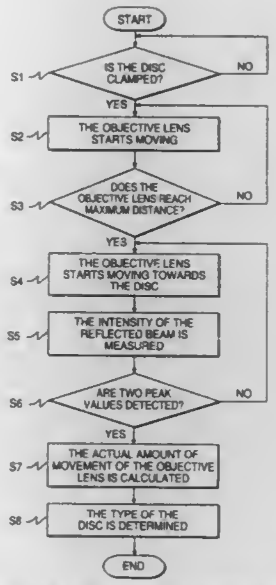
1. A method for determining an optical disc type, comprising the steps of:

directing a light beam at an optical disc;

moving a focal point of the light beam in a focus direction with respect to the optical disc;

detecting an intensity of a reflection of the light beam from the optical disc during the step of moving the focal point of the light beam;

detecting a time interval between occurrences of a plurality of peaks of the detected intensity of the reflected light beam; and


START
S1
IS THE DISC CLAMPED?
NO
YES
S2
THE OBJECTIVE LENS STARTS MOVING
S3
DOES THE OBJECTIVE LENS REACH MAXIMUM DISTANCE?
NO
YES
S4
THE OBJECTIVE LENS STARTS MOVING TOWARDS THE DISC
S5
THE INTENSITY OF THE REFLECTED BEAM IS MEASURED
S6
ARE TWO PEAK VALUES DETECTED?
NO
YES
S7
THE ACTUAL AMOUNT OF MOVEMENT OF THE OBJECTIVE LENS IS CALCULATED
S8
THE TYPE OF THE DISC IS DETERMINED
END

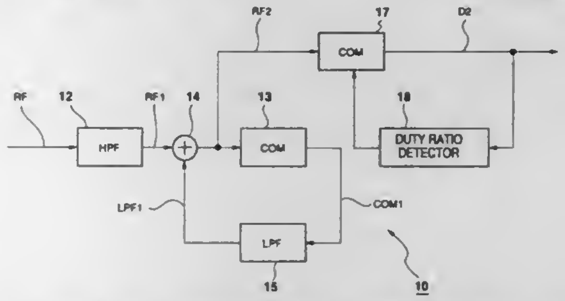
determining the optical disc type according to the detected time interval.

5,710,750
OPTICAL DISC DEVICE

Kaoru Tachibana, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 18, 1996, Ser. No. 717,199
Claims priority, application Japan, Sep. 22, 1995, 7-267948
Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—59 **2 Claims**



1. An optical device for playing back data recorded on a disc-shaped recording medium on the basic of a played-back signal obtained by projecting a light beam onto said disc-shaped recording medium and receiving said light beam returned from said disc-shaped recording medium, comprising:

- a high-pass filter for suppressing a low frequency component of said played-back signal and outputting the resulting signal
- an adder for adding an output signal of said high-pass filter and a correction signal and outputting the resulting signal;
- a first comparator for binarizing an output signal of said adder and outputting the resulting signal;
- a low-pass filter, having a frequency characteristic complementary to the frequency characteristic of said high-pass filter, for suppressing a high frequency component of an output signal of said first collator to generate said correction signal;
- a second comparator for binarizing said output signal of said adder taking a slice level as a reference and outputting the resulting signal as played-back data; and
- a controlling circuit for varying one of said slice level and a direct current level of said output signal of said adder in such a manner that a duty ratio of said played-back data becomes a prescribed value.

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5,710,751

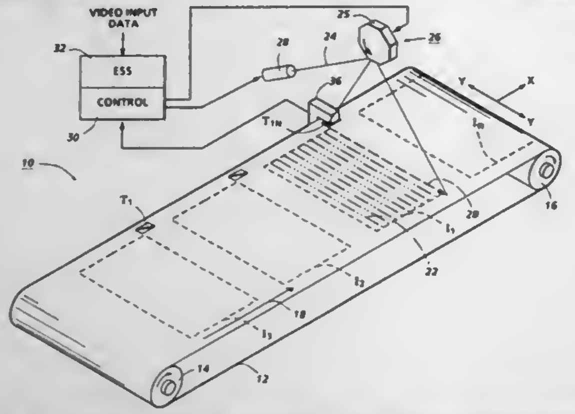
POLYGON FACET ERROR EFFECTS ELIMINATION IN MULTI-PASS COLOR SYSTEMS

Martin E. Hoover; Orlando J. Lacayo, both of Rochester, and Roy W. Rivers, Geneseo, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1995, Ser. No. 510,998

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—97 **9 Claims**



1. An imaging system for forming multiple superimposed image exposure frames on a photoconductive member moving in a process direction including:

a raster output scanner forming a plurality of scanlines in a transverse direction across the width of said member by reflecting modulated beams from a plurality of facets of a rotating polygon,

means for detecting the beginning of a scanline and providing a start of scan (SOS) signal representing the detection,

means to detect a first SOS signal for a first scanline of a first image exposure frame on the photoconductive member,

means to relate the SOS signal for a first scanline of a first image exposure frame to a given facet of the rotating polygon, and

means to detect a second SOS signal for a first scanline of a second image exposure frame superimposed on the first image exposure frame on the photoconductive member, the second SOS signal being related to said given facet of the rotating polygon in order to minimize color registration error.

5,710,752

APPARATUS USING ONE OPTICAL SENSOR TO RECOVER AUDIO INFORMATION FROM ANALOG AND DIGITAL SOUNDTRACK CARRIED ON MOTION PICTURE FILM

Charles Gordon Seagrave, San Rafael; Martin John Richards, Redwood City; Douglas Evan Mandell, San Francisco, and Mark Leighton Atherton, San Bruno, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation of Ser. No. 937,887, Sep. 30, 1992, Pat. No. 5,544,140, which is a continuation-in-part of Ser. No. 710,174, Jun. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 650,571, Feb. 4, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,230

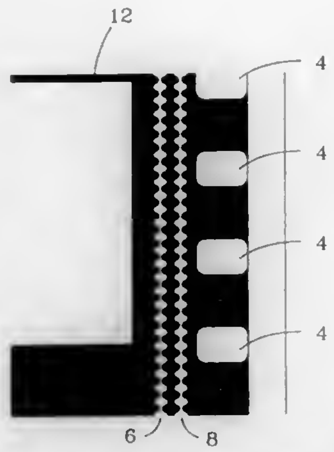
Int. Cl.^{6} G11B *3/74*

U.S. Cl. 369—97 **13 Claims**

1. An apparatus for recovering audio information carried by motion picture film in an analog soundtrack and in a digital soundtrack, said apparatus comprising

sample means for generating samples by sampling, output of an optical sensor sensing across widths of said analog soundtrack and said digital soundtrack,

image means for forming a two-dimensional image representation in response to said samples generated along lengths or said soundtracks, and



recovery means for recovering said audio information in response to said two-dimensional image representation.

5,710,753

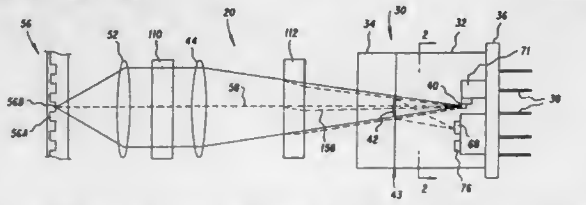
MULTI-ELEMENT GRATING BEAM SPLITTER USING DOUBLE REFRACTION TO REDUCE OPTICAL FEEDBACK AND ASSOCIATED LIGHT SOURCE NOISE

John C. Brazas, Jr., Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1996, Ser. No. 673,413

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—109 **3 Claims**



1. In an optical system including a multi-element grating beam splitter and an optical source with an effective aperture for generating a radiation beam to be applied to a data track of an optical storage medium, the improvement comprising:

a) optics disposed between the grating beam splitter and the data track including a waveplate and a crystalline plate disposed between the grating beam splitter and the waveplate and defining an optical axis along which light is projected to the data track for displacing the optical axis of the return beam to cause it to be substantially outside the effective aperture of the optical source to reduce optical feedback into the optical source; and

b) said grating beam splitter being adapted to receive the return beam and including:

i) a first grating element;

ii) a second grating element, said first and said second grating elements arranged on opposite sides of a plane which is substantially parallel to a reference plane defined by an optical axis of said radiation beam and a tangent to said data track, such that said first and said second grating elements separate a first and a second portion, respectively, of a return beam resulting from application of said radiation beam to said data track, along at least one plane substantially parallel to said data track;

iii) a third grating element, arranged adjacent to and on one side of said first and said second grating elements, to separate a third portion of said return beam along a plane substantially perpendicular to said reference plane; and

iv) a fourth grating element, arranged adjacent to and on an opposite side of said first and said second grating elements, to separate a fourth portion of said return beam along another plane substantially perpendicular to said reference plane.

5,710,754

MULTIPLEX TRANSMISSION SYSTEM WHEREIN ANALOG SIGNAL IS TRANSFORMED TO BASE BAND RANDOM-TRANSFORMED AND SUPERIMPOSED ON DISPERSED SIGNAL POINTS IN VECTOR SIGNAL SPACE

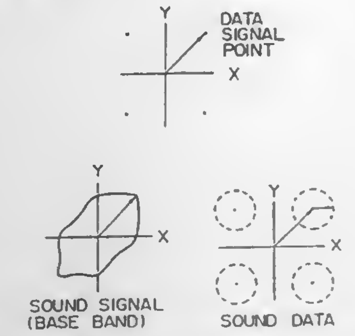
Takashi Kaku; Ryoji Okita, and Noboru Kawada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 240,093, May 9, 1994, abandoned, which is a continuation of Ser. No. 4,762, Jan. 14, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,742

Claims priority, application Japan, Jan. 14, 1992, 4-004860; Sep. 30, 1992, 4-260925

Int. Cl.^{6} H04J *11/00*

U.S. Cl. 370—207 **80 Claims**



1. A transmission system comprising a transmitter; a receiver; and an analog transmission line interconnecting said transmitter and said receiver;

said transmitter comprising:

a data signal point generation means for receiving a serial digital data signal and generating a first vector base band signal corresponding to a data point signal in a vector signal space, based on a block series of samples of the received serial digital data signal, wherein the generated data signal point is one of a plurality of predetermined data signal points in the vector signal space;

a base band signal transformation means for receiving an analog signal in the form of an analog passband signal and transforming the analog passband signal into a second vector base band signal,

a vector signal superimposing means for superimposing a plurality of vector components of the second vector base band signal on a plurality of vector components of the first vector base band signal, component by component, to generate a superimposed vector base band signal; and

a modulation means for modulating the superimposed vector base band signal to generate an analog modulated signal to be transmitted through said analog transmission line;

said receiver comprising:

a demodulator means for receiving the analog modulated signal transmitted through the analog transmission line and demodulating the analog modulated signal to regenerate the superimposed vector base band signal;

a decision means for receiving the regenerated superimposed vector base band signal and determining to which one of the plurality of predetermined data signal points in the vector signal space the regenerated superimposed vector base band signal corresponds, to regenerate the first vector base band signal;

a vector signal subtracter means for receiving the regenerated superimposed vector base band signal and the regenerated first vector base band signal and subtracting a plurality of vector components of the first vector base band signal from a plurality of vector components of the superimposed vector base band signal, component by component, to regenerate the respective vector components of the second base band signal;

a code transformation means for receiving the first vector base band signal, and transforming the first vector base band signal to regenerate the serial digital data signal; and

a passband transformation means for receiving the regenerated second base band signal, and transforming the regenerated second base band signal to regenerate the analog signal in the form of the passband signal.

5,710,755

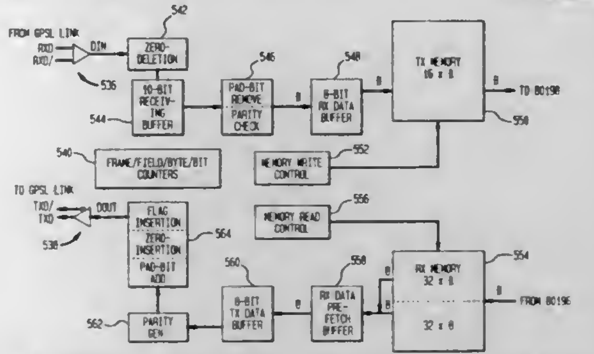
COMMUNICATION SYSTEM FOR CONTROL APPLICATIONS

Ming C. Chen, Shelton, Conn., assignor to Pitney Bowes, Stamford, Conn.

Filed Nov. 15, 1993, Ser. No. 152,614

Int. Cl.^{6} H04L *12/40;* H04G *9/02*

U.S. Cl. 370—24 **4 Claims**



1. An improved communication system for digital control applications, comprising:

a master node and a plurality of slave nodes;

said master node comprising:

first means for formatting and transmitting a flag signal and other data; and

second means for serial-to-parallel conversion and storage of data;

said plurality of slave nodes comprising:

third means for formatting and transmitting data; and

fourth means for serial-to-parallel conversion and latching of data received from the master node;

wherein said master node and said plurality of slave nodes are connected by transmit and receive wires for communication of data formatted into transmit frames and receive frames, said transmit frames and said receive frames being respectively carried by separate cables in full-duplex protocol, the transmit and receive frames being synchronized with each other; and each said frame comprising a flag signal for synchronization followed by a determined number of channels, each said channel having a determined number of bytes corresponding thereto, and each of said plurality of slave nodes having its own time slot on each transmit and receive frame, whereby transfers to and from all of said plurality of slave nodes are completed in each said frame, wherein said master node is a motion controller that generates motion profiles for motors and said plurality of slave nodes are motor drivers coupled to said motors.

5,710,756

BURST-ERROR RESISTANT ATM MICROWAVE LINK AND NETWORK

Eliezer Pasternak, Palo Alto, and Gideon Ben-Efraim, Cupertino, both of Calif., assignors to Netro Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 388,110, Feb. 13, 1995, Pat. No. 5,648,969. This application Oct. 3, 1995, Ser. No. 538,327

Int. Cl.^{6} G06F *11/10;* H04L *12/56*

U.S. Cl. 370—216 **5 Claims**

1. A digital radio link including:

an access unit for transferring data packets of variable or fixed size to and from a plurality of line interfaces;

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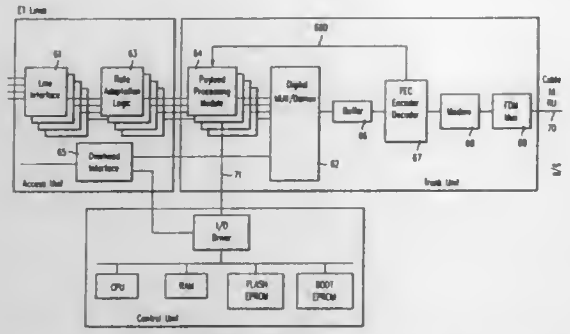


- a transfer circuit for receiving data from the access unit including a forward error correction encoder circuit for forward error correction encoding;
- a reception circuit for receiving data packets from the transmission circuit, said reception circuit including a forward error correction decoder for indication of an uncorrectable block; and
- a payload processing module for receiving bits from said forward error correction decoder and modifying some of said bits to reduce the chance of data packet misinsertion.

5,710,757

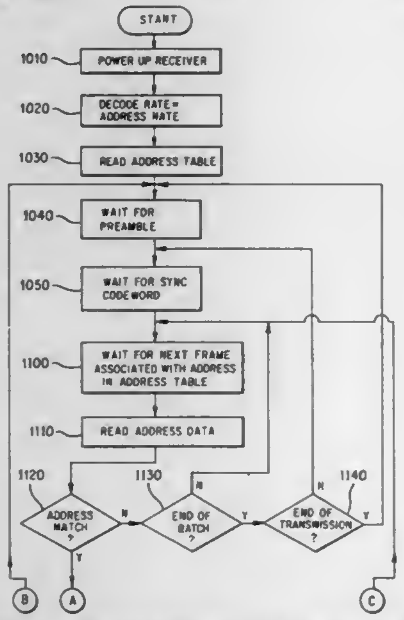
ELECTRONIC DEVICE FOR PROCESSING MULTIPLE RATE WIRELESS INFORMATION

Gregory J. May, Corvallis, Oreg., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Mar. 27, 1995, Ser. No. 411,365

Int. Cl.^{6} H04J *3/22*

U.S. Cl. 370—232 **14 Claims**



1. A method in an electronic device for processing wireless information having first address data and first message data, said method comprising the steps of:

- receiving said wireless information;
- setting a decoding rate to be an address rate;
- reading said first address data at said address rate;
- determining that said first address data matches a first address of said electronic device, said first address associated with lengthy information broadcast to a wide variety of users;
- adjusting said decoding rate to a first message rate corresponding to said first address, said first message rate being slower than said address rate; and
- reading said first message data at said first message rate.

5,710,758

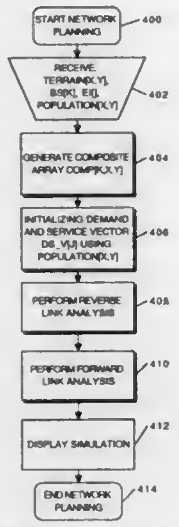
WIRELESS NETWORK PLANNING TOOL

Samir S. Soliman, San Diego, and Sheila M. Reynolds, Encinitas, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Sep. 29, 1995, Ser. No. 535,999

Int. Cl.^{6} H04B *17/00;* **H04Q** *7/34*

U.S. Cl. 370—241 **10 Claims**


START NETWORK PLANNING
400
RECEIVE TERRAIN[X,Y], BS[K], E[], POPULATION[X,Y]
402
GENERATE COMPOSITE ARRAY COMP[K,X,Y]
404
INITIALIZING DEMAND AND SERVICE VECTOR DS_V[i,j] USING POPULATION[X,Y]
406
PERFORM REVERSE LINK ANALYSIS
408
PERFORM FORWARD LINK ANALYSIS
410
DISPLAY SIMULATION
412
END NETWORK PLANNING
414

1. A method for testing and optimizing a configuration of a wireless telephone network comprising the steps of:

- (a) configuring a set of base stations over a market area having a population distribution;
- (b) generating a composite propagation loss matrix containing a set of corresponding propagation loss values between said set of base stations and a set of locations within said market area;
- (c) generating a demand and service vector having a population for each location using said population distribution;
- (e) assigning each of said set of locations to a base station to which a propagation loss exists with a minimum value;
- (f) calculating a sensitivity for each base station based on how many locations are associated with said base station, and said population associated with each location;
- (g) determining for each location a base station to which a reverse link signal may be transmitted with minimal reverse link power so as to arrive at said base station with energy substantially equal to said sensitivity; and
- (h) recalculating said base station sensitivity using said minimal reverse link power from each location.

5,710,759

SWITCH PROTECTION ARRANGEMENT

Geoffrey Chopping, Wimborne; Andrew James Barker, Attenborough, and David Paul Stoney, Stapleford, all of United Kingdom, assignors to GPT Limited, Coventry, United Kingdom

PCT No. PCT/GB94/00152, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO94/17614, PCT Pub. Date Aug. 4, 1994

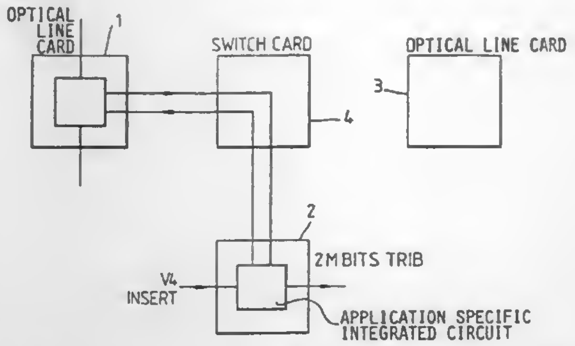
PCT Filed Jan. 26, 1994, Ser. No. 495,469

Claims priority, application United Kingdom, Jan. 27, 1993, 9301575

Int. Cl.^{6} H04J *1/16*

U.S. Cl. 370—244 **8 Claims**

1. A telecommunications switch protection arrangement including: a switch including switch paths; means for establishing a switched connection through the switch; a plurality of interface cards including an originating interface card, said cards including a capability of generating and monitoring multiple test data fields and reporting any detected discrepancies; the switched connection comprising a format that includes a test data byte reserved for transporting a multiplicity of different test data fields used to assist in a determination of whether the switch paths are routed and operating correctly; wherein the data fields comprise: a multiframe synchronization pattern; a plurality of parity check bits generated from data carried by said switched connection; a number of a shelf containing the originating interface card; a number of a card position containing the originating interface card; a type number of the originating interface card; and a channel number used by the switched connection to enter the switch.



5,710,760

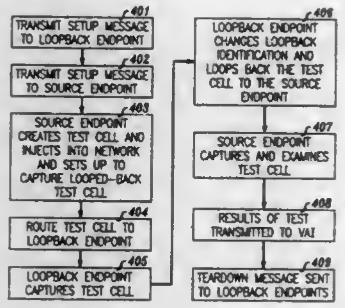
OUT-OF-BAND CONTROL FOR PERFORMING A LOOPBACK TEST FOR ASYNCHRONOUS TRANSFER MODE (ATM) NETWORKS

Keith Eugene Moll, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 29, 1995, Ser. No. 564,700

Int. Cl.^{6} H04L *1/14;12/26;12/56*

U.S. Cl. 370—249 **22 Claims**


401
TRANSMIT SETUP MESSAGE TO LOOPBACK ENDPOINT
402
TRANSMIT SETUP MESSAGE TO SOURCE ENDPOINT
403
SOURCE ENDPOINT CREATES TEST CELL AND INJECTS INTO NETWORK AND SETS UP TO CAPTURE LOOPED-BACK TEST CELL
404
ROUTE TEST CELL TO LOOPBACK ENDPOINT
405
LOOPBACK ENDPOINT CAPTURES TEST CELL
406
LOOPBACK ENDPOINT CHANGES LOOPBACK IDENTIFICATION AND LOOPS BACK THE TEST CELL TO THE SOURCE ENDPOINT
407
SOURCE ENDPOINT CAPTURES AND EXAMINES TEST CELL
408
RESULTS OF TEST TRANSMITTED TO VAI
409
TEARDOWN MESSAGE SENT TO LOOPBACK ENDPOINTS

1. A method for controlling a loopback test between ATM points in an ATM network comprising the steps of:

- selecting one of the ATM points as a loopback endpoint;
- transmitting first address information for a test cell to said loopback endpoint;
- selecting another of the ATM points as a source endpoint;
- transmitting second address information to said source endpoint;
- creating a nest cell at said source endpoint based on said second address information and injecting said cell into said network;
- capturing said test cell at said loopback endpoint based on said first address information; and
- looping back said test cell to said source endpoint.

5,710,761

ERROR CONTROL NEGOTIATION BASED ON MODULATION

Robert Earl Scott, Indian Rocks Beach, Fla., assignor to Paradyne Corporation, Largo, Fla.

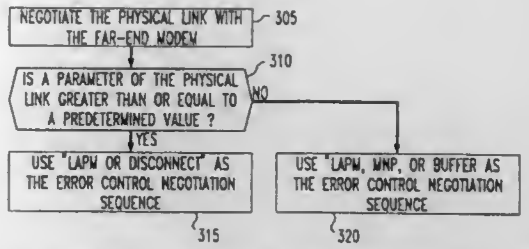
Filed May 31, 1995, Ser. No. 458,048

Int. Cl.^{6} H04L *1/00*

U.S. Cl. 370—252 **16 Claims**

1. A method for use in data communications equipment, the method comprising the steps of:

- negotiating a physical layer of a data connection with a far-end data communications equipment to determine a set of parameters for the physical layer of the data connection with the far-end data communications equipment; and
- selecting one of a number of error control negotiation sequences as a function of a value of at least one parameter from the set of parameters for the physical layer.


NEGOTIATE THE PHYSICAL LINK WITH THE FAR-END MODEM
305
310
IS A PARAMETER OF THE PHYSICAL LINK GREATER THAN OR EQUAL TO A PREDETERMINED VALUE ?
NO
YES
USE "LAPM OR DISCONNECT" AS THE ERROR CONTROL NEGOTIATION SEQUENCE
USE "LAPM, MNP, OR BUFFER AS THE ERROR CONTROL NEGOTIATION SEQUENCE
315
320

5,710,762

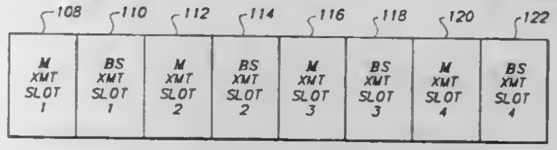
FRAME STRUCTURE HAVING NON-SYMMETRICAL SLOT ASSIGNMENTS FOR MOBILE COMMUNICATIONS

James E. Petranovich, Encinitas, Calif., assignor to Rockwell Semiconductor Systems, Inc., Newport Beach, Calif.

Continuation of Ser. No. 145,745, Oct. 29, 1993, Pat. No. 5,444,696. This application Jun. 6, 1995, Ser. No. 468,374

Int. Cl.^{6} H04J *4/00;* **H04Q** *7/36*

U.S. Cl. 370—280 **21 Claims**



1. A frame structure for use in a full duplex frequency channel of a wireless communications system having at least one central station and a plurality of peripheral stations in which stations communicate data using a slotted protocol having a predetermined number of slots in a frame, comprising:

- an uplink time slot in which one of the plurality of peripheral stations transmits to the at least one central station;
- a downlink time slot in which said at least one central station transmits back a signal precompensated for channel distortions to said one of the plurality of peripheral stations; and
- wherein the time (Tud) from the start of said uplink time slot in a first frame and the start of said downlink time slot in the first frame is less than the time (Tdu) from the start of said downlink time slot in the first frame and the start of said uplink time slot in a second frame where the second frame is substantially adjacent and later in time to said first frame.

5,710,763

FILTERED FAST FOURIER TRANSMULTIPLEXER AND METHOD

Robert Mark Harrison, Grapevine, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1995, Ser. No. 509,123

Int. Cl.^{6} H04J *1/05*

U.S. Cl. 370—307 **16 Claims**

1. A method of transmultiplexing a multi-channel information signal at a first sample rate into a plurality of selected communication channels at the first sample rate, the method comprising the steps of:

- (a) commutating the information signal to a first plurality of filters and commutating a delayed sample of the information signal to a second plurality of filters, each filter of the first plurality of filters corresponding with a filter of the second plurality of filters;

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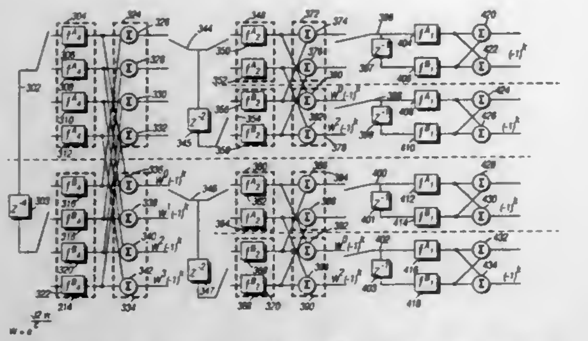


(b) summing an output of each filter of the first plurality of filters with an output from the corresponding filter of the second plurality of filters to form a first plurality of summed outputs;

(c) summing a scaled output of each of the second plurality of filters with an output of the corresponding filter of the first plurality of filters to form a second plurality of summed outputs;

(d) scaling each output of the second plurality of summed outputs by a time varying value;

(e) commutating the first plurality of summed outputs to form a first output signal at the first sample rate; and

(f) commutating the scaled second plurality of summed outputs to form a second output signal at the first sample rate.

5,710,764
METHOD OF SIGNAL TRANSMISSION IN A MOBILE COMMUNICATION SYSTEM

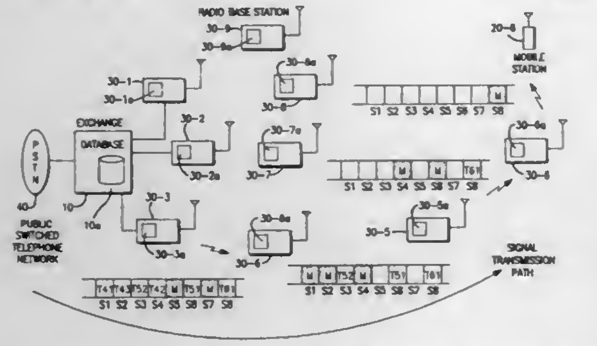
Yukio Yoshimura, and Tetsuya Yamashita, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 23, 1996, Ser. No. 653,698

Claims priority, application Japan, May 26, 1995, 7-128403

Int. Cl.^{6} H04J *3/14*

U.S. Cl. 370—315 **2 Claims**



1. A method of signal transmission in a mobile communication system, including a plurality of mobile stations, a plurality of radio base stations each providing a radio zone inherent thereto which communicates with the plurality of mobile stations in accordance with a multiplexing transmission system and each having at least one receiver and one transmitter operable in a radio frequency used in a adjacent radio base station, and an exchange managing mobile communication calls and controlling the mobile communication system, the method comprising steps of:

in the exchange:

discriminating a target radio base station and a mobile station by which a call is to be received when accepting a call request from a public switched telephone network at the exchange;

determining radio base stations to be used for a signal transmission path between the exchange and the target radio base station, and selecting a channel slot of radio signal which is available in all determined radio base stations including the target radio base station;

instructing each of the transmission path radio base stations to store information of the selected channel slot of radio signal;

connecting speech path between the public switched telephone network and the nearest radio base station among the selected radio base stations; and

transferring a call signal which is contained in the selected channel slot; and

in each radio base station:

monitoring channel slots of radio signal transmitted on a radio frequency of adjacent radio base station in accordance with the stored channel slot information; and

extracting and repeating transmission of the call signals in the channel slots with the radio base stations own radio frequency in the same channel slots as those of received radio signal.

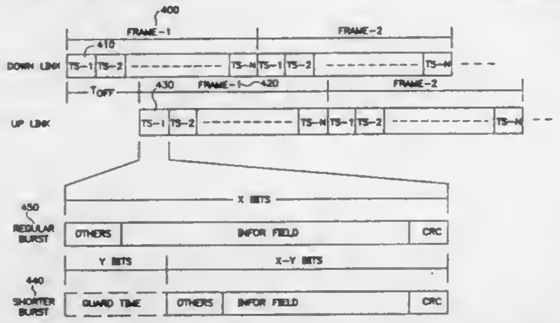
5,710,765
METHOD AND APPARATUS FOR INCREASING THE SYSTEM EFFICIENCY OF A TDMA SYSTEM BY REDUCING TIME SLOT GUARD TIME

Xiaoyang Lee, Monmouth Junction, and Steve Lam, Cranbury, both of N.J., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 29, 1996, Ser. No. 623,869

Int. Cl.^{6} H04J *3/16*

U.S. Cl. 370—321 **14 Claims**



1. A time division multiple access communications system in which a plurality of remote units communicate with a receiving station, the receiving station transmitting at least one downlink frame to each of said remote units, each of said remote units transmitting at least one uplink frame to said receiving station, comprising:

means, in the receiving station, for formatting and transmitting a downlink frame comprising n downlink traffic channel time slots where n is an integer, each time slot including a plurality of data bit intervals,

means, in each remote unit, for formatting and transmitting an uplink frame comprising:

n uplink traffic channel time slots, each of said uplink traffic channel time slots being separated from a respective adjacent uplink traffic channel time slot by a respective guard time, wherein

at least one of said n uplink traffic channel time slots includes x data bit intervals, x being a positive integer, said guard time being not greater than one data bit interval, and

at least another of said n uplink traffic channel time slots includes x-y data bit intervals, y being a positive integer less than x, said guard time being greater than one data bit interval.

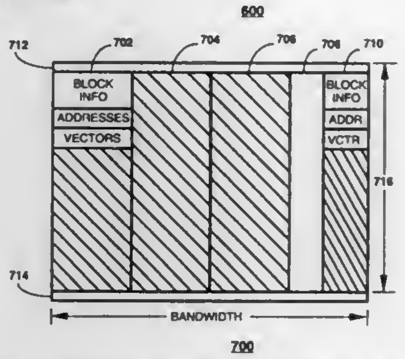
5,710,766
METHOD AND APPARATUS FOR SHARING A COMMON BANDWIDTH BETWEEN TWO PROTOCOLS IN A RADIO COMMUNICATION SYSTEM

Robert John Schwendeman, Pompano Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 578,792

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 370—329 **21 Claims**



1. In a radio communication system including a fixed portion and a portable portion, a method for sharing a common bandwidth between first and second protocols that can support up to N subchannels and M subchannels, respectively, within the common bandwidth, N and M being predetermined positive integer values, wherein the first and second protocols utilize transmission frames having first and second frame durations that are integer multiples of one another, the method comprising

in the fixed portion the steps of:

synchronizing the transmission frames of the first protocol with those of the second protocol;

determining a sharing plan for the subchannels utilized by the first and second protocols within the common bandwidth, the sharing plan applicable to a subsequent group of simultaneous transmission frames comprising messages; and

vectoring a receiver of the portable portion that has a message to be received in one of the first and second protocols, the vectoring done in accordance with the sharing plan and prior to a transmission of said subsequent group of simultaneous transmission frames; and

in both the fixed portion and the portable portion the step of

sharing the common bandwidth between the first and second protocols in accordance with the sharing plan during the transmission of said subsequent group of simultaneous transmission frames.

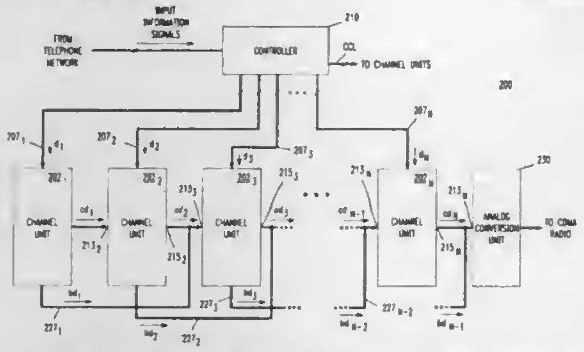
5,710,767
AUTOMATIC DATA BYPASS OF A REMOVED/FAILED CDMA CHANNEL UNIT

Winston Davidian, Millburn, N.J.; Kenneth Yiu-Kwong Ho, Syosset, N.Y., and Kenneth W. Parker, Rockaway, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 20, 1996, Ser. No. 603,770

Int. Cl.^{6} H04J *13/00*

U.S. Cl. 370—335 **24 Claims**



1. An apparatus for encoding a plurality of data streams in a code division multiple access format, comprising:

a plurality of channel units coupled in series, each for encoding at least one of said plurality of data streams and each having a digital combiner for successively combining the at least one data stream encoded therein with a preceding encoded output signal having cumulative encoded data provided by a preceding one of said channel units in the series, wherein each channel unit produces an associated encoded output signal; and,

at least one of said channel units capable of providing said associated encoded output signal as a direct output signal to a first subsequent one of said channel units, and of providing a bypass output signal having cumulative encoded data to a further subsequent one of said channel units in order to by pass said first subsequent channel unit.

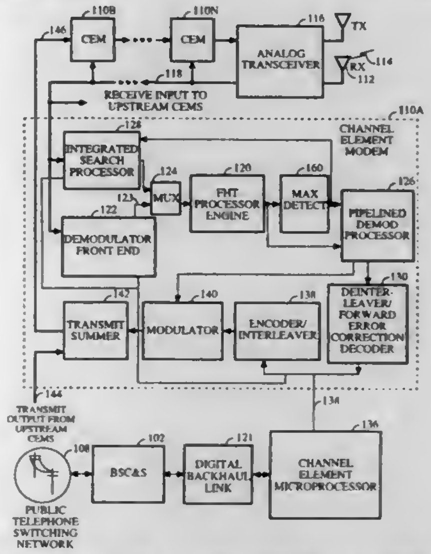
5,710,768
METHOD OF SEARCHING FOR A BURSTY SIGNAL

Noam A. Ziv; Roberto Padovani; Jeffrey A. Levin, and Kenneth D. Easton, all of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 316,177, Sep. 30, 1994. This application May 5, 1995, Ser. No. 436,029

Int. Cl.^{6} H04B *15/00;* **H04K** *1/00;* **H04L** *27/30*

U.S. Cl. 370—342 **8 Claims**


CEM
ANALOG TRANSCEIVER
TX
RX
RECEIVE INPUT TO UPSTREAM CEMS
CHANNEL ELEMENT MODEM
INTEGRATED SEARCH PROCESSOR
MUX
FHT PROCESSOR ENGINE
MAX DETECT
PIPELINED DEMOD PROCESSOR
DEMODULATOR FRONT END
TRANSMIT SUMMER
MODULATOR
ENCODER/INTERLEAVER
DEINTERLEAVER/FORWARD ERROR CORRECTION DECODER
TRANSMIT OUTPUT FROM UPSTREAM CEMS
BSC&S
DIGITAL BACKHAUL LINK
CHANNEL ELEMENT MICROPROCESSOR
PUBLIC TELEPHONE SWITCHING NETWORK

1. A method of receiving a signal comprised of a group of spread spectrum call signals sharing a common frequency band wherein each of said spread spectrum call signals comprises a series of bits encoded in groups of a fixed length into a series of symbols wherein a series of said symbols are grouped together in a power control group wherein each symbol in a common power control group is transmitted at a common power level and wherein said power control groups are transmitted in bursts, and isolating one of said call signals from among said group to determine a call signal strength at a path delay time offset from a zero offset reference time, said method comprising the steps of:

storing PN sequence data bits in a PN sequence buffer;

storing a first received set of call signal samples in a sample buffer having a limited size;

despreading a first fixed length set of said call signal samples from said sample buffer corresponding to a first path delay time with a first set of PN sequence data bits from said PN sequence buffer to produce a first despread output;

storing a second received set of call signal samples in said sample buffer; and

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despreading a second fixed length set of call signal samples from said sample buffer corresponding to a second path delay time with said first set of PN sequence data bits from said PN sequence buffer to produce a second despread output;

wherein said second fixed length set of call signal samples comprises a large number of the same call signal samples' as said first fixed length set of call signal samples and wherein the length of said first and second received set of call signal samples is a fraction the fixed length of said first and second fixed length set of call signal samples;

wherein said steps of storing said first and second fixed length set of call signal samples and said steps of despreading said first and second fixed length set of calls signal samples are performed independent of a probability that said one of said call signals comprises one of said power control groups.

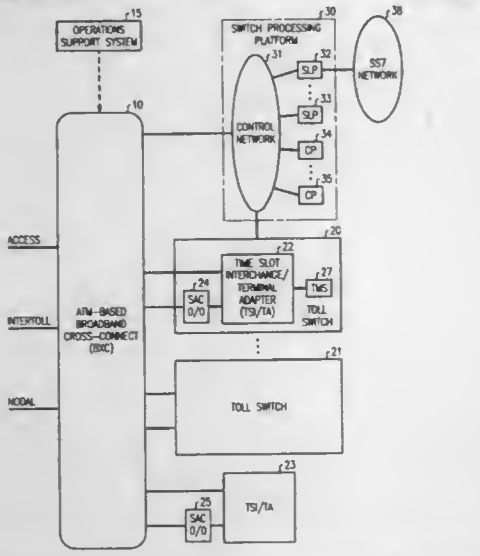
5,710,769
MERGING THE FUNCTIONS OF SWITCHING AND CROSS CONNECT IN TELECOMMUNICATIONS NETWORKS

Thomas Wayne Anderson, Naperville, and Lih-Fen Leu Wu, Lisle, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 29, 1996, Ser. No. 609,162

Int. Cl.⁶ H04L *12/56*

U.S. Cl. 370—355 **18 Claims**


15
OPERATIONS SUPPORT SYSTEM
30
SWITCH PROCESSING PLATFORM
38
SS7 NETWORK
31
32
SLP
33
SLP
34
CP
35
CP
CONTROL NETWORK
10
ATM-BASED BROADBAND CROSS-CONNECT (BBXC)
ACCESS
INTERTOLL
NODAL
20
22
TIME SLOT INTERCHANGE/ TERMINAL ADAPTER (TSI/TA)
24
SAC 0/0
27
TMS
TOLL SWITCH
21
TOLL SWITCH
23
TSI/TA
25
SAC 0/0

11. In a telecommunications network, a method of establishing a voice band call connection through a node of said network, comprising the steps of:

in a CCSS (cross connect/switching system) of said node comprising a plurality of switched voice band connection segments, establishing a plurality of provisioned bundles of channels of voice band connection segments; and

in said CCSS establishing one or more segments of said voice band call connection by selecting channels of ones of said bundles of provisioned voice band connection segments and establishing one or more segments of said connection by selecting one or more switched voice band connection segments that are not in one of the plurality of bundles of provisioned voice band connections.

5,710,770
ATM CELL SWITCHING SYSTEM

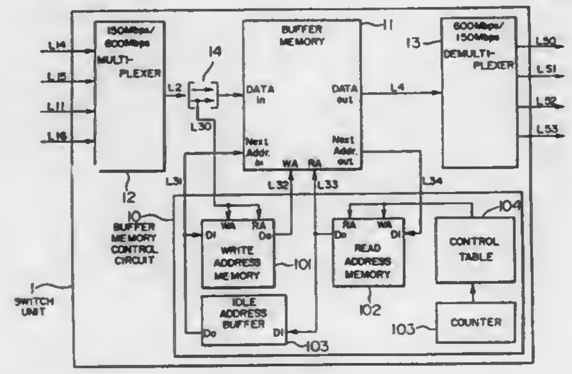
Takahiko Kozaki, Koganei; Junichirou Yanagi, Kodaira; Kiyoshi Aiki, Hachioji; Yutaka Ito, Yokohama; Kaoru Aoki, Yokohama, and Shinobu Gohara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 306,978, Sep. 16, 1994, which is a continuation of Ser. No. 845,668, Mar. 4, 1992, Pat. No. 5,365,519, which is a continuation-in-part of Ser. No. 482,090, Feb. 20, 1990, Pat. No. 5,124,977, which is a continuation-in-part of Ser. No. 218,217, Jul. 13, 1988, Pat. No. 4,910,731, said Ser. No. 845,668is a continuation-in-part of Ser. No. 745,466, Aug. 14, 1991, Pat. No. 5,280,475. This application Jun. 5, 1995, Ser. No. 462,532

Claims priority, application Japan, Jul. 15, 1987, 62-174603; Oct. 9, 1987, 62-253661; Apr. 27, 1988, 63-102512; Feb. 22, 1989, 1-040230; Mar. 5, 1991, 3-038388; Nov. 11, 1997, 62-283249

Int. Cl.⁶ H04L *12/56*

U.S. Cl. 370—368 **7 Claims**



1. A switching system comprising:

a shared buffer memory for storing a plurality of fixed length packets;

means for supplying fixed length input packets received from a plurality of input lines to said buffer memory, each of said input packets including routing information for designating one of a plurality of output lines and a connection identifier for designating a virtual connection or a virtual path of the packet;

means for distributing output packets read out from said buffer memory to said plurality of output lines in a predetermined order;

means for writing in said buffer memory a pair of data including a packet and a pointer address for indicating an address location of a succeeding packet in accordance with the routing information and the connection identifier of the input packets;

means for assigning connection identifiers to time slots of each of the output lines so that a set of same connection identifiers has a predetermined frequency corresponding to a bandwidth of the communication carried out by the packets having the same connection identifier;

means for designating one of the output lines periodically;

means for designating the location address of a packet to be read out from said buffer memory in accordance with one of said assigned connection identifiers which is specified depending on a present time slot on said designated output line and reading out from said buffer memory a pair of data including a packet and a pointer address in accordance with said designated location address to supply the packet to said distributing means as said output packet; and

means for storing the pointer address read out from said buffer memory as a new location address for use in the designating of the location address carried out later.

5,710,771
MULTICHANNEL COMMUNICATION SYSTEM

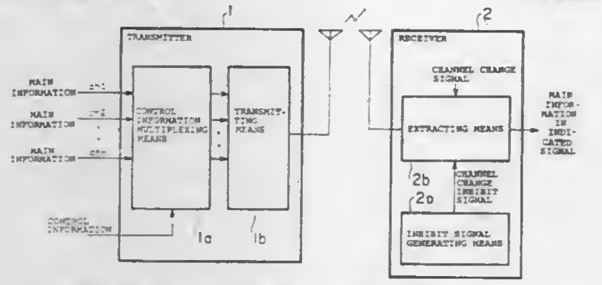
Tomoyuki Ueno, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 14, 1995, Ser. No. 557,599

Claims priority, application Japan, Mar. 20, 1995, 7-061363

Int. Cl.⁶ H04J *4/00*

U.S. Cl. 370—436 **13 Claims**



1. A multichannel communication system comprising:

a transmitter for frequency-division-multiplexing signals in a plurality of channels and transmitting the frequency-division-multiplexed signals; and

a receiver for selectively receiving a signal in one of the channels;

said transmitter comprising:

control information multiplexing means for time-division-multiplexing main information in each of the channels with control information common to the channels at the same timing; and

transmitting means for frequency-division-multiplexing and transmitting the main information in each of the channels which has been time-division-multiplexed with the control information by said control information multiplexing means;

said receiver comprising:

inhibit signal generating means for generating a channel change inhibit signal in timed relationship to the multiplexing of said control information; and

extracting means responsive to a channel change signal indicative of one of the channels to be received, for extracting the signal in said one of the channels which is indicated by said channel change signal from frequency-division-multiplexed signals transmitted from said transmitting means if a channel change inhibit signal is not transmitted from said inhibit signal generating means.

5,710,772
TDMA RADIO COMMUNICATION SYSTEM

Osamu Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 470,622

Claims priority, application Japan, Jun. 6, 1994, 6-123543

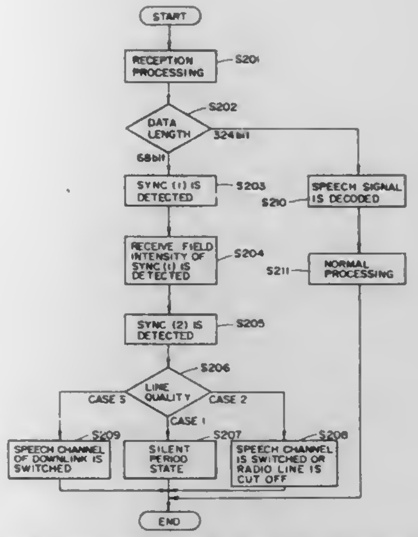
Int. Cl.⁶ H04J *3/16*

U.S. Cl. 370—458 **17 Claims**

1. A TDMA radio communication system whereby a radio base station and a mobile station transmit to and receive from each other digital speech signals over a radio line consisting of a plurality of time-division-multiplexed time slots, said mobile station comprising:

extracting means for extracting a first sync signal from signals received from said radio base station;

detecting means for detecting the presence or absence of transmit speech signals; and



sending means for sending said first sync signal to said radio base station in the absence of said transmit speech signals, and sending said transmit speech signals to said radio base station in the presence of said transmit speech signals.

5,710,773
PACKET TRANSMISSION SYSTEM

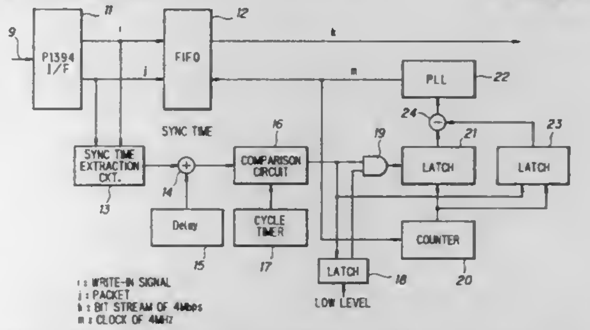
Tomohisa Shiga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,772

Claims priority, application Japan, Jul. 25, 1994, 6-192807; Sep. 9, 1994, 6-242255

Int. Cl.⁶ H04L *7/04*

U.S. Cl. 370—512 **10 Claims**



1. A packet transmission method for transmitting a bit stream of a prescribed rate while also packeting the bit stream, comprising the steps of:

periodically determining a position of a head bit of a frame of the bit stream at a transmission side;

packeting the bit stream, said step of packeting the bit stream including detecting whether data comprising the bit stream to be packeted includes a head bit of the bit stream and adding to a packet including a head bit of the bit stream data indicative of a time corresponding to the determined position of the head bit of the bit stream;

temporarily storing each of a received packet generated by said packeting step at a reception side;

extracting from each received packet including data indicative of a time corresponding to the determined position of the head bit of the bit stream a time of the position of the head bit of the bit stream; and

controlling a read-out rate of the bit stream included within each temporarily stored received packet with the extracted time.

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5,710,774
FRAME SYNCHRONIZING DEVICE

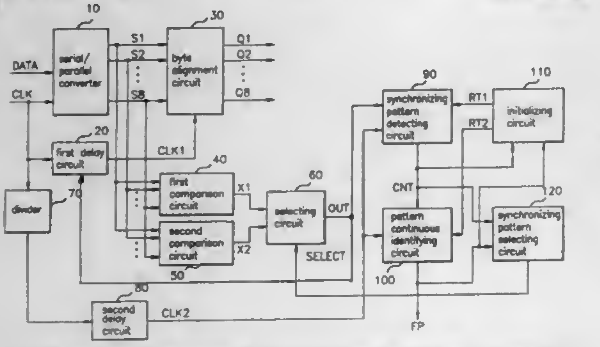
Chung-Wook Suh, and Seong-Do Kim, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea, and Korea Telecommunication Authority, Seoul, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 555,852

Claims priority, application Rep. of Korea, Dec. 9, 1994, 94-33484

Int. Cl.^{6} H04L ***7/08***

U.S. Cl. 370—513 **18 Claims**



1. A frame synchronizing device for synchronizing a plurality of frames in receiving data being transmitted at a high speed from a broadband digital network, each frame including the first 12 bytes of frame alignment bytes A1 and next 12 bytes of frame alignment bytes A2, said frame synchronizing device comprises:

a serial/parallel converting means for converting data inputted in serial by a reference clock CLK into parallel data S1 to S8 in the unit of bytes;

a first comparison means for outputting a first comparison signal X1 by determining whether the parallel data S1 to S8 converted by said serial/parallel converting means correspond to the frame alignment bytes A1;

a second comparison means for outputting a second comparison signals X2 by determining whether the parallel data S1 to S8 converted by said serial/parallel converter correspond to the frame alignment bytes A2;

a selection means for selecting one of the two comparison signals X1, X2 outputted from said first and second comparison means, depending on a predetermined selection control signal SELECT;

a first delay means for producing a first clock CLK1 by delaying an output of said selection means;

a byte alignment means for aligning the parallel data S1 to S8 outputted from said serial/parallel converting means in accordance with a frame, in response to the first clock CLK1 delayed by said first delay means;

a divider means for dividing the reference clock CLK by 1/n to output a divided output;

a second delay means for producing a second clock CLK2 by delaying the divided output of said divider means by a predetermined interval;

a synchronizing pattern detecting means for detecting whether a first frame synchronizing pattern consisting of subsequent 12 of the frame alignment bytes A1 and a second frame synchronizing pattern consisting of subsequent 12 of the frame alignment bytes A2 are received, in response to any one of the first and second comparison signals outputted from said selection means in synchronism with the second clock CLK2, thereby outputting a frame synchronous pattern detecting signal CNT;

a pattern continuous identifying means for outputting a frame pulse FP representing whether the first frame synchronizing pattern and, in sequence, the second frame synchronizing pattern are received, in response to the frame synchronous pattern detecting signal CNT representing detection of the first and second frame synchronous patterns in synchronism with the second clock CLK2 produced by said second delay means;

a synchronizing pattern selecting means for outputting a predetermined selection control signal SELECT so as to effect said selection means to select the second comparison signal X2 and output it, in response to the first frame synchronous pattern detecting signal CNT outputted from said synchronizing pattern detecting means; and

an initializing means for initializing said synchronizing pattern detecting means in response to the frame synchronous pattern detecting signal CNT representing detection of the first and second frame synchronizing patterns, and further initializing said synchronizing pattern detecting means, said pattern continuous identifying means and said synchronizing pattern selecting means in response to the frame pulse FP outputted through said pattern continuous identifying means.

5,710,775
ERROR ALLOWING PATTERN MATCHING CIRCUIT

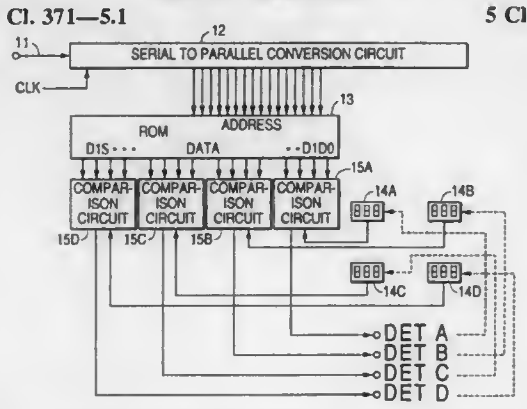
Kanada Nakayasu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,380

Claims priority, application Japan, May 18, 1994, 6-103586

Int. Cl.^{6} G06F ***11/00***

U.S. Cl. 371—5.1 **5 Claims**



1. An error allowing pattern matching circuit, comprising:

information storage means for receiving receive data as an address signal thereto and outputting the number of error bits at which the address signal does not coincide with a particular pattern to be detected, wherein said information storage means includes only one memory device;

a setting circuit for setting the allowable number of error bits for the receive data; and

a comparison circuit for comparing the number of error bits outputted from said information storage means with the allowable number of error bits set by said setting circuit and generating the receive data when the number of error bits becomes lower than the allowable number of error bits as a detection pattern, and wherein

a feedback loop is constructed so that the detection pattern from said comparison circuit is inputted to said setting circuit, and

said setting circuit sets the allowable number of error bits to a low value upon a pull in operation wherein most accurate pattern detection is required, but sets, in an ordinary operation, the allowable number of error bits to a high value in order to prevent an out-of-synchronous condition.

5,710,776
SIGNAL SELECTION AND FAULT DETECTION APPARATUS AND METHOD

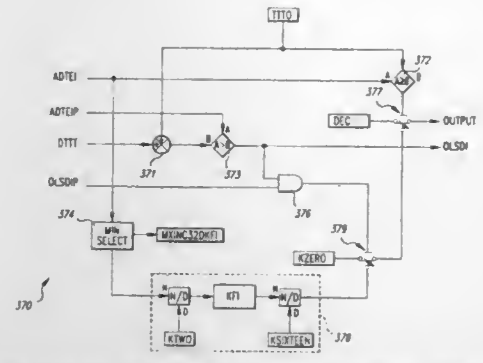
Lloyd R. Tomlinson, Renton, and Robert E. Freeman, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,680

Int. Cl.^{6} G06F ***11/00***

U.S. Cl. 371—5.1 **3 Claims**

1. A signal selector apparatus for selecting one of at least two input information signals, the signals possibly having errors resulting from null offsets, rate induced differences and gain differences and noise, the apparatus comprising:



a signal selector module that receives and selects one of the at least two input signals as a selected information signal;

a rate calculating module coupled to receive the selected information signal and having a first limiter that receives and limits the selected information signal by a selected threshold amount to produce a rate generated tolerance component signal that represents a worst case rate induced tracking error of the input signals;

a gain error calculating module coupled to receive the selected information signal and having a first multiplier and a first subtractor, the first multiplier receiving the selected information signal and multiplying the selected information signal by a worst case gain tolerance constant to produce a gain tolerance component signal, and the first subtractor being coupled to the first multiplier and decreasing the gain tolerance component signal by a variable limit equalization rate to produce a gain generated tolerance component signal that represents a worst case gain induced offset of the input signals;

a first adder coupled to the rate calculating module and the gain error calculating module that adds the rate generated tolerance component signal and the gain generated tolerance component signal to produce a total tolerance component signal;

a retention filter coupled to the first adder that receives the total tolerance component signal and produces a delayed decay rate signal;

a first maximum select module coupled to the first adder and the retention filter, the first maximum select module receiving the total tolerance component signal and the delayed decay rate signal and outputting as a dynamic threshold component signal, wherein the dynamic component threshold signal is the greater of the total tolerance component and delayed decay rate signals;

a second adder coupled to the first maximum select module that adds a first constant value to the dynamic threshold component signal to produce a total threshold component signal;

a first comparator coupled to the second adder that outputs a zero value as an output signal if the total threshold component signal is greater than an absolute value of a dynamic tracking error of the selected information signal, outputs a decrement value as the output signal if the absolute value of the dynamic tracking error is less than the first constant value, and outputs the absolute value of the dynamic tracking error as the output signal if the absolute value of the error is greater than the total threshold component signal;

an integrator coupled to the comparator that integrates the output signal to produce an out-of-threshold integration signal; and

a fault latching module coupled to the integrator and the signal selector module, the fault latching module receiving the out-of-threshold integration signal and latching the selected signal if the out-of-threshold integration signal exceeds a selected maximum value so that the signal selector module is prevented from selecting a latched signal.

5,710,777
COMMUNICATION SYSTEM

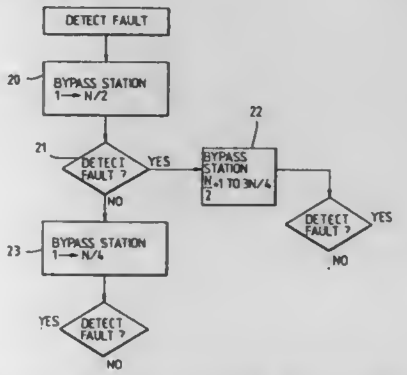
Simon C. Gawne, Middlesex, England, assignor to Madge Networks Limited, Bucks, England

Filed Feb. 5, 1993, Ser. No. 14,258

Claims priority, application United Kingdom, Feb. 7, 1992, 9202666

Int. Cl.^{6} G01R ***31/28***

U.S. Cl. 371—20.6 **10 Claims**



1. A method of analysing a communication system to locate a source of a fault, the communication system comprising a signal carrying medium coupled to a series of end station ports which enable respective end stations to transmit signals onto and receive signals from said signal carrying medium; and control means for controlling a connection of end stations to said signalling carrying medium via said end station ports, the method comprising the steps of:

upon detection of a fault, disconnecting end stations in series from said signal carrying medium;

detecting whether or not a fault condition still exists; and

causing said control means firstly to disconnect an end station which has previously been characterised as the most likely to be the source of the fault, under control of fault analysis means adapted to respond to fault detection.

5,710,778
HIGH VOLTAGE REFERENCE AND MEASUREMENT CIRCUIT FOR VERIFYING A PROGRAMMABLE CELL

Roger J. Bettman, Los Altos; S. Babar Raza, Sunnyvale; Donald Yu, Fremont; Donald A. Krall, Cupertino; Anita X. Meng, Milpitas, and Christopher S. Norris, Morgan Hill, all of Calif., assignors to Cyrpress Semiconductor Corporation, San Jose, Calif.

Filed Apr. 1, 1996, Ser. No. 625,332

Int. Cl.^{6} G01R ***31/28***

U.S. Cl. 371—22.2 **24 Claims**

1. A circuit for providing a verifying voltage signal comprising:

a step down circuit having an input coupled to a programming voltage and an output for providing a verifying voltage less than said programming voltage;

a programmable cell having a test input; and

a first switch having (a) an input coupled to the output of said step down circuit and (b) an output that presents said output of said step down circuit to said test input when a control input is at a first digital state and does not present said

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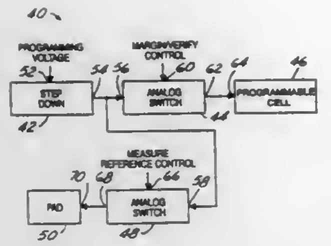
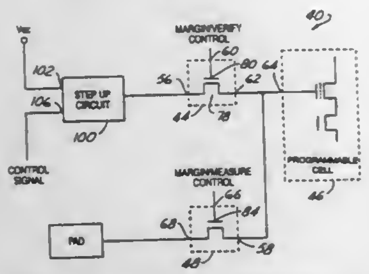




verifying voltage to said test input when said control input is at a second digital state.

5,710,779

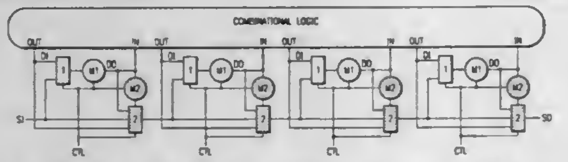
REAL TIME DATA OBSERVATION METHOD AND APPARATUS

Lee D. Whetsel, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 629,654, Apr. 9, 1996. This application May 8, 1996, Ser. No. 643,444

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—22.3 23 Claims



1. A method of operating a plurality of series-connected scan cells, each scan cell operable to capture and scan signals from a target circuit to be observed, comprising the steps of:

- placing one of the scan cells in an observation mode wherein scanning operation thereof is disabled and wherein a data node thereof which is connected to the target circuit is also connected directly to a scan output of said one scan cell to permit the target circuit to drive the scan output directly via the data node;
- placing another of the scan cells in a bypass mode wherein a scan output thereof is connected directly to a scan input thereof, so that said one scan cell is in the observation mode while said another scan cell is in the bypass mode; and
- observing, at the scan output of said another scan cell, signal activity occurring at the data node of said one scan cell while said one scan cell is in the observation mode with scanning operation thereof disabled.

5,710,780

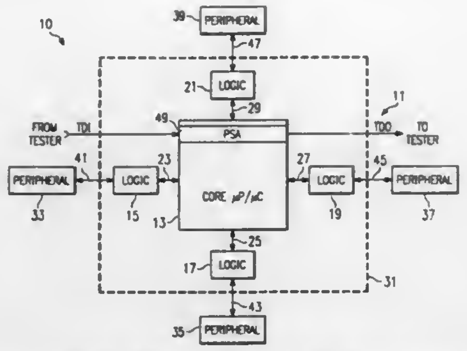
DIGITAL CIRCUITRY WITH IMPROVED PARALLEL SIGNATURE ANALYSIS CAPABILITY

Sudha Thiruvengadam, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 249,482, May 26, 1994, Pat. No. 5,572,536. This application Aug. 8, 1996, Ser. No. 695,139

Int. Cl.^{6} G01R *31/317*

U.S. Cl. 371—22.4 19 Claims



19. A circuit for producing a parallel test signature from data obtained from a target circuit, comprising:

- a plurality of latch circuits, each said latch circuit including a data input and a data output, a first said latch circuit having said data output thereof coupled to the data input of a second said latch circuit, and said first latch circuit having said data input thereof coupled to the data output of a third said latch circuit;
- a predetermined sample circuitry with a node of the target circuit;
- sample circuitry which includes a plurality of inputs for receiving respective clock signals from the target circuit and which can be triggered by any of said clock signals to sample a logic state of said node of the target circuit and to output the sampled logic state on said predetermined sample node regardless of which of said clock signals triggers said sample circuitry; and
- circuitry for selectively coupling said data input of said first latch circuit to said predetermined sample node.

5,710,781

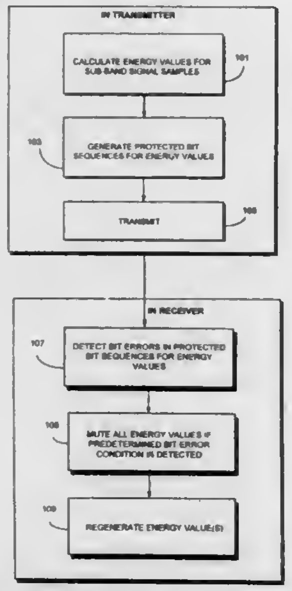
ENHANCED FADING AND RANDOM PATTERN ERROR PROTECTION FOR DYNAMIC BIT ALLOCATION SUB-BAND CODING

Richard L. Zinser, and Steven R. Koch, both of Niskayuna, N.Y., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Jun. 2, 1995, Ser. No. 460,000

Int. Cl.^{6} H04L *1/00*

U.S. Cl. 371—31 21 Claims


IN TRANSMITTER
CALCULATE ENERGY VALUES FOR SUB-BAND SIGNAL SAMPLES
101
103
GENERATE PROTECTED BIT SEQUENCES FOR ENERGY VALUES
TRANSMIT
105
IN RECEIVER
107
DETECT BIT ERRORS IN PROTECTED BIT SEQUENCES FOR ENERGY VALUES
108
MUTE ALL ENERGY VALUES IF PREDETERMINED BIT ERROR CONDITION IS DETECTED
109
REGENERATE ENERGY VALUE(S)

1. A method for communicating signals using sub-band coding, comprising the steps of:

- a. generating for signal samples from plural frequency bands, a band energy bit sequence representing an individual band energy value for each of the plural frequency bands;
- b. protecting one of the significant bits in some or all of the band energy bit sequences;
- c. transmitting and receiving frames of data, each data frame including protected bits with corresponding sub-band coded signal samples;
- d. determining for a received data frame a number of bit errors in the protected bits;
- e. muting the sub-band coded signal samples in the data frame if the determined number of bit errors exceeds a threshold under a first condition; and
- f. replacing the energy values for a currently received frame of sub-band coded signal samples if the determined number of bit errors exceeds the threshold under a second condition including replacing an individual band energy value with a previous corresponding band energy value if the previous corresponding band energy is less than a predetermined energy value.

5,710,782

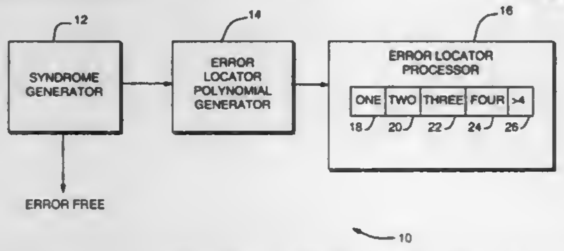
SYSTEM FOR CORRECTION OF THREE AND FOUR ERRORS

Lih-Jyh Weng, Shrewsbury, Mass., assignor to Quantum Corporation, Milpitas, Calif.

Filed Dec. 28, 1995, Ser. No. 580,351

Int. Cl.^{6} H03M *13/00*

U.S. Cl. 371—37.1 6 Claims



1. A method of determining locations of four errors in a code word of a Reed-Solomon or BCH code, the method including the steps of:

a. manipulating a degree-four error locator polynomial

$$\sigma(x)=\sigma_4x^4+\sigma_3x^3+\sigma_2x^2+\sigma_1x^1+\sigma_0$$

to produce a polynomial of the form:

$$\theta(y)=y^4+\theta_2y^2+\theta_1y+\theta_0;$$

b. factoring the polynomial into

$$\theta(y)=(y^2+t^*y+u)^*(y^2+v^*y+w);$$

c. equating the coefficients of the polynomials of steps a and b

$$t+v=0$$

$$t^*v+u+w=\theta_2$$

$$t^*w+v^*u=\theta_1$$

$$u^*w=\theta_0;$$

h. determining an equation with t as the only unknown:

$$t^3+\theta_2t+\theta_1=0$$

e. solving for a root t_0;

f. forming a quadratic equation with u and w as roots:

$$p^2+(\theta_2+t_0^2)p+\theta_0 0$$

g. solving for the roots p_0 and p_1;

h. substituting the roots into θ(y) and determining the roots of a pair of quadratic equations:

$$y^2+t_0^*y+p_1=0$$

$$y^2+t_0^*y+p_0=0;$$

i. associating the roots y_0, y_1 and y_2, y_3 of the pair of quadratic equations with the roots of the degree-four error locator polynomial; and

j. associating the roots of the degree-four error locator polynomial with locations in the code word.

5,710,783

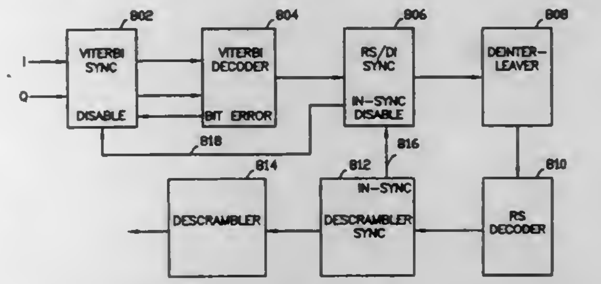
OPTIMIZATION OF SYNCHRONIZATION CONTROL IN CONCATENATED DECODERS

Daniel A. Luthi, 1236 Harefiled Dr., Santa Clara, Calif. 95131, and Nadav Ben-Efraim, 400 E. Remington Dr., Sunnyvale, Calif. 94087

Filed Jun. 7, 1995, Ser. No. 476,433

Int. Cl.^{6} H03M *13/00*

U.S. Cl. 371—37.4 24 Claims



1. A method for synchronizing a decoder to a concatenated forward error correction coded digital signal, comprising the steps of:

- receiving a digitally encoded signal having concatenated forward error correction coding;
- synchronizing to a first layer of the concatenated forward error correction coded signal;
- synchronizing to a second layer of the concatenated forward error correction coded signal; and
- disabling the first layer synchronization when the second layer is synchronized to so that the second layer synchronization determines synchronization of the decoder for both the first and second layers of the forward error correction coded digital signal.

5,710,784

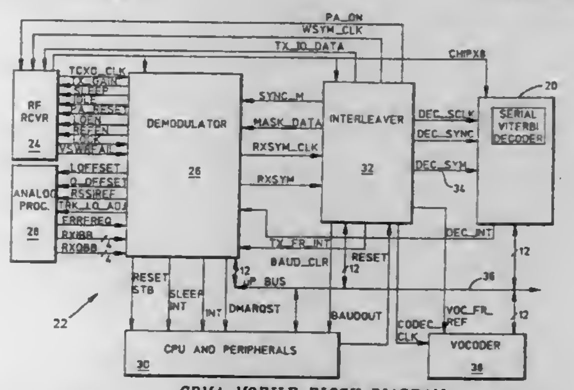
MULTIRATE SERIAL VITERBI DECODER FOR CODE DIVISION MULTIPLE ACCESS SYSTEM APPLICATIONS

Daniel Ray Kindred; Brian K. Butler, both of San Diego; Ephraim Zehavi, Del Mar, and Jack Keil Wolf, La Jolla, all of Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 126,477, Sep. 24, 1993, abandoned. This application Oct. 9, 1996, Ser. No. 728,101

Int. Cl.^{6} G06F *11/10*

U.S. Cl. 371—43 56 Claims



CDMA MOBILE BLOCK DIAGRAM

1. A method of providing decoded bit data in response to a transmission of code symbol data which represents original bit data

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having a data rate R_i, where R_i is one data rate of two or more predetermined original bit data rates, the method being executable using a decoder apparatus including an input buffer, a convolutional decoder, and an output buffer, the method including the steps of:

- transmitting said code symbol data in frames of predetermined time duration wherein the transition between each said successive frame of said code symbol data is forced to a predetermined state;
- receiving and storing successive portions of said transmission of said code symbol data in said input buffer; and
- decoding any portion of said successive portions in said convolutional decoder in two or more passes to obtain two or more rackets $\{P_i\}$ of decoded bit data, each packet P_i being decoded during a respective pass of said two or more passes, each packet P_i including:
  - decoded bit data I_i corresponding to original bit data having said data rate R_i; and
  - quality metric data Q_i representing symbol error conditions in said any portion and data error conditions in said decoded bit data; and storing said two or more packets in said output buffer,
- wherein said quality metric data Q_i representing data error conditions in each said frame of said decoded bit data includes:
  - a Quality Metric (QM) representing the results of a comparison between a predetermined Quality Threshold (QT) value and a measure of the probability of decoding said zero state at said each transition between successive frames of said decoded bit data.

5,710,785

SEQUENTIAL DECODER HAVING SHORT SYNCHRONIZATION RECOVERY TIME

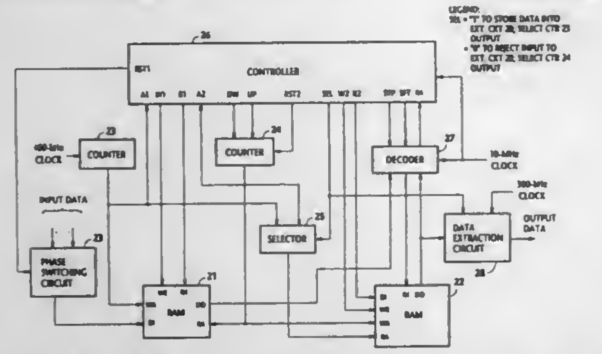
Toshiharu Yagi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 737,547, Jul. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 229,416, Aug. 8, 1988, abandoned. This application Apr. 24, 1995, Ser. No. 428,795

Claims priority, application Japan, Aug. 7, 1987, 62-197682; Oct. 20, 1987, 62-265643

Int. Cl.^{6} H03M *13/12*

U.S. Cl. 371—46 **13 Claims**



1. A sequential decoder for decoding convolutionally coded symbols received at a transmission rate of the symbols, comprising:

- first and second buffer storage means;
- a decoder coupled to said first and second buffer means for receiving a symbol supplied from said first and second storage means and for decoding the supplied symbol in synchronism with a clock pulse occurring at a rate higher than said transmission rate;
- address means for storing the received convolutionally coded symbols into said first storage buffer means at said transmission rate, reading symbols out of said first buffer storage means into said decoder and storing symbols decoded by said decoder into said second buffer storage means; and
- control means, connected to said first buffer storage means, said decoder means, and said address means, for determining the likelihood of each symbol decoded by said decoder in accordance with a predetermined likelihood algorithm; causing said address means to read decoded symbols in a backward direction out of said second buffer storage means into said decoder when the determination indicates a low likelihood; and for detecting an overflow condition of said first buffer storage means when a predetermined number of locations thereof are filled with the received symbols and causing said address means to read symbols out of said first buffer storage means into said decoder starting with a symbol which is k symbols older than the most recently received symbol, where k is an integer smaller than said predetermined number, said control means causing said decoder to repeatedly perform decoding, upon detection of a said overflow condition, on a symbol which is shifted backward by one clock interval with respect to a previous symbol.

5,710,786

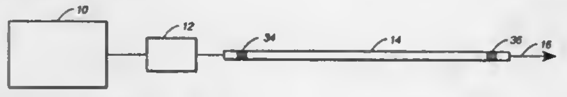
OPTICAL FIBRE LASER PUMP SOURCE FOR FIBRE AMPLIFIERS

Colin J. Mackechnie; Brian F. Ventrudo, and Peter G. Berrang, all of Victoria, Canada, assignors to SDL, Inc., San Jose, Calif.

Filed Aug. 25, 1995, Ser. No. 519,369

Int. Cl.^{6} H01S *3/30*

U.S. Cl. 372—6 **3 Claims**



1. An optical fibre laser pump source for Pr fibre amplifiers in the 1300 nm region comprising:

- a semiconductor laser source for providing a first light output, said laser source having a wavelength emission within the wavelength band of about 800 nm to 1070 nm;
- a Yb^{3+} fibre laser comprising a double clad fibre having a pumped core and inner pump cladding, said core doped with a Yb ions;
- first coupling means for optically launching said first output into said inner pump cladding;
- said Yb^{3+} fibre laser having dominate emission spectra with first and second dominate emission peaks respectively at about 974 nm and 1033 nm;
- a pair of fibre gratings formed in said double clad fibre in spaced relation forming an optical resonator cavity;
- said fibre laser having a sufficient fibre length to provide reabsorption in the doped core sufficient to optically discriminate against laser emission at said first dominate emission peak of said Yb^{3+} fibre laser;
- said gratings both having a peak wavelength corresponding to the peak of the absorption band of Pr^{3+} within the wavelength band of 1012 nm to 1022 nm to optically discriminate against laser emission at said second dominate emission peak of said Yb^{3+} fibre laser;
- the combination of both optical discriminations against said first and second dominate emission peaks of said Yb^{3+} fibre laser forcing stable laser emission at an operational wavelength between 1012 nm to 1022 nm within the absorption band of Pr^{3+};
- one of said fibre gratings approximate to said semiconductor laser source having a maximum reflectivity, R_1 at said operational wavelength and the other of said fibre gratings having a reflectivity, R_2 at said operational wavelength less than maximum reflectivity to provide a second light output; and
- second coupling means for optically launching said second output into a fibre amplifier with a core doped Pr^{3+}.

5,710,787

OUTPUT CONTROLLER FOR LASER DEVICE

Yoshiho Amada; Osamu Wakabayashi, and Noritoshi Ito, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

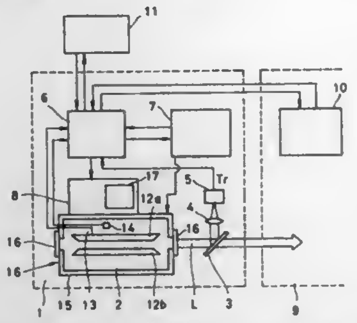
PCT No. PCT/JP94/01601, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/10131, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 28, 1994, Ser. No. 446,858

Claims priority, application Japan, Oct. 5, 1993, 5-249483

Int. Cl.^{6} H01S *3/10*

U.S. Cl. 372—25 **8 Claims**



1. An output control system for a laser device including a laser power source section for allowing pulse discharging with a predetermined pulse width at a predetermined interval across electrodes disposed within a laser chamber in accordance with applied control data; an oscillator for oscillating a laser beam by exciting a laser gas in the laser chamber by the pulse discharging across the electrodes and for outputting the oscillated laser beam to outside; and an output control section for applying the control data to the power source section so that, in the oscillator, a repetitive operation is carried out between a continuous pulse oscillating operation of the laser beam for a predetermined number of times at a predetermined interval and a pause time of the continuous pulse oscillating operation for a predetermined time, the output control system comprising:

- time means for measuring the pause time of the continuous pulse oscillation from end of the continual pulse oscillation to start of a next continual pulse oscillation;
- memory means for previously storing therein, for each pulse of the continuous pulse oscillation, control data for setting an energy of one pulse of the laser beam output from the oscillator to a target energy value in accordance with a magnitude of the pause time;
- detection means for detecting the energy of one pulse of the laser beam output from the oscillator; and
- correction means, based on a value obtained by subtracting the target energy value from a detected energy value of each pulse of the laser beam in a previous continuous pulse oscillation and a measured time value of a pause time immediately before the previous continuous pulse oscillation, for correcting the control data previously stored in association with each pulse in accordance with the length of the pause time.

5,710,788

OPTICALLY STABLE LASER RESONATOR

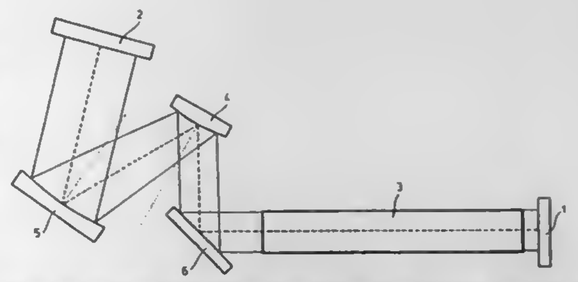
Linus Werner, Neuss, Germany, assignor to Urenco Deutschland GmbH, Jülich, Germany

Filed Dec. 4, 1996, Ser. No. 760,067

Claims priority, application Germany, Aug. 19, 1994, 44 29 452.2

Int. Cl.^{6} H01S *3/08*

U.S. Cl. 372—99 **5 Claims**



1. An optically stable laser resonator having a base mode beam axis and comprising a fully light reflective end mirror arranged at one end of said resonator, a partially reflective mirror serving as an uncoupling window arranged at the other end of said resonator, a laser active medium enclosed in said resonator, a pair of spherical optical mirrors disposed within said resonator, one being diverging (converse) and the other being converging (concave) to provide for an expanded laser beam at the uncoupling window, wherein the lines extending normally from the mirror surface at the incident points of the base mode beam axis of the resonator are disposed in a single plane, said base mode beam axis extending between said fully light reflective end mirror and said diverging mirror having an incidence angle w_1 at the diverging mirror which is larger than 10°, but smaller than 45°, and said base mode beam axis extending between said spherical mirrors having an incidence angle w_2 with respect to a normal line extending from the incidence point of said base mode beam axis and said converging mirror, with a predetermined mirror distance SA and a predetermined focal length f_1 of said diverging mirror and f_2 of said converging mirror which are determined by the formula:

$$\frac{\cos(w_1)}{f_1} + \frac{\cos(w_2)}{f_2} - \frac{SA \times \cos(w_1) \times \cos(w_2)}{f_1 \times f_2} = \frac{1}{f_1 \times \cos(w_1)} + \frac{1}{f_2 \times \cos(w_2)} - \frac{SA}{f_1 \times f_2 \times \cos(w_1) \times \cos(w_2)}$$

5,710,789

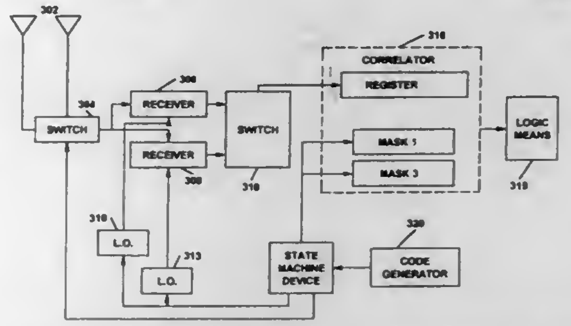
SIGNAL SYNCHRONIZATION SYSTEM FOR ENCODED SIGNALS

Timothy E. Snodgrass, 2054 Sisley Grove Rd., Palo, Iowa 52324, and Scott J. F. Zogg, 2765 Tower Dr., Cedar Rapids, Iowa 52411

Filed Jul. 22, 1996, Ser. No. 681,260

Int. Cl.^{6} H04L *27/26*

U.S. Cl. 375—202 **13 Claims**



1. A system for receiving and processing transmitted signals, comprising:

- an antenna;
- a plurality of receivers coupled to the antenna and tunable to the frequencies upon which the signal is transmitted;
- a correlator for obtaining synchronization between the receivers and the transmitted signals;
- a first switch disposed between the receivers and the correlator thereby coupling each receiver to the correlator;
- a state device coupled to the correlator and the receivers that provides an enabling signal to the receiver and a corresponding decode mask to the correlator for synchronizing the transmitted signal; and
- a code generator coupled to the state device providing a predetermined code sequence for use in obtaining system synchronization.

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5,710,790

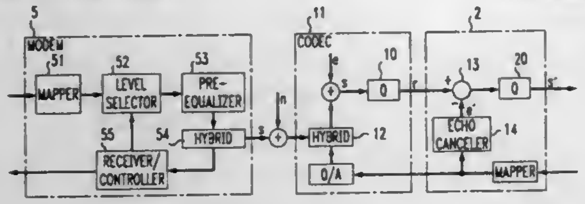
COMMUNICATION ARRANGEMENT WITH IMPROVED ECHO AND NOISE SUPPRESSION IN A CHANNEL CONTAINING QUANTIZATION

Hanan Herzberg, Morganville, and Burton Reuben Saltzberg, Middletown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 1, 1995, Ser. No. 384,498

Int. Cl.^{6} H04B *1/38*

U.S. Cl. 375—219 **33 Claims**



1. Communication apparatus including a level selector for developing analog levels in response to digitized symbols, and means responsive to said analog levels for communicating signals to a remote quantizer, where levels of the signals communicating to the remote quantizer are set to correspond to quantization levels of the remote quantizer, the improvement comprising:

an encoder responsive to an applied digital signal for developing said digitized symbols, where said digitized symbols comport with a preselected error correcting code.

5,710,791

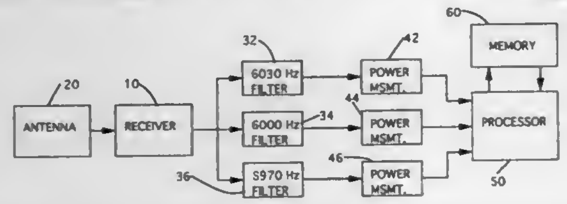
METHODS AND APPARATUS FOR PREDICTING VOICE QUALITY IN AMPS CELLULAR RADIO SYSTEMS

Claude Royer, Hull, Canada; Charles P. Bernardin, Richardson, and Wing F. Lo, Plano, both of Tex., assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 329,922, Oct. 27, 1994. This application Jul. 13, 1995, Ser. No. 502,264

Int. Cl.^{6} H04B *3/46*

U.S. Cl. 375—224 **11 Claims**



1. A method for assessing voice quality for an RF channel in an AMPS cellular radio system, the method comprising:

transmitting a SAT signal from a base station to a mobile unit served by that base station on the RF channel;

receiving the SAT signal at the mobile unit;

retransmitting the received SAT signal at the mobile unit on the RF channel;

receiving the retransmitted SAT signal at the base station;

filtering the received SAT signal to separate frequency components at each possible SAT frequency; and

comparing the separated components to estimate a signal-to-noise ratio for the received SAT signal at the base station.

5,710,792

ADAPTIVE EQUALIZER

Kazuhiko Fukawa, Yokohama; Hitoshi Yoshino, and Hiroshi Suzuki, both of Yokosuka, all of Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan

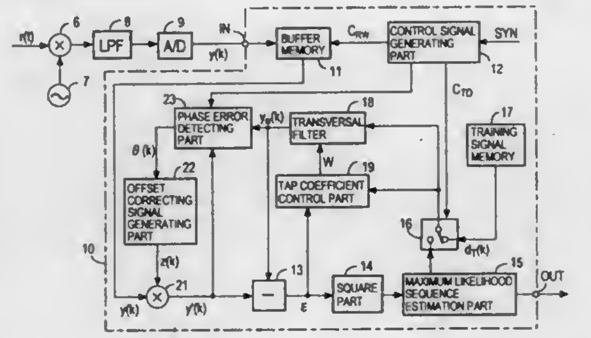
PCT No. PCT/JP94/02092, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO95/17052, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 14, 1994, Ser. No. 416,858

Claims priority, application Japan, Dec. 15, 1993, 5-314670

Int. Cl.^{6} H03H *7/30*

U.S. Cl. 375—229 **6 Claims**


r(t)
6
8
LPF
9
A/D
IN
y(k)
7
BUFFER MEMORY
11
C_RW
CONTROL SIGNAL GENERATING PART
SYN
12
C_TD
23
PHASE ERROR DETECTING PART
y_e(k)
18
TRANSVERSAL FILTER
17
TRAINING SIGNAL MEMORY
θ(k)
22
OFFSET CORRECTING SIGNAL GENERATING PART
W
19
TAP COEFFICIENT CONTROL PART
16
d_T(k)
10
z(k)
21
y(k)
y'(k)
13
ε
14
SQUARE PART
15
MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION PART
OUT

1. An adaptive equalizer for use in a receiver which receives a burst-like received signal, comprising:

buffer memory means into which a sequence of samples of digital signals obtained by sampling a baseband signal obtained through quasi-coherent detection of said received signal is written as a sequence of baseband signal samples and from which the sequence of baseband signal samples is read out with predetermined timing;

control signal generating means which generates a control signal for controlling the write and read of said buffer memory means;

maximum likelihood sequence estimation means which generates and outputs a desired symbol sequence for said baseband signal samples read out from said buffer memory means;

transversal filter means which has a characteristic based on the estimation of the impulse response of a transmission path and is supplied with said symbol sequence in correspondence with the timing of said baseband signal sample and outputs an estimated received signal;

phase error detecting means which detects a phase error between said estimated received signal from said transversal filter means and the baseband signal corresponding to said baseband signal sample;

offset correcting signal generating means which is supplied with said phase error, calculates an estimated offset angular frequency $\Delta\omega_e$ on the basis of said phase error and generates an offset correcting signal of an angular frequency equal in absolute value to said estimated offset angular frequency but opposite thereto in the direction of rotation;

multiplying means which multiplies said baseband signal sample and said offset correcting signal to generate a corrected baseband signal sample; and

subtracting means which calculates the difference between said corrected baseband signal sample and said estimated received signal from said transversal filter means and outputs it as an estimation error;

wherein said maximum likelihood sequence estimation means obtains likelihood information from said estimation error and makes a signal decision by a maximum likelihood sequence estimation algorithm on the basis of said likelihood information.

5,710,793

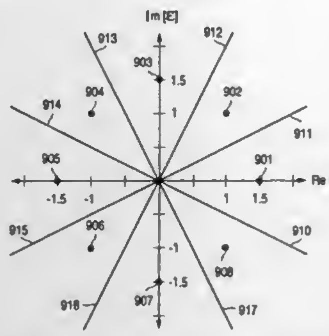
ERROR SIGNAL QUANTIZATION METHOD AND HARDWARE FOR MIXED BLIND AND DECISION DIRECTED EQUALIZATION

Craig Bradley Greenberg, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 21, 1995, Ser. No. 575,998

Int. Cl.^{6} H04T *7/00*

U.S. Cl. 375—232 **41 Claims**



1. A method of quantizing a measured complex error signal to supply a quantized complex error signal, the measured complex error signal including a measured real error component and a measured imaginary error component, the measured complex error signal being defined by a measured error magnitude and a measured error phase angle in a two-dimensional complex plane, the quantized complex error signal including a quantized real error component and a quantized imaginary error component, comprising the steps of:

assigning a third predetermined correction value to the quantized real error component and assigning a first predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a first area of the complex plane;

assigning a second predetermined correction value to the quantized real error component and assigning the second predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a second area of the complex plane;

assigning the first predetermined correction value to the quantized real error component and assigning the third predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a third area of the complex plane;

assigning a negative of the second predetermined correction value to the quantized real error component and assigning the second predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a fourth area of the complex plane;

assigning a negative of the third predetermined correction value to the quantized real error component and assigning a first predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a fifth area of the complex plane;

assigning the negative of the second predetermined correction value to the quantized real error component and assigning the negative of the second predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a sixth area of the complex plane;

assigning the first predetermined correction value to the quantized real error component and assigning the negative of the third predetermined correction value to the quantized imaginary error component when the measured complex error signal is in a seventh area of the complex plane; and

assigning the second predetermined correction value to the quantized real error component and assigning the negative of the second predetermined correction value to the quantized imaginary error component when the measured complex error signal is in an eighth area of the complex plane.

5,710,794

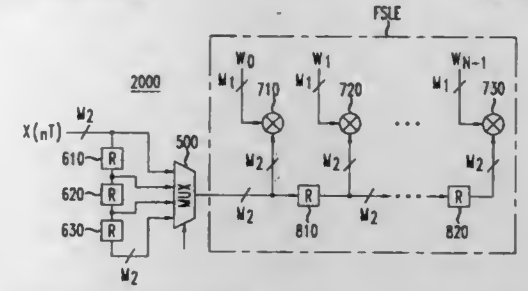
INITIAL PHASE-LOADING CIRCUIT FOR A FRACTIONALLY-SPACED LINEAR EQUALIZER

Naresh Ramnath Shanbhag, Scotch Plains, N.J., assignor to Lucent Technologies, Murray Hill, N.J.

Filed Apr. 28, 1995, Ser. No. 430,560

Int. Cl.^{6} H04L *27/01*

U.S. Cl. 375—234 **20 Claims**



1. An initial phase-loading circuit (IPLC) for a fractionally-spaced linear signal equalizer (FSLE), said circuit comprising:

a source of time-shifted discrete signals; and

a signal coupling component, coupled to said FSLE,

that receives the time-shifted discrete signals from said source and selectively introduces the time-shifted discrete signals to said FSLE.

5,710,795

RECEIVED SIGNAL DECISION APPARATUS FOR DIGITAL MODULATED SIGNAL RECEIVER

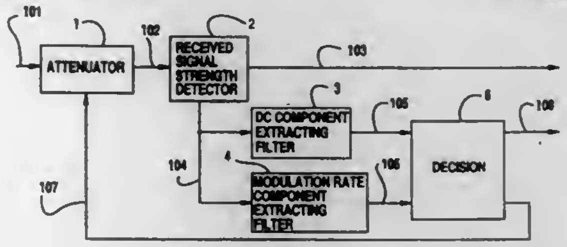
Soichi Tsumura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,057

Claims priority, application Japan, Jul. 15, 1994, 6-164424

Int. Cl.^{6} H04L *27/22*

U.S. Cl. 375—317 **11 Claims**


101
1
ATTENUATOR
102
2
RECEIVED SIGNAL STRENGTH DETECTOR
103
3
DC COMPONENT EXTRACTING FILTER
105
6
108
DECISION
104
4
MODULATION RATE COMPONENT EXTRACTING FILTER
106
107

1. A received signal decision apparatus for a digital modulated signal receiver, comprising:

received signal strength detecting means for detecting a received signal strength corresponding to an envelope of a received signal and outputting a received strength signal;

a DC component extracting filter for extracting a DC component of the received strength signal;

a modulation rate component extracting filter for extracting a modulation rate component of the received strength signal; and

decision means for deciding whether the received signal is optimum based on the extracted DC component and the extracted modulation rate component of the received strength signal.

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5,710,796

METHOD AND RECEIVER FOR DETERMINING A PHASE ERROR IN A RADIO-FREQUENCY SIGNAL

Mikko Järvelä , and Jukka Suonvieri, both of Oulu, Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

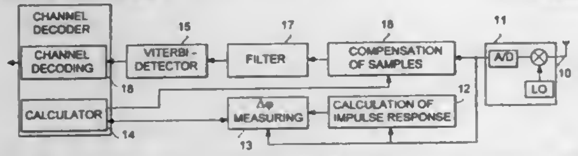
PCT No. PCT/FI95/00212, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO95/28771, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 12, 1995, Ser. No. 557,178

Claims priority, application Finland, Apr. 13, 1994, 941713

Int. Cl.^{6} H03K *9/00;* **H04L** *27/14:27/22*

U.S. Cl. 375—344 **13 Claims**



6. A receiver for receiving a radio-frequency signal, said receiver comprising:

receiving means for receiving a radio-frequency signal;

means for calculating an impulse response for said received signal;

sampling means for taking samples of said received signal at a plurality of chosen measuring points;

complex adapted filtering means for filtering said samples to provide filtered samples;

measuring means for measuring a phase error in said filtered samples;

calculating means responsive to said measuring means for calculating the total of said phase errors in said received signal on the basis of said measured phase error; and

compensation means for compensating for the phase error in said received signal;

said receiving means including adjusting means which, on the basis of said phase error measured by said measuring means, adjust the measuring points of said sampling means in order to keep the measured phase error within predetermined limits.

5,710,797

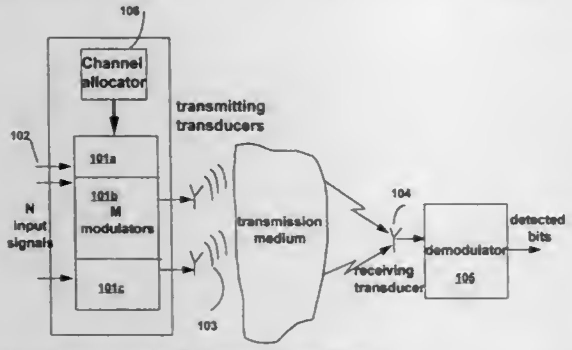
METHOD AND APPARATUS FOR DIGITAL COMMUNICATION IN THE PRESENCE OF CLOSELY SPACED ADJACENT CHANNELS

Mordechai Segal, Herzlia, Israel, and Ofir Shalvi, Cambridge, Mass., assignors to LIBIT Signal Processing Inc., Englewood Cliffs, N.J.

Filed May 23, 1995, Ser. No. 447,410

Int. Cl.^{6} H04L *27/06*

U.S. Cl. 375—346 **32 Claims**



1. A communication system, comprising:

a plurality of modulators each receiving one or more digital communication signals having information bits, each of the modulators operative to transmit over the same transmission medium using at least one of a given set of frequency bands;

a channel allocator connected to the plurality of modulators and operative to allocate the frequency bands to be partially overlapping;

a receiver having a receiving transducer and which is capable of detecting the information bits of one or more desired digital communication signals from each of the overlapping frequency bands in the presence of adjacent channel interference, the receiver comprising:

a demodulator including a down convertor and an analog to digital convertor for producing a digital version of the set of overlapping frequency bands;

a processor unit connected to the demodulator for receiving the digital version of the set of overlapping frequency bands and for detecting the information bits of the one or more desired digital communication signals, the processor unit further includes:

spectral estimation process initially determining timing, frequency and power level parameter estimations of the digital version of each of the overlapping frequency bands;

initialization process receiving the parameter estimations, determining the sequence in which the digital version of each of the overlapping frequency bands is processed, and dividing the one or more desired digital communication signals and the adjacent channel interference into clusters of closely spaced signals;

signal separator process receiving the parameter estimations and subtracting reconstructed adjacent clusters of closely spaced signals from the digital version of the set of overlapping frequency bands; and

detection and reconstruction process detecting the information bits from the clusters of closely spaced signals and producing therefrom each of the plurality of the digital communication signals.

5,710,798

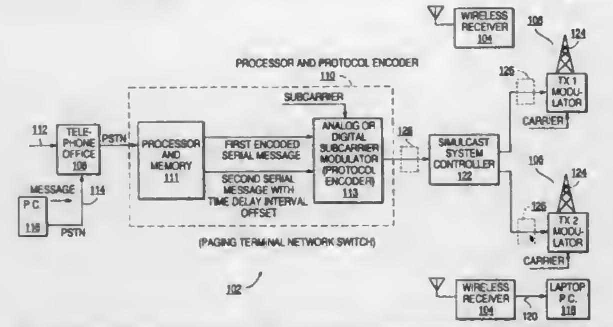
SYSTEM FOR WIRELESS TRANSMISSION AND RECEIVING OF INFORMATION AND METHOD OF OPERATION THEREOF

Thomas J. Campana, Jr., Chicago, Ill., assignor to NTP Incorporated, Annandale, Va.

Continuation-in-part of Ser. No. 391,555, Feb. 21, 1995, Ser. No. 386,060, Feb. 7, 1995, Ser. No. 385,312, Feb. 7, 1995, and Ser. No. 385,143, Feb. 7, 1995, which is a continuation-in-part of Ser. No. 112,256, Aug. 26, 1993, Pat. No. 5,446,759, which is a continuation-in-part of Ser. No. 850,275, Mar. 12, 1992, abandoned, Ser. No. 850,276, Mar. 12, 1992, abandoned, and Ser. No. 850,487, Mar. 12, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,778

Int. Cl.^{6} H04B *7/10;* **H04L** *1/02*

U.S. Cl. 375—347 **96 Claims**


WIRELESS RECEIVER 104
108
124
PROCESSOR AND PROTOCOL ENCODER
110
SUBCARRIER
126
TX 1 MODULATOR
CARRIER
112
TELEPHONE OFFICE 108
PSTN
PROCESSOR AND MEMORY 111
FIRST ENCODED SERIAL MESSAGE
SECOND SERIAL MESSAGE WITH TIME DELAY INTERVAL OFFSET
ANALOG OR DIGITAL SUBCARRIER MODULATOR (PROTOCOL ENCODER) 113
128
SIMULCAST SYSTEM CONTROLLER 122
MESSAGE
114
P.C. 116
PSTN
(PAGING TERMINAL NETWORK SWITCH)
106
124
126
TX 2 MODULATOR
CARRIER
102
WIRELESS RECEIVER 104
120
LAPTOP P.C. 118

1. Transmitting circuitry for wireless transmission of information by modulating a transmitted carrier with a subcarrier. with transmission of the information being subject to fading for a time interval, the transmitting circuitry comprising:

a processor, responsive to a source of information, for providing a first encoded information stream which comprises the information to be transmitted and a second encoded information stream which also comprises the information to be transmitted with the second encoded information stream being delayed by a time delay interval with respect to the first information stream which is equal to or greater than the time interval of the fading; and

an encoder, responsive to the first and second encoded information streams, for modulating the subcarrier with the first and second encoded information streams to produce first and second parallel information streams modulated on cycles of the subcarrier with the first parallel stream containing the first encoded information stream, with the second parallel stream containing the second encoded information stream and with the first parallel information stream as modulated on the subcarrier being time displaced from the second parallel information stream by the time delay interval.

5,710,799

CROSS POLARIZATION INTERFERENCE CANCELER AND CROSS POLARIZATION INTERFERENCE ELIMINATING APPARATUS USING THE SAME

Kenzo Kobayashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

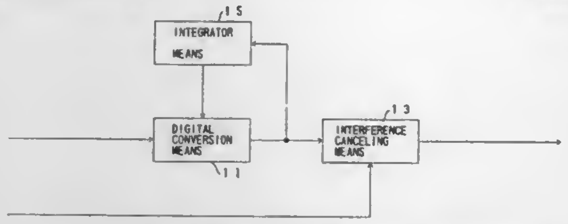
PCT No. PCT/JP93/00735, § 371 Date Feb. 1, 1994, § 102(e) Date Feb. 1, 1994, PCT Pub. No. WO93/25019, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 1, 1993, Ser. No. 190,067

Claims priority, application Japan, Jun. 1, 1992, 4-140721; Jun. 1, 1992, 4-140722; Aug. 28, 1992, 4-229693

Int. Cl.^{6} H04B *1/10*

U.S. Cl. 375—349 **4 Claims**



1. A cross polarization interference canceler comprising:

digital conversion means for subjecting a demodulated signal of one channel to an analog-to-digital conversion out of two channels which are independently formed using carriers having the same frequency but having planes of polarization which are mutually orthogonal;

interference canceling means for canceling interference caused by another channel of said two channels, with respect to the demodulated signal which is digitally converted by said digital conversion means; and

integrator means for carrying out an integration process with respect to the demodulated signal which is digitally converted by said digital conversion means to provide a negative feedback to said digital conversion means so that a D-C. offset introduced by the analog-to-digital conversion is eliminated by said negative feedback.

5,710,800

DATA RECEIVING DEVICE

Masahiro Ito, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 15, 1995, Ser. No. 558,325

Claims priority, application Japan, Nov. 16, 1994, 6-281737

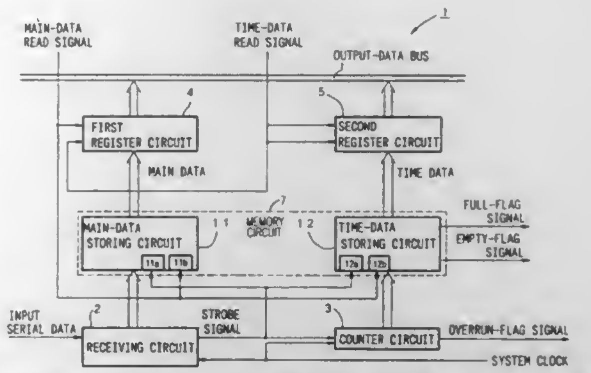
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 375—370 **8 Claims**

6. A data receiving device employed by a system which receives data sequentially transmitted thereto in a non-periodical manner under control of a host CPU, the data receiving device comprising:

a receiving circuit for sequentially receiving a plurality of input data which are sequentially transmitted thereto in a non-periodical manner, the receiving circuit producing a strobe signal when receiving each input data;

a counter circuit for measuring a receiving interval of time between moments of receiving two input data which are consecutively received by the receiving circuit, so that the receiving interval of time is provided as time data;



a memory circuit for storing main data, which are extracted from the receiving circuit, together with the time data, wherein the main data are stored therein with being related to the time data;

a control circuit for controlling read/write states of the memory circuit such that the read state is started after the write state if storage capacity of the memory circuit is fully occupied by predetermined sets of main data and time data;

a first register circuit for temporarily storing the main data, which are extracted from the memory circuit, under control of the control circuit, the main data being outputted from the first register circuit in accordance with a main-data read signal given from the host CPU; and

a second register circuit for temporarily storing the time data, which are extracted from the memory circuit, under control of the control circuit, the time data being outputted from the second register circuit in accordance with a time-data read signal given from the host CPU.

5,710,801

X-RAY EXAMINATION APPARATUS COMPRISING AN EXPOSURE-CONTROL SYSTEM

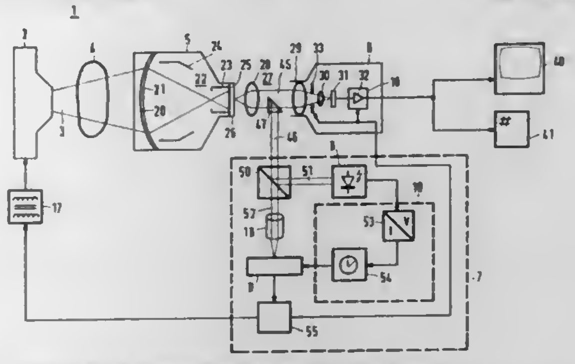
Bartholomeus G. M. H. Dillen, and Rudolph M. Snoeren, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 9, 1996, Ser. No. 728,116

Claims priority, application European Pat. Off., Oct. 10, 1995, 95202719

Int. Cl.^{6} H05G *1/00*

U.S. Cl. 378—98.7 **20 Claims**



1. An X-ray examination apparatus, comprising;

an X-ray detector for converting an X-ray image into an optical image, and

an exposure-control system comprising

a photodetector) for measuring brightness values of the optical image,

which photodetector comprises:

an image pick-up section and

an image storage section

characterized in that the image storage section includes a first storage section and a second storage section and is arranged to receive brightness values in the first storage section, while brightness values are being read from the second storage section (**15**).

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5,710,802

Patent Not Issued For This Number

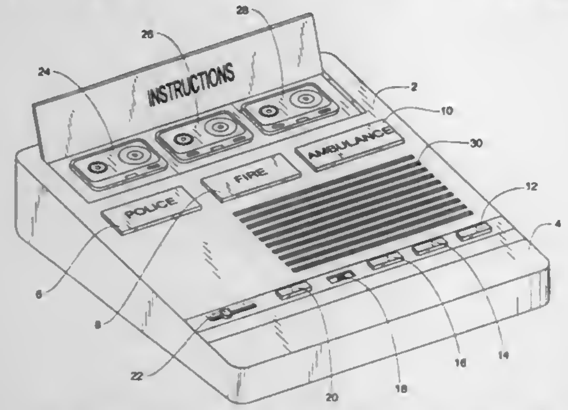
5,710,803
EMERGENCY PHONE MESSAGING SYSTEM

Robert Kowal, and Donna Kowal, both of HR 1 Box 721, Greenwood Lake, N.Y. 10925

Continuation-in-part of Ser. No. 489,752, Jun. 13, 1995, abandoned. This application Sep. 13, 1996, Ser. No. 713,591

Int. Cl.^{6} H04M *11/04*

U.S. Cl. 379—41 **10 Claims**



1. An improved emergency phone messaging system for use with a standard, wire based phone system comprising:

a housing, said housing having at least one flat, accessible control panel surface;

plurality of recording and playback means for recording phone numbers and emergency voice messages, for storing said phone numbers and emergency voice messages, and for playing back said phone numbers and emergency voice messages;

a speaker in electrical communication with at least one said recording and playback means, for audibly testing and screening said emergency voice messages;

test engagement means for selectably testing said phone numbers and emergency voice messages;

a microphone in electrical communication with and for imparting said emergency voice messages into said recording and playback means;

control means for turning said emergency phone messaging system on or off;

a telephone connection port for connecting said recording and playback means to a standard touch-tone telephone;

plurality of emergency activation means, each for activating one said recording and playback means;

message selection means for selectably assigning said phone number and emergency voice message to individual said recording and playback means;

a recording/playback/monitoring control means for initiating said recording and playback means, for accepting phone number inputs, voice message inputs and controlling inputs, for playing back said phone numbers and messages, for requesting a dial tone, and for accepting a monitoring request from a message receiver, and interrupting playback of said emergency voice messages and initiating a monitoring function in response to such a monitoring request;

said recording/playback/monitoring means in communication with said recording and playback means, said speaker, said test engagement means, said microphone, said control means, said emergency activation means, said selection means, and a telephone control means; and

a telephone control means for controlling input from said recording and playback means, from said recording/playback/control circuit and from a telephone line, and for controlling output to said recording/playback/control circuit and to a telephone line.

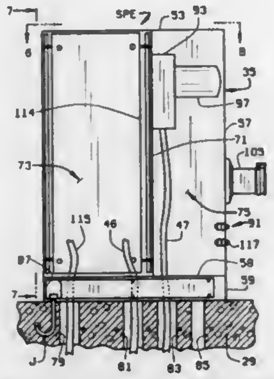
5,710,804
SERVICE PROTECTION ENCLOSURE FOR AND METHOD OF CONSTRUCTING A REMOTE WIRELESS TELECOMMUNICATION SITE

William H. Bhame, Marietta; George Robert Cutler, Fulton County; Bassem Rustom, Lilburn, and Robert L. Dick, IV, Atlanta, all of Ga., assignors to PCS Solutions, LLC, Atlanta, Ga.

Filed Jul. 19, 1995, Ser. No. 504,199

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—58 **23 Claims**



19. A service protection enclosure for installation at a cellular telephone or other wireless telecommunication site comprising a cabinet being adapted to be secured to a suitable foundation and having side walls, a top, and at least one door providing access to the interior of said cabinet, said cabinet housing an AC power distribution panel, said cabinet receiving AC service lines and telephone lines, the interior of said cabinet having at least two separate compartments therewithin including a first compartment for housing means for terminating said telephone lines and a second compartment for receiving said AC service lines, said service protection enclosure further comprising a single point grounding system for grounding said AC service lines and said telephone lines to common ground potential.

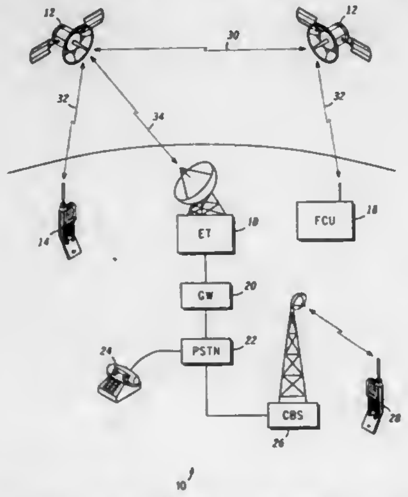
5,710,805
COMBINED REGISTRATION AND CALL CONTINUATION METHOD AND APPARATUS FOR A MOBILE COMMUNICATION SYSTEM

Peter Joseph Armbruster, Tempe; Kenneth Lee Sowles, Chandler; Daniel Richard Tayloe, Phoenix, and James William Bishop, Jr., Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1995, Ser. No. 552,964

Int. Cl.^{6} H04Q *7/38*

U.S. Cl. 379—59 **20 Claims**



1. A method for location registration and call continuation for a communication unit (CU) in a communication system having a Mobile-Switch Interface (MSI) coupled to a Mobile services Switching Center (MSC), wherein the MSI provides an interface between the CU and the MSC, and the MSC interfaces the communication system with another communication system, the method comprising the steps of:

a) evaluating, by the MSI, whether the CU must perform a location updating process after the CU has initiated access to the communication system, wherein the location updating process is performed so that the communication system has a knowledge of a location of the CU;

b) when the location updating process must be performed, the MSI assisting in performing the location updating process;

c) determining, by the MSI, whether the CU has requested to use a system service after the location updating process is completed;

d) when the CU has requested to use the system service after the location updating process is completed, the MSI allowing the CU to use the system service cycle if the MSC has informed the MSI that the CU cannot perform the additional system service, and the MSI repeating the determining step to determine whether the CU intends to use another system service; and

e) when the CU has not requested to use the system service after the location updating process is completed, the MSI forcing the CU to release a channel between the CU and the MSC.

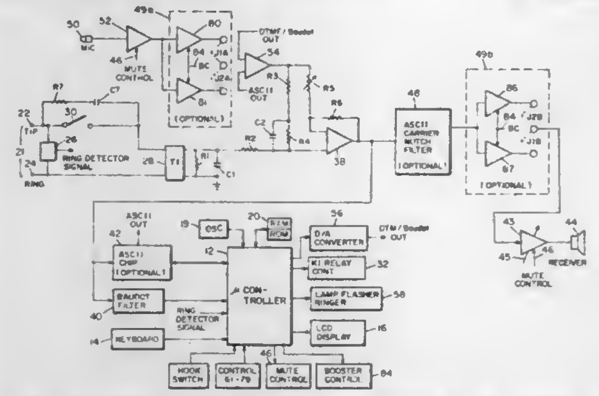
5,710,806
TELECOMMUNICATIONS DEVICE FOR THE HEARING IMPAIRED WITH TELEPHONE, TEXT COMMUNICATION AND ANSWERING, AND AUTOMATED VOICE CARRYOVER

Peter Lee; Phuong Le Pham, both of Huntington Beach, and George Cheung, La Mirada, all of Calif., assignors to Ameri Phone, Inc., Garden Grove, Calif.

Filed Sep. 22, 1994, Ser. No. 310,345

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—96 **21 Claims**



18. The method of operating a telecommunications device for providing voice and text telephone communication over a common telephone line such that said telecommunications device can be connected to said telephone line with at least one of a voice telephone answering machine and a facsimile machine, comprising the steps of:

sending and receiving voice messages and TTY messages over said telephone line;

monitoring said telephone line for a ring signal;

after detecting that ring signals have stopped on said telephone line, waiting for a first predetermined duration of time;

after said first predetermined duration of time, monitoring said telephone line through ac coupling for voice signals during a second predetermined duration of time;

upon recognizing a silent period of predetermined duration in which no voice signals are received during said second predetermined duration of time, supplying a text message to said telephone line;

monitoring said telephone line for a text reply message in response to said text message for a third predetermined duration; and

upon receiving a text reply message, coupling said telephone line to a recording device for recording any incoming text message.

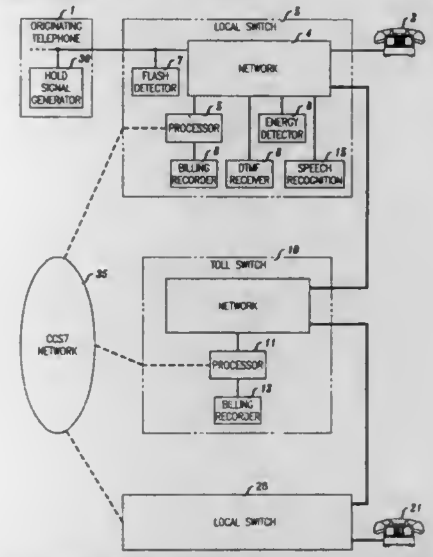
5,710,807
METHOD FOR RECORDING NON-COMMUNICATION INTERVALS DURING A COMMUNICATIONS CALL

David B. Smith, Hinsdale, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 342,199, Nov. 18, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,895

Int. Cl.^{6} H04M *15/00*

U.S. Cl. 379—114 **20 Claims**



1. In a telecommunications switching system which serves at least one calling telephone station, a method for adjusting charges for intervals non-communication between a caller and a called party during a call, comprising the steps of:

detecting in the switching system a signal from the calling station indicating a forthcoming interval of non-communication between a caller and a called party during said call;

making a record of elapsed time of said interval non-communication; and adjusting charges for said call based on said elapsed time of said interval of non-communication in said record.

5,710,808
TELEPHONE DIALLING CODE PROCESSOR

Mark William Eaton, 143 Melrose Road, Mt Roskill, Auckland, New Zealand

PCT No. PCT/NZ94/00013, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/19896, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 23, 1994, Ser. No. 501,052

Claims priority, application New Zealand, Feb. 25, 1993, 247003

Int. Cl.^{6} H04M *1/66*

U.S. Cl. 379—201 **7 Claims**

1. A telephone dialling code processor for connecting to a telephone line between a telephone network and a telephone terminal having a dialler; the processor processing an original dialling code produced within the telephone terminal, said processor comprising:

a dialling code muting means comprising a solid state circuit for selectively blocking low-voltage AC signals of a type used as

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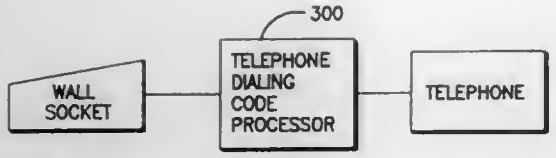


dialling codes from passing along said telephone line while simultaneously passing direct current telephone power and passing high voltage AC ring signals, said muting means being powered from the telephone line,

dialling code generating means, within said dialling code processor, for generating at least one dialling code,

comparison means for comparing original dialling code with at least one table of preloaded combinations, and

decision means for using results of the comparison to control the muting means and the dialling code generating means,

wherein the original dialling code is completely suppressed and a modified dialling code, if any, sent on to the telephone system, is entirely created by the dialling code generating means.

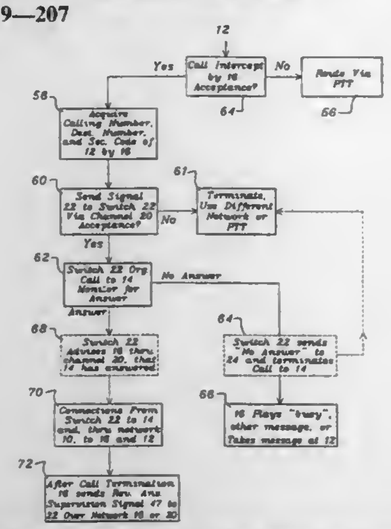
5,710,809
METHOD OF AND SYSTEM FOR EFFICIENT USE OF TELECOMMUNICATION VOICE NETWORKS

Alexander Mashinsky, New York, N.Y., assignor to SNIP, Inc., Carson City, Nev.

Continuation of Ser. No. 320,269, Oct. 11, 1994, abandoned. This application Oct. 10, 1996, Ser. No. 728,670

Int. Cl.⁶ H04M *3/42*

U.S. Cl. 379—207 **1 Claim**


12
Call Intercept by 16 Acceptance?
Yes
No
Route Via PTT
64
66
58
Acquire Calling Number, Dest. Number, and Sec. Code of 12 by 16
60
Send Signal 22 to Switch 22 Via Channel 20 Acceptance?
No
61
Terminate, Use Different Network or PTT
Yes
62
Switch 22 Org. Call to 14 Monitor for Answer
No Answer
Answer
68
Switch 22 Advises 16 thru channel 20, that 14 has answered
64
Switch 22 sends "No Answer" to 24 and terminates Call to 14
70
Connections From Switch 22 to 14 and, thru network 10, to 16 and 12
66
16 Plays "busy", other message, or Takes message at 12
72
After Call Termination 16 sends Rev. Ans. Supervision Signal 47 to 22 Over Network 16 or 20

1. A method of connecting a calling telephone equipment to a called telephone equipment, comprising the steps of:

receiving at a local telecommunications node a first call placed from the calling telephone equipment via a telecommunication network,

transmitting a data message from the local telecommunications node to a remote switching unit in a data communication mode which is external to a voice communication mode of the telecommunication network, the message comprising a telephone number of the called telephone equipment,

placing a second call from the remote switching unit to the called telephone equipment via the telecommunication network,

after the second call has been answered, placing a third call via the telecommunication network from the remote switching unit to the calling telephone equipment through the local telecommunications node,

connecting the calling telephone equipment and the called telephone equipment by connecting the second and third calls at the remote switching unit,

whereby the third call is not placed if the second call is not answered at the called telephone equipment so that costs attributable to the third call are not incurred unless the second call is answered at the called telephone equipment.

5,710,810
QUICK DIALING IN A MOBILE PHONE

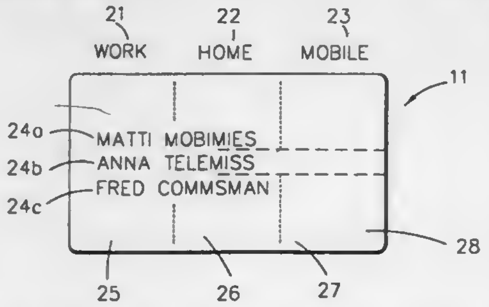
Ilkka Tiilikainen, Tampere, Finland, assignor to Nokia Mobile Phones Limited, Salo, Finland

Filed Jan. 2, 1996, Ser. No. 582,133

Claims priority, application Finland, Jan. 5, 1995, 950079

Int. Cl.⁶ H04M *1/00;1/56*

U.S. Cl. 379—355 **15 Claims**



1. A method for quickly initiating a telecommunication connection from a communication apparatus (**10**), in which method telephone numbers and corresponding identifications are stored in a memory of said communication apparatus (**10**) prior to making a call and where the number to be called is selected with a quick dialing method wherein the user first searches an identification on a display (**11**) corresponding to the required stored number by using keys (**11**, **12**, **13**), characterized in that thereafter a call to the selected number is initiated by a single touching of a predetermined area (**25**, **26**, **27**) of said display; and

in that at least two identifications (**24***a*, **24***b*, **24***c*) are shown on the display at the same time whereby the required number is selected by first scrolling the required identification onto a pre-defined line (**24***b*) of said display and by then touching a column (**21**, **22**, **23**) corresponding to a required section (**25**, **26**, **27**).

5,710,811
SPEECH CIRCUIT FOR SUBSCRIBER TELEPHONE APPARATUS

Luciano Tomasini, Monza; Rinaldo Castello, Arcore; Ivan Bietti, Casal Romano, and Giancarlo Clerici, Vimodrone, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Apr. 10, 1996, Ser. No. 633,843

Claims priority, application European Pat. Off., Apr. 11, 1995, 95830138

Int. Cl.⁶ H04M *1/00*

U.S. Cl. 379—394 **10 Claims**

1. A speech circuit for subscriber telephone apparatus, comprising:

two line terminals for connection to a two-wire telephone line,

a signal generator for generating signals for transmission on said telephone line,

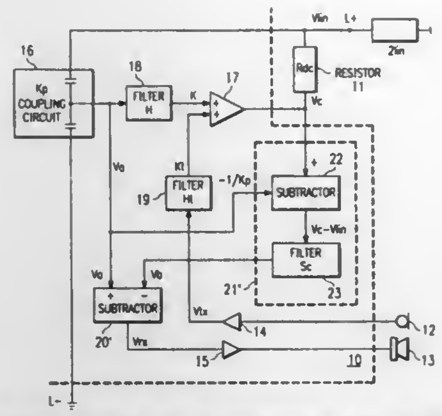
a receiver for receiving signals coming from said telephone line,

a circuit for coupling said signal generator and said receiver to said telephone line, comprising:

means for detecting said signals coming from said telephone line, said means for detecting being connected to said line terminals and having an output terminal,

a resistor connected to the line terminals so that a current substantially equal to the line current passes through it,

first processing and filtering means which are connected between said output terminal of said means for detecting and said resistor and, in combination with said means for detecting and with said resistor, can constitute a positive feedback loop for the formation of a complex termination impedance,



second processing and filtering means connected between said signal generator and said resistor for applying said signal to be transmitted to said telephone line, through said resistor, and

a subtractor having a first input connected to said output terminal of said means for detecting in order to receive a signal correlated to said signal coming from said telephone line, a second input to which is applied a signal correlated to said signal to be transmitted, and an output connected to said receiver, said subtractor being able to output a signal representing the difference between the signals on said first and second inputs,

characterized in that it comprises a filter/subtractor having a first input connected to the connection point between said first processing and filtering means and said resistor, a second input connected to a point on the path of said signal coming from said telephone line, and an output connected to said second input of said filter/subtractor to supply it with said signal correlated to said signal to be transmitted.

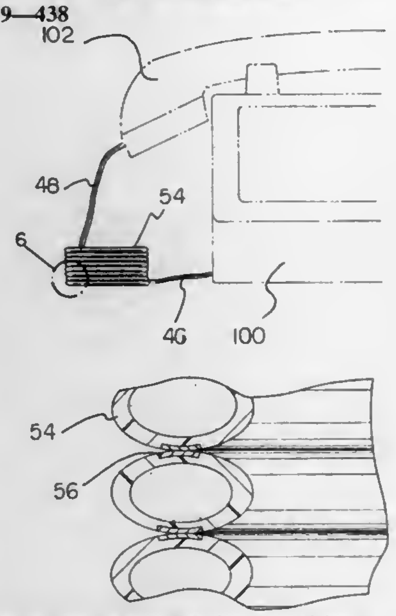
5,710,812
TELEPHONE CORD ANTI-TWISTING DEVICE

Matthew A. Fogel, 1553 Roma Dr., Vista, Calif. 92083-5031

Filed Jun. 6, 1996, Ser. No. 659,286

Int. Cl.⁶ H04M *1/00*

U.S. Cl. 379—438 **1 Claim**



1. A telephone anti-twisting device comprising:

a phone cord having a first end coupled with a base of a telephone, a second end of the phone cord coupled with a handset of the telephone, the phone cord having means for retractability, an intermediate extent of the phone cord comprised of a plurality of separable concentric rings in a stacked configuration when fully retracted, the means for retractability further including magnets disposed on upper and lower surface of each of the concentric rings, the magnet disposed on the upper surface of each concentric ring having a first polarity and the magnet of the lower surface of each concentric ring having a second polarity wherein the first polarity is opposite of the second polarity.

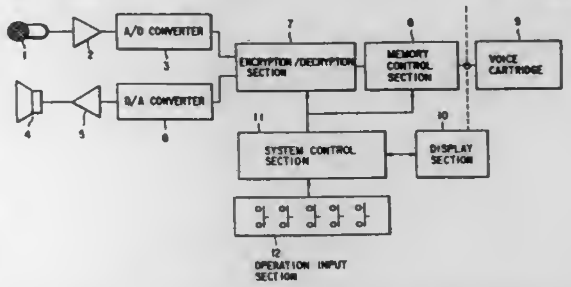
5,710,813
DIGITAL VOICE RECORDING/REPRODUCING APPARATUS

Nobuo Terui, and Hidetaka Takahashi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 412,131

Int. Cl.⁶ H04L *9/00*

U.S. Cl. 380—4 **9 Claims**



1. A digital voice recording or reproducing apparatus comprising:

key number setting means for setting a key number for encryption;

encrypting means for converting digital voice data to encryption data in accordance with said key number set by said key number setting means;

a voice memory for recording one of encrypted digital voice data and unencrypted digital voice data;

decrypting means for decrypting said encrypted data recorded in said voice memory in accordance with said key number set by said key number setting means; and

selecting means for selecting whether or not encryption processing by said encrypting means and decrypting processing by said decrypting means are executed.

5,710,814
CRYPTOGRAPHIC UNIT TOUCH POINT LOGIC

Keith Klemba, and Roger Merkling, both of Palo Alto, Calif., assignors to Cheyenne Property Trust, San Francisco, Calif.

Filed Jul. 23, 1996, Ser. No. 685,076

Int. Cl.⁶ H04K *1/00*

U.S. Cl. 380—9 **48 Claims**

1. A cryptographic unit, comprising:

at least one cryptographic method that is disabled in one or more predetermined ways at a plurality of touch points; and

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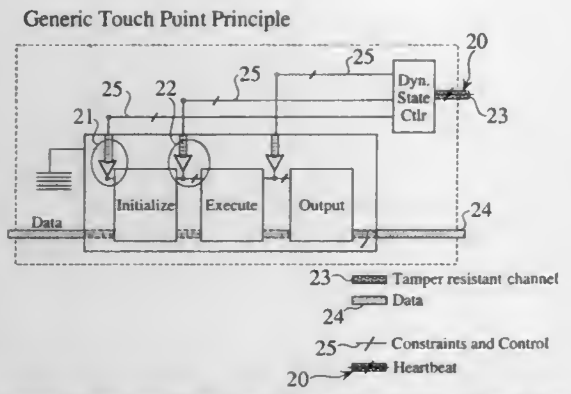

Generic Touch Point Principle
20
25
25
25
22
21
Dyn. State Ctlr
23
Initialize
Execute
Output
Data
24
23 Tamper resistant channel
24 Data
25 Constraints and Control
20 Heartbeat

dynamic state enabling logic at each touch point that forms a touch point gate which requires regular reconfiguration to maintain said touch points in an enabled state.

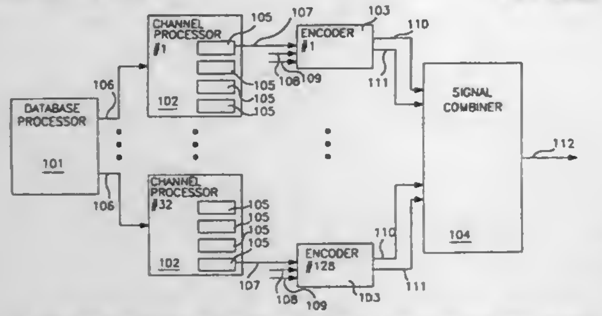
5,710,815
ENCODER APPARATUS AND DECODER APPARATUS FOR A TELEVISION SIGNAL HAVING EMBEDDED VIEWER ACCESS CONTROL DATA

Fong Ming, and Ngai-Ming Tsang, both of New Territories, Hong Kong, assignors to Vtech Communications, Ltd., Tai Po, Hong Kong

Filed Jun. 7, 1995, Ser. No. 477,659

Int. Cl.^{6} H04K *1/00*

U.S. Cl. 380—20 **30 Claims**



1. An apparatus for embedding viewer access control data within a television signal, said television signal including a sequence of television programs, said apparatus comprising:

means for generating a program category code identifying at least one attribute of program content of an associated television program;

means for changing said program category code during said associated television program; and

means coupled to said television signal and said program category code generating means for inserting said program category code into said television signal,

whereby an individual viewer may preclude receipt of portions of said television programming identified by a corresponding program category code as containing a program content attribute for which said individual viewer has chosen to preclude viewing.

5,710,816
METHOD AND APPARATUS FOR ENSURING RECEIPT OF VOICEMAIL MESSAGES

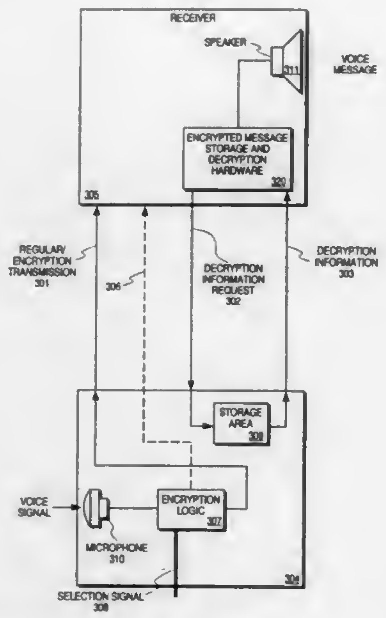
David G. Stork, and Nancy P. Stork, both of Stanford, Calif., assignors to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company, Ltd., Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,364

Int. Cl.^{6} H04L *9/00;9/08*

U.S. Cl. 380—21 **31 Claims**

26. An apparatus for sending and receiving voice signals, said transceiver comprising:



a microphone to receive a voice signal;

an encryption unit coupled to the microphone to generate an encryption version of the voice signal in response to the voice signal;

a telephone transmitter coupled to the encryption unit to transmit the encrypted version of the voice signal to a first location over a first of a plurality of telephone lines and to transmit first decryption information over a second of the plurality of telephone lines in response to a request from the first location.

5,710,817
METHOD AND DEVICE FOR PREVENTING UNAUTHORIZED ACCESS TO A COMPUTER SYSTEM

Peter Bertil Tom Sjööquist, Linköping, Sweden, assignor to ICL Systems AB, Kista, Sweden

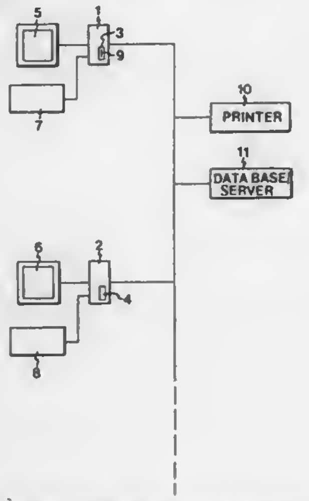
PCT No. PCT/SE93/00702, § 371 Date May 12, 1994, § 102(e) Date May 12, 1994, PCT Pub. No. WO94/04972, PCT Pub. Date Mar. 3, 1994

Continuation of Ser. No. 211,728, May 12, 1994, abandoned. This PCT application Aug. 24, 1993, Ser. No. 551,232

Claims priority, application Sweden, Aug. 25, 1992, 9202427

Int. Cl.^{6} H04L *9/32;9/00;9/30*

U.S. Cl. 380—25 **4 Claims**



1. A method for preventing access to a computer system, comprising a processing unit or the like, a disk unit for floppy disks, display and a keyboard, comprising the steps of

recording, on a floppy disk, a personal identification code that includes the user's name and an encrypted personal access cede, the encryption being carried out by means of a one-way encryption function,

recording on the same floppy disk, an authenticity code which is formed from the personal identification code and a system access code, which system access code is used as an encryption key, and is stored in a permanent memory accessible only to a system administrator,

inserting the floppy disk into the disk unit before start-up of said computer system,

in starting-up, said computer system reading at least the personal identification code in said information and the authenticity code from the floppy disk,

said computer system then checking the authenticity of the read information by using the system access code stored in the permanent memory as an encryption key to forms respective authenticity code which is compared with the authenticity code read from the floppy disk,

said computer system subsequently, at least in the case of the read information being authenticated, requesting the user via the display to enter his name and his personal access code in non-encrypted form via the keyboard,

said computer system checking, after the entering has been carried out, the user's name read from the floppy disk against the user's name as entered via the keyboard,

the computer system encrypting the entered non-encrypted personal access code by means of the one-way encrypting function, and, subsequently, checking the result against the encrypted personal access code read from the floppy disk, and

said computer system giving the user access to the computer system only in the case of a positive result of all three checks, namely, the read information being authenticated, the read user's name corresponding to the keyboard entered user's named, and the read encrypted personal access code corresponding to the non-encrypted keyboard entered personal access code following encryption.

5,710,818
APPARATUS FOR EXPANDING AND CONTROLLING SOUND FIELDS

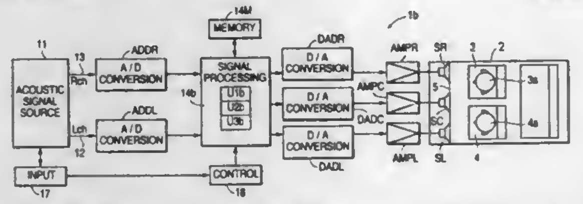
Toshitaka Yamato; Hiroshi Kowaki, both of Kobe; Kazuya Sako, Kakogawa, and Hiroyuki Yamaguchi, Kobe, all of Japan, assignors to Fujitsu Ten Limited, Hyogo-ken, Japan

Continuation of Ser. No. 786,847, Nov. 1, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 188,738

Claims priority, application Japan, Nov. 1, 1990, 2-115813 U; Nov. 1, 1990, 2-115814 U; Nov. 8, 1990, 2-305707

Int. Cl.^{6} H04S *1/00*

U.S. Cl. 381—1 **13 Claims**



1. An apparatus for expanding a stereophonic sound field produced by at least two loudspeakers disposed asymmetrically in front of a listener, said apparatus comprising:

a right and a left sound input signal;

a plurality of first circuits including phase shifting means and attenuating means;

a filter for filtering signals of different frequency bands interposed before the plurality of said first circuits

a second circuit including variable level adjusting means; and,

a delay circuit for delaying the right and left sound input signals to obtain respective delayed right and left sound input signals, respectively;

wherein said first circuits produce a right and a left crosstalk signal from the right and left sound input signals by phase shifting using the phase shifting means and by level correction using the attenuating means, and expand and symmetrize the sound field with respect to the listener by admixing the right and left crosstalk signals to the delayed left and right sound input signals, respectively,

wherein the frequency range of the right and left input signals is subdivided into plural partial bands so as to obtain the crosstalk signals, and

wherein said second circuit produces a right and a left crosstalk adjustment signal from the right and left sound input signals by level adjustment using the variable level adjusting means, and facilitates the adjustment of sound field expansion for the listener by admixing the right and left crosstalk adjustment signals to the delayed left and right sound input signals, respectively.

5,710,819
REMOTELY CONTROLLED, ESPECIALLY REMOTELY PROGRAMMABLE HEARING AID SYSTEM

Jan Tøpholm, Holte, and Søren Erik Westermann, Hellerup, both of Denmark, assignors to Tøpholm & Westermann APS, Vaerloese, Denmark

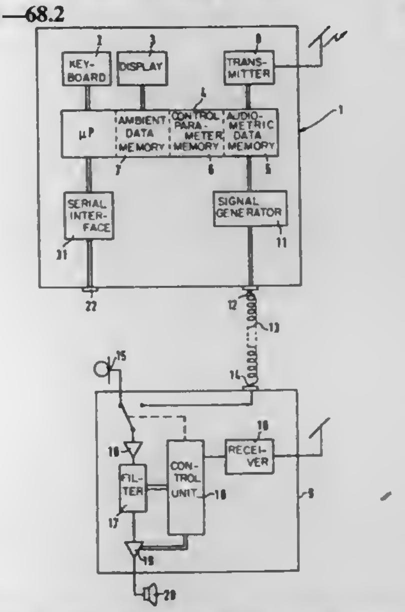
PCT No. PCT/EP94/00261, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO94/22276, PCT Pub. Date Sep. 29, 1994

PCT Filed Jan. 29, 1994, Ser. No. 424,472

Claims priority, application Germany, Mar. 15, 1993, 43 08 157.6

Int. Cl.^{6} H04R *25/00*

U.S. Cl. 381—68.2 **9 Claims**



1. A remotely controllable hearing aid system, especially with remote-control-programmable transmission characteristics, comprising an external control device (**1**) with a keyboard (**2**) for input and control functions and a display device (**3**) for operator prompting, with a data processing device (**4**) with assigned program memories and data memories, and with a transmitter (**8**) for wireless transmission of control parameter groups to a heating aid (**9**) equipped with a receiver (**10**) and other signal processing circuits, characterized by a signal generator (**11**) contained in the control device (**1**) and controllable by the data processing device (**4**) for generation of signals located mainly in the audible frequency range, and with a releasable, conductive connection (**12, 13, 14**) between the output of the signal generator (**11**) and an audio input of the hearing aid, as well as with a memory (**5**) for audiological or audiometric data located in the control device, whereby said memory is also operationally connected with the data processing device (**4**).

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5,710,820
PROGRAMMABLE HEARING AID

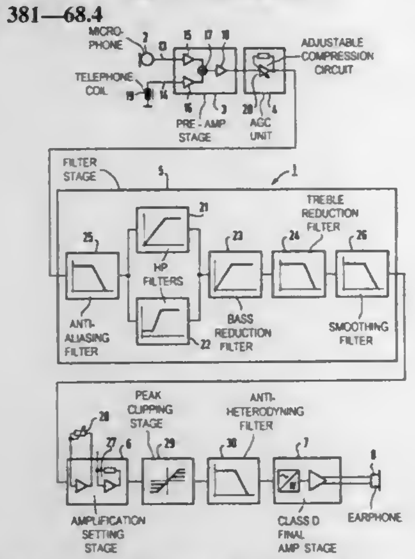
Raimund Martin, Eggolsheim; Werner Hohn, Uttenreuth, and Reinhard Kern, Eckental, all of Germany, assignors to Siemens Augiologische Technik GmbH, Erlangen, Germany

Filed Mar. 22, 1995, Ser. No. 407,953

Claims priority, application European Pat. Off., Mar. 31, 1994, 94105192

Int. Cl.^{6} H04R *25/00*

U.S. Cl. 381—68.4 **37 Claims**



37. A programmable hearing aid comprising:

an analog part for processing incoming audio signals, including a microphone, a telephone coil, pre-amplifier means for pre-amplifying signals from said microphone and said telephone coil to produce a pre-amplified output, automatic gain control means for automatically amplifying said pre-amplified output with a variable gain dependent on a characteristic of said pre-amplified output to produce an AGC output, filter means for filtering said AGC output to produce a filtered output, Class D amplifier means, having an input supplied with said filtered output and having an output, for amplifying said filtered output with a selected gain, means connected to said Class D amplifier means for setting said selected gain, and an earphone connected to said output of said Class D amplifier means;

a digital part comprising means for generating and supplying a plurality of control signals for operating said analog part at a basic setting, including a first control signal for controlling respective amplification of signals from said microphone and said telephone coil in said pre-amplifier means and a second control signal supplied to said means for setting said selected gain for controlling the setting of the gain of said Class D amplifier means, memory means for storing a telephone coil mode setting, deviating from said basic setting, and interface means for selectively causing said means for generating said control signals to employ said telephone coil mode setting instead of said basic setting.

5,710,821
AUDIO COMMUNICATIONS SYSTEM WITH BUILT IN EXPANSION CAPABILITY FOR A DESKTOP COMPUTER

Chris Cheab, San Jose, Calif., assignor to Sound Minds Technology, Inc., Campbell, Calif.

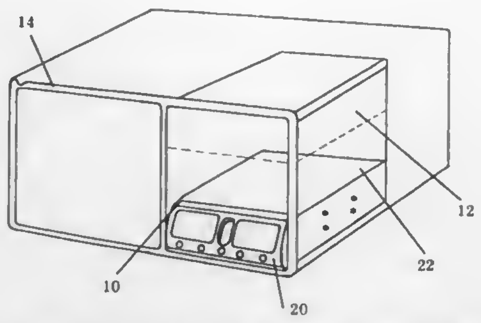
Continuation-in-part of Ser. No. 899,739, Jun. 17, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,305

Int. Cl.^{6} H04R *1/02*

U.S. Cl. 381—90 **20 Claims**

1. An audio communications system for installing into the drive bay of a computer, comprising:

a least one speaker;



means for enclosing, partitioning and isolating a volume of air space contained in said drive bay, thereby creating reveberating chamber for said at least one speaker, the said at least one speaker installed facing a user space to the front and facing said reveberating chamber to the back;

front panel means for enabling a user to interact with said audio communications system;

signal communication means between said audio communications system and said computer;

electrical means for powering said audio communications system from said computer.

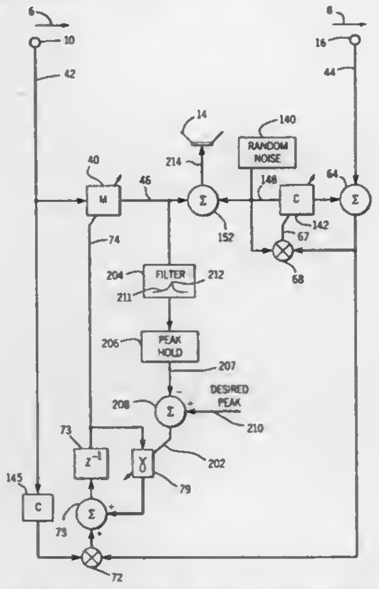
5,710,822
FREQUENCY SELECTIVE ACTIVE ADAPTIVE CONTROL SYSTEM

Shawn K. Steenhagen, Madison, Wis.; Steve C. Southward, Cary, N.C., and Kent F. Delfosse, Madison, Wis., assignors to Digisonix, Inc., Middleton, Wis., and Lord Corporation, Erie, Pa.

Filed Nov. 7, 1995, Ser. No. 553,186

Int. Cl.^{6} G10K *11/16*

U.S. Cl. 381—71.12 **72 Claims**



1. An active adaptive control method comprising introducing a control signal from an output transducer to combine with a system input signal and yield a system output signal, sensing said system output signal with an error transducer providing an error signal, providing an adaptive filter model having a model input from a reference signal correlated to said system input signal, and a model output outputting a correction signal to said output transducer to introduce said control signal according to a weight update signal, adaptively leaking said weight update signal as a function of said correction signal relative to a given peak value according to a desired peak value signal such that said correction signal adaptively converges to a value limited by said peak value, filtering said correction signal by a filter having a transfer characteristic which is a function of a frequency dependent shaped power limitation characteristic maximizing usage of available output transducer authority.

13. An active adaptive control method for a system input signal having a plurality of tones, comprising separating said system input signal into at least first and second input tones, introducing a control signal from an output transducer to combine with said system input signal and yield a system output signal, sensing said system output signal with an error transducer providing an error signal, providing a first adaptive filter model having a model input from a first reference signal correlated to said first input tone, and a model output outputting a first correction signal to said output transducer to introduce said control signal according to a first weight update signal, adaptively leaking said first weight update signal as a function of said first correction signal relative to a first given peak value according to a first desired peak value signal such that said first correction signal adaptively converges to a value limited by said first peak value, providing a second adaptive filter model having a model input from a second reference signal correlated to said second input tone, and a model output outputting a second correction signal to said output transducer to introduce said control signal according to a second weight update signal, adaptively leaking said second weight update signal as a function of said second correction signal relative to a second given peak value according to a second desired peak value signal such that said second correction signal adaptively converges to a value limited by said second peak value.

5,710,823
HOWLING REMOVER HAVING CASCADE CONNECTED EQUALIZERS SUPPRESSING MULTIPLE NOISE PEAKS

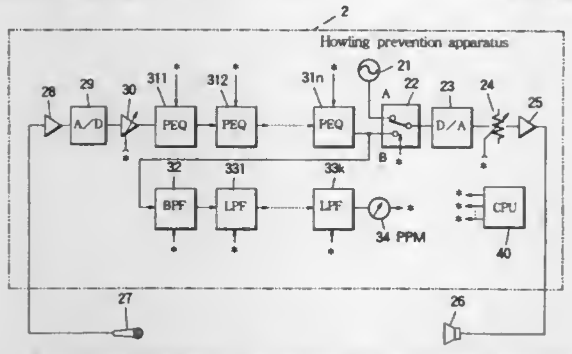
Yuichi Nagata; Satoshi Suzuki; Morito Yamada; Masao Yoshida; Mikio Kitano; Kiyoto Kuroiwa, and Shigenobu Kimura, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 11, 1995, Ser. No. 526,771

Claims priority, application Japan, Sep. 9, 1994, 6-216293

Int. Cl.^{6} H04R *27/00*

U.S. Cl. 381—83 **5 Claims**



1. A howling prevention apparatus for preventing a howling noise generated in an amplification loop, the amplification loop including a sound collector for collecting a sound to be produced, and sound producing means for amplifying the sound collected by the sound collector and for producing a sound, said howling prevention apparatus comprising:

a plurality of equalizers each having a variable frequency response, and being coupled in series to one another between the sound collector and the sound producing means;

a detector for supplying a noise signal to said sound producing means to enable said sound producing means to produce a test sound and for measuring the test sound collected by said sound collector through said equalizers to thereby detect a plurality of frequency points at which a loop gain of the amplification loop reaches a peak; and

a circuit for successively setting the variable frequency response of each equalizer to suppress a noise peak at and around each frequency point detected by said detector so that the plurality of the equalizers are individually adjusted to suppress the respective noise peaks to thereby prevent the howling noise, wherein

said detector comprises a band pass filter having a variable center frequency and being coupled to the plurality of equalizers, and at least one stage of a low pass filter cascade-connected to the band pass filter and having a cut-off frequency variable in a specified relationship with the center frequency, and a circuit for stepwise sweeping the variable center frequency of the band pass filter so as to detect the plurality of the frequency points.

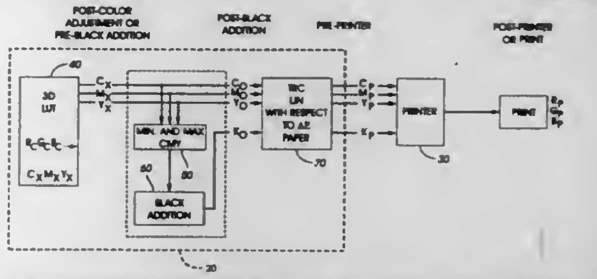
5,710,824
SYSTEM TO IMPROVE PRINTER GAMUT

Michael C. Mongeon, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 13, 1996, Ser. No. 614,599

Int. Cl.^{6} G06K *9/00;* **B41B** *15/00;* **G03F** *3/08*

U.S. Cl. 382—162 **3 Claims**



1. A method of expanding the color gamut of a color printer so that color images defined in terms of colorimetric color signals may be printed on a color printer responsive to printer colorant signals to render color prints with a set of three primary colorants and black on a substrate, the method comprising the ordered steps of:

a) linearizing the printer response by:

i) producing a set of printer colorant signals to print a corresponding set of varying density samples of each of the three primary colorants and black on a substrate,

ii) determining ΔE_p between the printer colorant signals and the substrate; and

iii) generating a printer linearization table for each of the three primary colorants and black whereby a linear increase in a colorant signal produces a linear increase in a printer colorant signal;

b) determining, for a given density characteristic of a combination of primary colorant signals to generate a color on the substrate, a black colorant signal, to add black to a color print as a nonlinear function of the primary colorant signals so as to expand the printable color gamut;

c) producing a color transform and correction table by:

i) producing a second set of printer colorant signals of colors from combinations of the three primary colorants, with black colorant signals added in accordance with the determined density characteristic of the combination of primary colorant signals, to print a corresponding set of color samples from combination of the three primary colorants and black on a substrate.

ii) measuring the color of each printed color sample in terms of colorimetric color signals, and

iii) generating a color transformation table mapping measured colors in terms of the three primary colorants used to generate the color samples to colorimetric color signals;

d) storing an addressable mapping of colorimetric color signals to colorant signals in a printer memory.

5,710,825
CUTTING LINE MEASURING APPARATUS

Koulchi Suda, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Jul. 7, 1995, Ser. No. 499,160

Int. Cl.^{6} G06K *9/00;9/30*

U.S. Cl. 382—145 **26 Claims**

1. A cutting line measuring apparatus comprising:

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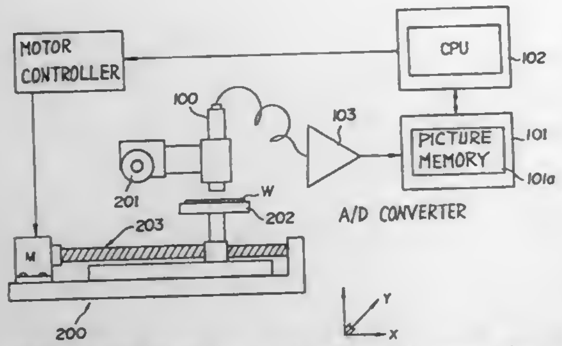


photographing means for photographing a cutting line of a semiconductor wafer;
range setting means for setting a measuring range of the cutting line;
data taking-in means for taking in an image signal within the measuring range outputted from the photographing means into an image memory as an image data;
binary-encoding means for transforming the image data in the image memory into binary image data;
first contour tracing means for tracing a contour of the cutting line from one side to the other side of the cutting line based on the binary image data;
second contour tracing means for tracing the contour of the cutting line in reverse from the other side to the one side of the cutting line based on the binary image data; and
judging means for judging a correction of the contour tracing based on a comparison of tracing results by the first contour tracing means with tracing results by the second contour tracing means.

5,710,826
IMAGE ENCODING METHOD

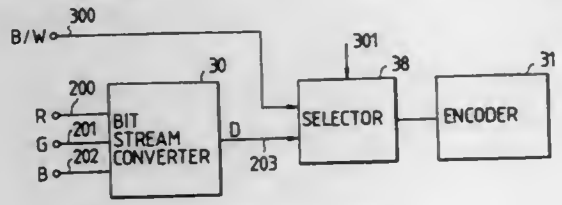
Hidefumi Osawa, Kawaguchi; Yasuhiko Yasuda, Musashino, and Shigeo Kato, Saitama-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 982,115, Nov. 25, 1992, Pat. No. 5,317,428, which is a continuation of Ser. No. 514,766, Apr. 26, 1990, abandoned. This application Feb. 2, 1994, Ser. No. 190,470

Claims priority, application Japan, Apr. 26, 1989, 1-106608; Apr. 26, 1989, 1-106609

Int. Cl.^{6} G06T *9/00*

U.S. Cl. 382—166 **13 Claims**



1. An image encoding method comprising:
a first inputting step of inputting a plurality of bits of signals representing a color of each of a plurality of pixels in a color image;
a second inputting step of inputting a binary signal representing whether each of a plurality of pixels in a monochromatic image is black or white;
a converting step of converting the plurality of bits of signals into a bit stream signal representing a color of each of a plurality of pixels in the color image;
a third inputting step of inputting a switching signal;
a selecting step of selecting one of the bit stream signal and the binary signal on the basis of the switching signal;
a compressing step of compressing the selected signal by a prediction encoding; and
an adding step of adding, to the compressed signal, identification data representing a result of the selection.

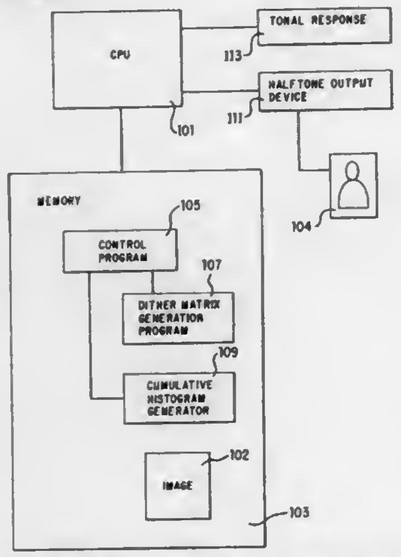
5,710,827
HALFTONE DITHER CELL WITH INTEGRATED PREFERRED COLOR MATCHING

Alexander Perumal, Jr., Poway, and Qian Lin, Santa Clara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 308,321, Sep. 19, 1994. This application Oct. 31, 1995, Ser. No. 558,560

Int. Cl.^{6} G03F *3/08;* **H04N** *1/46;1/40*

U.S. Cl. 382—167 **18 Claims**



1. A method of generating a dither matrix incorporating a desired vivid response, for use in a thermal-inkjet printer; said method comprising:
generating a dither matrix with a predicted vivid response close to the desired vivid response;
said generating step comprising incorporation into the dither matrix of a generally S-shaped response curve that provides a vivid response;
measuring actual response;
manipulating a cumulative histogram for said dither matrix in response to said actual response; and
inputting said cumulative histogram to a dither generation program to generate a dither matrix that conforms to said cumulative histogram.

5,710,828
METHOD AND APPARATUS FOR CONVERTING A THRESHOLD MATRIX WHICH IS THEN USED TO BINARIZE IMAGE SIGNALS

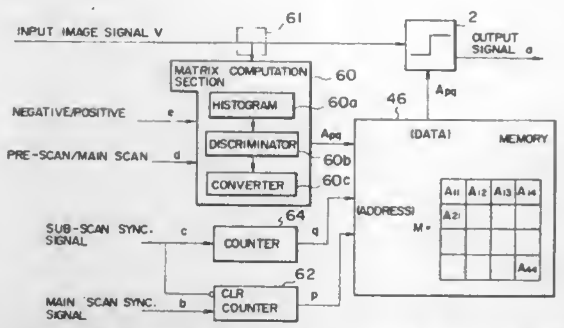
Michinori Hashimoto, Ayase, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1995, Ser. No. 413,849

Int. Cl.^{6} G06K *9/38*

U.S. Cl. 382—172 **17 Claims**

1. An image processing method, for employing a threshold matrix to binarize image signals obtained by reading an image recorded on a film, comprising the steps of:
a) preparing a histogram that represents the number of pixels in relation to an intensity or brightness level of said image signals;
b) discriminating from the histogram a middle tone image brightness range corresponding a middle tone image;



c) converting individual elements of a reference threshold matrix by using uppermost and lowermost brightness values of said middle tone image brightness range to obtain a converted threshold matrix; and
d) binarizing said image signals by said converted threshold matrix,
wherein at said step c), said individual elements of said reference threshold matrix are converted by an expression given below to obtain said converted threshold matrix;

$$A_{pq}=a_{pq}(U-L)/X+L$$

wherein
A_{pq}: individual elements of said converted threshold matrix;
a_{pq}: the individual elements of said reference threshold matrix;
U: the uppermost brightness value of said middle tone image brightness range;
L: the lowermost brightness value of said middle tone image brightness range; and
X: a number that is greater than (U−L) and smaller than N, where N is a number representing an entire range of gray scale levels that is read for said image, when said film is a negative film, or a number that is greater than 1 and smaller than (U−L) when said film is a positive film.

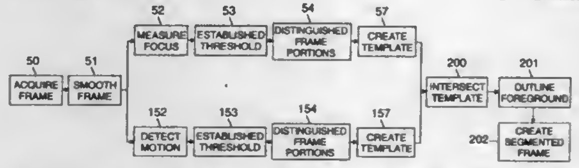
5,710,829
SYSTEM AND METHOD FOR FOCUSED-BASED IMAGE SEGMENTATION FOR VIDEO SIGNALS

Tsuhan Chen, Middletown, and Cassandra Turner Swain, Eatontown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 27, 1995, Ser. No. 429,458

Int. Cl.^{6} G06T *9/20*

U.S. Cl. 382—173 **37 Claims**



35. An apparatus for generating an output signal representing an outline of pertinent information in a video frame for use in compressing digital signals, said apparatus comprising:
receiving means for receiving a digital signal, said received digital signal representing a plurality of blocks, each block having an image attribute;
storage means for storing the image attribute of the blocks; and
processing means for processing said received digital signal to generate said output signal, said processing means operable to:
store at least a matrix of attributes;
calculate a focus gradient based, at least in part, on the stored matrix;
associate with each block a focus value based on the focus gradient and on estimate of edge width;
compare each focus value with a focus threshold;
designate each block having a focus value above the focus threshold as focused;
designate each block having a focus value below the focus threshold as defocused;
define a focus outline based, at least in part, on the focused blocks;
define a focus template by designating the regions between the focused blocks as focused;
calculate a motion gradient based, at least in part, on the stored matrix;
associate with each block a motion value based on the motion gradient;
compare each motion value with a motion threshold;
designate each block having a motion value above the motion threshold as moving;
designate each block having a motion value below the threshold as not moving;
define a motion template based, at least in part, on the moving blocks; and
define a motion/focus outline based on the focus template and the motion template.

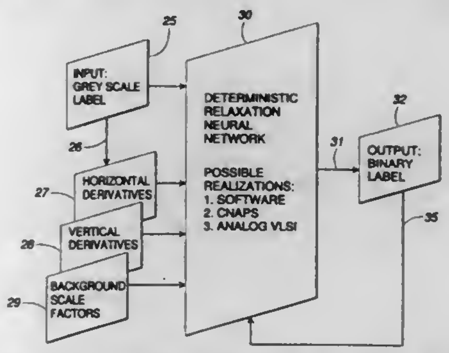
5,710,830
METHOD OF AND APPARATUS FOR SEGMENTING FOREGROUND AND BACKGROUND INFORMATION FOR OPTICAL CHARACTER RECOGNITION OF LABELS EMPLOYING SINGLE LAYER RECURRENT NEURAL NETWORK

Lee F. Holeva, Gurnee, Ill., assignor to United Parcel Service, Atlanta, Ga.

Continuation-in-part of Ser. No. 318,352, Oct. 5, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 574,254

Int. Cl.^{6} H04N *1/40*

U.S. Cl. 382—173 **12 Claims**



1. A method of segmenting foreground areas from background areas of an input image including input pixels having grey scale input pixel values, comprising the steps of:
defining an output image comprising output pixels having binary output pixel values;
assigning each input pixel and each output pixel a position in a coordinate system so that the input image and the output image correspond to the physical configuration of the substrate;
assigning a scaling factor to each input pixel so that a scaling factor assigned to an input pixel represents an estimate of the background input pixel values in a neighborhood about the input pixel;
defining an energy function that varies as a function of the input pixels values, the output pixels values, and the scaling factors comprising
a first component expressing a cost associated with an output pixel value not being in agreement with the value of a corresponding input pixel taking into account the value of the scaling factor assigned to the corresponding input pixel,
a second component expressing a cost associated with the value of an output pixel not being in agreement with the values of pixels in a neighborhood around the output pixel, and
a third component expressing a cost associated with the gradient of the input pixel values so as to define boundaries

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between regions of the input image having contrasting input pixel values; and

segmenting foreground areas of the output image from background areas of the output image by iteratively varying the output pixel values so that the energy function converges toward a minimum value.

5,710,831

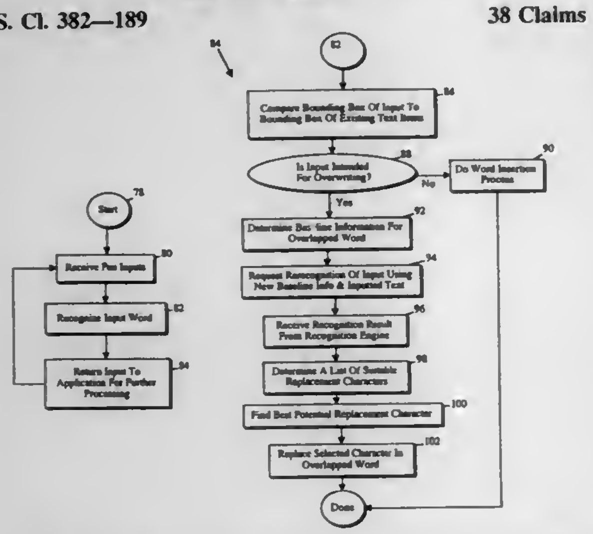
METHOD FOR CORRECTING HANDWRITING ON A PEN-BASED COMPUTER

Ernest H. Beernink; Stephen P. Capps, both of San Carlos; John R. Meier, and Frederich N. Tou, both of Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 99,847, Jul. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,886

Int. Cl.^{6} G06K *9/03*

U.S. Cl. 382—189 **38 Claims**


84
82
Compare Bounding Box Of Input To Bounding Box Of Existing Text Items
84
Is Input Intended For Overwriting?
88
No
Do Word Insertion Process
90
Yes
Determine Base-line Information For Overlapped Word
92
Request Rerecognition Of Input Using New Baseline Info & Inputted Text
94
Receive Recognition Result From Recognition Engine
96
Determine A List Of Suitable Replacement Characters
98
Find Best Potential Replacement Character
100
Replace Selected Character In Overlapped Word
102
Done
Start
78
Receive Pen Inputs
80
Recognize Input Word
82
Return Input To Application For Further Processing
84

1. A method for correcting text objects displayed on a display screen of a pen based computer system, the method comprising the steps of:

a) receiving an initial input on the display screen corresponding to at least one text object;

b) recognizing the initial input as said at least one text object having at least one character, wherein the recognized initial input includes a text object bounding box;

c) receiving an additional input on the display screen such that an additional input bounding box is defined for said additional input that includes at least one character;

d) determining whether said additional input is intended for overwriting based on an amount the additional input overlaps at least a portion of said text object by determining if there is substantial overlap between said additional input bounding box and said text object bounding box;

e) re-recognizing the initial input in conjunction with said additional input when it has been determined that the additional input was intended for overwriting;

f) determining a best potential replacement character of said text object based upon a result of said re-recognizing step; and

g) correcting said text object using the best potential replacement character result and displaying the result.

5,710,832

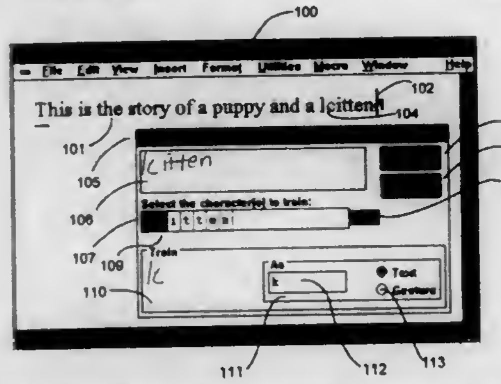
METHOD AND SYSTEM FOR DISPLAYING HANDWRITTEN DATA AND RECOGNIZED SYMBOLS

Eric Robert Berman, Redmond; Luis Fernando Talavera Abdala; Marlin Eller, both of Seattle, and Shishir P. Pardikar, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 42,834, Apr. 5, 1993, Pat. No. 5,550,930, which is a continuation of Ser. No. 716,730, Jun. 17, 1991, abandoned. This application Dec. 8, 1995, Ser. No. 569,497

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—189 **14 Claims**


100
File Edit View Insert Format Utilities Macro Window Help
This is the story of a puppy and a kitten
102
104
101
105
kitten
114
115
106
108
Select the character(s) to train:
i t t e n
107
109
Train
110
k
As
k
● Text
○ Gesture
111
112
113

1. A method in a computer system of displaying handwritten data and symbols, the method comprising:

receiving handwritten data;

receiving symbols that correspond to the handwritten data, in that the handwritten data and the symbols corresponding to the handwritten data each constitute a different expression of the same information;

displaying in a first subwindow a portion of the handwritten data;

displaying in a second subwindow distinct from the first subwindow the symbols that correspond to the displayed portion of the handwritten data while simultaneously displaying the portion of the handwritten data; and

in response to a request to scroll,

displaying another symbol that is adjacent to the previously displayed symbols; and

displaying a portion of the handwritten data that corresponds to the other symbol while simultaneously displaying the other symbol.

5,710,833

DETECTION, RECOGNITION AND CODING OF COMPLEX OBJECTS USING PROBABILISTIC EIGENSPACE ANALYSIS

Baback Moghaddam, and Alex Pentland, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 20, 1995, Ser. No. 425,579

Int. Cl.^{6} G06K *9/00;9/62;9/52;9/74*

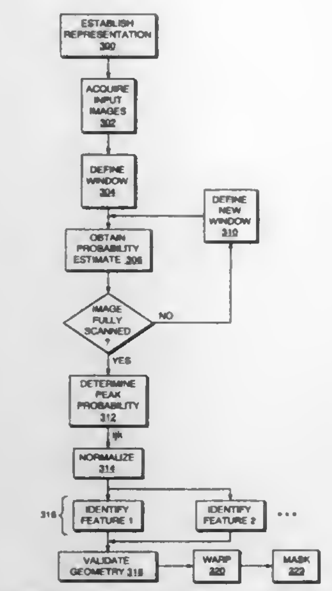
U.S. Cl. 382—228 **20 Claims**

1. A method for detecting selected features in digitally represented input images, the method comprising the steps of:

a. representing a training set of instances of the selected feature as a set of eigenvectors in a multidimensional image space;

b. representing portions of the input image as input vectors in the image space;

c. performing a density-estimation analysis on the input vectors to estimate, for each input vector, a probability level indicative of the likelihood that the input vector corresponds to an image portion containing an instance of the selected feature, wherein said density estimation analysis is based on all vector components; and



d. identifying image portions having the highest associated probability levels.

5,710,834

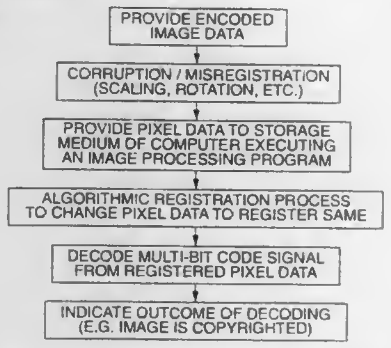
METHOD AND APPARATUS RESPONSIVE TO A CODE SIGNAL CONVEYED THROUGH A GRAPHIC IMAGE

Geoffrey B. Rhoads, West Linn, Oreg., assignor to Digimarc Corporation, Portland, Oreg.

Filed May 8, 1995, Ser. No. 436,099

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—232 **6 Claims**


PROVIDE ENCODED IMAGE DATA
CORRUPTION / MISREGISTRATION (SCALING, ROTATION, ETC.)
PROVIDE PIXEL DATA TO STORAGE MEDIUM OF COMPUTER EXECUTING AN IMAGE PROCESSING PROGRAM
ALGORITHMIC REGISTRATION PROCESS TO CHANGE PIXEL DATA TO REGISTER SAME
DECODE MULTI-BIT CODE SIGNAL FROM REGISTERED PIXEL DATA
INDICATE OUTCOME OF DECODING (E.G. IMAGE IS COPYRIGHTED)

1. In a method of processing image data, the method including providing image processing equipment including a computer, a storage medium, and an image processing program stored in said medium and executing on said computer, said program permitting editing of images, and providing to said equipment data corresponding to an input image, an improvement comprising:

discerning, from said input image data, an N-bit code signal steganographically encoded therein, where N is greater than or equal to two, said discerning including performing an algorithmic registration process to resolve an initially unknown variable needed to discern the code signal from the image, wherein the input image is an originally encoded image corrupted by a process selected from a group consisting of: scaling or rotation of the originally encoded image, wherein the multi-bit code signal is discerned no withstanding said corruption; and

controlling operation of the equipment depending on the code signal discerned from the image.

5,710,835

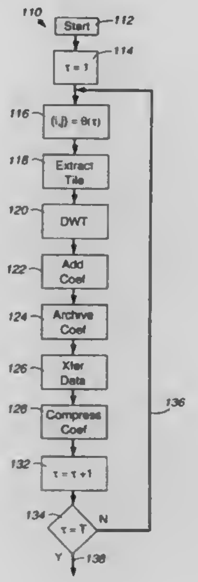
STORAGE AND RETRIEVAL OF LARGE DIGITAL IMAGES

Jonathan N. Bradley, Los Alamos, N. Mex., assignor to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Nov. 14, 1995, Ser. No. 557,475

Int. Cl.^{6} G06K *9/42;9/36*

U.S. Cl. 382—233 **28 Claims**



1. A method for selectively viewing areas of an image at multiple resolutions in a computer having a primary memory for data processing and a secondary memory for data storage, the method comprising the steps of:

storing a complete set of image data array I(x,y) representing said image in a first secondary memory of said computer;

defining a plurality of discrete tile image data $T_{ij}(x,y)$ subsets, where said complete set of image data I(x,y) is formed by superposition of said discrete tile image data $T_{ij}(x,y)$;

performing one or more discrete wavelet transformation (DWT)-based compression processes on each said tile image data $T_{ij}(x,y)$ in a selected sequence to output each said discrete tile image data $T_{ij}(x,y)$ as a succession of DWT coefficients in a succession of subband sets, where one subband of each set is a low-resolution representation of said discrete tile image data $T_{ij}(x,y)$ to form a sequence of low-resolution representations of said image data array I(x,y) to selected resolutions;

maintaining updated sums of said DWT coefficients from said discrete tile image $T_{ij}(x,y)$ to form a seamless DWT of said image and storing said sums in a first primary memory location of said computer;

periodically compressing said sums and transferring said compressed sums to a second secondary memory to maintain sufficient memory in said primary memory for data processing, wherein said second secondary memory contains stored DWT wavelet coefficients;

selecting a viewing set of said image data array I(x,y) to be viewed at a desired resolution:

determining a viewing subset of said stored DWT wavelet coefficients that support said viewing set of said image data at said desired resolution; and

forming from said subset of said stored DWT wavelet coefficients a computer display of said viewing set of said image data at said desired resolution.

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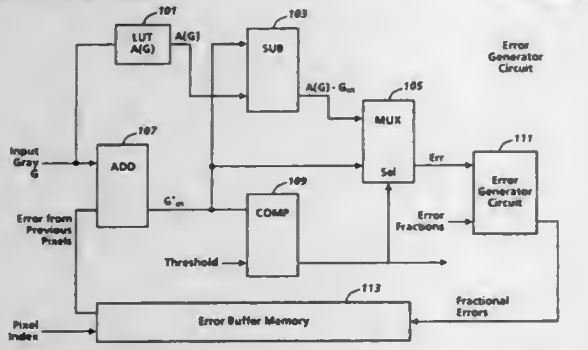
5,710,836
SYSTEM AND APPARATUS FOR TONAL REPRODUCTION ADJUSTMENT IN AN ERROR DIFFUSION PROCESS

Jeng-Nan Shiau, Webster, and Francis K. Tse, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 1, 1994, Ser. No. 347,754
Int. Cl.^{6} G06T *5/00;* H04N *1/405*
U.S. Cl. 382—237 **16 Claims**



1. A system for processing an input grey image value corresponding to a pixel, comprising:

modifying means for adding an error value to the input grey image value to produce a modified input grey image value;

comparing means for comparing the modified input grey image value with a predetermined threshold value and for outputting a rendering value based on the comparison;

error means, operatively connected to said comparing means, for generating an error equal to the modified input grey value when the modified input grey value is less than the predetermined threshold value and for generating an error equal to the modified input grey value minus an effective spot area value when the modified input grey value is equal to or greater than the predetermined threshold value;

diffusing means for fractionalizing the error into fractional error values and diffusing the fractional error values to pixels adjacent the pixel; and

buffer means, operatively connected to said diffusing means and said modifying means, for accumulating the diffused fractional error values for individual pixels and generating the error value therefrom.

5,710,837
BRANCH DELETION METHOD FOR THINNED IMAGE

Koji Matsumoto, and Manabu Oosaka, both of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan
Continuation of Ser. No. 286,810, Aug. 4, 1994, abandoned, which is a continuation of Ser. No. 950,212, Sep. 24, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,988
Claims priority, application Japan, Oct. 1, 1991, 3-280439
Int. Cl.^{6} G06K *9/44*
U.S. Cl. 382—259 **13 Claims**

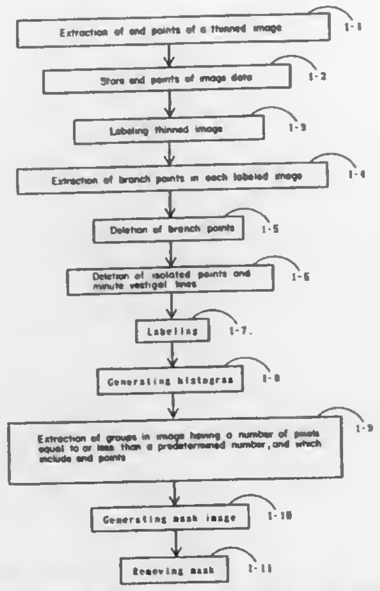
1. A method of removing a branch from a thinned image having a plurality of pixels, said method comprising the steps of:

obtaining an electronic representation of said thinned image;

electronically identifying a branch point and an end point of said electronic representation of said thinned image, said branch point being part of a main body of said electronic representation of said thinned image, said branch point connecting a branch with said main body;

electronically separating said branch connected to said branch point from said main body, said branch being separated by deleting said branch point on said main body;

electronically determining a length of said separated branch based on a number of pixels between said branch point and said end point in said electronic representation of said thinned image;

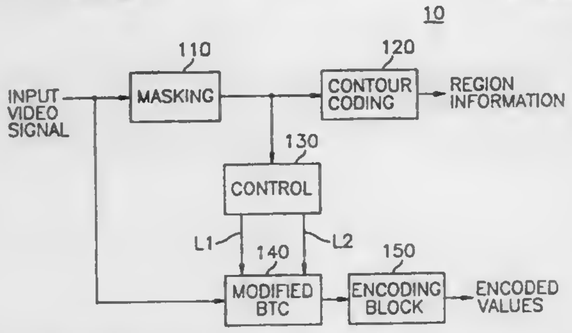

Extraction of end points of a thinned image
1-1
Store end points of image data
1-2
Labeling thinned image
1-3
Extraction of branch points in each labeled image
1-4
Deletion of branch points
1-5
Deletion of isolated points and minute vestigal lines
1-6
Labeling
1-7
Generating histogram
1-8
Extraction of groups in image having a number of pixels equal to or less than a predetermined number, and which include end points
1-9
Generating mask image
1-10
Removing mask
1-11

electronically extracting said separated branch when said separated branch has a length equal to or less than a predetermined length; and

electronically removing said extracted branch from said electronic representation of said thinned image.

5,710,838
APPARATUS FOR ENCODING A VIDEO SIGNAL BY USING MODIFIED BLOCK TRUNCATION AND CONTOUR CODING METHODS

Hae-Mook Jung, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 25, 1996, Ser. No. 622,533
Claims priority, application Rep. of Korea, Mar. 28, 1995, 95-6619
Int. Cl.^{6} G06K *9/00*
U.S. Cl. 382—242 **4 Claims**



1. An apparatus for encoding a video signal having a plurality of video frames, each of the video frames containing pixels therein, said apparatus comprising:

means for comparing an intensity value of each pixel contained in a video frame with a threshold value and classifying each pixel into one of two groups based on a comparison result between the intensity value of each pixel and the threshold value to thereby provide a binary frame, the binary frame including a plurality of regions, each of the regions consisting of continuous pixels classified into one of the two groups;

means for coding the binary frame to thereby provide region information including contour information and binary information, the contour information representing position data of pixels on a contour of each region and the binary information representing a group into which pixels included in each region are classified;

means for dividing the binary frame into a multiplicity of non-overlapping binary blocks, each of the binary blocks containing K×K pixels with K being a positive integer larger than 1;

means, for each binary block, for determining the number L of pixels classified into one of the two groups and included in each binary block;

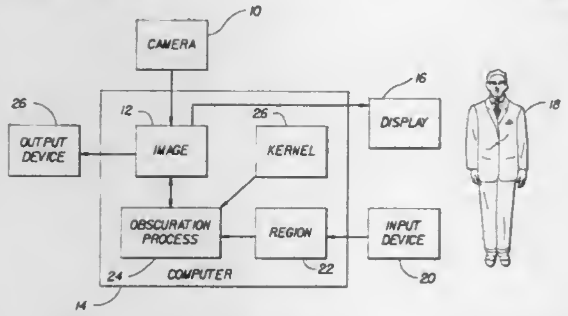
means, for each binary block, for generating a control signal representing whether or not all of the K×K pixels in each binary block belong to only one of the two groups;

means for dividing the video frame into a multiplicity of non-overlapping video blocks of K×K pixels, each video block corresponding to one of the binary blocks, and providing, for each video block, a mean value and two reconstruction values based on intensity values of the K×K pixels therein and the number L determined for a corresponding binary block thereof; and

means, in response to the control signal, for selecting the mean value if the control signal represents that all of the pixels in the corresponding binary block belong to one of the two groups and selecting the two reconstruction values if otherwise, to thereby generate a selected output for each video block.

5,710,839
METHOD AND APPARATUS FOR OBSCURING FEATURES OF AN IMAGE

Ronald S. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 20, 1994, Ser. No. 230,195
Int. Cl.^{6} G06K *9/40*
U.S. Cl. 382—264 **3 Claims**



1. A method of obscuring information in an image, comprising:

(a) obtaining a digital signal representative of the image;

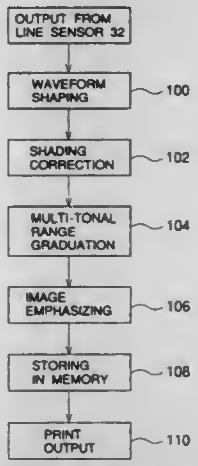
(a) designating a region of the image for obscuration; and

(b) merging first image signal information from outside the region with second image signal information from inside the region by applying at least one convolution kernel to the region from an outside edge of the region to a center in discrete sequential layers, the result of each layer being merged with the next layer;

wherein the at least one convolution kernel is rotationally symmetric about a normal to the surface of the region, and wherein the at least one convolution kernel comprises at least eight rotationally symmetric kernels.

5,710,840
IMAGE PROCESSING METHOD AND APPARATUS FOR ADJUSTING THE TONE DENSITY OF PIXELS BASED UPON DIFFERENCES BETWEEN THE TONE DENSITY OF A CENTER PIXEL AND TONE DENSITIES OF PERIPHERAL PIXELS

Takahiro Hideshima, and Ushio Anayama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 233,782, Apr. 26, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,226
Claims priority, application Japan, Apr. 26, 1993, 5-120337
Int. Cl.^{6} G06K *9/40*
U.S. Cl. 382—266 **22 Claims**



1. A computer-implemented image processing method for emphasizing an image, including a middle tone density area and a binary density area consisting of black and white picture elements, comprising the steps of:

sensing said image with a sensor to form a plurality of pixels, each of said pixels having a tone density;

designating a center pixel and a plurality of peripheral pixels;

determining a sum of differences between the tone density A_0 of said center pixel and the tone density A_i of each of said peripheral pixels;

adjusting the tone density A_0 of said center pixel based upon a quadratic function of said sum to produce an adjusted tone density A_0', such that said image is edge-sharpened in said binary density area without deterioration of the image quality of said image in said middle tone density area; and

outputting the adjusted tone density signal.

5,710,841
METHOD FOR IMPROVING THE CONTRAST IN PHOTOGRAPHIC FILM MATERIALS

Andrew Green, Harrow; Peter Thomas Fry, Hemel Hempstead; Clare Elizabeth Scriven, Watford, and Richard Arthur Sharman, Dunstable, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 29, 1995, Ser. No. 536,332
Claims priority, application United Kingdom, Oct. 13, 1994, 9420654
Int. Cl.^{6} G06T *5/00*
U.S. Cl. 382—274 **2 Claims**

1. A method of correcting the contrast of a processed photographic film material using its characteristic curve, the method comprising the steps of:

a) illuminating the film material;

b) capturing an image of the illuminated film material using an electronic camera unit;

c) producing an output signal corresponding the image captured by the camera unit;

d) correcting the contrast of the captured image signal to reveal hidden detail in the film; and

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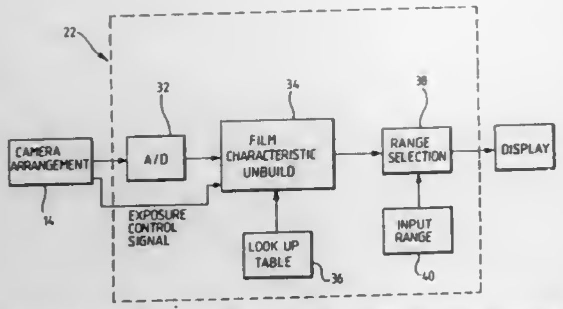
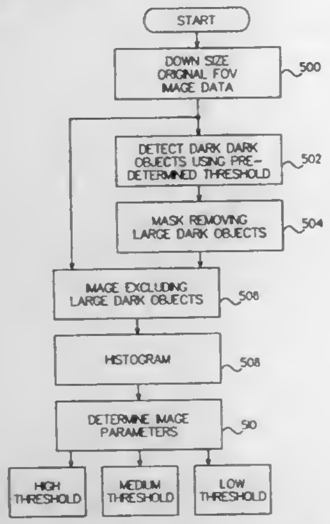


e) displaying the corrected image of film, characterized in that step d) includes using the characteristic curve of the processed film material to correct the contrast, the characteristic curve of the material being defined by the equation:

$$D = \frac{D_s}{[1 + \{E_i/E\}^{\beta}/\alpha]^{\alpha}}$$

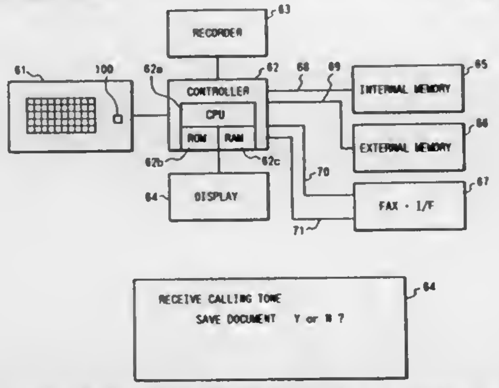
where
- E is the exposure,
- D is the density at exposure E,
- E_i is the exposure at the point of inflexion of the curve,
- D_s is the density at saturation, and
- α and β are characteristics relating to the processed photographic material.

5,710,842
METHOD FOR IDENTIFYING OBJECTS USING DATA PROCESSING TECHNIQUES
Shih-Jong J. Lee, Bellevue, Wash., assignor to NeoPath, Redmond, Wash.
Division of Ser. No. 179,812, Jan. 10, 1994, Pat. No. 5,528,703, which is a continuation-in-part of Ser. No. 838,395, Feb. 18, 1992, abandoned. This application Mar. 14, 1996, Ser. No. 615,468
Int. Cl.⁶ G06K *9/36*
U.S. Cl. 382—283 **9 Claims**


START
DOWN SIZE ORIGINAL FOV IMAGE DATA
500
DETECT DARK DARK OBJECTS USING PRE-DETERMINED THRESHOLD
502
MASK REMOVING LARGE DARK OBJECTS
504
IMAGE EXCLUDING LARGE DARK OBJECTS
506
HISTOGRAM
508
DETERMINE IMAGE PARAMETERS
510
HIGH THRESHOLD
MEDIUM THRESHOLD
LOW THRESHOLD

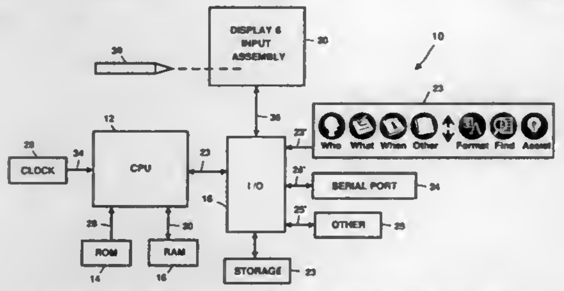
7. A method for creating a mask to identify objects of interest wherein the objects of interest are contained in an image represented by an array of image data, said method comprising the steps of:
- (a) processing the data representing the image to create a threshold image wherein the threshold image is an array of data words wherein each data word of the threshold image corresponds to a respective data word of the image;
- (b) creating a binary image by comparing each data word of the threshold image with its respective data word of the image wherein the binary image is an array of data words each corresponding to a respective data word of the image and wherein each data word of the binary image identifies whether the respective data word of the image was greater than the respective data word of the threshold image, wherein the step of creating a binary image further comprises the steps of:
  - (i) subtracting a predetermined offset from each data word of the threshold image to create an array of data representing a low threshold image;
  - (ii) comparing each data word of the low threshold image with its respective data word of the image to create a low threshold binary image wherein the low threshold binary image is an array of data words each corresponding to a respective data word of the image and wherein each data word of the low threshold binary image identifies whether the respective data word of the image was greater than the respective data word of the low threshold image; and
  - (iii) adding objects identified by the low threshold binary image to the binary image;
- (c) filling holes in the binary image by inverting the binary image and excluding data representing an object of size less than the expected size of the objects of interest by a predetermined amount, the identified objects are then added back to the binary image to create a preliminary mask;
- (d) processing the data representing the preliminary mask to detect its dark edges and combining the resulting data with the preliminary mask to create data representing a dark edge incorporated mask; and
- (e) processing the data representing the preliminary mask to detect its bright edges and combining the resulting data with the dark edge incorporated mask to create data representing a mask identifying the objects of interest.

5,710,843
DOCUMENT PROCESSING APPARATUS HAVING A COMMUNICATION/FACSIMILE FUNCTION WITH SELECTIVE MEMORY SWITCHING
Takahiro Tsukamoto, Hoya; Naohiro Hosokawa, Kawasaki, and Atsushi Nakamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 863,450, Apr. 3, 1992. This application Apr. 20, 1995, Ser. No. 425,471
Int. Cl.⁶ H04N *1/00;1/40;* **G06F** *9/00;9/46*
U.S. Cl. 382—305 **10 Claims**



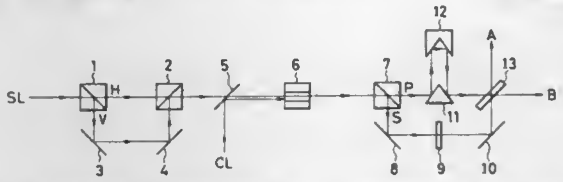
5. A document processing apparatus having a document processing function and a facsimile function, comprising:
- first memory means for storing data;
- second memory means for storing data;
- selection means for selecting the facsimile function during execution of the document processing function;
- saving means for, when said selection means selects the facsimile function, saving data, which relates to the document processing, and which is stored in said first memory means, to said second memory means;
- means for performing the facsimile function by using said first memory means;
- restoration means for, when performance of the facsimile function is ended, restoring the data saved in said second memory means by said saving means to said first memory means; and
- another selection means for selecting between execution/non-execution of saving by said saving means.

5,710,844
METHOD FOR SEARCHING AND DISPLAYING RESULTS IN A PEN-BASED COMPUTER SYSTEM
Stephen P. Capps, San Carlos; Shifteh Karimi, Menlo Park, and Sarah Clark, Boulder Creek, all of Calif., assignors to Apple Computer, Cupertino, Calif.
Filed May 27, 1992, Ser. No. 889,660
Int. Cl.⁶ G06K *9/20*
U.S. Cl. 382—317 **11 Claims**



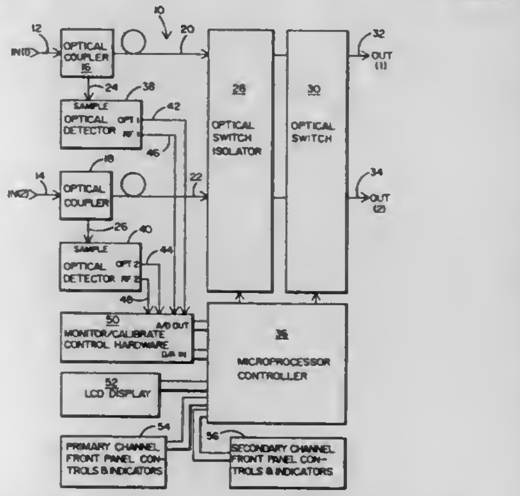
1. A method of controlling a screen display with an input pointer to search the contents of a memory device for a pen-based computer system, where the contents of the memory device comprise one or more files, where each file comprises one or more records, and where each file has an associated file selection button provided as part of the computer system, comprising the steps of:
- receiving a search string which has been written or selected on the screen display with the pointer;
- searching the content of each searchable record of each file that is associated with a selection button in the memory device for the search string;
- determining the number of hits in each file; and
- displaying on the screen display a plurality of indicators, each having a corresponding file selection button, and each showing the number of hits in the file corresponding to the selection button.

5,710,845
ALL-OPTICAL SWITCH
Kazuhito Tajima, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Dec. 20, 1995, Ser. No. 580,061
Claims priority, application Japan, Dec. 22, 1994, 6-320801
Int. Cl.⁶ G02B *6/26*
U.S. Cl. 385—16 **18 Claims**



1. An all-optical switch made up of a semiconductor chip, said semiconductor chip comprising:
- (a) means for introducing propagation time difference A to vertically and horizontally polarized components of a signal light;
- (b) means for impressing phase modulation to said signal light, said means inducing refractive index changes when a control light is applied thereto;
- (c) means for introducing propagation time difference B, which is opposite to said propagation time difference A, to said vertically and horizontally polarized components of said signal light;
- (d) means for making polarization of said vertically and horizontally polarized components of said signal light to coincide with each other; and
- (e) means for making said vertically and horizontally polarized components of said signal light to interfere with each other.

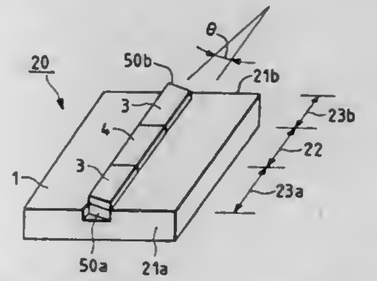
5,710,846
SELF-CALIBRATING OPTICAL FIBER SWITCH
Richard Allen Wayman, and Jerome Mike Truppa, both of San Jose, Calif., assignors to RF Systems, Inc., San Jose, Calif.
Filed Mar. 26, 1996, Ser. No. 622,687
Int. Cl.⁶ G02B *6/26;* **H04B** *10/08*
U.S. Cl. 385—17 **14 Claims**



1. A self-calibrating n×m optical routing switch comprising:
- a) n optical input signals,
- b) means for sampling and comparing the input signals to a reference
- calibration, and
- c) a microprocessor controlling an output switch feeding the input signals into
- m outputs,

where n and m are positive integers.

5,710,847
SEMICONDUCTOR OPTICAL FUNCTIONAL DEVICE
Hideaki Takano, Kokubunji; Hirohisa Sano, Niiza; Tatsuo Kanetake, Kodaira; Masaki Ohira, Kanazawa-ku; Makoto Suzuki, Kokubunji, and Hiroaki Inoue, Hidaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 29, 1996, Ser. No. 593,051
Claims priority, application Japan, Feb. 3, 1995, 7-016642
Int. Cl.⁶ G02B *6/26;6/42*
U.S. Cl. 385—28 **13 Claims**



1. A semiconductor optical functional device comprising:
an optical functional region; and

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a mode conversion region for increasing a beam size of propagated light on a facet in said optical functional region;

wherein the facet of the side to be connected with a fiber in the mode conversion region is provided obliquely to the direction of propagation of light; and

wherein said mode conversion region includes a waveguide and is formed so as to gradually change the size of said waveguide in the direction of propagation of light.

5,710,848

OPTIMIZED NON-LINEAR EFFECT TAPERED OPTICAL FIBER AND METHOD OF MAKING SAME

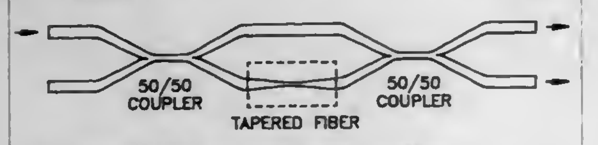
Patrick Dumais, Outremont; Suzanne Lacroix, Verdun; Francois Gonthier, Montreal, all of Canada; Richard James Black, Menlo Park, Calif., and Jacques Bures, Outremont, Canada, assignors to Ecole Polytechnique de Montreal, Montreal, Canada

Division of Ser. No. 245,172, May 16, 1994, Pat. No. 5,479,546. This application Dec. 22, 1995, Ser. No. 577,026

Claims priority, application Canada, May 16, 1994, 2123632

Int. Cl.⁶ G02B *6/26;* **H01S** *3/30;* **G01B** *9/02*

U.S. Cl. 385—43 **14 Claims**



1. A tapered optical fiber component comprising:

an optical fiber a having a cladded region with an optical core, the cladded region having a transition region transitioning in diameter to form an effective area region having a predetermined effective area, the diameter of the effective area region being reduced to cutoff all except the LP01 and LP11 modes;

the transition region having the characteristic of adiabatically concentrating an optical signal for propagation through the effective area region of reduced diameter, the power density of the optical signal propagating through the effective area region being increased as an inverse function of the effective area.

14. A method of making an optimum Kerr effect tapered optical fiber component from a length of optical fiber having a jacket, a cladding and a core passing through the cladding, the jacket covering the cladding, comprising the steps of:

removing the jacket material from a portion of the optical fiber to expose a length of the cladding material;

coupling an optical signal from a laser source through the of optical fiber;

monitoring the optical power out of the fiber for a predetermined beat signal; while

tapering the length of the exposed cladding material to form an adiabatic taper to and from an effective area region having a substantially optimum or minimum effective area for a predetermined length.

5,710,849

TAPER SHAPES FOR FLATBAND RESPONSE AND SIDELOBE SUPPRESSION IN GRATING ASSISTED OPTICAL COUPLER FILTERS

Brent Little, Cambridge, Mass.; Chi Wu, Nepean, and Wei-Ping Huang, Waterloo, both of Canada, assignors to Northern Telecom, Ltd., Montreal, Canada

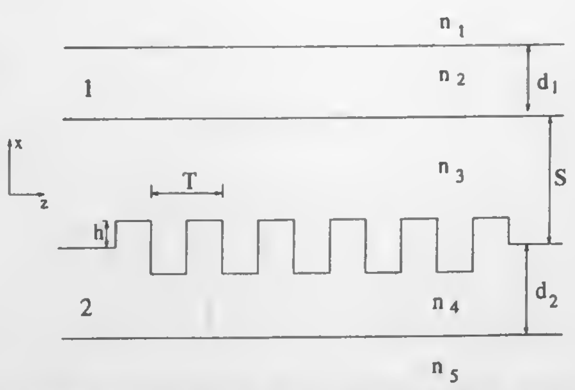
Filed Nov. 1, 1995, Ser. No. 551,470

Int. Cl.⁶ G02B *6/26*

U.S. Cl. 385—50 **9 Claims**

1. A grating-assisted filter coupler comprising: a first waveguide for receiving an optical signal having at least one predetermined wavelength, and

a second waveguide in a spaced relationship to the first waveguide,



a grating region providing selective coupling of said predetermined wavelength between the first waveguide and the second waveguide,

the coupling between first and second waveguides being tailored by a taper function defining an interaction strength given by

$$K_f(z)=A_1e^{-\alpha_1(z-z_1)^2}+A_2e^{-\alpha_2(z-z_2)^2}+A_3e^{-\alpha_3(z-z_3)^2}\quad 0<z<1$$

where: $K_f(z)$ is the normalized interaction strength along the propagation direction;

A_1, A_2, A_3; $\alpha_1, \alpha_2, \alpha_3$; z_1, z_2, z_3; are sets of constant coefficients determined to provide a specific level of sidelobe suppression and passband response;

and z is the normalized propagation distance along the coupler.

5,710,850

OPTICAL FIBER COUPLING MEMBER, METHOD OF PRODUCING THE SAME AND METHOD OF CONNECTING OPTICAL FIBERS

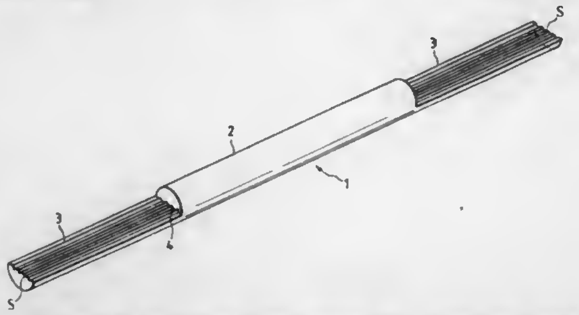
Tsutomu Watanabe, and Shinji Ishikawa, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 21, 1996, Ser. No. 670,760

Claims priority, application Japan, Jun. 26, 1995, 7-159445; Oct. 2, 1995, 7-254794; Mar. 21, 1996, 8-064121

Int. Cl.⁶ G02B *6/38*

U.S. Cl. 385—71 **13 Claims**



1. An optical fiber connecting member for connecting optical fibers by facing end portions of a least one pair of optical fibers, comprising a rod-shaped body having:

at least one through-hole in which said optical fibers are inserted, the cross-section of each said through-hole being approximately circular and slightly larger than the diameter of said optical fibers;

introduction portions being formed at opposite end portions of said rod-shaped body, in each of which at least one half of a cross-section of said through-hole is removed and remaining portion of said cross-section is provided in the form of at least one introduction groove for guiding end portions of said optical fibers into said through-hole; and

a retaining portion for retaining said optical fibers inserted in said through-hole, the cross-section of said retaining-portion being circular.

5,710,851

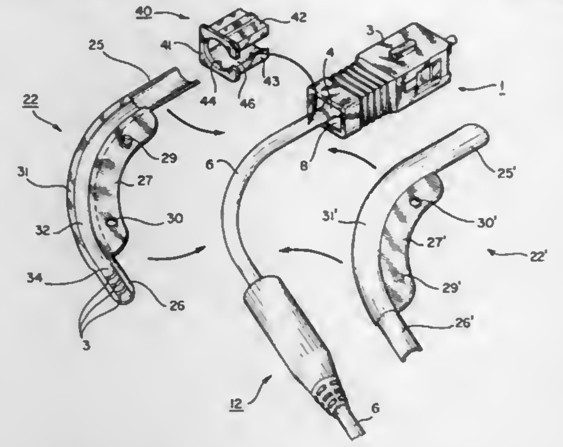
STRAIN RELIEF SYSTEM FOR A FIBER OPTIC CONNECTOR

Eric Walter, Westchester, Ill.; Donald W. Duda, Williams Bay, Wis.; Wenzong Chen, Darien, and Eric Repta, Schaumburg, both of Ill., assignors to Amphenol Corporation, Wallingford, Conn.

Filed Nov. 6, 1995, Ser. No. 553,895

Int. Cl.⁶ G02B *6/36*

U.S. Cl. 385—86 **31 Claims**



1. A strain relief system for a connector, comprising:

an essentially rigid boot made up of two halves in the form of discrete members which, when assembled together around a cable, define a central passage through which the cable extends;

means for aligning and securing together the two halves of the boot; and

a clip which fits over one end of the boot and which includes an opening for permitting the clip to be fitted over the cable even after the cable has been terminated to the connector, said clip including a portion arranged to extend into an opening in the connector to hold together said two halves at one end and to retain said one end in said opening, said clip having an outer profile which is arranged to correspond to the inner profile of the connector into which the boot is to be fitted.

5,710,852

OPTICAL WAVEGUIDE FOR FIBER-OPTIC AMPLIFIERS FOR THE WAVELENGTH REGION AROUND 1550 NM

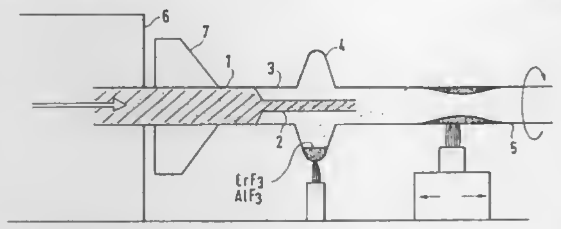
Dieter Weber, Kornwestheim, Germany, assignor to Alcatel NV, Netherlands

Filed Jun. 5, 1995, Ser. No. 462,702

Claims priority, application Germany, Jun. 10, 1994, 44 20 287.3

Int. Cl.⁶ G02B *6/02;6/16*

U.S. Cl. 385—123 **8 Claims**



1. An improved optical waveguide having silicon dioxide as the base material, the improved optical waveguide comprising:

A) a core comprising:

1) at least one doping agent to increase the refractive index of the base material,

2) erbium,

3) aluminum, and

4) fluorine, wherein the erbium is combined with at least some of the fluorine so that the erbium is surrounded by the fluorine; and

B) a cladding formed around the core.

5,710,853

COIL FORM

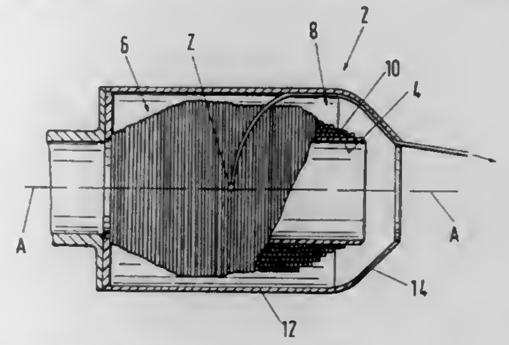
Wolfgang Von Hoessle, Riemerling; Kuno Roder, Eglharting, and Elmar Albert, Neidlingen, all of Germany, assignors to Daimler-Benz Aerospace AG, Ottobrunn, Germany

Filed Jul. 30, 1996, Ser. No. 699,727

Claims priority, application Germany, Aug. 2, 1995, 195 28 347.3

Int. Cl.⁶ G02B *6/10*

U.S. Cl. 385—123 **17 Claims**



1. A coil form, comprising:

a coil support having a coil support wall with a winding receiving area;

a winding arranged on said coil support wall at said winding receiving area, said winding having turns mutually fixed by a binding agent containing a volatile solvent, said binding agent drying while said volatile solvent diffuses off, said coil support having substantially, the same coefficient of thermal expansion (α) as said winding,

said coil support winding receiving area being solvent-permeable, said winding receiving area being covered by said winding to define a solvent diffusion region whereby said binding agent is dried while said solvent diffuses through said coil support wall.

5,710,854

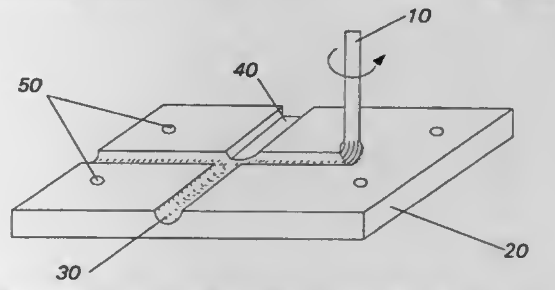
MULTI-MODE OPTICAL T-SPLITTER AND METHOD OF FABRICATING SAME

W. Michael Myers; Donnette E. Haney; Shin Sumida, and Tadashi Miyashita, all of Columbus, Ohio, assignors to Photonic Integration Research, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 227,135, Apr. 13, 1994, Pat. No. 5,473,721. This application Apr. 15, 1995, Ser. No. 423,414

Int. Cl.⁶ G02B *6/10*

U.S. Cl. 385—132 **36 Claims**



10. A multi-mode optical splitter to couple light to, from, and between multi-mode optical fibers, optical sources/detectors and various optical elements, comprising:

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a substrate having a predetermined index of refraction;
channels forming an approximately T-shaped geometry in said substrate, said channels being filled with optically conductive waveguide material to define a waveguide circuit configuration, said waveguide material having a relatively higher index of refraction than said substrate, wherein the legs of the "T" formed by said channels terminate at openings on the sides of said substrate, said legs being at about 90° or 180° angles from each other; and
a perforated type partially reflecting mirror with an array of holes therethrough at the junction of the "T".

5,710,855
PACKAGE FOR OPTICAL FIBERS SUPPORTED IN AN EASILY-VIEWABLE CLOSED LOOP

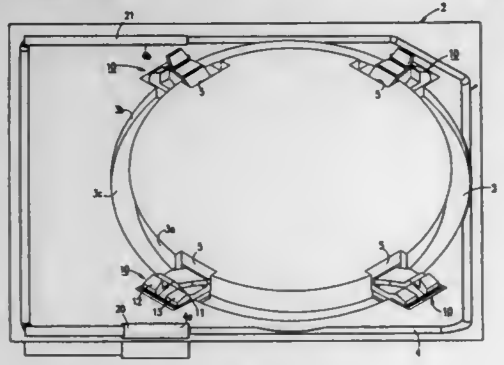
Ellie Konwitz, Ramat Gan, Israel, assignor to Laser Industries, Ltd., Tel Aviv, Israel

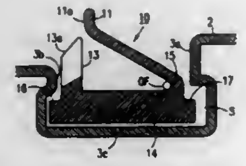
Filed Dec. 12, 1995, Ser. No. 570,864

Claims priority, application Israel, Dec. 20, 1994, 112089

Int. Cl.^{6} G02B *6/00*

U.S. Cl. 385—135 **14 Claims**





1. A package for an optical fiber, comprising:
a mounting sheet;
and a plurality of clips fixed to a face of said mounting sheet in a closed-loop array, each of said clips having a retainer formation for receiving and releasably retaining an optical fiber when wound thereon, said mounting sheet being formed with an annular recess for receiving the optical fiber, and said plurality of clips being fixed to the mounting sheet along said annular recess, each of said clips being formed with a pair of jaws, constituting said retainer formation, for receiving and releasably retaining an optical fiber, said pair of jaws being open at the side of the respective clip facing away from the center of the closed-loop array of clips.

5,710,856
LIGHT REFLECTIVE SHEET AND LIGHT REFLECTOR USING IT

Toshiyuki Ishii; Katsumi Senba; Takayuki Kajihara, all of Aichi-ken, and Naoko Takemura, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

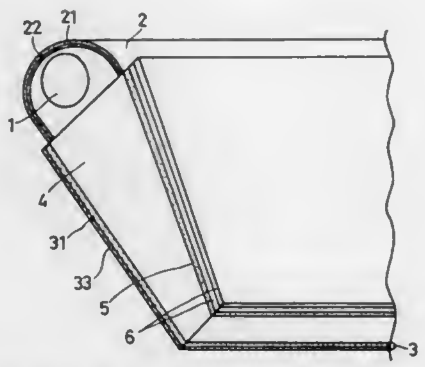
Filed Jan. 23, 1996, Ser. No. 590,113

Claims priority, application Japan, Jan. 27, 1995, 7-011482

Int. Cl.^{6} G02B *6/10;* F21V *7/04*

U.S. Cl. 385—146 **31 Claims**

1. A light reflective sheet which comprises a porous resin sheet and a protective layer laminated on at least one surface of the porous resin sheet; the porous resin sheet comprising a polyolefin resin and 100 to 300 parts by weight of a finely powdery inorganic filler with respect to 100 parts by weight of a polyolefin resin; the porous resin sheet being stretched at an area stretch magnification of 1.5 to 20 times; the light reflectance of the porous resin sheet at a wave length of 550 nm being 95% or more; the stiffness of the light reflective sheet being at least 50 mm.



5,710,857
EDIT SEAMING IN A VIDEO DATA RECORDING/REPRODUCING APPARATUS

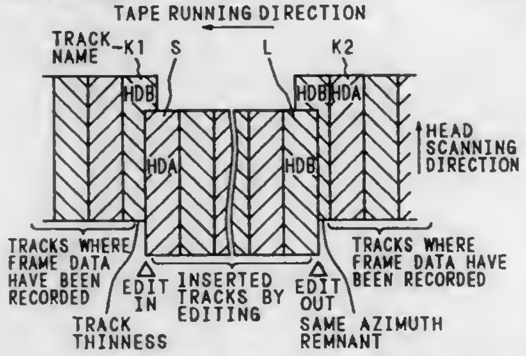
Tatsuo Yamasaki, and Junichi Nose, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 22,348, Feb. 24, 1993, abandoned. This application Aug. 15, 1994, Ser. No. 290,289

Claims priority, application Japan, Feb. 28, 1992, 4-043073; Jun. 19, 1992, 4-161059

Int. Cl.^{6} H04N *5/93;* G11B *27/02*

U.S. Cl. 386—52 **37 Claims**



1. A method of seaming first and second video data segments recorded onto a linearly displaceable video recording medium, said first and second video data segments each including at least one video data portion having a pair of video data portion edges, said method comprising:
a) dividing each video data portion into low frequency and high frequency data portions; and
b) storing each said video data portion on a plurality of consecutive tracks including a pair of edge tracks on the linearly displacement video recording medium while storing only said high frequency data portion on at least one edge track, said step b) including,
i) recording said first video data segment on said linearly displaceable video recording medium, and
ii) recording said second video data segment on said linearly displaceable video recording medium with the edges of said video data portions of said second video data segment being in substantial alignment with the edges of said video data portions of said first video data segment at a seam between said first and second video data segments;
conditions caused by slight misalignment of the edges of said video portions of said first and second video data segments in said step b)ii) causing loss of at most said high frequency data portion located on an edge track immediately adjacent said seam, thereby losing only high frequency video information in the video portions immediately adjacent the seam.

5,710,858
METHOD AND APPARATUS FOR REPRODUCING DIGITAL VIDEO SIGNALS

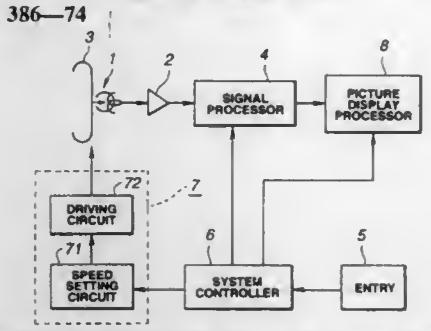
Yuka Oikawa, Chiba; Naofumi Yanagihara, Tokyo, and Nobuaki Izumi, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,329

Claims priority, application Japan, Aug. 25, 1994, 6-200878

Int. Cl.^{6} H04N *5/783*

U.S. Cl. 386—74 **7 Claims**



1. A method for reproducing digital video signals that had been recorded on a recording medium by an inclined azimuth recording system, wherein the improvement comprises the step of
varying speed reproduction S such that $S=a(t*m\pm1)/n$
where n is the number of heads, a is a constant of 1 or 2, t is the number of tracks on which one-frame data of the digital video signals is recorded, m is a constant which is an integer other than 0, and the ratio of a to n is not 0.5.

5,710,859
IMAGE DATA RECORDER WHEREIN COMPRESSED DATA RECORDING IS STOPPED/STARTED AT A DIFFERENT TIME THAN COMMANDED

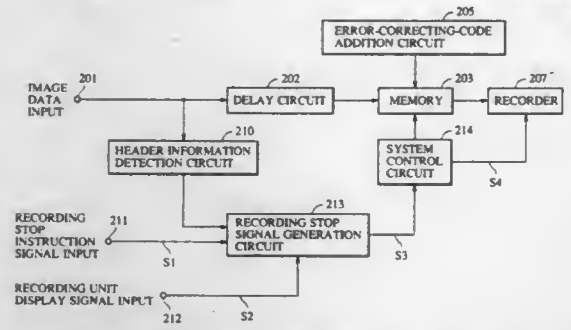
Yoshitaka Takeuchi, Tokyo, and Akio Fujii, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 553,873

Claims priority, application Japan, Nov. 14, 1994, 6-278908

Int. Cl.^{6} H04N *5/917*

U.S. Cl. 386—111 **20 Claims**


205
ERROR-CORRECTING-CODE ADDITION CIRCUIT
201
IMAGE DATA INPUT
202
DELAY CIRCUIT
203
MEMORY
207
RECORDER
210
HEADER INFORMATION DETECTION CIRCUIT
214
SYSTEM CONTROL CIRCUIT
S4
213
RECORDING STOP INSTRUCTION SIGNAL INPUT
211
RECORDING STOP SIGNAL GENERATION CIRCUIT
S1
S3
RECORDING UNIT DISPLAY SIGNAL INPUT
212
S2

1. An image data recorder, comprising:
input means for inputting coded data in which intra-frame coded data and inter-frame coded data are mixed in at predetermined intervals;
recording means for recording said coded data on a recording medium in a plurality of tracks;
instruction means for providing an instruction that recording by said recording means be stopped; and
control means for detecting an end of each track, and for stopping recording on the basis of a combination of (i) the operation of said instruction means, (ii) the predetermined intervals, and (iii) the detection of the end of each track.

5,710,860
LIGHT-BLOCKING APPARATUS FOR LIQUID CRYSTAL MONITOR OF CAMCORDER

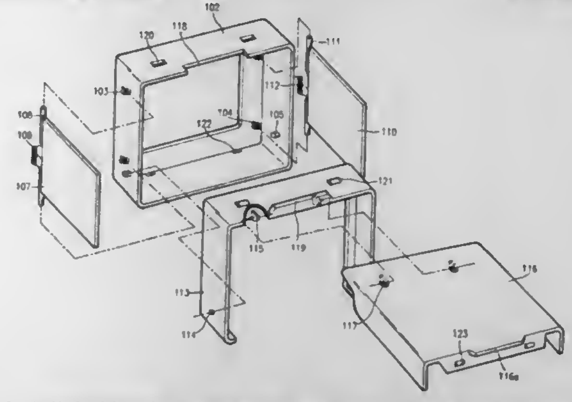
Tea Wan Kim, Incheon-si, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed May 3, 1996, Ser. No. 642,599

Claims priority, application Rep. of Korea, May 4, 1995, 9485/1995

Int. Cl.^{6} H04N *5/225*

U.S. Cl. 386—118 **5 Claims**



1. A light-blocking apparatus for a liquid crystal monitor for a camcorder, comprising:
a coupling member fixed to a liquid crystal monitor body;
a supporting member rotatably installed in the inner lower portion of said coupling member;
a upper and lower light-blocking member rotatably installed in the inner upper portion of said supporting member; and
one-side and other-side light-blocking members rotatably and elastically installed on the inner left and right sides of said liquid crystal monitor body.

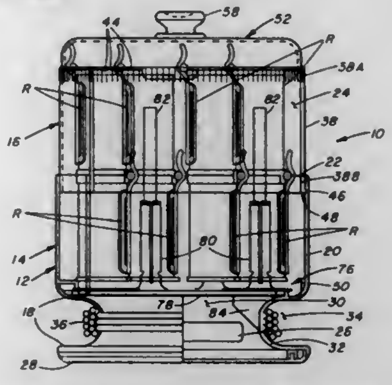
5,710,861
MULTIPLE HAIR SETTING ROLLER HEATING APPARATUS HAVING HEATING CHAMBER ENCLOSURE WITH TELESCOPIC PARTS

Paule Stern, San Diego, Calif., assignor to Madison Star, LLC, San Diego, Calif.

Filed Sep. 29, 1995, Ser. No. 536,936

Int. Cl.^{6} A61H *33/12;* A45B *1/04*

U.S. Cl. 392—405 **27 Claims**



1. An apparatus for heating multiple hair setting rollers, said apparatus comprising:
(a) a telescopic enclosure including
(i) a lower housing body defining a receptacle for receiving and holding a quantity of water therein, said lower housing body having an open upper end, and
(ii) an upper housing extension extending through and within said open upper end of said lower housing body and defining therewith a heating chamber, said upper housing extension being mounted to said lower housing body for undergoing sliding telescopic movement therealong toward and away therefrom between an upper extended condition

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wherein said upper housing extension substantially extends away from said lower housing body and together therewith defines said heating chamber having a first volume within said enclosure for containing a first plurality of hair setting rollers therein and a lower contracted condition wherein said upper housing extension substantially extends within said lower housing body and together therewith defines said heating chamber having a second volume within said enclosure smaller than the first volume for containing a second plurality of hair setting rollers therein less in number than the first plurality of hair setting rollers;

(b) means disposed in said lower housing body of said telescopic enclosure for generating heat in said heating chamber of said enclosure; and

(c) means disposed in said telescopic enclosure for supporting the pluralities of hair setting rollers in said heated chamber of said enclosure at each of said extended and contracted conditions thereof;

(d) said lower housing body further having an upper annular sidewall, a lower hollow base and a bottom cover removably attached to a bottom edge portion of said lower hollow base, said lower hollow base having a lower annular sidewall disposed below and attached to said upper annular sidewall, said lower annular sidewall having a diameter less than the diameter of said upper annular sidewall so as to define an annular recessed region surrounding said lower annular sidewall and underlying said upper annular sidewall within which is stored an electrical cord in a wrapped relation about said lower annular sidewall, said electrical cord extending into said lower hollow base to connect with said heat generating means disposed in said lower housing body.

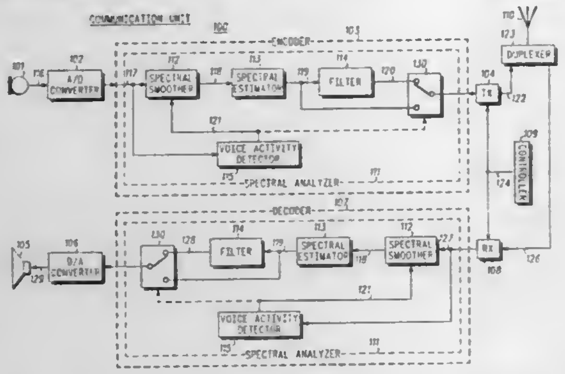
5,710,862
METHOD AND APPARATUS FOR REDUCING AN UNDESIRABLE CHARACTERISTIC OF A SPECTRAL ESTIMATE OF A NOISE SIGNAL BETWEEN OCCURRENCES OF VOICE SIGNALS

Steven Adam Urbanski, Round Lake Beach, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1993, Ser. No. 85,693

Int. Cl.^{6} G10L *9/00*

U.S. Cl. 395—2.35 **31 Claims**



1. A method for performing spectral analysis of an input signal including a noise signal and occurrences of voice signals, the method comprising the steps of:

detecting the occurrences of voice signals in the input signal;

smoothing, responsive to the step of detecting, a spectrum of the input signal over a first bandwidth during the occurrences of the voice signals and over a second bandwidth, substantially greater than the first bandwidth, between the occurrences of the voice signals to produce a smoothed spectrum of the input signal; and

estimating, responsive to the step of smoothing, a spectrum of the smoothed spectrum of the input signal to produce a spectral estimate of the smoothed spectrum of the input signal.

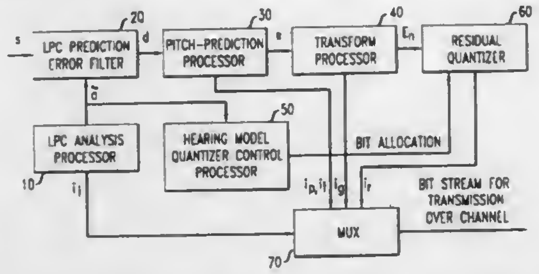
5,710,863
SPEECH SIGNAL QUANTIZATION USING HUMAN AUDITORY MODELSIN PREDICTIVE CODING SYSTEMS

Juin-Hwey Chen, 68 Longfield Dr., Neshanic Station, N.J. 08853

Filed Sep. 19, 1995, Ser. No. 530,980

Int. Cl.^{6} G10L *9/14*

U.S. Cl. 395—2.39 **10 Claims**


s
20
LPC PREDICTION ERROR FILTER
d
30
PITCH-PREDICTION PROCESSOR
e
40
TRANSFORM PROCESSOR
En
60
RESIDUAL QUANTIZER
a
50
LPC ANALYSIS PROCESSOR
10
i1
HEARING MODEL QUANTIZER CONTROL PROCESSOR
BIT ALLOCATION
ip, it
ig
ir
BIT STREAM FOR TRANSMISSION OVER CHANNEL
MUX
70

1. A method of coding a signal representing speech information, the method comprising:

generating a first signal representing an estimate of the signal representing speech information;

comparing the signal representing speech information with the first signal to form a second signal representing a difference between said compared signals;

determining a quantizer resolution in accordance with a perceptual noise masking signal which is determined by a model of human audio perception;

quantizing the second signal in accordance with the determined quantizer resolution; and

generating a coded signal based on said quantized signal.

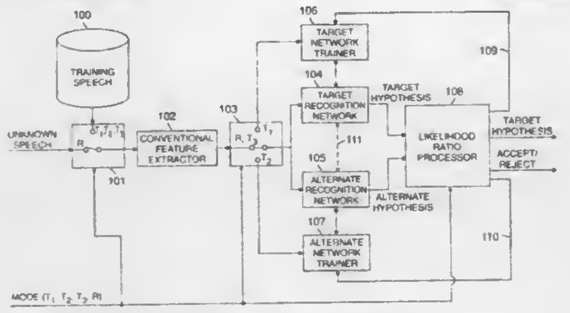
5,710,864
SYSTEMS, METHODS AND ARTICLES OF MANUFACTURE FOR IMPROVING RECOGNITION CONFIDENCE IN HYPOTHESIZED KEYWORDS

Biing-Hwang Juang, Warren; Chin-Hui Lee, New Providence, and Richard Cameron Rose, Watchung, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1994, Ser. No. 366,162

Int. Cl.^{6} G10L *5/06*

U.S. Cl. 395—2.47 **30 Claims**



1. A speech recognition system comprising:

a memory for storing a plurality of recognition models wherein each one of said recognition models represents a known word within a vocabulary, said plurality of recognition models including keyword recognition models representing keywords and alternate hypothesis recognition models representing words phonetically similar to the keywords; and

a processor having an input for receiving an input signal representing a speech utterance, the processor processing said input signal utilizing ones of said plurality of recognition models to identify a particular known word represented within said input signal, generating an output signal representing a confidence measure corresponding to the relative accuracy of the identity of said particular known word, and adjusting at least one of

said alternate hypothesis recognition models as a function of said output signal to improve said confidence measure.

5,710,865
METHOD OF BOUNDARY ESTIMATION FOR VOICE RECOGNITION AND VOICE RECOGNITION DEVICE

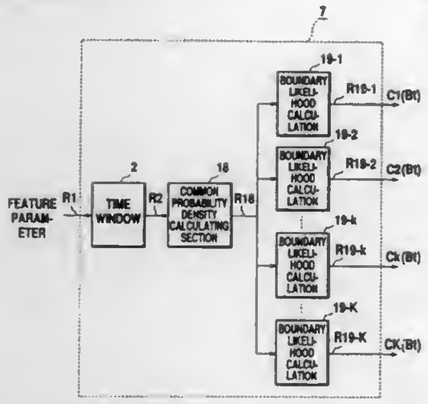
Yoshiharu Abe, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,170

Claims priority, application Japan, Mar. 22, 1994, 6-050606

Int. Cl.^{6} G10L *5/06;9/00*

U.S. Cl. 395—2.57 **23 Claims**



1. A computer-implemented process for estimating a presence of a phonemic boundary within a parametric voice signal, comprising the steps of:

analyzing an input voice to obtain the parametric voice signal;

extracting as a sample each value of the parametric voice signal within a variable position window of a predetermined time width;

calculating for the sample extracted at each position of the window a common probability density which represents a probability that the phonemic boundary lies at a center of the window;

calculating a first probability density estimating whether a particular boundary type lies at the center of the window, by multiplying the common probability density calculated by a first polynomial coefficient;

calculating a second probability density estimating whether the particular boundary type does not lie at the center of the window, by multiplying the common probability density calculated by a second polynomial coefficient; and

producing a signal indicative of the estimate of the presence of the phonemic boundary as a function of the first and second probability densities.

5,710,866
SYSTEM AND METHOD FOR SPEECH RECOGNITION USING DYNAMICALLY ADJUSTED CONFIDENCE MEASURE

Fileno A. Alleva, Redmond, Wash.; Douglas H. Beeferman, Hilton Head, S.C., and Xuedong Huang, Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed May 26, 1995, Ser. No. 452,141

Int. Cl.^{6} G10L *9/00*

U.S. Cl. 395—2.65 **30 Claims**

1. A computer-implemented method of recognizing an input speech utterance, comprising:

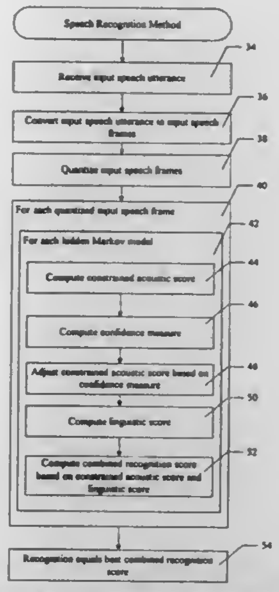
receiving the input speech utterance;

comparing the input speech utterance with a plurality of stored acoustic utterance models, each stored acoustic utterance model corresponding to a linguistic expression, the comparing including an output probability analysis and a transition probability analysis of the input speech utterance with respect to each of the stored acoustic utterance models and resulting in a constrained acoustic score for each of the stored acoustic utterance models;

for each stored acoustic utterance model, computing a confidence measure based on the constrained acoustic score for the stored acoustic utterance model, the confidence measure reflecting a probability that the constrained acoustic score correctly reflects how accurately the stored acoustic utterance model matches the input speech utterance;

for each stored acoustic utterance model, computing a combined score based on the constrained acoustic score and the confidence measure computed for the stored acoustic utterance model; and

determining which of the linguistic expressions corresponding to the stored acoustic utterance models most closely matches the input speech utterance based on the combined scores, thereby recognizing the input speech utterance.


Speech Recognition Method
34
Receive input speech utterance
36
Convert input speech utterance to input speech frames
38
Quantize input speech frames
40
For each quantized input speech frame
42
For each hidden Markov model
44
Compute constrained acoustic score
46
Compute confidence measure
48
Adjust constrained acoustic score based on confidence measure
50
Compute linguistic score
52
Compute combined recognition score based on constrained acoustic score and linguistic score
54
Recognition equals best combined recognition score

5,710,867
METHOD FOR PARALLEL PROCESSING OF FUZZY LOGIC INFERENCE RULES AND CORRESPONDING CIRCUIT ARCHITECTURE WITH FUZZY INPUTS AND OUTPUTS

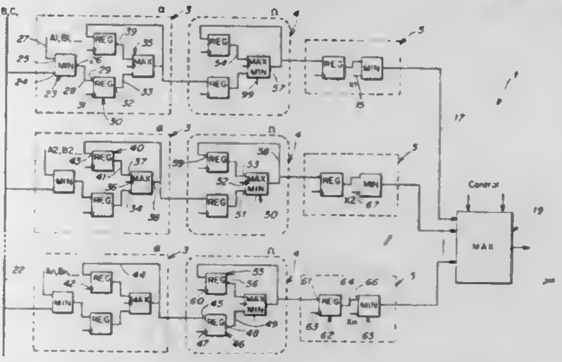
Biagio Giacalone, Trapani; Vincenzo Catania, Agata Li Batti-ati; Claudio Luzzi, Acri, and Vincenzo Matranga, Palermo, all of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed May 2, 1995, Ser. No. 431,687

Claims priority, application European Pat. Off., May 23, 1994, 94830240

Int. Cl.^{6} G06G *7/00*

U.S. Cl. 395—3 **26 Claims**



24. A fuzzy logic system for processing a plurality of fuzzy logic rules, the fuzzy logic system comprising:

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a plurality of fuzzy logic lines, each fuzzy logic line corresponding to a fuzzy logic rule and including:
  an evaluating device that serially provides at least one weight of terms of an antecedent of the rule corresponding to the fuzzy logic line,
  a calculating device that provides a series of intermediate partial truth values according to the at least one weight of terms serially provided by the evaluating device, wherein the last intermediate partial truth value in the series is considered an overall truth value, and wherein at least one fuzzy logic rule includes an OR logical operator such that at least one overall truth value is based on an OR logical operation, and
  a processing device that provides a processed signal based on the overall truth and a consequent of the rule; and
a union device that receives, in parallel, the processed signal provided by each fuzzy logic line, and provides a fuzzy logic signal based on the processed signal provided by each fuzzy logic line.

5,710,868

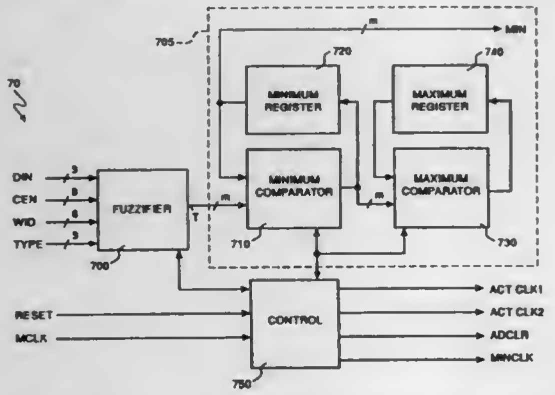
APPARATUS AND METHOD FOR GENERATING A FUZZY NUMBER FOR USE IN FUZZY LOGIC SYSTEMS

Paul M. Basehore, Sanford, Fla., assignor to Microchip Technology Incorporated, Chandler, Ariz.

Continuation-in-part of Ser. No. 408,407, Mar. 23, 1995, which is a continuation-in-part of Ser. No. 41,235, Mar. 31, 1993, Pat. No. 5,412,752, which is a continuation-in-part of Ser. No. 893,093, Jun. 3, 1992, Pat. No. 5,459,816, which is a continuation-in-part of Ser. No. 712,871, Jun. 12, 1991, Pat. No. 5,245,695. This application Oct. 4, 1995, Ser. No. 538,939

Int. Cl.^{6} G06G *7/00*

U.S. Cl. 395—3 **59 Claims**



25. An apparatus converting a digital input signal to a fuzzy value, comprising:
  a subtractor subtracting a value of the digital input signal with a center of a membership function and outputting a difference value;
  a comparator comparing the difference value with a width of said membership function and outputting a comparison result representing whether the difference value is greater than the membership function width; and
  a calculator digitally complementing said difference value in accordance with a bit length of said width and said comparison result to generate said fuzzy value.

5,710,869

DAISY CHAIN CIRCUIT FOR SERIAL CONNECTION OF NEURON CIRCUITS

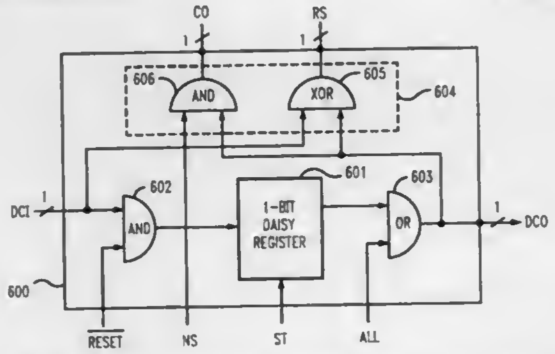
Catherine Godefroy, Essonnes; Andre Steimle, Evry; Pascal Tannhof, Cely En Biere, and Guy Paillet, Montpellier, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 485,337

Claims priority, application European Pat. Off., Jul. 28, 1994, 94480072

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—21 **6 Claims**



1. In each neuron circuit in a neural network comprised of a plurality of neuron circuits, a daisy chain circuit for selecting between two neuron states (free or engaged), said daisy chain circuit including:
  means for receiving an input signal (DCI);
  means for generating an output signal (DCO) said output signal being available as a subsequent neuron's daisy chain circuit input, such that the neuron circuits of the neural network may be linked together by their daisy chain circuits to form a chain;
  register means (**601**) for storing said input signal under the control of a store enable signal (ST), said store enable signal being active during a learning phase of a neuron, the logic value of said input signal being loaded into said register; and
  reset means connected to said register for forcing a first logic value therein at initialization, and
  said receiving means of the first daisy chain circuit in a chain of said neuron circuits being connected to a first potential (VH) such that the first input signal of the chain is equal to a second logic value, wherein
  said reset means comprises an AND gate (**602**), the output of said AND gate (**602**) being connected to the input of said register means and said input signal generated by the preceding daisy chain circuit being ANDed with a reset signal.

5,710,870

DECOUPLED SIX DEGREE-OF-FREEDOM ROBOT MANIPULATOR

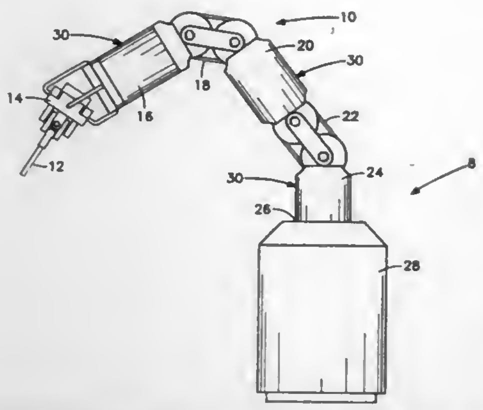
Timothy Ohm, La Crescenta; Curtis Boswell, Pasadena; Hari Das, Altadena, all of Calif.; Eric Paljug, McKees Rock, Pa.; Guillermo Rodriguez, La Canada, Calif.; Paul Schenker, Pasadena, Calif.; Sukhan Lee, La Canada, Calif.; Ed Barlow, San Dimas, Calif., and Steve Charles, Geramtown, Tenn., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 7, 1995, Ser. No. 525,813

Int. Cl.^{6} G05G *11/00;* **G05B** *19/00*

U.S. Cl. 395—98 **64 Claims**

35. A multiple degree of freedom robot having a plurality of arm joints, a wrist joint coupled to one of said arm joints and having a tip, and a computer control system, said computer control system comprising:
  a user interface for receiving user commands;
  a servo controller coupled to said arm and wrist joints for reading actual positions of said arm and wrist joints; and



  a real-time kinematic processor coupled to said user interface and said servo controller for receiving said user commands and said actual positions of said arm and wrist joints for computing forward and inverse kinematic relationships for controlling said arm and wrist joints in accordance with said user commands and said computed relationships;
wherein said real-time kinematic processor comprising:
  (a) means for setting a vector of tip displacements at said robot to zero,
  (b) means for computing at each joint a displacement vector corresponding to a unit motion at a current joint,
  (c) means for multiplying a displacement vector at said current joint by a transition matrix of a succeeding joint to produce a result,
  (d) means for multiplying said result by a joint axis vector of said current joint,
  (e) means for multiplying said result by said transition matrix to define a transition from a last joint to said tip,
  (f) means for setting said vector as a respective column of a jacobian matrix, and
  (g) means for multiplying a user defined vector of tip displacements by said jacobian matrix to compute corresponding joint angle displacements;
wherein said servo controller implements said joint angle displacements.

5,710,871

DATA CORRECTION SUBSYSTEM AND METHOD FOR COLOR IMAGE PROCESSING SYSTEM

Hironobu Tadenuma, and Shuichi Ichinose, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

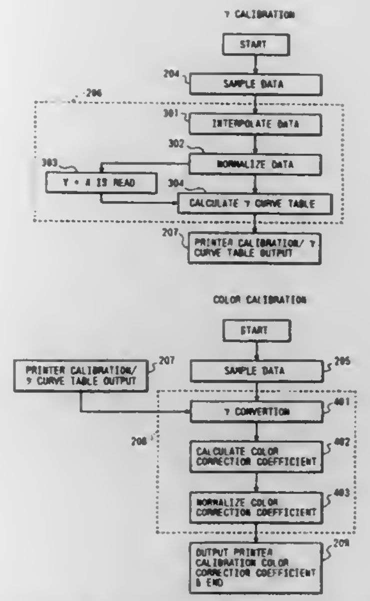
Filed Mar. 14, 1995, Ser. No. 403,442

Claims priority, application Japan, Mar. 15, 1994, 6-44143

Int. Cl.^{6} G06K *15/00;* **G03F** *3/08*

U.S. Cl. 395—109 **18 Claims**

1. A data correction subsystem for a color image processing system having a color image reading device and a color image printing device, the data correction subsystem comprising:
  transmitting means for transmitting a chart file to the printing device so that the printing device produces a sample chart;
  calculation means for calculating γ and color calibration data from read sample data so that the read sample data can be corrected to corresponding data in the chart file, the read sample data being obtained by causing the reading device to read the sample chart, the calculation means including gray density normalization means for subjecting the read sample data to normalization processing to expand a gray density distribution region of the read sample data toward a higher density side; and


γ CALIBRATION
START
204
SAMPLE DATA
206
301
INTERPOLATE DATA
302
NORMALIZE DATA
303
γ = A IS READ
304
CALCULATE γ CURVE TABLE
207
PRINTER CALIBRATION/ γ CURVE TABLE OUTPUT
COLOR CALIBRATION
START
PRINTER CALIBRATION/ γ CURVE TABLE OUTPUT
207
SAMPLE DATA
205
γ CONVERTION
401
208
CALCULATE COLOR CORRECTION COEFFICIENT
402
NORMALIZE COLOR CORRECTION COEFFICIENT
403
OUTPUT PRINTER CALIBRATION COLOR CORRECTION COEFFICIENT & END
209

  calibration means for correcting printing data to be transmitted to the printing device using the γ and color calibration data.

5,710,872

COLOR IMAGE RECORDING DEVICE, SYSTEM, AND METHOD

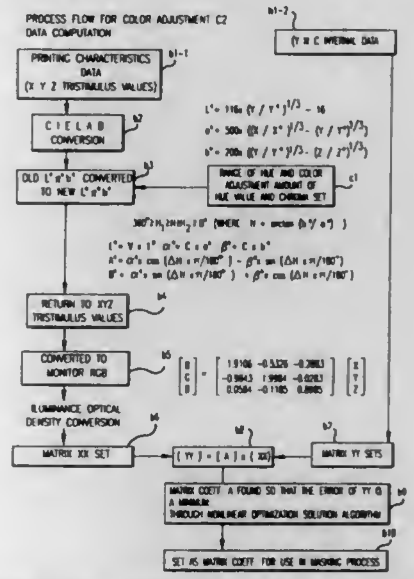
Akihiko Takahashi, and Naoaki Yorita, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 22, 1996, Ser. No. 620,178

Claims priority, application Japan, Mar. 23, 1995, 7-063251; Jun. 15, 1995, 7-174245

Int. Cl.^{6} H04N *1/60*

U.S. Cl. 395—109 **47 Claims**


PROCESS FLOW FOR COLOR ADJUSTMENT C2 DATA COMPUTATION
b1-2
PRINTING CHARACTERISTICS DATA (X Y Z TRISTIMULUS VALUES)
b1-1
CIELAB CONVERSION
b2
OLD L*a*b* CONVERTED TO NEW L*a*b*
b3
c1
RETURN TO XYZ TRISTIMULUS VALUES
b4
CONVERTED TO MONITOR RGB
b5
ILLUMINANCE OPTICAL DENSITY CONVERSION
MATRIX XX SET
b6
b8
b7
MATRIX YY SETS
b9
SET AS MATRIX COEFF. FOR USE IN MASKING PROCESS
b10

1. A color image recording device that forms color data for printing by adjusting a color of an RGB signal from an input device, the color image recording device comprising:
  printing characteristic data recording means for recording printing characteristics of a printing device;
  color adjustment setting means for determining color adjustment in a selected color region having a uniform color space;
  color adjustment data computation means for correcting a data value of the printing characteristic data recording means by a setting amount of the color adjustment setting means; and
  a matrix coefficient computation means for computing a matrix coefficient in order to convert the RGB signal into data unique

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to the color image recording device using results of computations of the color adjustment data computation means and the data from the printing characteristic data recording means,

wherein the color adjustment data computation means conducts data conversion on the printing characteristic data in the uniform color space.

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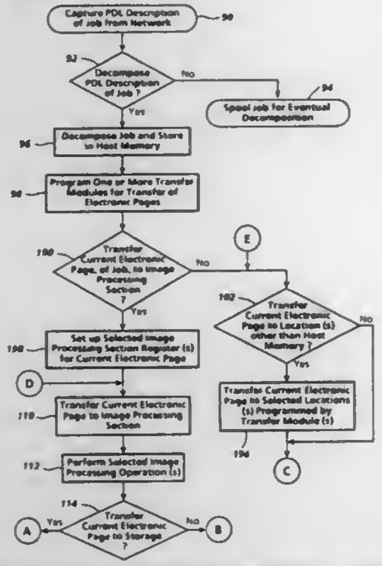
APPARATUS AND METHOD FOR MAXIMIZING A RATE OF IMAGE DATA TRANSFER IN A PRINTING SYSTEM

Kenneth D. Romano, Webster; Anthony M. Frumusa, Penfield; Samuel D. Ambalavanar, Rochester; Robert M. Chapin, Rushville; Daniel A. Mohabir, Walworth, and Mehdi Mansoori, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1994, Ser. No. 315,277
Int. Cl.^{6} G06K *15/00*

U.S. Cl. 395—115 **22 Claims**


Capture PDL Description of Job from Network
90
92
Decompose PDL Description of Job ?
No
Yes
94
Spool Job for Eventual Decomposition
96
Decompose Job and Store to Host Memory
98
Program One or More Transfer Modules for Transfer of Electronic Pages
100
Transfer Current Electronic Page, of Job, to Image Processing Section ?
E
102
Transfer Current Electronic Page to Location (s) other than Host Memory ?
108
Set up Selected Image Processing Section Register (s) for Current Electronic Page
D
110
Transfer Current Electronic Page to Image Processing Section
Transfer Current Electronic Page to Selected Locations (s) Programmed by Transfer Module (s)
106
C
112
Perform Selected Image Processing Operation (s)
114
Transfer Current Electronic Page to Storage ?
A
B
Yes
No

1. A printing system, including a controller, for processing one or more images of a job with the job being stored in a job storage area and the images being represented by image signals, comprising:

a video bus for transmitting image signals of the job, represented by one or more segments, from the job storage area to one of a plurality of destinations;

an image processing section, communicating with said video bus, for performing one or more image processing operations on at least one image associated with the job;

a first transfer module, communicating with said video bus, including:

a first buffer for buffering a first set of image signals representing a first segment of the job, and

a first programmable direct memory access apparatus, responsive to the controller, for transferring the first segment of the job from said first buffer to said image processing section, wherein, in response to transferring the first segment, a second set of image signals, representing a second segment of the job is buffered in said first buffer; and

a second transfer module, communicating with both said video bus and said second output device, said second transfer module being disposed in parallel with said first transfer module and including a second programmable direct memory access apparatus, responsive to the controller, for transferring the first segment of the job from said image processing section, to a selected one of a storage area and an output device, while the second segment of the job is being transferred from said first buffer to said image processing section.

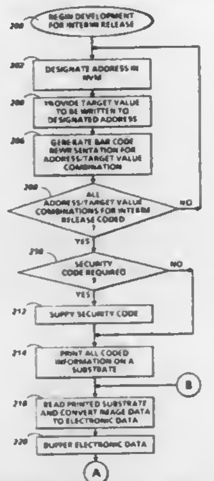
5,710,874

SYSTEM FOR MANAGING PRINTING SYSTEM MEMORY WITH MACHINE READABLE CODE

George F. Bergen, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1995, Ser. No. 548,240
Int. Cl.^{6} G06K *15/00*

U.S. Cl. 395—115 **6 Claims**


BEGIN DEVELOPMENT FOR INTERIM RELEASE
200
202
DESIGNATE ADDRESS IN NVM
204
PROVIDE TARGET VALUE TO BE WRITTEN TO DESIGNATED ADDRESS
206
GENERATE BAR CODE REPRESENTATION FOR ADDRESS/TARGET VALUE COMBINATION
208
ALL ADDRESS/TARGET VALUE COMBINATIONS FOR INTERIM RELEASE CODED
NO
YES
210
SECURITY CODE REQUIRED
NO
YES
212
SUPPLY SECURITY CODE
214
PRINT ALL CODED INFORMATION ON A SUBSTRATE
B
218
READ PRINTED SUBSTRATE AND CONVERT IMAGE DATA TO ELECTRONIC DATA
220
BUFFER ELECTRONIC DATA
A

1. In a printing system for executing programmed jobs and having both non-volatile memory and a subsystem thereof disposable in either a first state or a second state, the first state corresponding with the subsystem being one of enabled and disabled, the second state corresponding with the subsystem being the other of enabled and disabled, the subsystem being disposed in the first state when the non-volatile memory is set with a first value and the second state when the non-volatile memory is set with a second value, a system for changing the state of the subsystem automatically from the first state to the second state, comprising:

a) a substrate including a representation of machine readable code, the representation of the machine readable code corresponding with the second value;

b) a raster image processing device for scanning the substrate to read the representation of the machine readable code;

c) a controller which, in response to scanning the substrate with said raster image processing device, changes the first value to the second value, in response to a reprogramming authorization signal, so that the state of the subsystem is changed automatically from the first state to the second state: and

d) wherein the subsystem remains in the second state for all subsequent jobs executed in the printing system until the printing system is reprogrammed by changing the second value back to the first value with the reprogramming authorization signal.

5,710,875

METHOD AND APPARATUS FOR PROCESSING 3-D MULTIPLE VIEW IMAGES FORMED OF A GROUP OF IMAGES OBTAINED BY VIEWING A 3-D OBJECT FROM A PLURALITY OF POSITIONS

Hiroshi Harashima; Robert Hsu, and Kazuya Kodama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

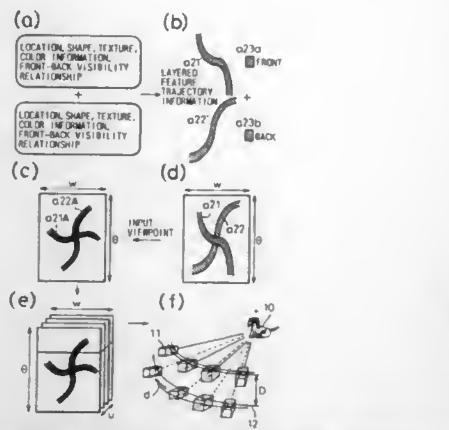
Filed Mar. 8, 1995, Ser. No. 400,756
Claims priority, application Japan, Sep. 9, 1994, 6-215523
Int. Cl.^{6} G06T *7/00*

U.S. Cl. 345—419 **32 Claims**

1. A method of processing 3-D multiple-view images comprising:

acquiring by an image acquisition means, 3-D multiple-view images comprised of a group of images obtained by viewing a 3-D object from a plurality of viewpoints;

finding by an image analysis means, layered feature trajectory information connecting identical points of the 3-D object


(a)
(b)
LOCATION, SHAPE, TEXTURE, COLOR INFORMATION, FRONT-BACK VISIBILITY RELATIONSHIP
LAYERED FEATURE TRAJECTORY INFORMATION
FRONT
BACK
(c)
(d)
INPUT VIEWPOINT
(e)
(f)

between images of the 3-D multiple-view images obtained by the image acquisition means; and

finding by interpolation by an image interpolation means, an image of the 3-D object viewed from any arbitrary viewpoint based on the layered feature trajectory information.

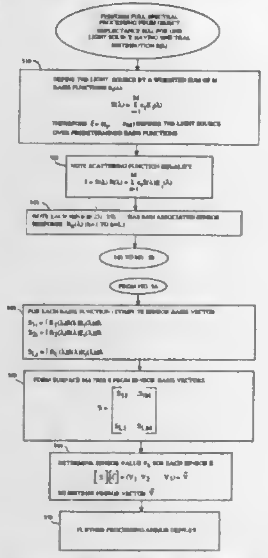
5,710,876

COMPUTER GRAPHICS SYSTEM FOR RENDERING IMAGES USING FULL SPECTRAL ILLUMINATION DATA

Mark S. Peercy, Sunnyvale, and Daniel R. Baum, Palo Alto, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed May 25, 1995, Ser. No. 450,619
Int. Cl.^{6} G06T *15/50*

U.S. Cl. 395—126 **29 Claims**



1. In a computer controlled graphics display system for displaying an object having an associated surface reflectance function to a plurality of sensors each having an associated sensor response function, a color processing method comprising the steps of:

(a) determining at a point on said object an illumination vector whose components represent the weights of predetermined basis functions for a predetermined light source;

(b) determining a surface matrix responsive to a surface reflectance function at said point, said plurality of predetermined basis functions, and said plurality of sensor response functions wherein each entry in said surface matrix has a value representing $\int X_c(\lambda)\ s(\lambda)\ E_i(\lambda)\ d\lambda$, which represents a color component for an ith basis function of said plurality of predetermined basis functions, wherein $s(\lambda)$ represents said surface reflectance function, λ represents wavelength, $X_c(\lambda)$ represents one of said plurality of sensor response functions and $E_i(\lambda)$ represents one of said plurality of predetermined basis functions for said ith basis function;

(c) determining a set of colorimetric sensor sensor values at said point including multiplying in a matrix multiplication circuit said surface matrix by said illumination vector, and displaying a picture element on a display responsive to said set of colorimetric sensor sensor values.

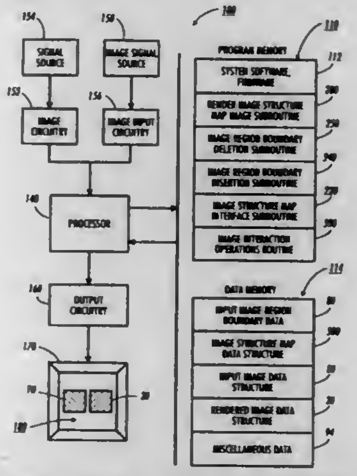
5,710,877

USER-DIRECTED INTERACTION WITH AN IMAGE STRUCTURE MAP REPRESENTATION OF AN IMAGE

David H. Marimont, and Leonidas John Guibas, both of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1995, Ser. No. 581,660
Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—127 **24 Claims**



1. A method for operating a processor-controlled machine to dynamically interact with an image structure map data structure representing an original image in response to input interaction signals received from a user; the machine including input signal circuitry for receiving interaction signals from a user interaction device; memory for storing data; output circuitry connected to a display device for presenting images thereon; and a processor connected for accessing instruction data stored in the memory for operating the machine; the processor being further connected for receiving the input interaction signals from the user interaction device, and connected for providing image definition data defining images to the output circuitry for presenting the images on the display device; the method comprising:

receiving an image interaction signal from the input circuitry indicating a request from a user to dynamically modify an image structure map data structure, referred to as an image structure map; the image interaction signal including an input image location included in an input image definition data structure and an image interaction request;

the image structure map representing an original image definition data structure defining an original image in a form suitable for presenting the original image on the display device of the machine;

the image structure map representing the original image definition data structure as a partition of a two-dimensional (2D) plane induced by a set of intersecting image boundaries determined to be included in the original image into one or more region data items each indicating a respective image region in the original image formed by the set of intersecting image boundaries;

the image structure map, also referred to as an image structure map representation of the original image, being dynamically modifiable such that a selected image structure included in the image structure map is capable of being modified without recomputing all image structures included in the image structure map at the time of modification;

each region data item indicating a plurality of image region boundary data items; each image region boundary data item indicating a respective one of the set of intersecting image

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boundaries forming the respective image region; each region data item further indicating a signal property descriptor; the signal property descriptor having a value indicating a smoothly varying function of signals included in locations in the original image definition data structure determined to be included in the respective image region of the original image; and

in response to receiving the image interaction signal, modifying the image structure map according to the image interaction request using the input image location by

determining an image structure map location of a target image structure in the image structure map using the input image location; and

modifying the target image structure in the image structure map according to the image interaction request such that only the target image structure and, when necessary, image structures associated with the target image structure, are modified in response to the request from the user.

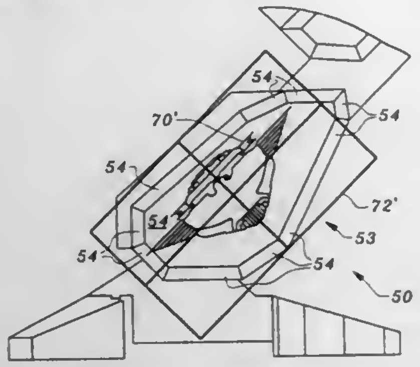
5,710,878

METHOD FOR FACILITATING MATERIAL APPLICATION FOR A GROUP OF OBJECTS OF A COMPUTER GRAPHIC

David Scott McCoy, 406 Langford Dr., Bollingbrook, Ill. 60440, and John-Mark Albertson, 1222 Degener Ave., Elmhurst, Ill. 60126

Filed Jun. 7, 1995, Ser. No. 480,649
Int. Cl.^{6} G06T *15/00*

U.S. Cl. 395—129 **20 Claims**



1. A method of facilitating material application for a group of objects of a computer graphic comprising the steps of:

defining a group of objects;

representing a first object from said group of objects, said first object having a geometry within a coordinate system of a computer graphic, said first object comprised of at least one component;

designating said component as a first named component by assigning a name to said component;

creating a material which defines a surface quality;

creating a material application, said material application comprising data specifying said material and the manner in which using said material is to be applied;

using said material application for applying said material to said first named component;

storing said material application;

representing a second object from said group of objects, said second object having a geometry within a coordinate system of a computer graphic, said second object comprised of at least one component;

designating said component of the second object as a second named component, by assigning the name to said component so that the name is assigned to both the first named component and the second named component;

designating the malarial application for said second named component because said second named component has been assigned the name;

using said material application for applying said material to said second named component.

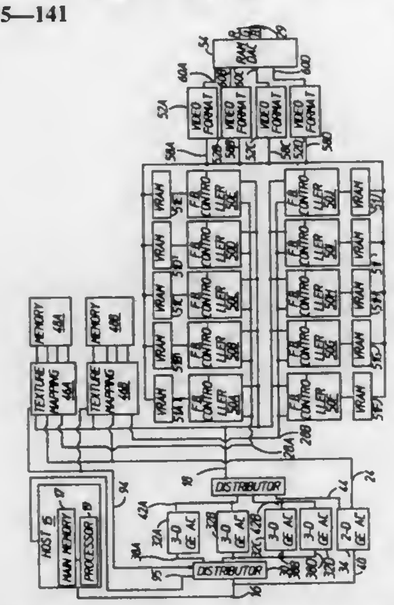
5,710,879

METHOD AND APPARATUS FOR FAST QUADRILATERAL GENERATION IN A COMPUTER GRAPHICS SYSTEM

Jon L. Ashburn, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 8, 1995, Ser. No. 488,644
Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—141 **20 Claims**



1. In a computer graphics system, apparatus for generating pixel data representative of a quadrilateral, comprising:

a processing circuit for generating plane equation data in response to vertex data defining a quadrilateral, said processing circuit including:

first means responsive to said vertex data for dividing the quadrilateral into vertex data representative of first and second triangles;

second means responsive to the vertex data representative of said first triangle for generating plane equation data for said first triangle, including shared data, that is shared by said first and second triangles; and

third means responsive to vertex data representative of the second triangle and the shared data for generating plane equation data for said second triangle, without generating at least some of the shared data twice; and

a fill scan converter responsive to said plane equation data for said first and second triangles for generating pixel data representative of said quadrilateral.

5,710,880

METHOD AND SYSTEM FOR CREATING A GRAPHIC IMAGE WITH GEOMETRIC DESCRIPTORS

Virginia E. Howlett; Laura Janet Butler, and Joyce Alison Grauman, all of Seattle, Wash., assignors to Microsoft Corporation, Redmond, Wash.

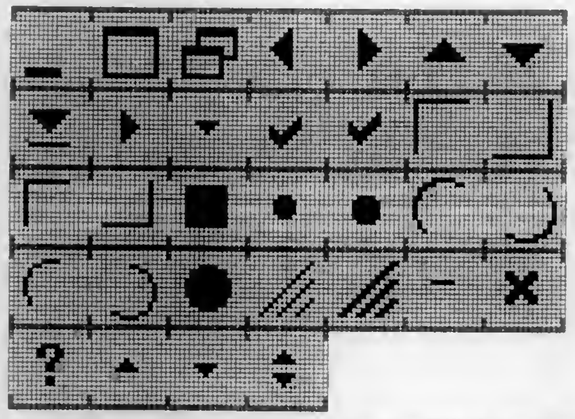
Filed Nov. 3, 1994, Ser. No. 333,799
Int. Cl.^{6} G06F *17/21*

U.S. Cl. 395—168 **21 Claims**

1. A method of creating a scalable graphic image that can be displayed at a plurality of sizes by a pixel-oriented display device, comprising the steps of:

creating a pixel-based design of said graphic image;

dividing said pixel-based design into constituent parts based on the colors of said constituent parts; and



generating geometric descriptors for said constituent parts, said geometric descriptors operative to support a combination of representations of said constituent parts to display said graphic image for each of said plurality of sizes.

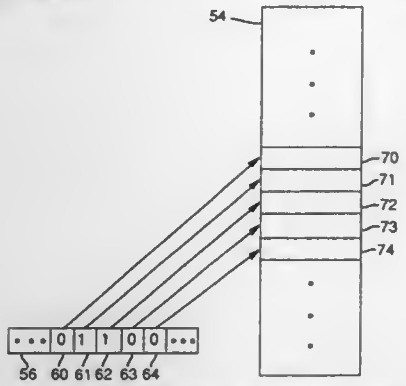
5,710,881

DATA MERGING METHOD AND APPARATUS FOR SHARED MEMORY MULTIPROCESSING COMPUTER SYSTEMS

Rajiiv Gupta, Los Altos, and Alan H. Karp, Sunnyvale, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 149,418, Nov. 9, 1993, abandoned.
This application Nov. 25, 1996, Ser. No. 755,686
Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—200.3 **19 Claims**



1. A method for sharing memory in a multiprocessor computer system, the method comprising:

storing a plurality of data blocks in a global memory;

for each processor so requesting, storing a copy of an originating one of the data blocks in a cache memory local to the requesting processor for access by the requesting processor;

storing in the cache memory a bitmask comprising a flag associated with each data element in the copy, each flag initially set to a first value;

setting the flag in the bitmask associated with each of the data elements written by the requesting processor to a second value;

merging the copies by storing into said global memory those elements of the copies that said flags in said bitmask indicate were modified into the data block; and

for each processor accessing data in one of the data blocks

associating in the local memory of the processor a subword store flag with the local copy, the subword store flag being indicative of the minimum size data element modified and initially set to indicate a first size, the first size being that of the first sized data elements,

setting the subword store flag to indicate a second size when the processor performs a subword store operation on the local copy, and

sending the subword store flag along with the local copy and the local copy write bits to the global memory when the local copy is flushed from the local memory.

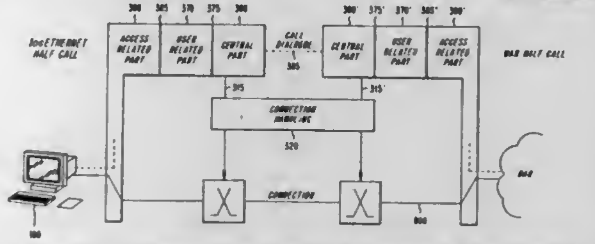
5,710,882

METHOD AND CALL SET UP SERVER FOR SETTING UP A CALL USING A CALL HANDLING PORTION AND A CONNECTION HANDLING PORTION TO HANDLE THE CALL AND THE CONNECTION, RESPECTIVELY

Anders C. Svennevik, Stockholm, and Stefan R. Lundberg, Tyresö, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 29, 1995, Ser. No. 496,669
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.12 **6 Claims**



1. A method of a setting up a call in a communications network from a transmitting point to a destination point, the method comprising the steps of:

ordering the call to be transferred from the transmitting point,

transferring the call from the transmitting point to a transmitting access part, for determining how the call should be represented and selecting a service,

transferring the call, which includes a call portion representing the actual data to be transferred and a connection portion representing connection points, from the transmitting access part to a call handling portion,

handling the call portion in the call handling portion, including performing the selected service, and transferring the connection portion to a connection handling portion,

reserving a connection between the connection points represented by the connection portion in the connection handling portion,

transferring the call portion from the call handling portion to a destination access part,

interpreting how the call is represented and the service that has been selected in the destination access part,

transferring the call to the destination point,

answering the call in the destination point,

transferring answered call information from the destination point to the destination access part, for determining how the answered call information should be represented,

transferring the answered call information, which includes an answered call data portion representing the actual answer data to be transferred and an answered connection portion representing reserved connection points, from the destination access part to a call handling portion,

handling the answered call data portion in the call handling portion, and transferring the answered connection portion to the connection handling portion,

setting up a connection between the reserved connection points represented by the answered connection portion in the connection handling portion,

transferring the answered call data portion from the call handling portion to the transmitting access part,

interpreting how the answered call information is represented in the transmitting access part, and

transferring the answered call information to the transmitting point.

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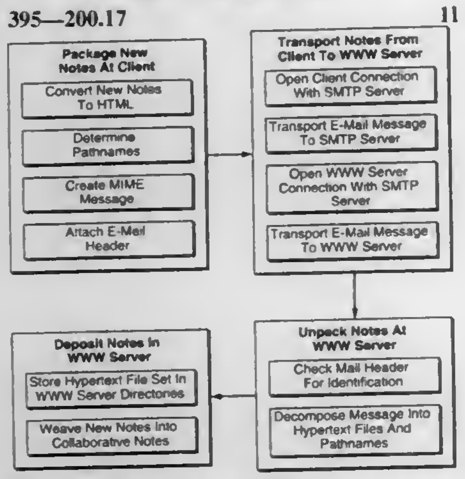
5,710,883
HYPERTEXT DOCUMENT TRANSPORT MECHANISM FOR FIREWALL-COMPATIBLE DISTRIBUTED WORLD-WIDE WEB PUBLISHING

Jack Hong, Palo Alto, and George Toye, Foster City, both of Calif., assignors to Stanford University, Stanford, Calif.

Filed Mar. 10, 1995, Ser. No. 402,470

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.17 **11 Claims**


Package New Notes At Client
Convert New Notes To HTML
Determine Pathnames
Create MIME Message
Attach E-Mail Header
Transport Notes From Client To WWW Server
Open Client Connection With SMTP Server
Transport E-Mail Message To SMTP Server
Open WWW Server Connection With SMTP Server
Transport E-Mail Message To WWW Server
Unpack Notes At WWW Server
Check Mail Header For Identification
Decompose Message Into Hypertext Files And Pathnames
Deposit Notes In WWW Server
Store Hypertext File Set In WWW Server Directories
Weave New Notes Into Collaborative Notes

1. A method for publishing a hypertext file set on a world-wide web server machine, the method comprising:

packaging the hypertext file set as a composite e-mail message on a client machine,

transporting the composite e-mail message over the internet from the client machine to the world-wide web server machine,

unpacking the composite e-mail message to recover the hypertext file set, and

depositing the hypertext file set into a memory means on the world-wide web server machine.

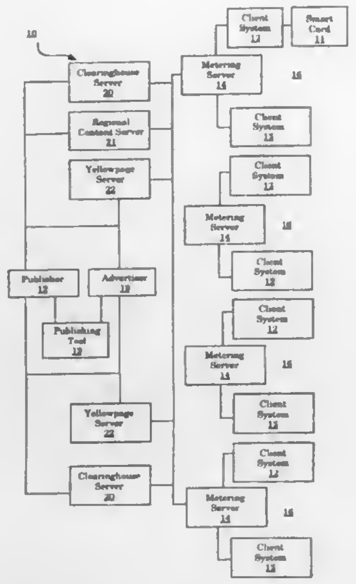
5,710,884
SYSTEM FOR AUTOMATICALLY UPDATING PERSONAL PROFILE SERVER WITH UPDATES TO ADDITIONAL USER INFORMATION GATHERED FROM MONITORING USER'S ELECTRONIC CONSUMING HABITS GENERATED ON COMPUTER DURING USE

Rick Dedrick, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 29, 1995, Ser. No. 412,707

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.47 **19 Claims**



1. A method for storing and updating electronic information in a personal profile server for an individual user, and dynamically changing the residence of the electronic information, said electronic information being transmitted between a computer and a network system including said personal profile server, comprising the steps of:

interfacing the computer with a removable non-volatile storage device containing minimum user information on the individual user including information identifying the individual user;

securing connection between the computer and the network using said minimum user information;

transmitting additional user information from said personal profile server of the network to the computer, said additional user information including the individual user's electronic consuming habits; and

automatically updating the personal profile server with updates to said additional user information gathered from monitoring the individual user's electronic consuming habits generated on the computer during use.

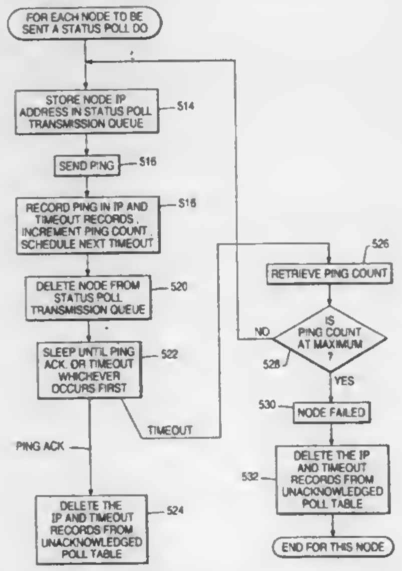
5,710,885
NETWORK MANAGEMENT SYSTEM WITH IMPROVED NODE DISCOVERY AND MONITORING

Andre B. Bondi, Red Bank, N.J., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 28, 1995, Ser. No. 565,180

Int. Cl.^{6} G06F *17/00*

U.S. Cl. 395—200.54 **15 Claims**


FOR EACH NODE TO BE SENT A STATUS POLL DO
STORE NODE IP ADDRESS IN STATUS POLL TRANSMISSION QUEUE
514
SEND PING
516
RECORD PING IN IP AND TIMEOUT RECORDS, INCREMENT PING COUNT, SCHEDULE NEXT TIMEOUT
518
DELETE NODE FROM STATUS POLL TRANSMISSION QUEUE
520
SLEEP UNTIL PING ACK. OR TIMEOUT WHICHEVER OCCURS FIRST
522
PING ACK
TIMEOUT
DELETE THE IP AND TIMEOUT RECORDS FROM UNACKNOWLEDGED POLL TABLE
524
526
RETRIEVE PING COUNT
IS PING COUNT AT MAXIMUM ?
528
NO
YES
530
NODE FAILED
532
DELETE THE IP AND TIMEOUT RECORDS FROM UNACKNOWLEDGED POLL TABLE
END FOR THIS NODE

1. A method for monitoring nodes in a network having at least one network management station and a plurality of nodes, comprising:

queuing the plurality of nodes in a queue in a network management station so as to arrange an order of transmission of polling messages to the plurality of nodes;

sending a polling message from the network management station to the plurality of managed nodes in sequence at a predetermined rate;

recording in the network management station transmission of the polling messages in a table having a first portion indexed by a

network address of each node and a second portion indexed by a timeout associated with a polling message count for each node having an outstanding status poll; and

determining if each of the plurality of nodes has failed after a predetermined number of polling messages have been sent to each node.

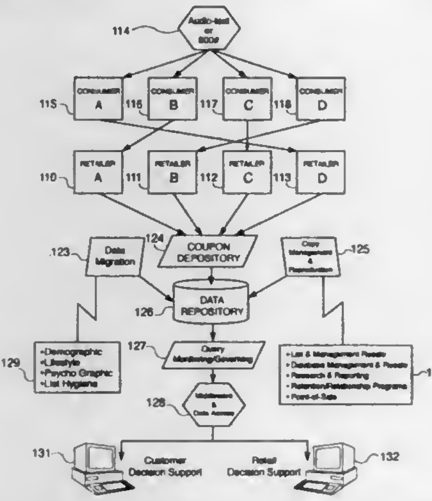
5,710,886
ELECTRIC COUPONING METHOD AND APPARATUS

Scott N. Christensen, Omaha, Nebr., and David D. Ingwersen, Scottsdale, Ariz., assignors to SellectSoft, L.C., Phoenix, Ariz.

Filed Jun. 16, 1995, Ser. No. 491,367

Int. Cl.^{6} G06F *151/00*

U.S. Cl. 395—214 **19 Claims**



1. A series of operational steps to be performed with the aid of a computer for distributing and generating coupons, comprising the steps of:

generating in a first computer a database comprising at least a list of consumer names and addresses,

generating in the first computer a package of data for a selected group of consumers from the list, the package of data including at least one coupon data,

transmitting from the first computer the package of data to computers of the selected group of consumers from the list,

entering, in the first computer, identification data received from a consumer from the selected group of consumers,

transmitting to a computer of the consumer a validation code so as to allow the computer of the consumer to generate at least one coupon from the at least one coupon data in the package of data,

generating in the computer of the consumer, in response to a command input by a consumer, at least one coupon from the at least one coupon data in the package of data, the at least one coupon including at least a consumer identification number derived from the validation code,

processing, in the first computer, the at least one coupon when the at least one coupon has been redeemed, to retrieve the at least customer identification number, and

updating, in the first computer, the database from information retrieved from said processing step to indicate whether a consumer has redeemed the at least one coupon.

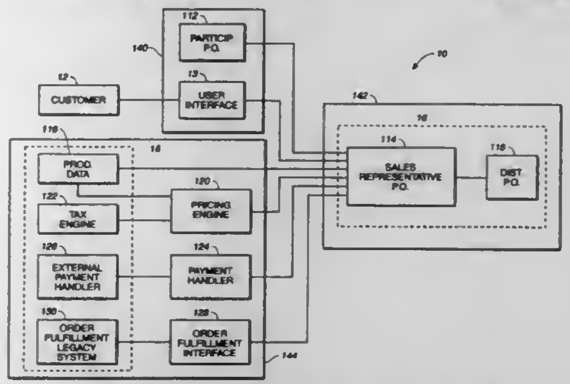
5,710,887
COMPUTER SYSTEM AND METHOD FOR ELECTRONIC COMMERCE

Raman Chelliah, San Carlos; Jason S. Cornez, Belmont; Carl Dellar, Cupertino, all of Calif.; Stephen Harrison, Cambridge, Mass.; John A. Hempe, Foster City, Calif.; Chih-Cheng Hsu, Fremont, Calif.; Eric J. Golin, Menlo Park, Calif.; Charles A. Price, San Jose, Calif.; Neal S. Rutta, Willow Glen, Calif.; Thomas A. Wood, Mountain View, Calif., and Wayne K. Yamamoto, San Francisco, Calif., assignors to Broadvision, Los Altos, Calif.

Filed Aug. 29, 1995, Ser. No. 520,627

Int. Cl.^{6} G06F *15/62*

U.S. Cl. 395—226 **49 Claims**



1. A system for facilitating commercial transactions, between a plurality of customers and at least one supplier of items, over a computer driven network capable of providing communications between the supplier and at least one customer site associated with each customer and including an input means and a display, the system comprising:

a. means for causing at least one supplier to be represented on the display for selection by the customer using the input means;
b. means for effecting presentation of items on the display for customer observation;
c. an item database associated with a supplier and including information on presented items;
d. pricing means for receiving information from the item database to determine the cost associated with a presented item;
e. a customer information database for storing information relating to a customer; and
f. means for creating a customer monitoring object for each customer by referencing information, relating to that customer, which had been stored in the customer information database and upon the customer selecting at least one supplier such that the customer monitoring object is configured to operate by
  i. responding to customer enquiries, communicated through the input means, regarding a presented item by accessing the item database to retrieve information relating to said item and to present said information to the customer by means of the display,
  ii. receiving a customer's selection of a presented item through the input means,
  iii. communicating with the pricing means to have the cost of the item determined,
  iv. presenting the cost to the customer by means of the display,
  v. receiving customer communications, through the input means, indicating a desire to receive the item, and
  vi. passing a delivery initiation communication to initiate the delivery of the item to the customer.

5,710,888

Patent Not Issued For This Number

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5,710,889

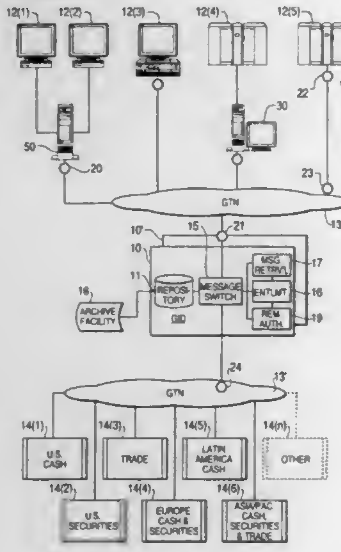
INTERFACE DEVICE FOR ELECTRONICALLY INTEGRATING GLOBAL FINANCIAL SERVICES

Barry Alan Clark, Rutherford, N.J., and John D'Onofrio, Staten Island, N.Y., assignors to Citibank, N.A., New York, N.Y.

Division of Ser. No. 392,270, Feb. 22, 1995. This application Jun. 7, 1995, Ser. No. 474,167

Int. Cl.⁶ G06F *17/60;* **G06K** *5/00;* **G06G** *7/52*

U.S. Cl. 395—244 **9 Claims**



1. An interface apparatus comprising:

a first device for delivering financial services from a plurality of processing facilities to a plurality of customer facilities, said first interface device including:

a message switch means for determining which messages received from a customer facility should be sent to which processing facility, and for determining which messages received from a processing facility should be sent to which customer facility;

means for storing messages received from customer facilities and processing facilities; and

means coupled to said message switch means and said storing means for queuing said stored messages to the processing facilities determined by said message switch means when the proper processing facility becomes operable, and for queuing said stored messages to the customer facilities determined by said message switch means in response to a message retrieval request received from the proper customer facility and

a second interface device for providing backup operations in the event that the first mentioned interface device becomes inoperable, the second interface device including:

a second message switch means for determining which messages received from a customer facility should be sent to which processing facility, and for determining which messages received from a processing facility should be sent to which customer facility;

a second storing means for storing messages received from customer facilities and processing facilities; and

a second queuing means coupled to said message switch means and said storing means for queuing said stored messages for the processing facilities determined by said message switch means when the proper processing facility becomes operable, and for queuing said stored messages to the customer facilities determined by said message switch means in response to a message retrieval request received from the proper customer facility.

5,710,890

METHOD AND DEVICE FOR THE TRANSMISSION OF DATA ON A BUS

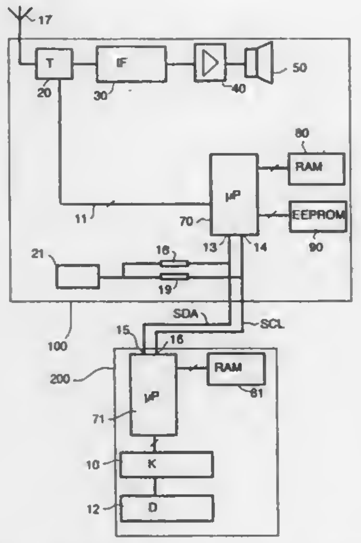
Jean-Pierre Hermer, Rambouillet, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1995, Ser. No. 573,853

Claims priority, application France, Dec. 21, 1994, 94 15411

Int. Cl.⁶ G06F *13/42*

U.S. Cl. 395—286 **6 Claims**



1. A method for the transmission of data with the help of a two-wire bus, carried out in a device comprising:

a master station which enables control of the transmission and reception of data and comprises a data terminal and a clock terminal,

a slave station which enables the transmission and reception of data and comprises a data terminal and a clock terminal,

a data wire which interconnects the data terminals of the stations,

a clock wire which interconnects the clock terminals of the stations,

means for maintaining the bus wires at a first voltage level in the absence of forcing by the stations,

each of the stations being capable of forcing one of the bus wires to a second voltage level, and the master station being capable of producing a start signal, which indicates that it is ready to control the transmission of data, characterized in that before the production of a start signal the master station

forces its clock terminal and subsequently its data terminal to the second voltage level,

subsequently maintains its clock terminal at the second voltage level for a predetermined first period of time after which it allows it to return to the first level

the slave station

tests whether its clock terminal and its data terminal are at the second voltage level, and in that case

detects subsequently whether its clock terminal returns to the fast voltage level,

and then forces its clock terminal to the second voltage level for a predetermined second period of time, after which it allows it to return to the first level,

and during this period the master station

tests whether its clock terminal is maintained at the second voltage level during said second predetermined period of time and if it subsequently returns to the first level,

and then allows its data terminal to return to the first level, and said start signal is then generated.

5,710,891

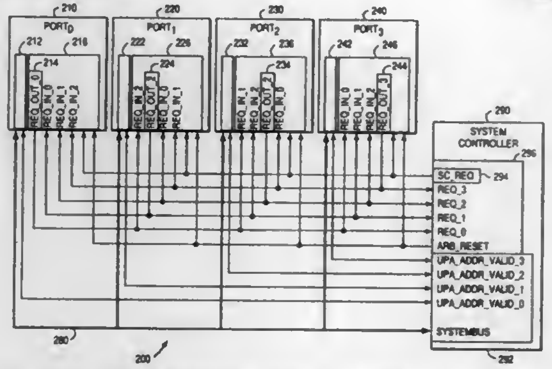
PIPELINED DISTRIBUTED BUS ARBITRATION SYSTEM

Kevin B. Normoyle, San Jose; Zahir Ebrahim, Mountain View; Satyanarayana Nishtala, Cupertino; William C. Van Loo, Palo Alto, and Louis F. Coffin, III, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 31, 1995, Ser. No. 414,559

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—299 **5 Claims**



1. A method for arbitrating access to a system bus coupled to a plurality of sub-systems, each sub-system including a bus arbiter, the method comprising the steps of:

storing in the bus arbiter of each sub-system a first value indicating which sub-system, if any, is a current bus master of the system bus, and a second value indicating which sub-system is a last port driver, wherein the last port driver is a last bus master of the system bus; all of the bus arbiters independently storing identical first and second values;

at each sub-system, asserting a bus request for the system bus whenever the associated sub-system requires use of the system bus, each asserted bus request being transmitted to the bus arbiters of all the sub-systems;

within each bus arbiter, when the first stored value indicates there is a current bus master, ignoring any bus requests asserted by any of the sub-systems until the current bus master relinquishes control of the system bus;

whenever there is a current bus master, at the sub-system comprising the current bus master if the current bus master sub-system requires continued use of the system bus and predefined criteria for enabling continued use of the system bus are satisfied, continue driving the system bus with the current bus master sub-system without interruption;

within each bus arbiter, whenever there is not a current bus master, detecting and processing any asserted bus requests so as determine a next bus master, the asserted bus requests processing step including:

determining that there is no bus requested asserted by any of the plurality of sub-systems which remain outstanding during a first system clock cycle;

if, during the first bus cycle a bus request by the sub-system indicated by the second value to be the last port driver is detected, setting the first value to indicate that the current bus master is the last port driver regardless of any bus requests by any other ones of the sub-systems, and enabling the last port driver sub-system to drive the system bus during a second system clock cycle; and

if, during the first bus cycle a bus request by the sub-system indicated by the second value to be the last port driver is not detected and at least one bus request by any other sub-system is detected, performing bus arbitration during a second system clock cycle to select a next bus master, setting the first value and second value to indicate the selected next bus master, and enabling the selected next bus master to drive the system bus during a third system clock cycle.

5,710,892

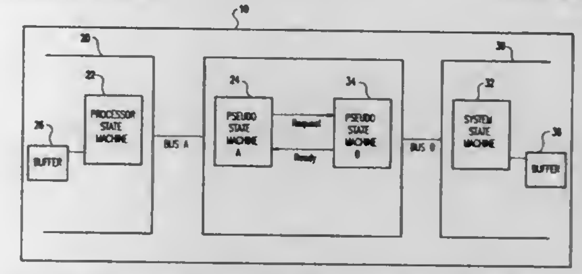
SYSTEM AND METHOD FOR ASYNCHRONOUS DUAL BUS CONVERSION USING DOUBLE STATE MACHINES

Kenneth Joseph Goodnow, Essex Jct., and Dana John Thygesen, Huntington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1995, Ser. No. 504,347

Int. Cl.⁶ G06F *13/00;13/14*

U.S. Cl. 395—307 **15 Claims**



1. A bus interface system in communication with first and second computer components, comprising:

a first bus associated with said first component, said first bus having a first characteristic speed, data width, and protocol;

a second bus associated with said second component, said second bus having a second characteristic speed, data width, and protocol, wherein at least one of said second characteristics is different from said first characteristics;

a first state machine communicating with said first bus, the first state machine being a mirror of a state machine of the first component;

a second state machine communicating with said second bus; and

data storage means associated with said first and second buses, said first and second state machines being in selective communication using an asynchronous handshaking protocol, whereby data is transferred between said first and second buses.

5,710,893

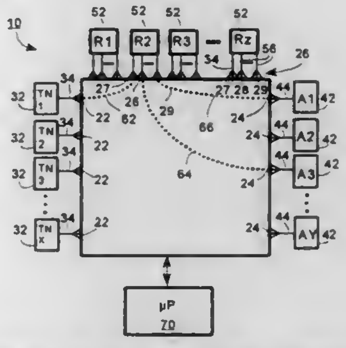
METHOD AND APPARATUS FOR REPLICATING DIGITAL SIGNALS

Bert A. Lindgren, Charlotte, N.C., assignor to LAN-hopper, Systems, Inc., Atlanta, Ga.

Filed Aug. 22, 1995, Ser. No. 517,954

Int. Cl.⁶ G06F *3/00;11/00*

U.S. Cl. 395—311 **25 Claims**



13. An apparatus for establishing data communication paths between a plurality of target networks and a plurality of digital devices, comprising:

a. a cross-bar switch in data communication with the target networks and the digital devices;

b. a plurality of replicators in data communication with the cross-bar switch that generate, and make available to the cross-bar switch, at least two copies of a data signal received from the cross-bar switch; and

c. a controller in control communication with the cross-bar switch that selectively causes the cross-bar switch to establish

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a first data path between at least one target network and a first replicator, and that selectively causes the cross-bar switch to establish a second data path between the first replicator and at least one digital device.

5,710,894

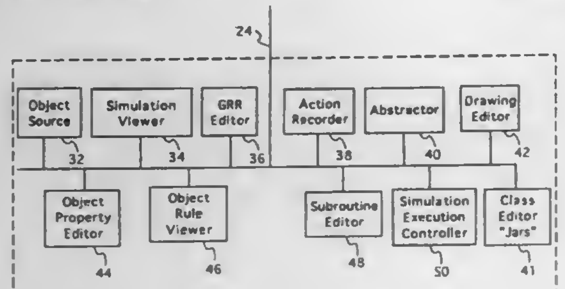
DYNAMIC CLASSES AND GRAPHICAL USER INTERFACE FOR SAME

David L. Maulsby, Boston, Mass.; G. Allen Cypher, Palo Alto, and Enio Ohmaye, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 4, 1995, Ser. No. 416,332

Int. Cl.^{6} G09B *19/04*

U.S. Cl. 395—326 **31 Claims**



1. A method of creating and updating a dynamic class within a computer controlled system, said method comprising the steps of:
placing a first set of items into a first region of said dynamic class, wherein said first set of items, individually, do not necessarily have any hierarchical attributes or characteristics in common;
placing a second set of items into a second region of said dynamic class;
generating a membership of said dynamic class by including said first set of items and excluding those items of said second set of items that match with corresponding items of said first set of items; and
updating said membership of said dynamic class under user control during execution of said computer controlled system.

5,710,895

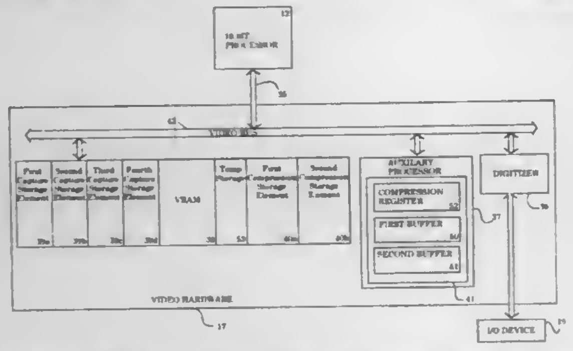
METHOD AND APPARATUS FOR CAPTURING AND COMPRESSING VIDEO DATA IN REAL TIME

Richard Gerber, Hillsboro, and Joshua Herman, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 215,918, Mar. 22, 1994, abandoned. This application Oct. 31, 1996, Ser. No. 742,261

Int. Cl.^{6} G06T *1/20;* G06F *3/14*

U.S. Cl. 395—327 **15 Claims**



1. In an interactive video system comprising a host processor and a driver controlling a video hardware device including an auxiliary processor to capture and compress video data, a method comprising the steps of:
(a) receiving by the driver the capture message call; and
(b) determining from the capture message call whether the auxiliary processor is selected to modify the video data, wherein when selected,
(i) controlling capturing said video data by the driver, and
(ii) controlling handshaking between the host processor and the auxiliary processor by the driver so that the auxiliary processor compresses the video data generally in real time, the controlling handshaking step includes the steps of retrieving the video data from a first storage element, compressing the video data by the auxiliary processor,
storing the compressed video data by the auxiliary processor in a second storage element accessible by the host processor,
signaling the host processor that the auxiliary processor has completed compressing the video data, and
reading said compressed video data by the host processor from the second storage element.

5,710,896

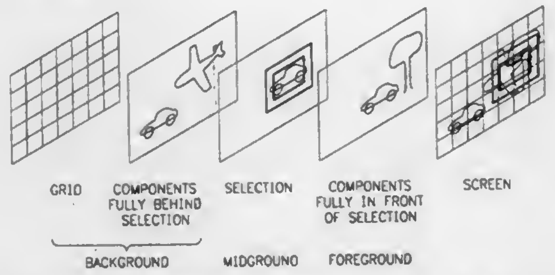
OBJECT-ORIENTED GRAPHIC SYSTEM WITH EXTENSIBLE DAMAGE REPAIR AND DRAWING CONSTRAINTS

Robert Seidl, Palo Alto, Calif., assignor to Object Technology Licensing Corporation, Cupertino, Calif.

Continuation of Ser. No. 146,631, Oct. 29, 1993, abandoned. This application Mar. 6, 1996, Ser. No. 611,833

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—333 **52 Claims**


GRID
COMPONENTS FULLY BEHIND SELECTION
SELECTION
COMPONENTS FULLY IN FRONT OF SELECTION
SCREEN
BACKGROUND
MIDGROUND
FOREGROUND

1. Apparatus operating on a computer system having a memory and a display for displaying a plurality of graphical images, the apparatus repairing damage caused by changes in the images in response to graphic change commands, and the apparatus comprising:
(a) means for modeling the plurality of graphical images as a plurality of graphic component objects in the memory, each of the graphic component objects having graphic data stored therein representing one of the plurality of graphic images and having means for rendering on the display, the graphic data in the each graphic component object;
(b) canvas view means including means for selecting ones of the plurality of graphic component objects and for controlling said selected graphic component objects to render graphic data therein on the display and means responsive to the data change commands for generating view damage signals; and
(c) update means contained within the canvas view means and responsive to the view damage signals for repairing view damage in accordance with a predetermined policy.

5,710,897

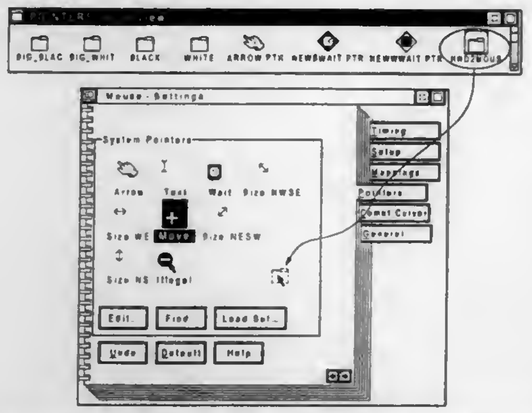
MANAGER FOR SELECTING A POINTER GRAPHICS FOLDER AND CUSTOMIZING POINTERS

Ira H. Schneider, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 15, 1995, Ser. No. 515,500

Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—334 **10 Claims**



1. In a data processing system operating under a graphical user interface, which provides for a device pointer operable on said data processing system, said device pointer having a plurality of pointer graphics, which each represents a unique system operation and changes one from another depending upon the location of said device pointer, a pointer graphics manager comprising:
a pointer graphics editor whereby an end-user can edit the appearance of any of said plurality of pointer graphics displayed by said graphical user interface;
a plurality of folders, each of said plurality of folders containing a set of pointer graphics; and
a pointer graphics selector for selecting a particular one of said plurality of folders and for automatically utilizing a set of pointer graphics contained therein for said device pointer for each unique system operation wherein an end-user can select an entire set of pointer graphics by selecting a single folder among said plurality of folders.

5,710,898

INFORMATION PROCESSING APPARATUS EMPLOYING HELP FUNCTION

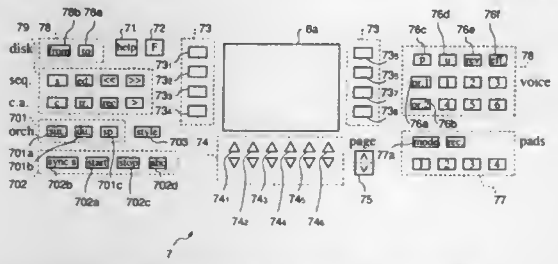
Akira Tozuka, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 14, 1995, Ser. No. 404,026

Claims priority, application Japan, Mar. 15, 1994, 6-043893

Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—338 **5 Claims**



1. An information processing apparatus comprising:
display means having a display screen;
a plurality of function operating elements for designating execution of a plurality of functions, respectively;
a help operating element for one-step designation of display of explanations and/or instructions related to information displayed on said display screen of said display means; and
control means responsive to operation of said help operating element, for controlling said display means to display explanations and/or instructions related to said information displayed on said display screen, on said display screen of said display means;
said control means in addition being responsive to operation of each of said function operating elements taking place during said display of said explanations and/or instructions responsive to said operation of said help operating element, for controlling said display means to display explanations and/or instructions related to said each function operating element, on said display screen of said display means.

5,710,899

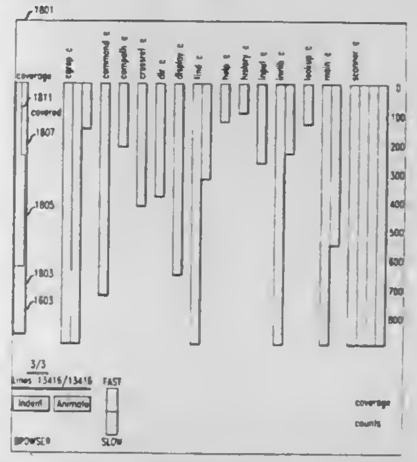
INTERACTIVE SELECTORS FOR SELECTING SUBSETS OF A SET OF VALUES

Stephen Gregory Eick, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 99,815, Jul. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 32,342, Mar. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 802,912, Dec. 6, 1991, abandoned. This application Feb. 10, 1995, Ser. No. 386,614

Int. Cl.^{6} G06F *17/50*

U.S. Cl. 395—339 **27 Claims**



1. A selector for use in a system including a display and pointing means for specifying locations in the display, the selector comprising:
a) a first area in the display containing a plurality of different sections, in which
i) respective different sections (**1605**) represent respective different values of a predetermined attribute of computer code and
ii) the predetermined attribute is contained in the following group of attributes:
A) date of creation of lines of code,
B) date of deletion of lines of code,
C) author of lines of code,
D) whether lines of code were tested, and
E) type of testing undergone by lines of code:
b) a second area in the display which contains
i) a plurality of module representations (**205**) of modules of computer code, and
ii) a plurality of line representations (**207**) of individual lines of code within the modules;
c) means for detecting selection of a section (**1605**) by the pointing means and, in response, simultaneously changing appearance of both
i) the selected section, and
ii) the line representations possessing the value of the selected section.

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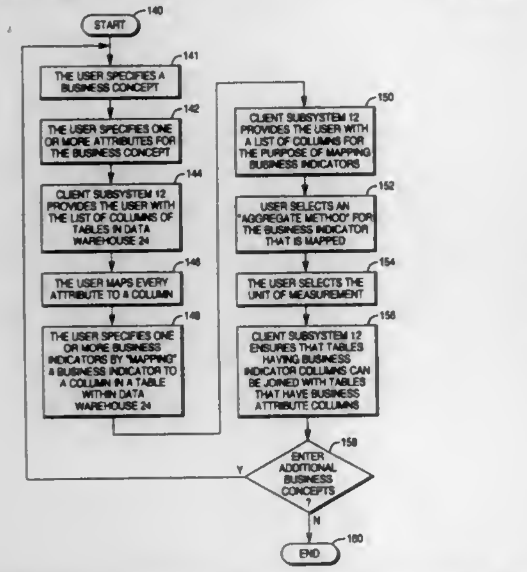
5,710,900
SYSTEM AND METHOD FOR GENERATING REPORTS FROM A COMPUTER DATABASE

Tejwansh S. Anand, Roswell, Ga.; Michael A. Georgantos, San Diego, Calif.; Yih-Shluan Hu, Alpharetta; James F. Knutson, Roswell, both of Ga.; Drew T. Lettington; Marshall P. Lindsay, both of San Diego, Calif.; Alan J. Meyer, Riverside, Calif.; Kenneth W. O'Flaherty, Del Mar, Calif.; Richard N. Schubert, San Diego, Calif., and Peter G. Selfridge, Watchung, N.J., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 12, 1995, Ser. No. 542,268
Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—339 **8 Claims**


START
140
THE USER SPECIFIES A BUSINESS CONCEPT
141
THE USER SPECIFIES ONE OR MORE ATTRIBUTES FOR THE BUSINESS CONCEPT
142
CLIENT SUBSYSTEM 12 PROVIDES THE USER WITH THE LIST OF COLUMNS OF TABLES IN DATA WAREHOUSE 24
144
THE USER MAPS EVERY ATTRIBUTE TO A COLUMN
146
THE USER SPECIFIES ONE OR MORE BUSINESS INDICATORS BY "MAPPING" A BUSINESS INDICATOR TO A COLUMN IN A TABLE WITHIN DATA WAREHOUSE 24
148
CLIENT SUBSYSTEM 12 PROVIDES THE USER WITH A LIST OF COLUMNS FOR THE PURPOSE OF MAPPING BUSINESS INDICATORS
150
USER SELECTS AN "AGGREGATE METHOD FOR THE BUSINESS INDICATOR THAT IS MAPPED
152
THE USER SELECTS THE UNIT OF MEASUREMENT
154
CLIENT SUBSYSTEM 12 ENSURES THAT TABLES HAVING BUSINESS INDICATOR COLUMNS CAN BE JOINED WITH TABLES THAT HAVE BUSINESS ATTRIBUTE COLUMNS
156
ENTER ADDITIONAL BUSINESS CONCEPTS ?
158
Y
N
END
160

1. An application for generating a report for a user regarding an enterprise of the user comprising:

a graphical user interface (GUI) which allows the user to select and specify parameters for the report, display the report, print the report, and save the report;

a folder management subsystem which allows the user to create a folder object for storing the report within a database, store the report within the folder object, and retrieve the report from the folder object using the GUI;

a business information setup subsystem which allows the user to create data types and create and constrain relationships between the data types;

an analyst definition subsystem which allows the user to select an analyst representing a method of analysis to use in generating the report using the GUI, wherein the analyst definition subsystem includes a report generator which selects and retrieves queries for the analyst from the database and executes the queries to retrieve data within the data types from the database to generate the report; and

a viewer module for displaying the report.

5,710,901
METHOD AND APPARATUS FOR VALIDATING DATA ENTERED BY A USER

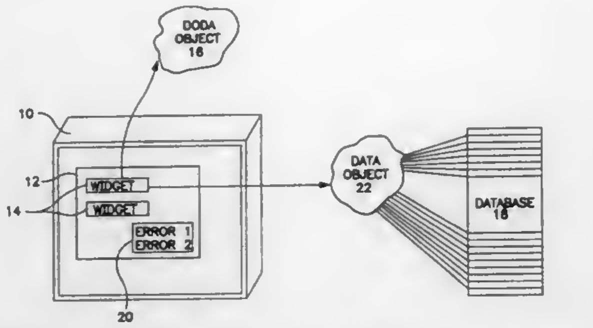
Scott A. Stodghill, Evergreen, and Llad Mattie, Englewood, both of Colo., assignors to TCI Summitrak of Texas, Inc., Englewood, Colo.

Filed Dec. 29, 1995, Ser. No. 581,778
Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—339 **6 Claims**

1. A system for storing and retrieving information to and from a database, comprising:

keyboard means for entering data into the system;



display means, for visually displaying alphanumeric and graphic symbols representing requests for data and the data entered into the system, said display means comprising

at least one window disposed within the display means,

a validation window associated with each window and capable of being displayed on said display means within said window, and

at least one widget disposed within each of said windows, wherein all data entered into the system via said keyboard means is associated with at least one widget;

means for detecting an error condition relating to the data associated with each of said widgets within a window;

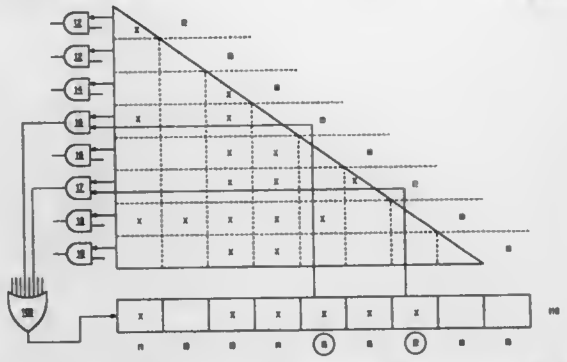
means responsive to said means for detecting an error condition for creating an error message string for display in the validation window associated with the window in which said error condition was detected, said means also creating pointer data identifying the widget in which the error condition was detected.

5,710,902
INSTRUCTION DEPENDENCY CHAIN INDENTIFIER

Gad S. Sheaffer, Haifa, and Robert Valentine, Qirvat Tivon, both of Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 6, 1995, Ser. No. 524,065
Int. Cl.^{6} G06F *9/38*

U.S. Cl. 395—392 **9 Claims**



6. A method of identifying instruction dependencies for an ordered set of instructions comprising the steps of:

(a) setting bit positions for a jth instruction of the sequence in an ith line of a storage structure having i bits, where i and j are integers, the bit positions corresponding to instructions upon which the ith instruction directly depends;

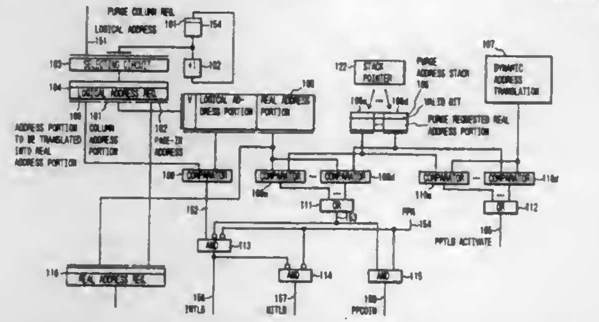
(b) setting additional bit positions in the ith line corresponding to instructions upon which the ith instruction indirectly depends by performing a logical bitwise OR operation of lines in the storage structure corresponding to the instructions upon which the ith instruction directly depends.

5,710,903
DATA PROCESSING SYSTEM PROVIDED WITH AN ADDRESS TRANSLATION LOOKASIDE BUFFER CAPABLE OF QUICK PARTIAL PURGE OPERATION

Taiji Horiuchi; Kuniki Toubaru, and Hiromlchi Kainou, all of Hadano, Japan, assignors to Hitachi, Ltd., Chiyodaku, and Hitachi Computer Engineering Co., Ltd., Kanagawa-Ken, both of Japan

Filed Mar. 9, 1995, Ser. No. 401,745
Claims priority, application Japan, Mar. 10, 1994, 6-039806
Int. Cl.^{6} G06F *12/12*

U.S. Cl. 395—401 **9 Claims**



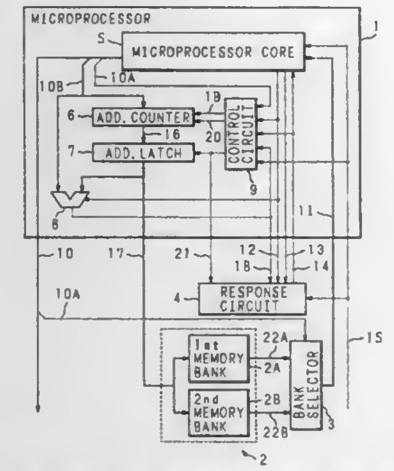
1. A data processing system provided with an address translator for translating logical addresses into corresponding real addresses and an address translation lookaside buffer for storing a plurality of entries each of an address translation pair of a logical address portion and a real address portion determined by the address translator, comprising a purge address stack for storing a plurality of real addresses to be invalidated for the entries of the address translation lookaside buffer to execute a plurality of cycles of partial purge process for the partial purging of the address translation lookaside buffer collectively for partial purge requests accumulated in the purge address stack.

5,710,904
MICROPROCESSOR HAVING ADDRESS PRE-OUTPUTTING FUNCTION AND DATA PROCESSOR USING THE SAME

Norio Masui, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1994, Ser. No. 225,870
Claims priority, application Japan, Apr. 9, 1993, 5-83266
Int. Cl.^{6} G06F *12/02*

U.S. Cl. 395—405 **4 Claims**



1. A microprocessor for accessing a first area of a memory external to said microprocessor and a second area of the memory by outputting common addresses excluding a least significant bit of the actual addresses, said first area of the memory storing data for even addresses and the second area of the memory storing data for odd addresses, said microprocessor comprising:

a microprocessor core for generating the actual addresses;

an address counter for generating a pre-output address value obtained by, at a start of every access to the second area of the memory, sequentially incrementing from an initial value obtained by excluding the least significant bit from the actual address generated by said microprocessor core;

an address latch for latching the pre-output address value generated by said address counter, and outputting the pre-output address value outside the microprocessor to the memory;

a control circuit for controlling the address latch to latch the pre-output address value generated by the address counter and to provide the pre-output address value to the memory after accessing the memory; and

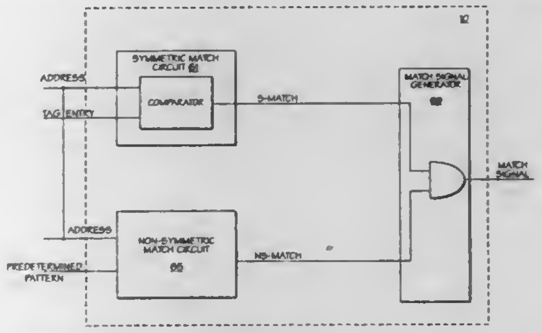
an address comparator for, at the time of accessing the first and second areas of the memory, comparing the value obtained by excluding the least significant bit from the actual address generated by said microprocessing core and the pre-output address value latched by the address latch, and outputting a hit signal when both values coincide with each other, the control circuit controlling the address counter and the address latch to latch the value obtained by excluding the least significant bit from the actual address generated by said microprocessing core when the address comparator does not output a hit signal when accessing the first and second areas of the memory.

5,710,905
CACHE CONTROLLER FOR A NON-SYMETRIC CACHE SYSTEM

Ricky Wan, Fremont, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Dec. 21, 1995, Ser. No. 575,985
Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—445 **12 Claims**



1. A cache controller, comprising:

a symmetric match circuit configured to compare a cache tag address with an address received on a host bus;

a non-symmetric match circuit configured to compare a predetermined non-cacheable address with said address received on the host bus; and

a hit signal generator coupled to said symmetric match circuit and said non-symmetric match circuit and configured to generate a hit signal when said cache tag address matches said address received on the host bus and said predetermined non-cacheable address does not match said address received on the host bus.

5,710,906
PREDICTIVE SNOOPING OF CACHE MEMORY FOR MASTER-INITIATED ACCESSES

Subir Ghosh, and Hsu-Tien Tung, both of San Jose, Calif., assignors to OPTi Inc., Milpitas, Calif.

Filed Jul. 7, 1995, Ser. No. 499,610
Int. Cl.^{6} G06F *13/28;12/08*

U.S. Cl. 395—473 **35 Claims**

1. A method for transferring a plurality of data units between a bus master and a respective plurality of memory locations at

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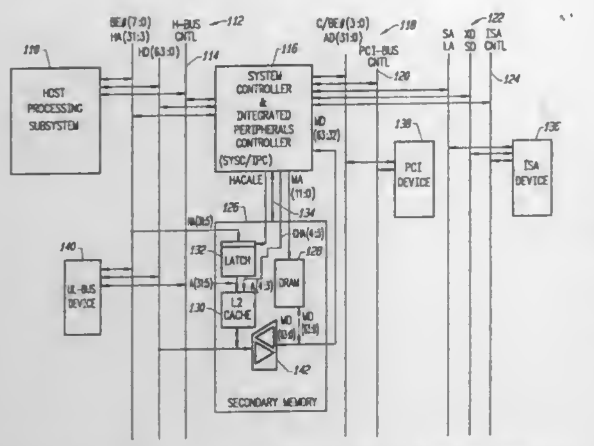


sequential memory location addresses in an address space of a secondary memory, for use with a host processing unit and a first cache memory which caches memory locations of said secondary memory for said host processing unit, said first cache memory having a line size of l bytes, comprising the steps of:

sequentially transferring data units between said bus master and said secondary memory beginning at a starting memory location address in said secondary memory address space and continuing beyond an l-byte boundary of said secondary memory address space, said sequentially transferred data units including a last data unit before said l-byte boundary and a first data unit beyond said l-byte boundary; and

initiating a next-line inquiry, prior to completion of the transfer of the last data unit before said l-byte houndary, to determine whether an N+1'th l-byte line of said secondary memory is cached in a modified state in said first cache memory, said N+1'th l-byte line being a line of said secondary memory which includes said first data unit beyond said l-byte boundary.

5,710,907

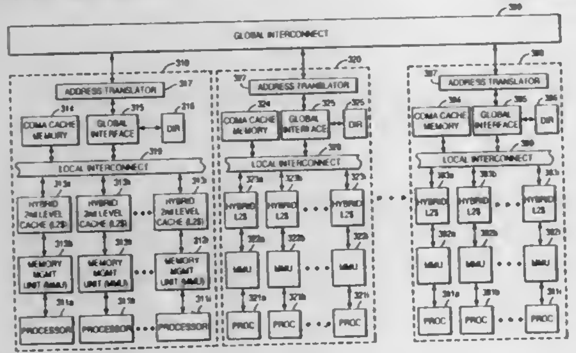
HYBRID NUMA COMA CACHING SYSTEM AND METHODS FOR SELECTING BETWEEN THE CACHING MODES

Erik Hagersten, Palo Alto, Calif., and Robert C. Zak, Jr., Lexington, Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 22, 1995, Ser. No. 577,283

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—475 **21 Claims**



1. A hybrid non-uniform-memory-architecture/cache-only-memory-architecture (NUMA/COMA) caching system useful in association with a computer system having a plurality of subsystems coupled to each other by a system interconnect, and wherein data is stored in said hybrid NUMA/COMA caching system as a plurality of pages, each said page including a plurality of data lines, said hybrid NUMA/COMA caching system comprising:

a plurality of hybrid NUMA/COMA caches configured to store at least one of said plurality of data lines; and

a plurality of COMA caches configured to store at least one of said plurality of pages.

5,710,908

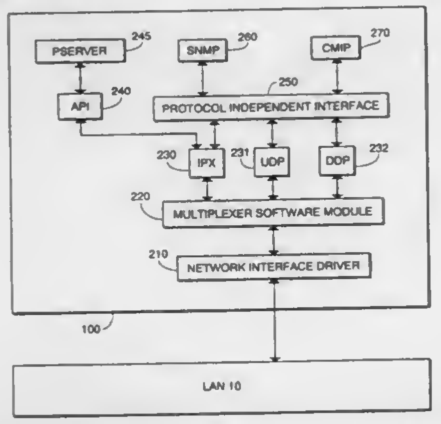
ADAPTIVE NETWORK PROTOCOL INDEPENDENT INTERFACE

Chiu Ming Man, Anaheim, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,172

Int. Cl.^{6} H04L *29/06*

U.S. Cl. 395—500 **43 Claims**



1. A protocol independent method of transmitting a data packet from a first application program executing on a first device which is interfaced to a local area network (LAN) to a second application program executing on a second device which is interfaced to the LAN, said method comprising the steps of:

initializing a protocol independent interface program which (i) determines which protocols are available for use, (ii) assigns an access line to each protocol available for use, (iii) assigns an access ID to the first application program, and (iv) creates mapping information that indicates a one-to-one correspondence between an access ID/access line pair and a block of protocol specific information which includes a protocol header having predetermined address data;

sending a data packet to the protocol independent interface program together with the access ID of the first application program and a destination ID for the second application program;

selecting one of the available protocols to transmit the data packet;

retrieving a block of protocol specific information from the mapping information based on the access ID of the first application program and the access line corresponding to the protocol selected in said selecting step;

forming a transmission packet including the data packet, the destination ID, and the retrieved block of protocol specific information; and

transmitting the transmission packet to the second application program via the LAN.

5,710,909

DATA COMPRESSION UTILIZATION METHOD AND APPARATUS FOR COMPUTER MAIN STORE

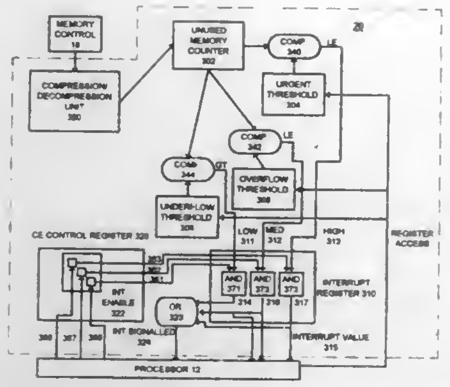
Jeffrey Douglas Brown; Scott Douglas Clark; Michael Joseph Corrigan, all of Rochester; Kent Harold Haselhorst, Byron, and Larry Wayne Loen, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1996, Ser. No. 590,134

Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—497.01 **10 Claims**

1. An apparatus for utilizing data compression in a computer system main store comprising:



means for dynamically calculating an amount of unused memory in the computer system main store and for comparing the calculated amount with a plurality of predefined threshold values;

means responsive to said compared values for selectively generating one interrupt of a plurality of predefined interrupts; and

means responsive to said generated interrupt for adjusting the usage of the computer system main store.

5,710,910

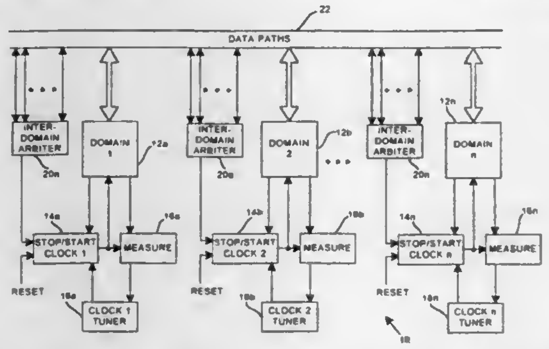
ASYNCHRONOUS SELF-TUNING CLOCK DOMAINS AND METHOD FOR TRANSFERRING DATA AMONG DOMAINS

Theodore H. Kehl, and Steven M. Burns, both of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Filed Sep. 30, 1994, Ser. No. 316,604

Int. Cl.^{6} G06F *1/04*

U.S. Cl. 395—551 **43 Claims**



1. A method of clocking a domain of register transfer modules, the domain for performing run-time logic operations on input data to generate output data, comprising the steps of:

generating a clock signal for the domain from an adjustable-period-length clock;

repetitively sampling a prescribed register transfer module output signal during a clock period;

detecting a logic-level transition among output signal samples;

determining from when among the samples the output signal transition occurred that the clock period is one of too long, too short, or in tune; and

either one of adjusting or not adjusting the clock period length automatically in response to the determining step.

5,710,911

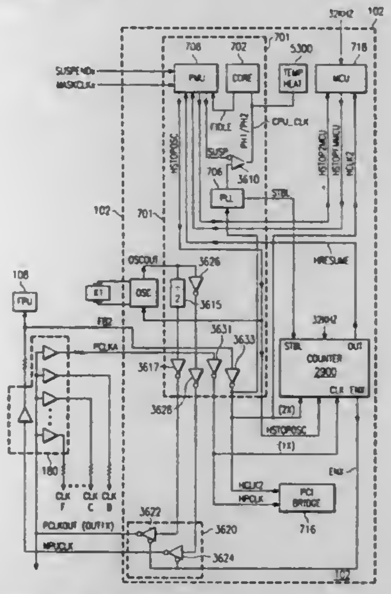
CLOCK CONTROL CIRCUITS, SYSTEMS AND METHODS

James J. Walsh; Joseph Joe, both of Plano; Ian Chen, Houston, all of Tex., and Yutaka Takahashi, Yokohama, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 363,198, Dec. 22, 1994. This application Jun. 7, 1995, Ser. No. 484,096

Int. Cl.^{6} G06F *1/04;1/08*

U.S. Cl. 395—555 **12 Claims**



1. A computer system, comprising:

a microprocessing unit ("MPU"); and

a peripheral processing unit ("PPU") external of said MPU that supplies a mask clock signal to said MPU, wherein said MPU comprises:

a central processing unit (CPU) having a clock input;

a source of clock pulses;

a logic circuit having an output to supply a clock control signal wherein said logic circuit is responsive to said mask clock signal, a suspend signal, and a resume signal to generate said clock control signal based on one or more of said mask clock signal, said suspend signal and said resume signal;

a second logic circuit, responsive to a software controllable enabling input, at least one interrupt input, and a clock signal, to supply said clock control signal wherein, in operation, said clock control signal can provide a signal to suspend operation to said CPU, and can act to lift said signal to suspend when an interrupt is indicated at said interrupt input; and

a clock gate coupled to said clock pulses and having a clock gate output coupled to the clock input of said CPU, said clock gate responsive to said clock control signal to prevent said clock pulses from reaching said central processing unit within one clock cycle of a change in said clock control signal.

5,710,912

METHOD AND APPARATUS FOR ENABLING A COMPUTER SYSTEM TO ADJUST FOR LATENCY ASSUMPTIONS

Michael S. Schlansker; B. Ramakrishna Rau; Rajiv Gupta, all of Los Altos, Calif., and Joseph A. Fisher, Brookline, Mass., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed May 6, 1993, Ser. No. 59,041

Int. Cl.^{6} G06F *15/16*

U.S. Cl. 395—561 **21 Claims**

1. A method for operating a computer system such that the computer system is capable of correctly executing programs having latency assumptions that are different than the latencies of the computer system, comprising the steps of:

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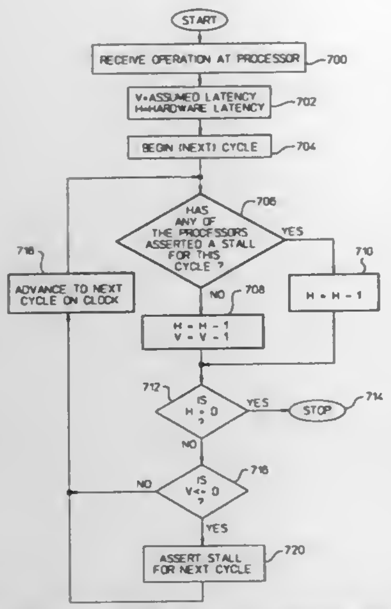
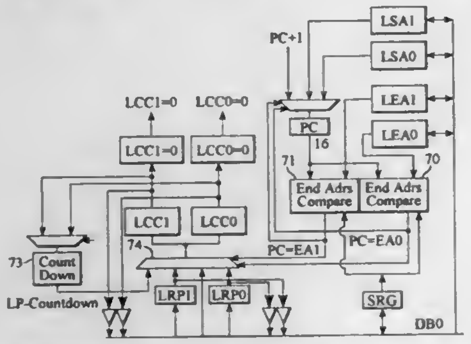


(a) loading into a computer system a computer program having instructions and latency assumptions with which the computer program was created, said computer system having hardware latencies;
(b) storing the latency assumptions from the computer program to a latency storage area; and
(c) executing the instructions of the computer program, wherein when executing said instructions each instruction in said program is executed following execution of any previously executed instructions, and while executing said instructions ensuring that the latency assumptions are not violated by the processing system by comparing the latency assumptions with which the computer program was created with the hardware latencies of the computer system and by stalling a step executing the instructions prior to satisfying the latency assumption of said any previously executed instructions, thereby correctly executing the computer program regardless of hardware latencies of said computer system.

5,710,913
METHOD AND APPARATUS FOR EXECUTING NESTED LOOPS IN A DIGITAL SIGNAL PROCESSOR

Kumkum Gupta, Orinda; Mihran Touriguian, Hercules; Ingrid Verbauwhede, Berkeley, and Harlan W. Neff, Castro Valley, all of Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Dec. 29, 1995, Ser. No. 581,167
Int. Cl.^{6} G06F *9/32*
U.S. Cl. 395—588 **9 Claims**

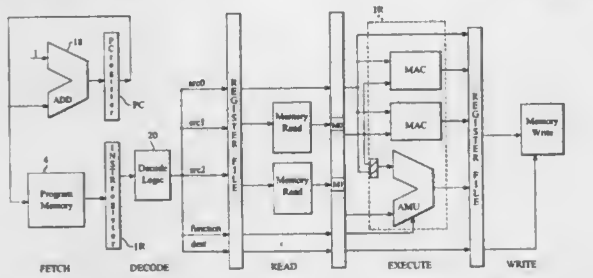


1. A digital signal processing system, for executing instructions and thereby processing data, said system including:
a program memory which stores the instructions; and
program control means for receiving a sequence of the instructions from the program memory and generating control signals for controlling execution of the instructions in said sequence, wherein the program control means includes a loop circuit for causing the program control means to execute a nested loop of the instructions, wherein the nested loop includes an inner loop and an outer loop, and wherein the loop circuit includes:
a first set of loop registers for storing first loop start and end addresses and loop count values for the inner loop;
a second set of loop registers for storing therein second loop start and end addresses and loop count values for the outer loop;
logic circuitry for controlling execution of the nested loop using the addresses and loop count values in the loop registers, in response to a loop enable signal;
a first end address comparator for comparing addresses corresponding to instructions of the inner loop against the first loop end address; and
a second end address comparator for comparing addresses corresponding to instructions of the outer loop against the second loop end address.

5,710,914
DIGITAL SIGNAL PROCESSING METHOD AND SYSTEM IMPLEMENTING PIPELINED READ AND WRITE OPERATIONS

Ingrid Verbauwhede, Berkeley, Calif., and Gerhard Fettweis, Dresden, Germany, assignors to Atmel Corporation, San Jose, Calif.

Filed Dec. 29, 1995, Ser. No. 581,320
Int. Cl.^{6} G06F *9/38;9/34;9/42*
U.S. Cl. 395—595 **12 Claims**

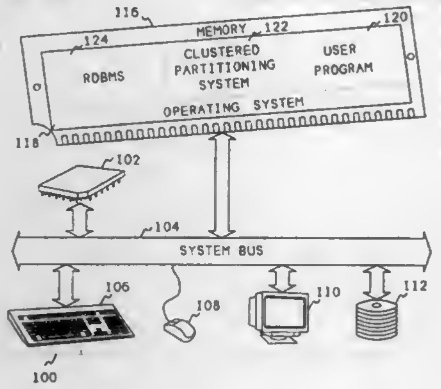


1. A method for controlling operation of a digital signal processing system for executing instructions in a pipelined manner to process data, said system including a memory, said method including the steps of:
(a) decoding a first one of the instructions during a first cycle;
(b) during a second cycle, reading from the memory a first set of data bits determined by the first one of the instructions, and decoding a second one of the instructions; and
(c) during at least one cycle after the second cycle;
(i) processing the first set of data bits to generate a first set of processed data bits and writing the first set of processed data bits to the memory
(ii) during a third cycle, processing the first set of data bits to generate the first set of processed data bits, reading from the memory a second set of data bits determined by the second one of the instructions, and decoding a third one of the instructions; and
(iii) during a fourth cycle, writing the first set of processed data bits to the memory, processing the second set of data bits to generate a second set of processed data bits, reading from the memory a third set of data bits determined by the third one of the instructions, and decoding a fourth one of the instructions.

5,710,915
METHOD FOR ACCELERATING ACCESS TO A DATABASE CLUSTERED PARTITIONING

James David McElhiney, Ottawa, Canada, assignor to Electronic Data Systems Corporation, Plano, Tex.

Filed Dec. 21, 1995, Ser. No. 576,102
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—603 **19 Claims**

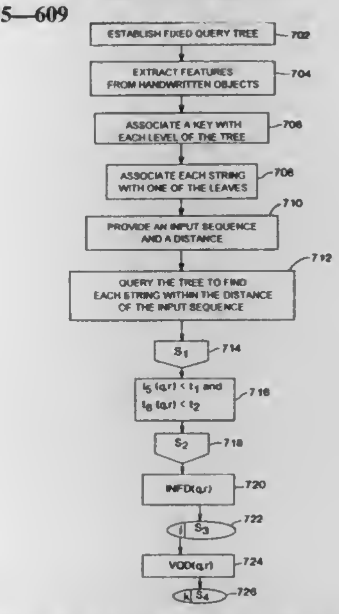


1. A method for storing and accessing records in a database table, the method comprising the steps of:
(a) selecting at least two search fields from the input data table;
(b) defining a bit-interleaved key field comprising
  (b1) for each field selected in step (a), determining a percentage of queries that will use the field,
  (b2) from the fields selected in step (a), selecting a field having the highest percentage of queries as defined in step (b),
  (b3) selecting a most significant bit from the field selected in step (b2),
  (b4) assigning the bit selected in step (b3) as a bit of the bit-interleave key field.
  (b5) reducing the percentage of queries for the field selected in step (b2) by a predetermined amount.
  (b6) repeating steps (b2) through (b5) until the bit-interleave key field has all bits assigned;
(c) attaching a unique record identifier to each record in the input data table;
(d) defining a search table within the database comprising
  (d1) building a key field as defined in step (b) for each record in the input data table, and
  (d2) combining the record identifier defined in step (c), the key field as built in step (d1), and the fields selected in step (a), for each record in the input data table and writing this combination to the search table;
(e) defining a detail table within the database comprising
  (e1) combining the record identifier defined in step (c) and the remaining fields from each record in the input data table, and writing this combination to the detail table; and
(f) receiving a search request comprising a set of value constraints and retrieving a set of all records satisfying the value constraints from the search table and detail table comprising
  (f1) determining whether at least one record in the search table may satisfy the set of value constraints,
  (f2) when step (f1) determines that at least one record may satisfy the set of value constraints, comparing the values of the fields in each record in the search table to the set of value constraints, and
  (f3) for each record selected in step (f2) using the record identifier to retrieve a corresponding record from the detail table.

5,710,916
METHOD AND APPARATUS FOR SIMILARITY MATCHING OF HANDWRITTEN DATA OBJECTS

Daniel Barbará, Princeton, and Ibrahim Kamel, Monmouth Junction, both of N.J., assignors to Panasonic Technologies, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 324,231, Oct. 17, 1994, Pat. No. 5,524,240, which is a continuation-in-part of Ser. No. 248,392, May 24, 1994, abandoned. This application Jun. 16, 1995, Ser. No. 491,506
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—609 **30 Claims**


ESTABLISH FIXED QUERY TREE
702
EXTRACT FEATURES FROM HANDWRITTEN OBJECTS
704
ASSOCIATE A KEY WITH EACH LEVEL OF THE TREE
706
ASSOCIATE EACH STRING WITH ONE OF THE LEAVES
708
710
PROVIDE AN INPUT SEQUENCE AND A DISTANCE
712
QUERY THE TREE TO FIND EACH STRING WITHIN THE DISTANCE OF THE INPUT SEQUENCE
S1
714
716
S2
718
INFD(q,r)
720
S3
722
VOD(q,r)
724
S4
726

8. A method for indexing and querying a database having a plurality of electronic handwritten strings, comprising the steps of:
(a) extracting a plurality of global features from each one of the plurality of electronic handwritten strings;
(b) forming a fixed query tree index having a plurality of leaves and a plurality of internal nodes which belong to a plurality of levels, including the steps of:
  (1) associating a respectively different single key with each one of the plurality of levels, each key being a handwritten string.
  (2) associating each string with one of the plurality of leaves, such that:
    (A) each child of each internal node in any one of the plurality of levels between the one leaf and a root node of the index is a root of a respective subtree, and
    (B) each string associated with any leaf in the subtree which includes the one leaf is equally distant from the single key associated with the one level, using a distance function based on the global features; and
(c) querying the fixed query tree to search for a first subset of the strings, such that each string in the first subset is within a threshold distance of an input string, according to the distance function used in step (b) (2) (B).

5,710,917
METHOD FOR DERIVING DATA MAPPINGS AND DATA ALIASES

Mark Anthony Musa, Chittenden, Vt., and Glenn Carroll Godoy, Tioga, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 471,873
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—610 **16 Claims**

1. Within a computer processing system, a method for automatically generating a data mapping from a first data format in a source database to a second data format in a target database, said method comprising the steps of:

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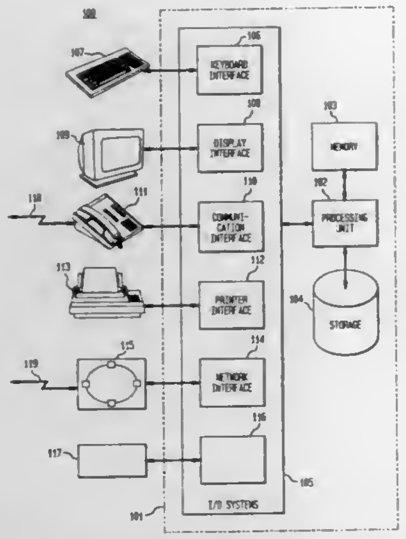
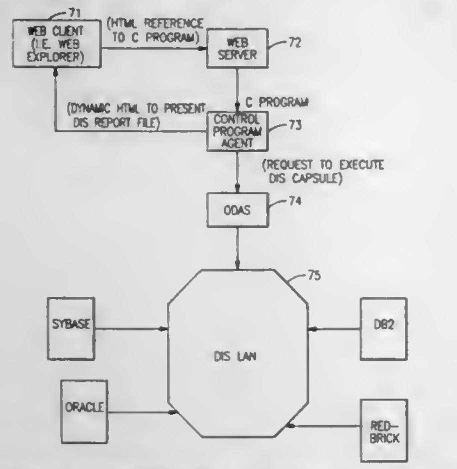


retrieving a preexisting first data mapping from the source database to an intermediate database;
retrieving a preexisting second data mapping from the intermediate database to the target database; and
automatically deriving a third data mapping from the source database to the target database based upon said first and second data mappings.

5,710,918
METHOD FOR DISTRIBUTED TASK FULFILLMENT OF WEB BROWSER REQUESTS

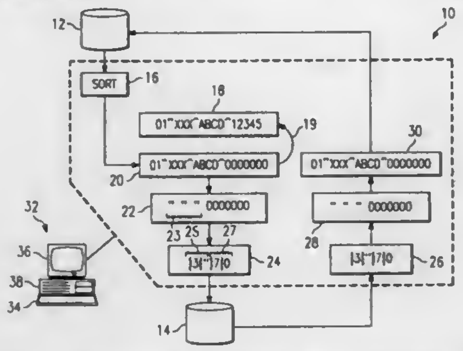
Konrad Charles Lagarde, Milford, Conn., and Richard Michael Rogers, Beacon, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 7, 1995, Ser. No. 474,572
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—610 **28 Claims**


71
WEB CLIENT (I.E. WEB EXPLORER)
(HTML REFERENCE TO C PROGRAM)
WEB SERVER
72
C PROGRAM
(DYNAMIC HTML TO PRESENT DIS REPORT FILE)
CONTROL PROGRAM AGENT
73
(REQUEST TO EXECUTE DIS CAPSULE)
ODAS
74
75
SYBASE
DIS LAN
DB2
ORACLE
RED-BRICK

1. A method for distributed task fulfillment of requests of a web browser with a command file agent tangibly embodying a program set of instructions executable by a supporting machine environment for performing method steps required by a request initiated at said web browser and fulfilling the request by a providing a result, said method steps comprising:
receiving at said command file agent a submit command from a control program agent in preparation for a report and variables associated with said report to pass to said command file agent as a command file variable for use in naming a report file which will be created by said command file agent will create that said report file with a unique file name during execution of said command file agent,
processing by said command file agent a series of linked objects according to a specified flow sequence within a distributed data environment specified by said command file agent, including executing functions specified in said command file agent for including data retrieval and processing, and
in the process storing the result of said processing in said report file having said unique file name during execution of said command file agent.

5,710,919
RECORD COMPRESSION

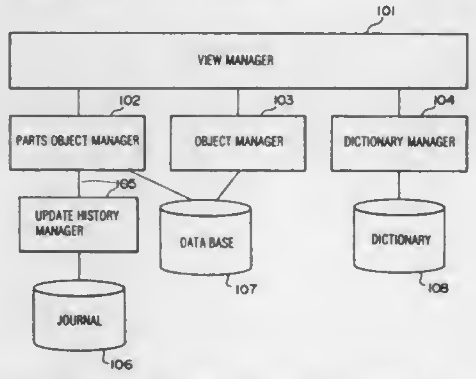
Peter D. Rall, Plano, Tex., assignor to Electronic Data Systems Corporation, Plano, Tex.
Filed Sep. 29, 1995, Ser. No. 536,872
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—612 **15 Claims**



1. A method performed on a computer for compressing a plurality of records, each record comprising a plurality of delimited fields, each field comprising at least one character, the method comprising:
comparing, on a field-by-field basis, a first record to a second record;
replacing each field of the second record with a vertical repeat indicator if the field of the second record matches the corresponding field of the first record; and
replacing adjacent matching characters in the second record with a horizontal repeat indicator.

5,710,920
OBJECT EXTENDING METHOD

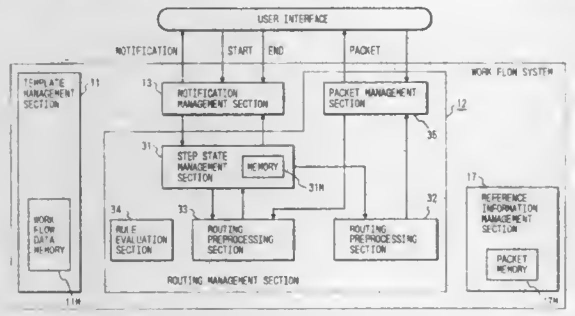
Takeo Maruyama, Osaka; Satoshi Wakayama, Sakai, and Yo-Ichi Yamamoto, Takatsuki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 23, 1994, Ser. No. 362,873
Claims priority, application Japan, Dec. 28, 1993, 5-338052
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—614 **20 Claims**



4. An object-oriented data base system comprising:
a data base for storing an object which includes an attribute, a relation and a procedure;
a dictionary file for storing a definition object which includes definition information defining a structure of said object;
a dictionary manager for generating a new definition object by appending a parts definition object indicative of change information of changes in said structure of said object defined in said definition information to said definition object;
means for generating a new object by appending to said object a parts object representing changes in attribute, relation, and procedure of said object made in accordance with said change information; and
means for accessing said data base by operating said new definition object.

5,710,921
INFORMATION PROCESSING SYSTEM AND WORK FLOW MANAGEMENT METHOD THEREFOR

Yoichi Hirose, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1995, Ser. No. 424,645
Claims priority, application Japan, May 26, 1994, 6-136314
Int. Cl.^{6} G06F *9/06*
U.S. Cl. 395—676 **6 Claims**

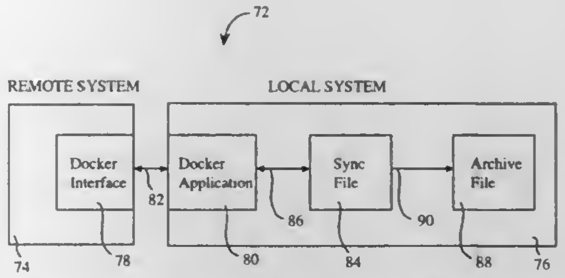

USER INTERFACE
NOTIFICATION
START
END
PACKET
WORK FLOW SYSTEM
TEMPLATE MANAGEMENT SECTION
11
13
NOTIFICATION MANAGEMENT SECTION
PACKET MANAGEMENT SECTION
12
31
STEP STATE MANAGEMENT SECTION
MEMORY
31M
17
REFERENCE INFORMATION MANAGEMENT SECTION
34
33
32
WORK FLOW DATA MEMORY
RULE EVALUATION SECTION
ROUTING PREPROCESSING SECTION
ROUTING PREPROCESSING SECTION
PACKET MEMORY
ROUTING MANAGEMENT SECTION
11M
17M

1. An information processing system comprising:
dividing means for dividing a job to be processed into a plurality of working steps including a first working step and a second working step succeeding said first working step;
defining means for defining an order and content of said plurality of working steps;
means for transferring an information packet to locations of each of said plurality of working steps;
selecting means for selecting an information packet transmitted from said first working step location, said information packet containing a process result of said first working step;
adding means for adding an information field to the selected information packet, the information field determining whether or not the first working step process result is to be routed to the second working step locations
and
routing means for determining whether or not said second working step following said first working step is selected to perform based on a content of said information field.

5,710,922
METHOD FOR SYNCHRONIZING AND ARCHIVING INFORMATION BETWEEN COMPUTER SYSTEMS

Peter E. Alley, Saratoga, and Walter R. Smith, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Continuation of Ser. No. 72,606, Jun. 2, 1993, abandoned.
This application Dec. 18, 1995, Ser. No. 575,013
Int. Cl.^{6} G06F *17/30*
U.S. Cl. 395—617 **20 Claims**

1. A method for synchronizing data records stored in a first computer system with corresponding data records stored in a second computer system, each computer system having memory capable of storing a multiplicity of selected records that are intended to be synchronized, the method comprising the steps of:
identifying each record stored in the memory of the first computer system that is intended to be synchronized with a unique identification indicia and an indicia that indicates a time when the record was last altered;
initiating communication between the first computer system and the second computer system;
identifying to the second computer system a name indicator of the first computer system that is intended to be synchronized;
determining the last time that the records of the first computer system were synchronized with the second computer system in accordance with the name indicator of the first computer system;
identifying each of the selected records that was deleted on the first computer system since last synchronized with the second computer system and for each such deleted record on the first computer system, deleting the corresponding record from the second computer system;
identifying each of the selected records that was added to the first computer system since last synchronized with the second computer system and for each record that was added to the first computer system, copying such new record to the second computer system to create a corresponding record in the second computer system;
identifying each of the selected records in the first computer system that both has a corresponding record in the second computer system and was modified on the first computer system since last synchronized; and
synchronizing the modified records between the first and second computer system;
wherein said record deleting step, said record adding step and said modified record synchronizing step cooperate to synchronize the records stored in the first computer system with records stored in the second computer system,
wherein the second computer system is capable of synchronizing with a plurality of different first computer systems that may each have different data, and
wherein said identifying of the first computer system that is intended to be synchronized is selected from the plurality of different first computer systems based on the name indicators for each of the plurality of different first computer systems, each of the name indicators being a unique indicia.



5,710,923
METHODS AND APPARATUS FOR EXCHANGING ACTIVE MESSAGES IN A PARALLEL PROCESSING COMPUTER SYSTEM

Andrew T. Jennings, West Chester; Timothy N. Fender, Berwyn; Duane J. McCrory, Malvern, and Craig R. Church, Havertown, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Apr. 25, 1995, Ser. No. 428,684
Int. Cl.^{6} G06F *9/30*
U.S. Cl. 395—68 **7 Claims**

1. A method for communicating active messages among nodes of a parallel processing computer system, said active messages being defined by µthreads, comprising the steps of:
(a) generating a µthread descriptor comprising an instruction pointer (µIP) and flame pointer (µFP);
(b) generating a Local Parameters pointer (µLP) after said node receives said active message, wherein said Local Parameters

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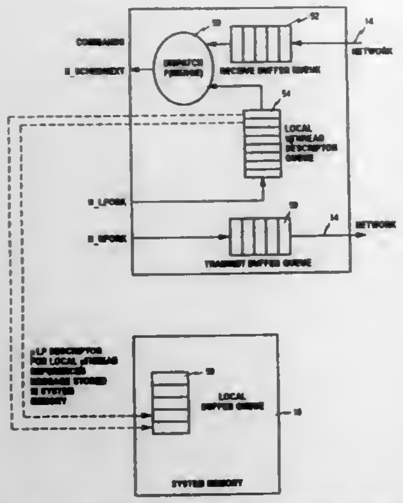
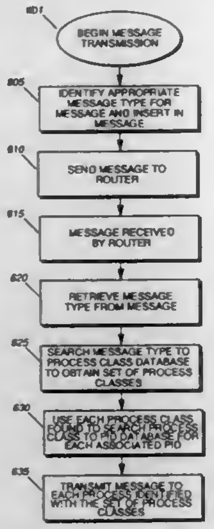


pointer (μLP) identifies where additional parameters have been stored and is included as part of said μthread descriptor; and

(c) performing a procedure identified by said instruction pointer (μIP) on a data structure identified by said frame pointer (μFP) in accordance with said μthread;

wherein said procedure uses said Local Parameters pointer (μLP) to locate additional parameters associated with said procedure.

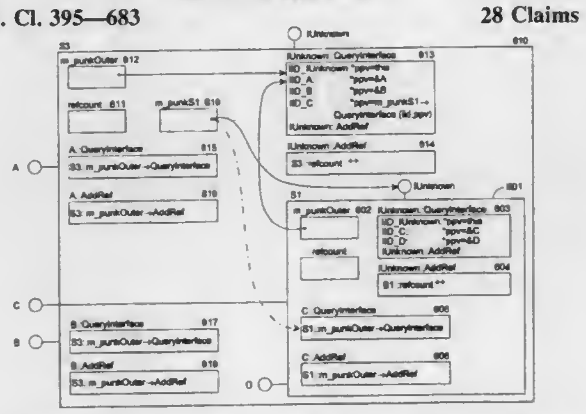
5,710,924
METHOD OF ROUTING MESSAGES WITHIN A MULTI-PROCESSING SOFTWARE SYSTEM
Ramy P. Ayoub, Arlington Heights; Arthur L. Fumarolo, Schaumburg, and John William Maher, Woodstock, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 24, 1995, Ser. No. 427,025
Int. Cl.^{6} G06F *9/00;9/44*
U.S. Cl. 395—683 **12 Claims**


801
BEGIN MESSAGE TRANSMISSION
805
IDENTIFY APPROPRIATE MESSAGE TYPE FOR MESSAGE AND INSERT IN MESSAGE
810
SEND MESSAGE TO ROUTER
815
MESSAGE RECEIVED BY ROUTER
820
RETRIEVE MESSAGE TYPE FROM MESSAGE
825
SEARCH MESSAGE TYPE TO PROCESS CLASS DATABASE TO OBTAIN SET OF PROCESS CLASSES
830
USE EACH PROCESS CLASS FOUND TO SEARCH PROCESS CLASS TO PID DATABASE FOR EACH ASSOCIATED PID
835
TRANSMIT MESSAGE TO EACH PROCESS IDENTIFIED WITH THE SET OF PROCESS CLASSES

1. In a multi-process software system having a plurality of client processes, each client process having a corresponding process class, a method of routing a message among at least some of the plurality of client processes, the method comprising the steps of:

assigning a message type to the message;
mapping the message type to at least one process class; and
routing the message to each of the plurality of client processes having a process class that corresponds to the at least one process class.

5,710,925
METHOD AND SYSTEM FOR AGGREGATING OBJECTS
Paul Leach, Seattle; Antony S. Williams, Redmond; Edward Jung, Seattle; C. Douglas Hodges; Srinivasa R. Koppolu, both of Redmond; Barry B. MacKichan, Bainbridge Island, and Craig Wittenberg, Mercer Island, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Continuation of Ser. No. 185,465, Jan. 24, 1994, which is a continuation-in-part of Ser. No. 996,552, Dec. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,353
Int. Cl.^{6} G06F *9/40*
U.S. Cl. 395—683 **28 Claims**



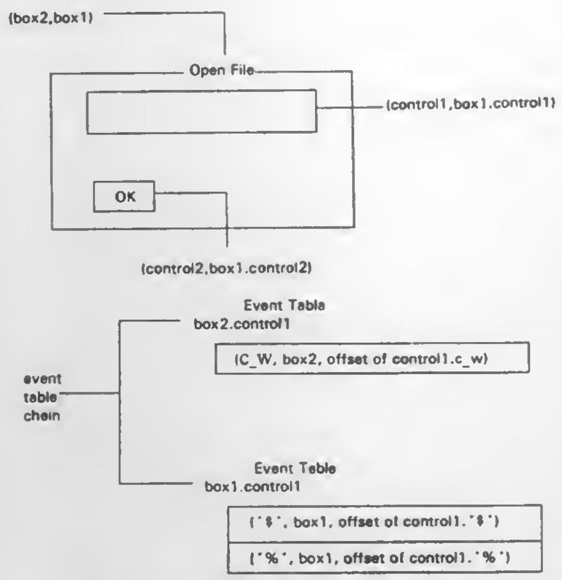
1. A method in a computer system of reference counting for an enclosing object and an enclosed object, the enclosing object and the enclosed object being aggregated into an aggregate object, the enclosing object having a reference count, the enclosing object having an add reference function member and a release reference function member, the enclosed object having an add reference function member and a release reference function member, the method comprising the steps of:

under control of the add reference function member of the enclosed object, invoking the add reference function member of the enclosing object, wherein the add reference function member of the enclosing object increments the reference count; and
under control of the release reference function member of the enclosed object, invoking the release reference function member of the enclosing object, wherein the release reference function member of the enclosing object decrements the reference count, wherein when the reference count indicates that no references to the enclosing object exists, deleting the enclosing and enclosed objects, and wherein deleting the enclosing and enclosed objects results in deleting the aggregate object.

5,710,926
DEVELOPERS TOOL FOR OBJECT-ORIENTED PROGRAMMING
Joseph Clark Maurer, 3120 Poplarwood Ct., Ste. 3100, Raleigh, N.C. 27604
Filed Sep. 3, 1993, Ser. No. 116,725
Int. Cl.^{6} G06F *9/00;9/44*
U.S. Cl. 395—701 **15 Claims**

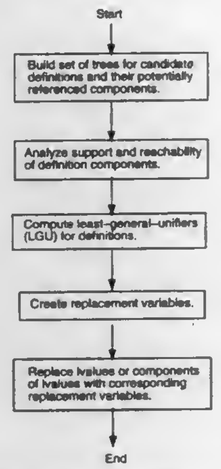
1. A software developer's tool to help write application programs for an object-oriented operating system comprising

a computer including a storage device holding code, said code including
  a copying utility,
  a first code section permitting the identification of a parent object and associated code including event tables, a parent object identifier and event table identifiers, the event tables signifying events capable of taking place during running of an application program to be written,
  a second code section permitting the creation of a child object identical to the parent object, by actuation of said copying utility which creates the child object by referencing the associated code and event tables of the parent object which code pointers allowing the child object to run independently of and without affecting the parent object,



  said second code section generating a unique child object identifier for the child object different from but derived from the parent object identifier and generating a unique child object event table identifier for each event table of the child object derived from the parent object identifier and associated with said child object, the object and event table identifiers providing information regarding the relationship between objects, and objects and event tables, and
  an editing utility permitting editing of the child object event tables in a manner linking new events for the child object event tables to the parent object event tables,
  wherein repeated sequential use of said code sections creates a chain of parent and child objects having a linked list of event tables with unedited code of the child objects referencing code of the parent.

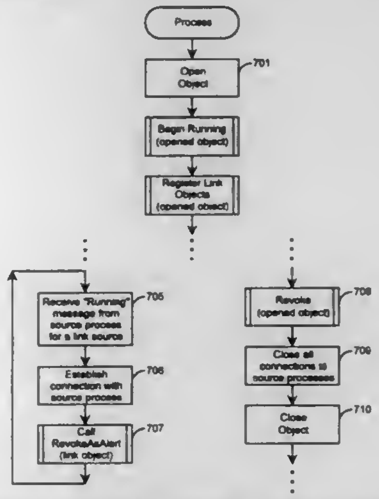
5,710,927
METHOD OF REPLACING LVALUES BY VARIABLES IN PROGRAMS CONTAINING NESTED AGGREGATES IN AN OPTIMIZING COMPILER
Arch D. Robison, Champaign, Ill., assignor to Kuck & Associates, Inc., Champaign, Ill.
Filed Jun. 14, 1995, Ser. No. 490,130
Int. Cl.^{6} G06F *9/00*
U.S. Cl. 395—709 **10 Claims**


Start
Build set of trees for candidate definitions and their potentially referenced components.
Analyze support and reachability of definition components.
Compute least-general-unifiers (LGU) for definitions.
Create replacement variables.
Replace lvalues or components of lvalues with corresponding replacement variables.
End

1. A method operable within an optimizing compiler that during compilation replaces references to general lvalues with variables, the method comprising the steps of:

(a) performing data-flow analysis that analyzes the support and reachability of definition components;
(b) calculating least-general-unifiers for definitions based on said data-flow analysis;
(c) creating replacement variables corresponding to said least-general-unifiers that are replaceable; and
(d) replacing loads and stores of said lvalues with loads and stores of said replacement variables.

5,710,928
METHOD AND SYSTEM FOR CONNECTING OBJECTS IN A COMPUTER SYSTEM
Robert G. Atkinson, Woodinville, Wash., assignor to Microsoft Corporation, Redmond, Wash.
Continuation of Ser. No. 316,058, Sep. 30, 1994, Pat. No. 5,499,369, which is a continuation of Ser. No. 974,959, Nov. 9, 1992, abandoned. This application Dec. 13, 1995, Ser. No. 571,359
Int. Cl.^{6} G06F *9/06*
U.S. Cl. 395—710 **8 Claims**


Process
Open Object
701
Begin Running (opened object)
Register Link Objects (opened object)
Receive "Running" message from source process for a link source
705
Establish connection with source process
706
Call RevokeAsAlert (link object)
707
Revoke (opened object)
708
Close all connections to source processes
709
Close Object
710

1. A method in a computer system for connecting a link object to a source object, the method comprising:

placing the source object in a running state, the running state indicating that the source object can be connected to the link object when the link object enters an alert state;
after placing the source object in the running state,
placing the link object in an alert state, the alert state indicating that the link object can be connected to the source object when the source object is in the running state; and
establishing a connection between the link object and the source object by sending an identifier of the link object to the source object.

5,710,929
MULTI-STATE POWER MANAGEMENT FOR COMPUTER SYSTEMS
Henry Tat-Sang Fung, San Jose, Calif., assignor to Vadem Corporation, San Jose, Calif.
Continuation of Ser. No. 285,169, Aug. 3, 1994, abandoned, which is a continuation of Ser. No. 17,975, Feb. 12, 1993, Pat. No. 5,396,635, which is a continuation of Ser. No. 908,533, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 532,314, Jun. 1, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,189
Int. Cl.^{6} G06F *1/32*
U.S. Cl. 395—750 **12 Claims**

9. A computer system having an activity level and a power consumption level and comprising a power management system and a plurality of computer system devices powered by a single common computer power supply and being responsive to receipt of

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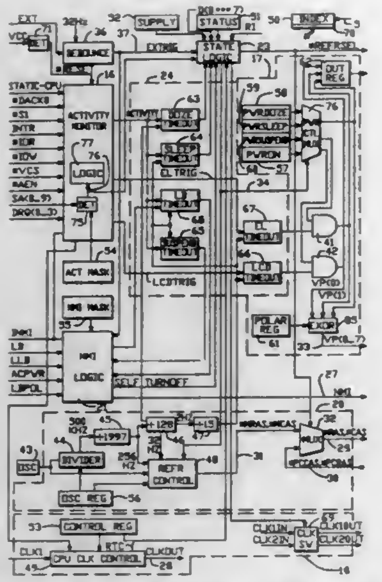


at least one clock signal, said plurality of computer system circuits including a CPU device, a plurality of input/output devices, a memory device, and a single common system bus which directly connects the CPU device with the input/output devices, wherein said power management system comprises:

an activity monitor that monitors the activity level of the computer system and generates a first inactivity indicator after a first predetermined period of inactivity and a second inactivity indicator a second predetermined period of inactivity after generating the first inactivity indicator;

a state controller that has three powered modes of operation including a first state, a second state, and a third state, said state controller being responsive to the activity monitor and transitions from said first state to said second state in response to said first inactivity indicator, and transitions from said second state to said third state in response to said second inactivity indicator;

a power switching circuit responsive to the state controller which couples device operating power from said single computer power supply to a first predetermined group of the computer system devices when the state controller is in said first state, to a second predetermined group comprising fewer of the computer system devices than the first predetermined group when the state controller is in said second state, and to a third predetermined group comprising fewer of the computer system devices than the second predetermined group when the state controller is in said third state; and

a clock switching and control circuit, separate and operating independently from said power switching circuit, for reducing a frequency of said at least one clock signal communicated to said computer devices;

whereby the power consumption level of the computer system is controlled in response to the activity level of the computer system.

5,710,930
APPARATUS AND A METHOD FOR ALLOWING AN OPERATING SYSTEM OF A COMPUTER SYSTEM TO PERSIST ACROSS A POWER OFF AND ON CYCLE

Clifton W. Laney, Beaverton, Oreg.; Larry M. Leszczynski, Rocklin, and Mary J. Madison, Pollock Pines, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

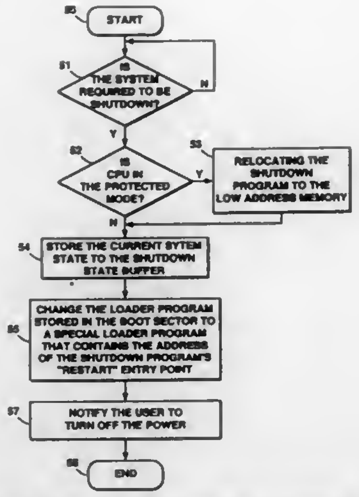
Filed Aug. 4, 1995, Ser. No. 511,263

Int. Cl.^{6} G06F ***1/32***

U.S. Cl. 395—750 **15 Claims**

1. A method of allowing an operating system of a computer system to persist across a power off and on cycle, comprising the steps of:

(A) detecting if the computer system is to be powered off;


START
IS THE SYSTEM REQUIRED TO BE SHUTDOWN?
N
Y
IS CPU IN THE PROTECTED MODE?
Y
RELOCATING THE SHUTDOWN PROGRAM TO THE LOW ADDRESS MEMORY
N
STORE THE CURRENT SYSTEM STATE TO THE SHUTDOWN STATE BUFFER
CHANGE THE LOADER PROGRAM STORED IN THE BOOT SECTOR TO A SPECIAL LOADER PROGRAM THAT CONTAINS THE ADDRESS OF THE SHUTDOWN PROGRAM'S "RESTART" ENTRY POINT
NOTIFY THE USER TO TURN OFF THE POWER
END

(B) preserving a state of the computer system by storing data representing the state of the computer system in a designated area of a nonvolatile memory of the computer system when the computer system is detected to be powered off;

(C) replacing a system initialization code of the operating system so as to branch to a state restore code that accesses the designated area of the nonvolatile memory such that when the computer system is again powered on, the restore code accesses the designated area of the nonvolatile memory for the data to restore the computer system to the state before the computer system was powered off.

5,710,931
SUSPENSION STATE CONTROL FOR INFORMATION PROCESSING DEVICES SUCH AS BATTERY POWERED COMPUTERS

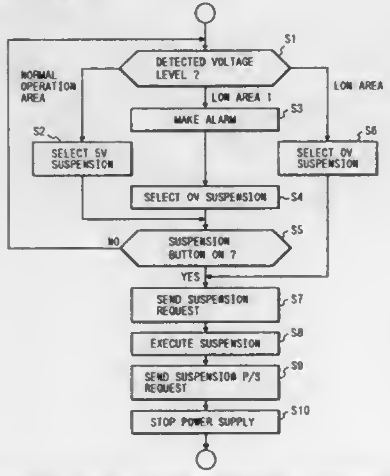
Atsushi Nakamura, Yokohama; Akihiko Hamamoto, Kawasaki, and Shigehiro Kadota, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,239

Claims priority, application Japan, Sep. 7, 1994, 6-239591; Jul. 13, 1995, 7-199295

Int. Cl.^{6} G06F ***1/26;1/32***

U.S. Cl. 395—750 **36 Claims**



1. An information processing apparatus comprising:

a battery for supplying power to a device that requires power;

first storage means for retaining data in a power supplied state;

second storage means for retaining data in a non-power supplied state and in the power supplied state;

transfer means for transferring the data stored in said first storage means to said second storage means while power is supplied;

first prediction means for predicting a processing time required by said transfer means to transfer the data to said second storage means;

second prediction means for predicting a power characteristic for said second storage means;

remaining power detection means, for detecting a remaining power level for said battery, that includes reference value setting means for setting a first predetermined value in accordance with results obtained by said first and said second prediction means; and

power supply halting means for, when said remaining power detection means determines that said remaining power level for said battery is lower than a first predetermined reference value, halting a supply of power to the device upon completion of the transfer of the data by said transfer means.

5,710,932
PARALLEL COMPUTER COMPRISED OF PROCESSOR ELEMENTS HAVING A LOCAL MEMORY AND AN ENHANCED DATA TRANSFER MECHANISM

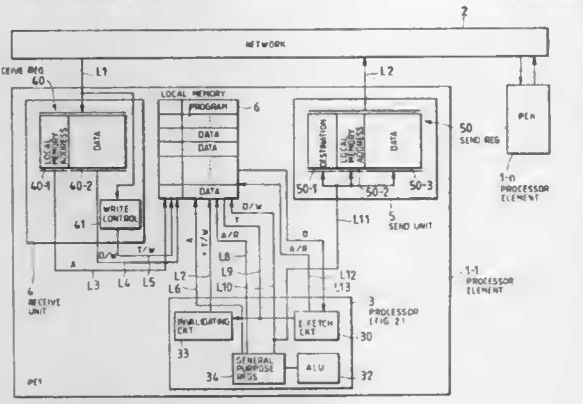
Naoki Hamanaka, and Teruo Tanaka, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 303,626, Jan. 27, 1989, Pat. No. 5,297,255, which is a continuation-in-part of Ser. No. 145,614, Jan. 19, 1988, Pat. No. 5,086,498, and Ser. No. 78,656, Jul. 28, 1987, abandoned. This application Mar. 21, 1994, Ser. No. 215,262

Claims priority, application Japan, Jan. 29, 1988, 63-17070; Jan. 29, 1988, 63-17073

Int. Cl.^{6} G06F ***13/00***

U.S. Cl. 395—800 **10 Claims**



1. A parallel computer comprising:

(a) a plurality of processor elements connected to each other by a data transfer network;

(b) each of said processor elements including:

(b1) a memory for holding a program and data,

(b2) a processor connected to the memory, executing instructions included in said program, said processor including a memory fetch circuit fetching data required by one of the instructions from said memory and storing data obtained as a result of execution of one of the instructions into said memory,

(b3) a send unit transmitting means connected to the network and said processor transmitting data and address information to a destination processor element via the network, the program being programmed to request the transmitting without receiving a request for transfer of the data from the destination processor element.

(b4) a receive unit connected to the network, receiving therefrom, in parallel to execution of instructions by said processor, data and a data identifier both sent from another processor element,

(b5) a plurality of reception data areas provided within said memory, each reception data area storing data received by said receive unit.

(b6) a plurality of tag areas provided within said memory, each tag area being provided for a corresponding one of the reception data areas, each tag area storing a tag representative of validity of data stored in each corresponding reception data area,

(b7) a write circuit connected to said receive unit and said memory and responsive to receipt of data and a data identifier by said receive unit, writing the received data into one of said plurality of reception data areas determined by the address information received from the network and writing a tag indicative of validity into one of said plurality of tag areas corresponding to said one reception data area, said write circuit operating in parallel to execution of instructions by said processor,

(b8) a memory access circuit included in said processor and connected to said memory, fetching data required by one of the instructions from said memory and storing data obtained as a result of execution of one of the instructions into said memory, said memory access circuit reading a tag held in one of the tag areas corresponding to one of the reception data areas before reading received data from said one of said reception data areas for the program, and

(b9) a check circuit checking if the read tag indicates validity; wherein said memory access circuit reads data held in said one reception data area to a portion within said processor for processing received data as valid received data under a condition that the checked tag indicates validity, the memory access circuit repeatedly reading a tag held in said one tag area until a tag indicative of validity is read out from the one tag area, in the event that initially the checked tag indicates invalidity.

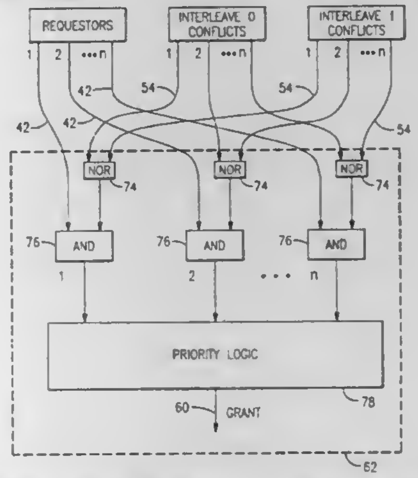
5,710,933
SYSTEM RESOURCE ENABLE APPARATUS

Patrick J. Meaney, and Adrian E. Seigler, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,856

Int. Cl.^{6} G06F ***15/00***

U.S. Cl. 395—800 **14 Claims**



1. A resource enable apparatus for enabling operations on a system resource, comprising:

a register representing current and future operations on the resource;

a pattern source that generates a pattern corresponding to a requested resource operation for each of a plurality of requests for resource operations in a queue;

compare logic that determines for each of said plurality of requests if the request will conflict with other resource operations by comparing the pattern generated for the request with said register;

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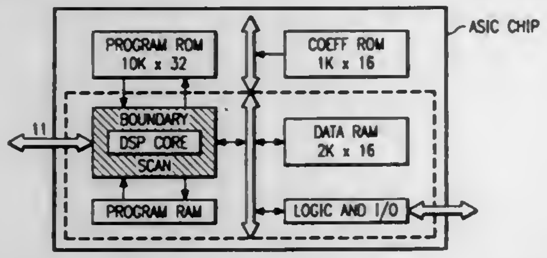
- priority logic that grants priority to a request in the queue if no conflict is determined and to update said register according to the pattern generated for the request; and
- resource enable logic that enables operations on the resource according to said register.

5,710,934
METHODS AND TEST PLATFORMS FOR DEVELOPING AN APPLICATION-SPECIFIC INTEGRATED CIRCUIT
Mariano Bona, Grenoble; Pierre-Albert Comte, Moirans, and Duc Pham-Minh, Grenoble, all of France, assignors to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France
Continuation of Ser. No. 70,706, May 27, 1993, abandoned.
This application May 15, 1995, Ser. No. 441,652
Claims priority, application France, May 27, 1992, 92 06514
Int. Cl.^{6} G06F *9/455*
U.S. Cl. 395—800 **34 Claims**



13. A method for developing a programmed ASIC integrated circuit which includes a signal processor core, a RAM memory and a ROM memory for management and processing programs, and input-output management peripherals, and which performs command exchanges with external devices, said method comprising the steps of:

(a) providing a core-emulation integrated circuit, which includes said signal processor core but does not include all other elements of said ASIC;

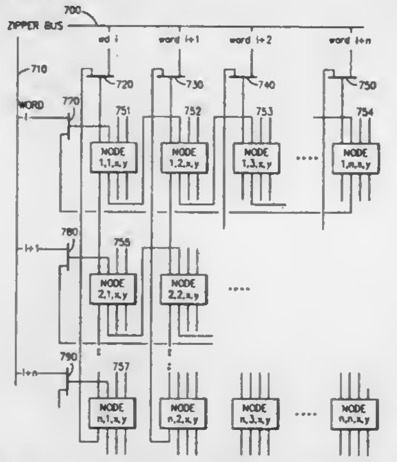
(b) mounting said core-emulation integrated circuit on a first test platform circuit board which also includes one or more additional integrated circuits connected to emulate said RAM and ROM to said core-emulation integrated circuit, at least one data register for passing data between said core-emulation integrated circuit and said first additional integrated circuits, an analog/digital converter for sending and receiving analog data, and also includes diagnostic logic connected to provide monitoring and program loading by a microcomputer;

(c) providing an interface program which allows said platform to be controlled, for automatic chaining of tests, from a microcomputer

(d) testing and debugging said first test platform, using testing and debugging features which are included in the processing programs and which can be activated by a subset of the application commands in both the final version of the integrated circuit and in any production versions, to provide initial debugging of one or more signal processing programs, but not the management programs, for use in a finished ASIC design; and

(e) manufacturing integrated circuits incorporating said signal processor core, and RAM and ROM memories containing signal processing programs debugged in accordance with said step (c), and also containing management programs.

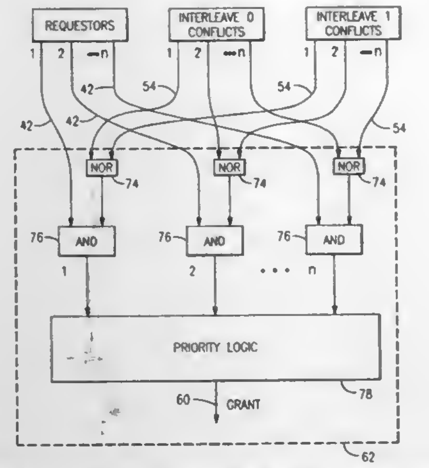
5,710,935
ADVANCED PARALLEL ARRAY PROCESSOR (APAP)
Thomas Norman Barker, Vestal; Clive Allan Collins, Poughkeepsie; Michael Charles Dapp, Endwell; James Warren Dieffenderfer, Owego; Donald George Grice, Kingston; Peter Michael Kogge, Endicott; David Christopher Kuchinski, Owego; Billy Jack Knowles, Kingston; Donald Michael Lesmeister, Vestal; Richard Ernest Miles; Richard Edward Nier, both of Apalachin, all of N.Y.; Eric Eugene Retter, Warren Center, Pa.; Robert Reist Richardson, Vestal, N.Y.; David Bruce Rolfe, West Hurley, N.Y.; Nicholas Jerome Schoonover, Tioga Center, N.Y.; Vincent John Smoral; James Robert Stupp, both of Endwell, N.Y., and Paul Amba Wilkinson, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 887,630, May 22, 1992, Pat. No. 5,590,345, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned, Ser. No. 798,788, Nov. 27, 1991, abandoned, and Ser. No. 698,866, May 31, 1991, Pat. No. 5,313,645. This application Jun. 6, 1995, Ser. No. 466,462
Int. Cl.^{6} G06F *15/80*
U.S. Cl. 395—800 **10 Claims**



1. A multi-processor memory element comprising: on a chip a plurality of processor-memory elements with a network interface, said processor-memory elements of said chip being intercoupled by an internal communication network for passing information between processor-memory elements on the chip, and having a broadcast port for external communication from the chip, said chip having a single broadcast and control interface for processor-memory elements on said chip, wherein a plurality of multi-processor memory elements comprise a multi-processor memory system including PME architecture multi-processor memory element on a single semiconductor substrate which functions as a system node, said multi-processor memory element including a pluralitv of processing memory elements, and means on said substrate for distributing interconnection and controls within the multi-processor memory system node enabling the system to perform SIMD/MIMD functions as a multi-processor memory system, wherein dedicated local memories are independently accessible by respectively coupled processors in both SIMD and MIMD modes exclusive of access by another processor.

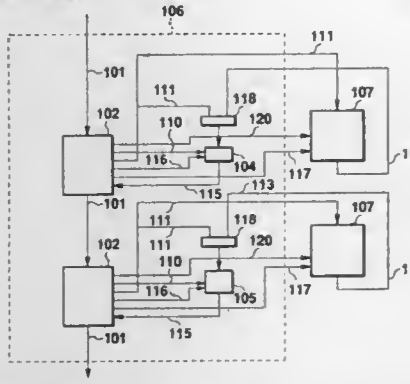
5,710,936
SYSTEM RESOURCE CONFLICT RESOLUTION METHOD
Patrick J. Meaney, and Adrian E. Seigler, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 414,856, Mar. 31, 1995. This application Jun. 7, 1995, Ser. No. 475,672
Int. Cl.^{6} G06F *15/00*
U.S. Cl. 395—800 **5 Claims**

1. A method of establishing priority among a plurarlity of requests for resource operations on a system resource, comprising the steps of:



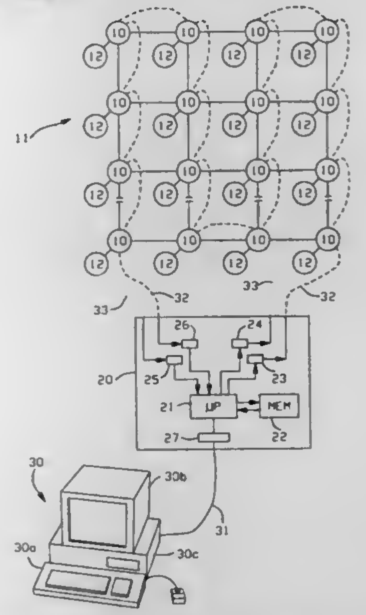
- representing current and future operations on the resource in a register;
- generating a pattern corresponding to a requested resource operation for each of a plurality of requests for resource operations in a queue;
- determining for each of said plurality of requests if the request will conflict with other resource operations by comparing the pattern generated for the request with said register; and
- granting priority to a request in the queue if no conflict is determined and to update said register according to the pattern generated for the request.

5,710,937
SORTING APPARATUS
Yasunori Kasahara, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 190,272, Feb. 2, 1994, abandoned.
This application Aug. 22, 1995, Ser. No. 517,987
Claims priority, application Japan, Feb. 15, 1993, 5-025330
Int. Cl.^{6} G06F *15/40*
U.S. Cl. 395—800 **10 Claims**



1. A sorting apparatus comprising:
- a plurality of sort processors, wherein each of said sort processors includes
  - (a) a local memory for storing a first output string, which is to be outputted from a preceding sort processor, as a first data string, said local memory including a low speed portion, and a high speed portion having an access speed quicker than an access speed of said low speed portion, a first portion of said first data string being stored in the high speed portion of the local memory and a second portion of said first data string being stored in the low speed portion of the local memory; and
  - (b) a sort core unit for merge sorting a second output string, which is outputted from said preceding sort processor, and the first data string stored in said local memory and for outputting a merge sort result to a succeeding sort processor;
- wherein, to read said first data string from said local memory, said sort core unit includes control means for returning data of said first portion of said first data string from said high speed portion to said sort core unit, for transferring data of said second portion of said first data string from said low speed portion to an address in said high speed portion as data is returned from said high speed portion to said sort core unit, and for returning data of said second portion of said first data string from said high speed portion to said sort core unit at high speed.

5,710,938
DATA PROCESSING ARRAY IN WHICH SUB-ARRAYS ARE ESTABLISHED AND RUN INDEPENDENTLY
Curtis Wayne Dahl, Draper; Daniel Allen Neuss, Park City; Mark Steven Collett, Kaysville, and Mark Elliot Bsharah, Sandy, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.
Filed Jul. 19, 1995, Ser. No. 504,303
Int. Cl.^{6} G06F *15/00*
U.S. Cl. 395—800.13 **12 Claims**



1. A data processing system which is comprised of:
- a plurality of message routing circuits that have input/output channels which are intercoupled to form an array, and a corresponding plurality of data processing nodes each of which has an input/output channel to a respective message routing circuit;
- each data processing node being adapted to send messages which address other data processing nodes, and each message routing circuit being adapted to pass said messages on said input/output channels to the addresses data processing nodes; wherein,
- said data processing system further includes an operator console for manually selecting a subset of said data processing nodes that are to comprise a sub-array, a control module connected to said operator console by a first control channel for receiving commands from said console which define said sub-array; a second control channel connected directly to every data processing node and a third control channel connected directly to every message routing circuit which carry control signals from said control module that cause said sub-array to form without any of said messages being passed on any of said input/output channels.

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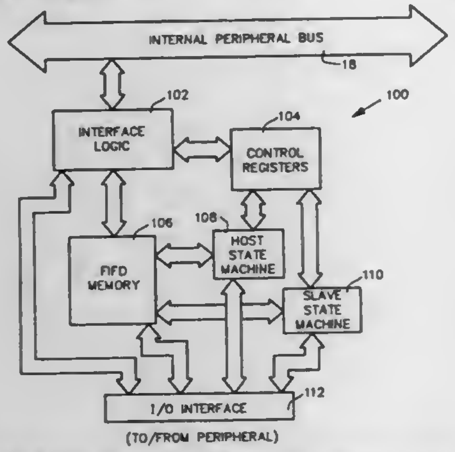
5,710,939
BIDIRECTIONAL PARALLEL DATA PORT HAVING MULTIPLE DATA TRANSFER RATES, MASTER, AND SLAVE OPERATION MODES, AND SELECTIVE DATA TRANSFER TERMINATION

William Ballachino, Arlington, Tex.; James Andrew Colgan, Ichikawa, Japan, and Franco Iacobelli, Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 26, 1995, Ser. No. 452,350
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—821 **13 Claims**



1. An apparatus including a bidirectional parallel signal interface for coupling to and providing a parallel data interface between a computer and a peripheral device external thereto, wherein said computer operates in a plurality of modes including a host mode where data is communicated from said computer to said peripheral device and a slave mode where data is communicated from said peripheral device to said computer, said parallel signal interface comprising:

an interface circuit, including a plurality of registers, for coupling to a computer and communicating thereto and therefrom a plurality of commands and a first plurality of data, wherein said plurality of registers are for receiving, storing and outputting said plurality of commands;

a storage circuit, coupled to said interface circuit via a data communications path, for coupling to a peripheral device and communicating directly thereto and therefrom second and third pluralities of data via said data communications path, for storing said first, second and third pluralities of data, and for communicating said first plurality of data directly to and from said interface circuit via said data communications path;

a host mode controller, coupled to said interface circuit and said storage circuit outside of said data communications path, for receiving a first portion of said plurality of commands outputted by said plurality of registers and in accordance therewith controlling said communication of said second plurality of data from said storage circuit to said peripheral device, and for coupling to said peripheral device and communicating thereto and therefrom a first plurality of control signals; and

a slave mode controller, coupled to said interface circuit and said storage circuit outside of said data communications path, for receiving a second portion of said plurality of commands outputted by said plurality of registers and in accordance therewith controlling said communication of said third plurality of data from said peripheral device to said storage circuit, and for coupling to said peripheral device and communicating thereto and therefrom a second plurality of control signals;

wherein said communication of said second and third pluralities of data between said storage circuit and said peripheral device is effected in accordance with a plurality of data communication rates, and wherein said plurality of data communication rates are controlled by said host and slave mode controllers in accordance with said plurality of commands from said plurality of registers.

5,710,940

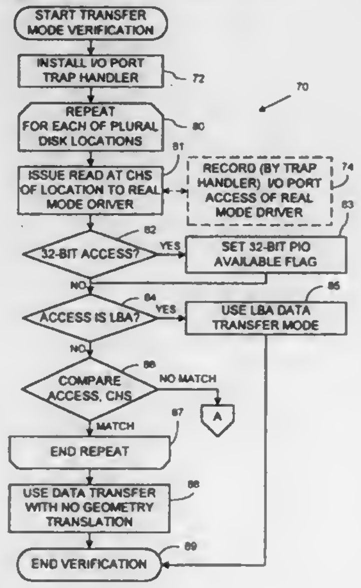
Patent Not Issued For This Number

5,710,941
SYSTEM FOR SUBSTITUTING PROTECTED MODE HARD DISK DRIVER FOR REAL MODE DRIVER BY TRAPPING TEST TRANSFERS TO VERIFY MATCHING GEOMETRIC TRANSLATION

William George Parry, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Feb. 28, 1995, Ser. No. 396,522
Int. Cl.^{6} G06F *9/445*

U.S. Cl. 395—834 **17 Claims**


START TRANSFER MODE VERIFICATION
INSTALL I/O PORT TRAP HANDLER
72
70
REPEAT FOR EACH OF PLURAL DISK LOCATIONS
80
81
ISSUE READ AT CHS OF LOCATION TO REAL MODE DRIVER
RECORD (BY TRAP HANDLER) I/O PORT ACCESS OF REAL MODE DRIVER
74
83
82
32-BIT ACCESS?
YES
SET 32-BIT PIO AVAILABLE FLAG
NO
84
ACCESS IS LBA?
YES
USE LBA DATA TRANSFER MODE
85
NO
86
COMPARE ACCESS, CHS
NO MATCH
A
MATCH
87
END REPEAT
USE DATA TRANSFER WITH NO GEOMETRY TRANSLATION
88
END VERIFICATION
89

1. A computer system, comprising:

a processor for running one or more programs including an operating system program, the processor having a real mode of operation and a protected mode of operation;

a data storage device having a recordable medium for storing data;

a data storage device controller for controlling storage of data on the recordable medium;

one or more input/output ports coupling the processor and the data storage device controller;

a real mode dryer executing on the processor for transferring data in the real mode of operation of the processor between the programs and the data storage device controller via the input/output ports; and

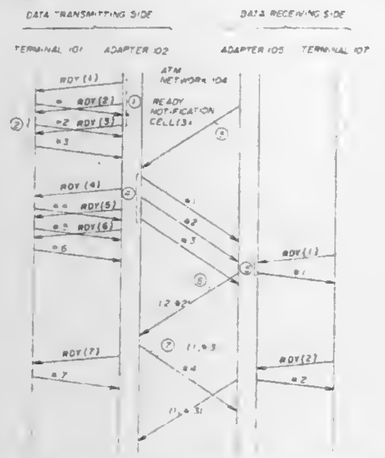
a protected mode dryer executing on the processor and being operative to analyze accesses to the input/output ports by the real mode driver for a plurality of test data transfers so as to verify whether a geometry translation is utilized by the real mode driver, the protected mode driver being operative in place of the real mode driver to transfer data in the protected mode of operation of the processor between the programs and the data storage device controller utilizing the geometry translation if the protected mode driver verifies that the geometry translation also is utilized by the real mode driver.

5,710,942
ADAPTER MONITORING STORAGE CAPACITY OF ITS BUFFER AND SEQUENTIALLY GENERATING READY SIGNALS TO NOTIFY A TERMINAL TO TRANSFER MORE BURST DATA TO THE BUFFER

Tatsuru Nakagaki, and Toshio Irie, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 62,165, May 17, 1993, Pat. No. 5,519,835, and a continuation of Ser. No. 810,052, Dec. 19, 1991, abandoned. This application Apr. 10, 1995, Ser. No. 420,311
Claims priority, application Japan, Dec. 20, 1990, 2-412370
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—872 **2 Claims**



1. A terminal adapter for connecting a terminal to an ATM network and controlling the transmission over the ATM network of successive data bursts, supplied thereto by the terminal for transmission over the ATM network in accordance with a ready notification signal received from the ATM network, the ready notification signal including data indicating a number of data bursts appropriate for transmission over the ATM network, the terminal adapter comprising:

a buffer having a capacity of storing a plurality of data bursts to be transmitted over the ATM network;

read means, responsive to a ready notification signal received from the ATM network, for determining a number of data bursts to be transmitted over the ATM network and for reading the determined number of data bursts, in succession, from the buffer;

assembling means for assembling successive data bursts read from the buffer by said read means into one or more successive and respective ATM cells for transmission over the ATM network;

monitoring means for monitoring the current storage capacity of the buffer and thereby determining the current available storage capacity of the buffer for storage of a number of further data bursts therein and for sequentially generating and sending to the terminal a corresponding number of ready signals, each ready signal instructing the terminal to transmit a corresponding data burst to the adapter for storage in the buffer; and

means for writing each data burst received from the terminal into the buffer.

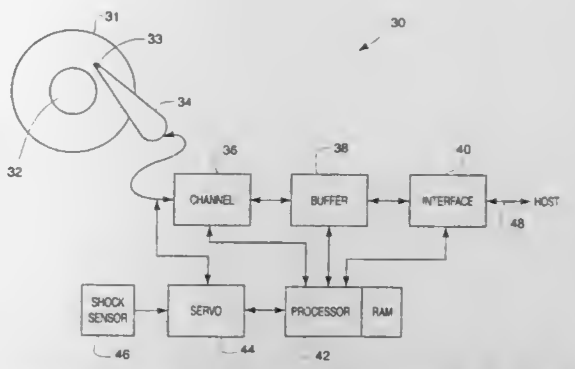
5,710,943
TIME BASED DATA RETENTION IN A VARIABLE DATA RATE DISK DRIVE

Scott Burton, Westminster; Lance R. Carlson, and Stephen R. Cornaby, both of Niwot, all of Colo., assignors to Maxtor Corporation, Longmont, Colo.

Filed Jun. 30, 1995, Ser. No. 497,299
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—872 **23 Claims**

19. An apparatus for assuring that the desired data is transferred between a disk drive and an exterior environment during read and write operations, comprising:



a magnetic disk onto which data may be written in the form of magnetic polarity transitions, wherein said magnetic disk includes a first concentric data track with a first radius and a second concentric data track with a second radius that is greater than said first radius, said first concentric data track containing less data than said second concentric data track over the same angular distance;

a spindle motor for rotating said magnetic disk at a substantially constant angular velocity;

means for transferring data between said disk and said exterior environment, wherein said means for transferring data includes means for transferring data with said first concentric data track at a first data rate and said second concentric data track at a second data rate that is greater than said first data rate;

buffer means, located between said means for transferring and said host system, for providing temporary storage of data as said data is being transferred between said magnetic disk and said exterior environment, said buffer being capable of storing a predetermined amount of data;

data retaining means for retaining an amount of data in said buffer means for a predetermined period of time after said data has been transferred between said disk and said buffer means, for possible retransfer between said disk and said buffer means, before releasing corresponding data storage locations in said buffer means for the storage of new data;

buffer control means for adjusting the amount of data being retained by said data retaining means based on a substantially fixed time period for providing efficient data transfer rate performance between said magnetic disk and said exterior environment.

5,710,944
MEMORY SYSTEM AND DATA COMMUNICATIONS SYSTEM

Benjamin Rosen, Ganei Tikva; Avi Ginsberg, Petach-Tiquva; Itzhak Barak, Tel Aviv, and Yaron Ben-Arie, Ramat-Gan, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 9, 1996, Ser. No. 599,016
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—875 **11 Claims**

1. A memory system for storing data messages communicated between a processor unit and a communication module, each data message comprising at least one data word, the memory system comprising:

a memory array having a plurality of memory buffers, each buffer for storing a data message;

logic circuitry coupled to the memory array for setting one bit of a data message stored in one of the memory buffers to a first logic state during a processor unit read access when the processor unit reads the data message from the one of the memory buffers, and for negating the one bit to a second logic state during a communication module write access when the communication module writes a new data message into the one of the memory buffers, wherein when the communication module is to write a new data message to one of the memory

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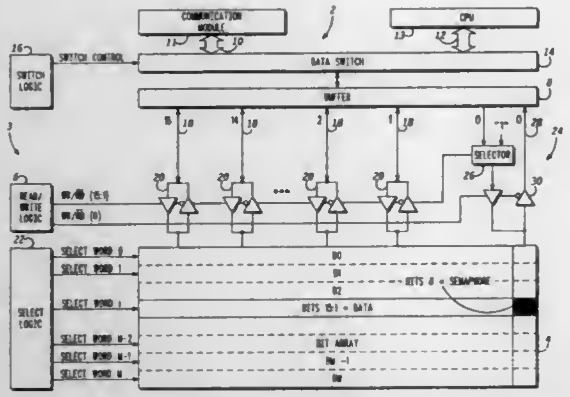


buffers, the state of the one bit of the current data message stored in the one memory buffer provides an indication as to whether the new data message will overwrite the current data message, which current data message has not been read by the processor unit or whether the new data message will overwrite the current data message, which current data message has been read by the processor unit.

5,710,945

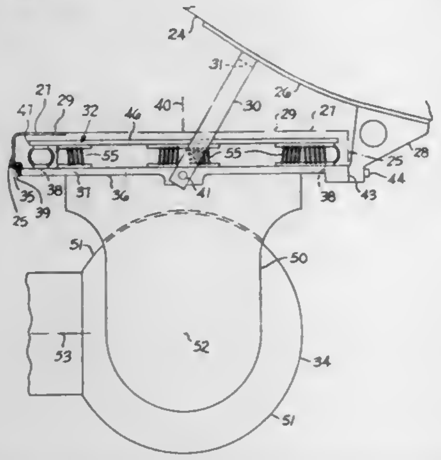
RESILIENT CAMERA MOUNT USABLE ON A HELICOPTER

Richard C. Thompson, Garden City, Mich., assignor to McMahon Helicopter Services, Inc., Canton, Mich.

Filed Jul. 3, 1996, Ser. No. 674,819

Int. Cl.⁶ C03B *29/00*

U.S. Cl. 396—13 **4 Claims**



1. A mechanism for mounting a camera underneath the nose of a helicopter, comprising:

an annular support ring having a vertical opening, a single central axis (**40**), a forward portion and a rear portion;

means for suspending said support ring from the nose of a helicopter;

a camera mounting plate located above said support ring;

multiple pairs of shock absorbers trained between said support ring and said camera mounting plate equidistant from said single central axis;

each of said pair of shock absorbers comprising a front shock absorber located on the forward portion of said support ring and a rear shock absorber located on the rear portion of said support ring;

the shock absorbers in each of said pairs being located on an imaginary straight line extending diagonally through said central axis;

each of said shock absorbers having a deflection capability in a first direction tangent to an imaginary circle centered on said single central axis, a second direction normal to the plane of the camera mounting plate, and a third direction parallel to the plane of the camera mounting plate,

each of said shock absorbers comprising a single cable wound in a helical fashion creating a plurality of equally spaced turns to provide an equal number of right hand turns and left hand turns;

each cable helix having an axis that is tangent to an imaginary circle centered on said single central axis; and

means disposed in the opening of the support ring and connected to the camera mounting plate for suspending a camera in a position below the support ring whereby the weight of the camera is entirely supported on the wound cables.

5,710,946

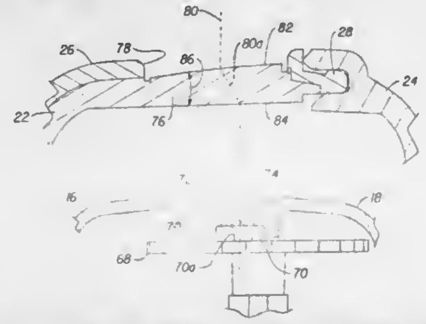
WATER-RESISTANT CAMERA WITH OPTICAL WEDGE TO SHIFT IMAGE OF NON-ALIGNED FILM FRAME COUNTER

James G. Rydelek, Henrietta, and Alan E. Lewis, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 10, 1997, Ser. No. 781,275

Int. Cl.⁶ G03B *29/00*

U.S. Cl. 396—25 **5 Claims**



1. A water-resistant camera comprising a frame counter having successive numbered portions for indicating the particular number of exposures remaining for picture-taking, and an optical element for transmitting ambient light beams to said frame counter to form an image of any one of said numbered portions in order to view the one numbered portion, is characterized in that:

said optical element is positioned out of optical alignment with said one numbered portion, and includes an optical wedge that bends the light beams the optical element transmits to said frame counter in order to make the image of said one numbered portion appear to be optically aligned with the optical element.

5,710,947

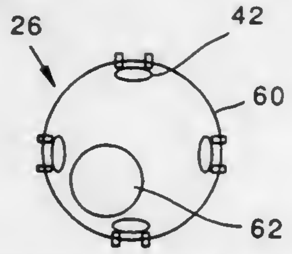
PRESSURE SENSOR CONTROL FOR ELECTRICALLY RESPONSIVE CAMERA FEATURE

Paul Teremy, Rochester; David Reynolds Dowe, Holley, and Dale Frederick McIntyre, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 415,980, Apr. 4, 1995, abandoned. This application Mar. 15, 1996, Ser. No. 617,534

Int. Cl.⁶ G03B *17/08;17/24;17/00*

U.S. Cl. 396—26 **8 Claims**



1. A camera comprising an orientation sensing device for indicating the spatial orientation of said camera, is characterized in that:

said orientation sensing device includes a casing mounted relative to said camera;

a plurality of sensors arranged within said casing each sensor including a pressure sensitive element which varies in electrical resistance based on the amount of external pressure applied thereto;

an unsupported weight movably encased in said casing; and

means attached to said plurality of sensors for detecting changes in electrical resistance, wherein gravitational force acting on said unsupported weight causes at least one sensor to be acted upon by said weight, thereby indicating said camera orientation.

5,710,948

CAMERA SYSTEM WITH COLOR TEMPERATURE METER

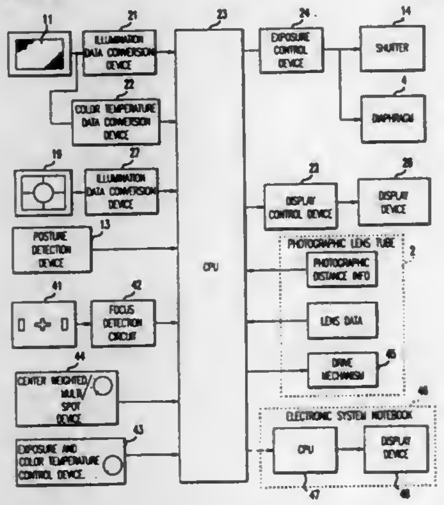
Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 188,779, Jan. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 65,262, May 21, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 384,483

Claims priority, application Japan, Jun. 9, 1992, 4-174892; Feb. 17, 1993, 5-027035; Mar. 3, 1993, 5-043035

Int. Cl.⁶ G03B *7/18;11/00;15/00;17/18*

U.S. Cl. 396—50 **29 Claims**


11
21
ILLUMINATION DATA CONVERSION DEVICE
22
COLOR TEMPERATURE DATA CONVERSION DEVICE
23
24
EXPOSURE CONTROL DEVICE
14
SHUTTER
4
DIAPHRAGM
19
27
ILLUMINATION DATA CONVERSION DEVICE
13
POSTURE DETECTION DEVICE
DISPLAY CONTROL DEVICE
DISPLAY DEVICE
CPU
PHOTOGRAPHIC LENS TUBE
PHOTOGRAPHIC DISTANCE INFO
LENS DATA
DRIVE MECHANISM
42
FOCUS DETECTION CIRCUIT
44
CENTER WEIGHTED/MULTI/SPOT DEVICE
43
EXPOSURE AND COLOR TEMPERATURE CONTROL DEVICE
ELECTRONIC SYSTEM NOTEBOOK
CPU
DISPLAY DEVICE
47

1. A camera assembly for photographing a subject in a field or photographic film comprising:

a lens barrel including a photographic lens; and

a body coupled to said lens tube including a photometry element that measures colors in the subject field from light rays that have passed through said photographic lens, a color temperature data conversion device coupled to said photometry element that converts the measured colors into a color temperature, a controller coupled to said color temperature data conversion device that determines an optimum exposure value based on the color temperature, a filter determination device coupled to said controller that determines a color conversion filter to be laced over said photographic lens based on the color temperature and a display coupled to said controller that displays the optimum exposure value and the determined color conversion filter.

5,710,949

LENS DRIVING DEVICE

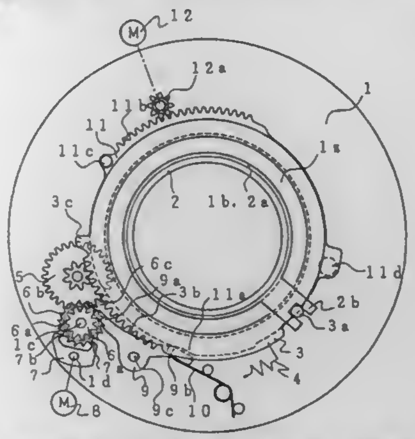
Kazuo Akimoto; Miyoshi Tanikawa, and Hiroki Kusumi, all of Yotsukaido, Japan, assignors to SEIKO Precision Inc., Japan

Filed Sep. 13, 1995, Ser. No. 527,787

Claims priority, application Japan, Sep. 13, 1994, 6-218860

Int. Cl.⁶ G03B *9/08;3/00*

U.S. Cl. 396—132 **7 Claims**



1. A lens driving device for controlling the position of a lens setting member according to a distance to an object to be photographed, comprising: a lens barrel mounted to undergo movement in the direction of an optical axis; a lens setting member mounted to undergo rotation about the lens barrel and to move the lens barrel in the direction of the optical axis; biasing means for applying a biasing force for biasing the lens setting member in one direction; a ratchet engaging with the lens setting member to undergo rotation therewith, the ratchet being provided with a plurality of teeth on an outer surface thereof; a retaining member having a pair of engaging pawls disposed to alternately engage with the ratchet to prevent rotation of the ratchet due to the biasing force of the biasing means; an electromagnetic actuator; means for applying a first driving voltage to the electromagnetic actuator to maintain the retaining member in an engaged state and applying a second driving voltage to the electromagnetic actuator to rock the retaining member so that the engaging pawls are alternately brought into engagement with the teeth of the ratchet to cause the biasing means to rotate the ratchet in a stepwise manner during periods when the ratchet is not engaged by either of the engaging pawls of the retaining member; and driving means for driving the lens barrel to return to an initial position by rotating the lens setting member to an initial position against the biasing force of the biasing means and for performing at least one of an exposure operation and an aperture control operation; wherein the first driving voltage applied to the electromagnetic actuator is lower than the second driving voltage applied to the electromagnetic actuator such that a lower voltage is applied when the driving member is rotated and the lens setting member is at rest than when the lens setting member is not at rest.

5,710,950

AUTOMATIC EXPOSURE CAMERAS WITH IMPROVED APERTURE STOP SIGNAL

Toshiaki Hozumi, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,712

Claims priority, application Japan, Sep. 7, 1994, 6-214102

Int. Cl.⁶ G03B *17/00*

U.S. Cl. 396—263 **15 Claims**

1. An automatic exposure camera having an aperture and a continuous shooting capability, comprising:

a drive unit to drive the aperture;

a signal pulse generator generating signal pulses in accordance with the motion of the aperture;

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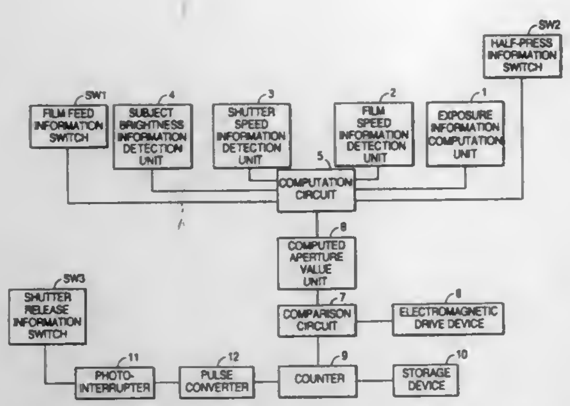

SW2
HALF-PRESS INFORMATION SWITCH
SW1
FILM FEED INFORMATION SWITCH
4
SUBJECT BRIGHTNESS INFORMATION DETECTION UNIT
3
SHUTTER SPEED INFORMATION DETECTION UNIT
2
FILM SPEED INFORMATION DETECTION UNIT
1
EXPOSURE INFORMATION COMPUTATION UNIT
5
COMPUTATION CIRCUIT
8
COMPUTED APERTURE VALUE UNIT
SW3
SHUTTER RELEASE INFORMATION SWITCH
7
COMPARISON CIRCUIT
6
ELECTROMAGNETIC DRIVE DEVICE
11
PHOTO-INTERRUPTER
12
PULSE CONVERTER
9
COUNTER
10
STORAGE DEVICE

a measuring unit counting the signal pulses generated by the signal pulse generator for a specified period of time;

a storage unit storing the signal pulses counted by the measuring unit; and

a controller, which during continuous shooting, controls an initial picture taking operation in accordance with the signal pulses generated according to the operation of the aperture, and controls subsequent picture taking operations in accordance with the signal pulses generated according to the aperture operation within the specified period of time during the initial picture taking operation and which are stored in the storage unit.

5,710,951

PHOTOGRAPII INFORMATION RECORDING APPARATUS CAPABLE OF RECORDING REPRODUCTION CONTROL INFORMATION AND REPRODUCING APPARATUS FOR REPRODUCING PHOTOGRAPH INFORMATION ON THE BASIS OF SAID REPRODUCTION CONTROL INFORMATION

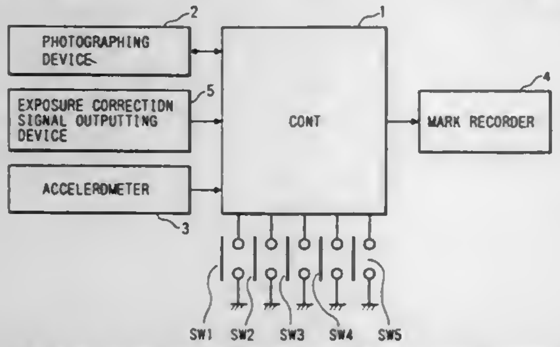
Hiroshi Wakabayashi, Yokohama, and Hiroshi Terunuma, Ichikawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 658,013, Jun. 4, 1996, abandoned, which is a continuation of Ser. No. 533,671, Sep. 26, 1995, abandoned, which is a continuation of Ser. No. 412,596, Mar. 29, 1995, abandoned, which is a continuation of Ser. No. 255,890, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 86,363, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 957,064, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 841,297, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 693,069, May 1, 1991, abandoned, which is a continuation of Ser. No. 372,558, Jun. 28, 1989, abandoned. This application Jan. 15, 1997, Ser. No. 783,998

Claims priority, application Japan, Jul. 4, 1988, 63-88624 U

Int. Cl.^{6} G03B *17/24*

U.S. Cl. 396—311 **23 Claims**



1. A photographic system comprising photographing means for recording photograph information, control means for recording reproduction control information in association with said photograph information, and reproducing means for reproducing photograph information, said reproducing means including means for determining whether or not to reproduce photograph information depending upon a characteristic thereof, and means for forcing reproduction of photograph information, regardless of the characteristic thereof, in response to reproduction control information recorded in association with the photograph information.

5,710,952

SHEET FILM PACK WITH RESILIENT LIGHT TRAPPING MECHANISM

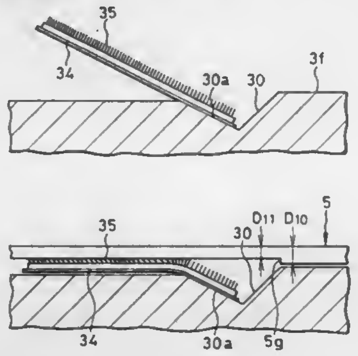
Taro Okutsu; Yasuhiko Kitamura; Hitoshi Komiyama; Katsumasa Okada; Hiromasa Nagai, and Yoshio Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 15, 1995, Ser. No. 528,666

Claims priority, application Japan, Oct. 7, 1994, 6-244400

Int. Cl.^{6} G03B *17/26*

U.S. Cl. 396—518 **8 Claims**



1. A sheet film pack comprising:

a pack housing for receiving a plurality of sheet film units in a stack therein;

an opening formed in one side of said pack housing for placing a topmost one of said sheet film units in an exposure position through said opening;

a lid slidable relative to said pack housing between a closed position for closing said opening in light-tight fashion and an open position opening said opening;

a sliding surface provided on a front side of said pack housing at a leading end thereof opposite to a trailing end, for allowing said lid to slide thereon;

a groove formed in said sliding surface in a direction orthogonal to the direction of sliding said lid, said groove having a V-shaped section; and

a light-trapping ribbon, said light-trapping ribbon being entirely backed with a resilient sheet and partly secured to one of inclined surfaces of said groove such that a not-secured part of said light-trapping ribbon protrudes out of said groove and is inclined relative to said sliding surface so that said light-trapping ribbon is resiliently bent by said lid and kept in contact with said lid.

5,710,953

RECTANGULAR PHOTOGRAPHIC FILM SHEET AND CAMERA FOR USE THEREWITH

Stanley Ward Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1996, Ser. No. 686,158

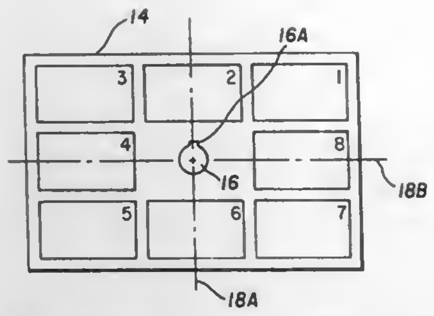
Int. Cl.^{6} G03B *41/00*

U.S. Cl. 396—335 **3 Claims**

1. A photographic film sheet comprising:

a) a rectangular shape;

b) a plurality of image areas disposed around the perimeter of the sheet, with all of the images being arranged to define an orthogonal pattern; and



c) the sheet defining a central opening for permitting spin processing of the images on the sheet.

5,710,954

CAMERA SYSTEM HAVING FUNCTION FOR PHOTOGRAPHING IMAGE LINKED TO ELECTRONIC IMAGE

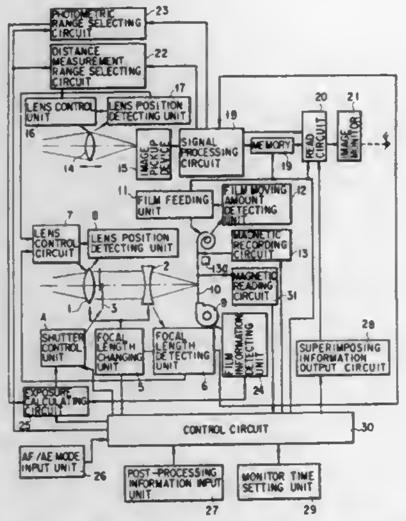
Akira Inoue, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 384,535, Feb. 8, 1995, abandoned. This application Nov. 29, 1996, Ser. No. 757,596

Claims priority, application Japan, Feb. 17, 1994, 6-020470; Mar. 25, 1994, 6-055495; Apr. 5, 1994, 6-066907

Int. Cl.^{6} G03B *17/24*

U.S. Cl. 396—374 **2 Claims**


PHOTOMETRIC RANGE SELECTING CIRCUIT
23
DISTANCE MEASUREMENT RANGE SELECTING CIRCUIT
22
17
LENS CONTROL UNIT
LENS POSITION DETECTING UNIT
16
14
15
IMAGE PICKUP DEVICE
18
SIGNAL PROCESSING CIRCUIT
MEMORY
19
20
READ CIRCUIT
21
IMAGE MONITOR
11
FILM FEEDING UNIT
FILM MOVING AMOUNT DETECTING UNIT
12
7
8
LENS CONTROL CIRCUIT
LENS POSITION DETECTING UNIT
MAGNETIC RECORDING CIRCUIT
13
130
MAGNETIC READING CIRCUIT
31
2
10
9
1
3
4
SHUTTER CONTROL UNIT
FOCAL LENGTH CHANGING UNIT
FOCAL LENGTH DETECTING UNIT
FILM INFORMATION DETECTING UNIT
28
SUPERIMPOSING INFORMATION OUTPUT CIRCUIT
5
6
24
EXPOSURE CALCULATING CIRCUIT
25
CONTROL CIRCUIT
30
AF/AE MODE INPUT UNIT
26
POST-PROCESSING INFORMATION INPUT UNIT
27
MONITOR TIME SETTING UNIT
29

1. A camera into which a film having a magnetic information recording section can be loaded, said camera comprising:

(a) an imaging device for forming an electronic image of an object;

(b) a release button;

(c) an exposure device for exposing said object on said film in response to an operation of said release button;

(d) a recording device for recording said electronic image output from said imaging device in combination with an operation of said exposure device;

(e) an image monitor for displaying said electronic image which has been recorded on said recording device;

(f) a post-processing information input device for setting at least one of the following information:

i) exposure correction information at a time of printing,

ii) color correction information,

iii) trimming information, and

iv) information on a number of prints,

while monitoring said electronic image displayed on said monitor;

(g) a superimposing device for displaying one of:

i) a character, and

ii) a symbol

corresponding to said information, together with said electronic image, on said image monitor, such that said information set by said post-processing information input device can be confirmed; and

(h) a magnetic recorder for recording said information on said magnetic information recording section of said film while feeding said film, after said information is set by said post-processing information input device.

5,710,955

ELECTROSTATIC LATENT IMAGE DEVELOPING DEVICE AND TONER CARTRIDGE USED THEREFOR

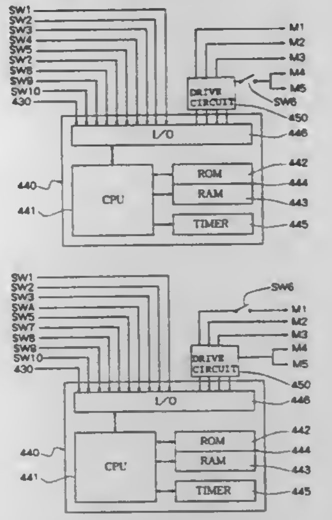
Toshinori Nishimura, and Yukio Hashimoto, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 336,063, Nov. 4, 1994, Pat. No. 5,621,507. This application May 7, 1996, Ser. No. 646,135

Claims priority, application Japan, Nov. 30, 1993, 5-298825; Jan. 14, 1994, 6-2559; Jan. 14, 1994, 6-14944

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—13 **2 Claims**



1. An electrostatic latent image-developing device comprising:

a toner cartridge equipped with a container having a toner discharge opening, a toner contained in said container, and a sealing tape for sealing said toner discharge opening;

a toner cartridge-holding means having a toner-receiving opening and allowing detachably to mount said toner cartridge; and

a conveying means for conveying the toner discharged from said toner cartridge to a developing unit;

wherein said toner cartridge-holding means is provided with a toner cartridge mount detection switch that is opened and closed by the attachment or detachment of said toner cartridge, and said toner cartridge mount detection switch is inserted in an electric circuit that feeds electric power to an electric motor that drives said conveying means.

5,710,956

IMAGE FORMING APPARATUS WITH JUDGING DEVICE FOR JUDGING WHETHER TO CONTINUE OR STOP AN INITIALIZATION PROCESS

Takao Kurohata; Kenji Taki; Yasuhiko Yamaguchi; Chiharu Kobayashi, and Kojiro Akutsu, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,911

Claims priority, application Japan, Sep. 16, 1994, 6-222287

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—24 **8 Claims**

1. An image forming apparatus comprising:

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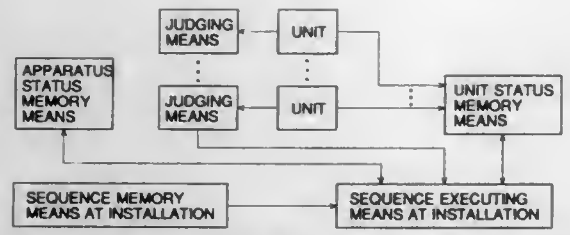

JUDGING MEANS
UNIT
APPARATUS STATUS MEMORY MEANS
JUDGING MEANS
UNIT
UNIT STATUS MEMORY MEANS
SEQUENCE MEMORY MEANS AT INSTALLATION
SEQUENCE EXECUTING MEANS AT INSTALLATION

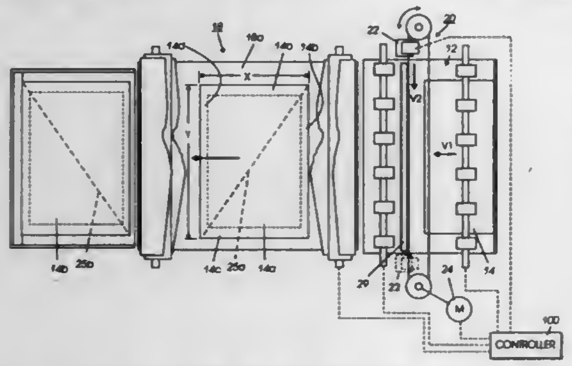
(a) a sequence memory for storing an initialization processing sequence to be conducted only at installation of the apparatus;
(b) an adjusting means for adjusting the apparatus in accordance with the initialization processing sequence stored in said sequence memory;
(c) apparatus status indicating means for indicating whether the apparatus is new;
(d) control means for controlling said adjusting means so that said adjusting means adjusts the apparatus when said apparatus status indicating means indicates that the apparatus is new; and
(e) judging means for judging whether to continue or interrupt the initialization processing sequence on the basis of a predetermined state of the apparatus,

wherein said judging means includes means for judging to continue the initialization processing sequence when all units of the apparatus to be initially adjusted are new, and to stop the initialization processing sequence when at least one unit of the apparatus to be initially adjusted is old.

5,710,957
REPRODUCTION APPARATUS TRANSMISSIVITY SENSOR SYSTEM FOR DUPLEX DOCUMENTS

Thomas Acquaviva, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 18, 1996, Ser. No. 751,893
Int. Cl.^{6} G03G *15/04;21/00*
U.S. Cl. 399—45 **11 Claims**



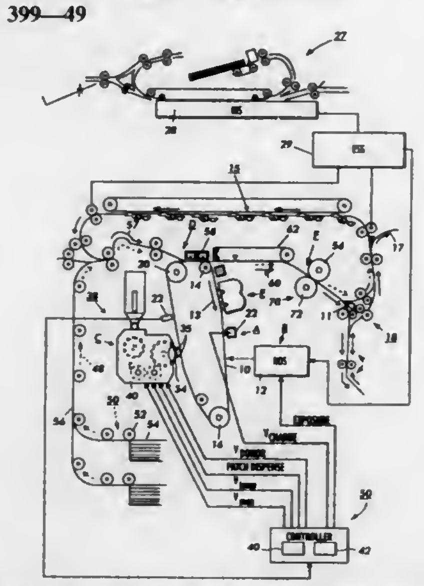
1. In a document reproduction apparatus with an imaging station and a sheet feeding system for feeding physical document sheets in a document sheet feeding path at a first velocity in a document sheet motion direction to said imaging station to be imaged and then fed away from said imaging station, said document reproduction apparatus also having a transmissivity sensor for measuring the transmissivity of the document sheets to be imaged to provide an imaging control signal for reducing show-through imaging defects from light transmissive document sheets including show-through imaging of opposite side images on light transmissive document sheets; the improvement comprising:

a linearly movable document sheet light transmissivity measurement system mounted across said document sheet feeding path outside of said imaging station,
a scanning system for linearly moving said document sheet light transmissivity measurement system on a single axis of movement at a second velocity across said document sheet feeding path transversely of said document sheet motion direction,
said scanning system being controlled to move said document sheet light transmissivity measurement system transversely across a document sheet moving in said document sheet feeding path in coordination with said document sheet movement past said document sheet light transmissivity measurement system so that said document sheet light transmissivity measurement system diagonally scans the document sheet on two axes, to provide a more accurate transmissivity measurement of the document sheet than a single axis transmissivity scan.

5,710,958
METHOD FOR SETTING UP AN ELECTROPHOTOGRAPHIC PRINTING MACHINE USING A TONER AREA COVERAGE SENSOR

Guru B. Raj, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1996, Ser. No. 689,299
Int. Cl.^{6} G03G *15/00*
U.S. Cl. 399—49 **5 Claims**



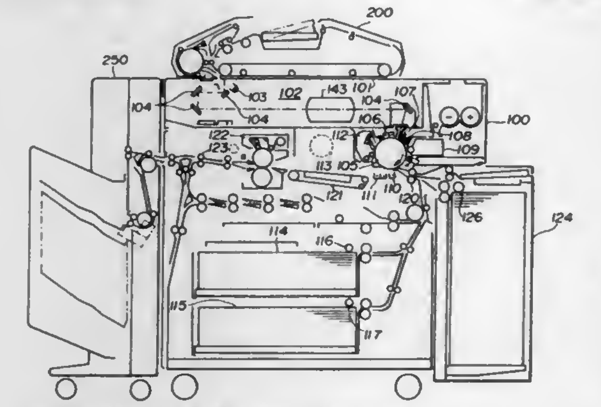
1. A method of adjusting image quality in a printing machine having a variable density image developed on a photoconductive surface in accordance with an initial set of starting values, including:

detecting a plurality of densities of the variable density image and transmitting a plurality of signals with each signal being indicative of a density;
generating new starting values, responsive to the plurality of signals, using a linearized perturbation model;
calculating error values, responsive to the plurality of signals, minimizing a sum of squares of the error values;
testing the error values for convergence to a set of reference values with each reference value indicative of an acceptable density;
repeating said detecting, transmitting, generating, calculating, and testing, steps for a plurality of iterations;
branching to a component responsive to the error values exceeding the reference values and the plurality of iterations exceeding a first prescribed value; and
adjusting the component, said adjusting comprises adjusting a voltage for a developer unit having a mixture of toner particles and carrier granules therein, and adjusting a toner dispenser for discharging toner particles into the developer unit, including:
comparing a developer state variable to a first development parameter;
generating a toner concentration value, responsive to the developer state variable exceeding the first development parameter;
comparing the developer state variable to a second development parameter;
generating a second toner concentration value, responsive to the developer exceeding the second development parameter;
adjusting the voltage for the developer unit;
detecting a plurality of densities of the variable density image and transmitting a plurality of signals with each signal being indicative of a density;
generating new starting values, responsive to the plurality of signals, using a linearized perturbation model;
calculating error values, responsive to the plurality of signals, minimizing the sum of squares of the error values;
testing the error values for convergence to a set of reference values with each reference value indicative of an acceptable density;
repeating said adjusting, detecting, transmitting, generating, calculating, and testing steps for the first mentioned plurality of iterations and a second plurality of iterations; and
branching to a second component, responsive to the error signals exceeding the reference signals, and the first mentioned plurality of iterations exceeding the first mentioned prescribed value and the second plurality of iterations exceeding a second prescribed value.

5,710,959
IMAGE FORMING APPARATUS HAVING A FUNCTION OF TURNING ON A POWER SUPPLY USING A TIMER

Kazuhiko Hirooka, Tokyo; Yoshihiro Funamizu, Kawasaki; Akihiko Satoh, Kawasaki; Mitsuhiko Sato, Kawasaki; Tetsuya Nozaki, Yokohama; Yoshihito Osari, Kawasaki; and Hajime Kaji, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 629,465
Claims priority, application Japan, Apr. 25, 1995, 7-102431
Int. Cl.^{6} G03G *15/00*
U.S. Cl. 399—88 **9 Claims**

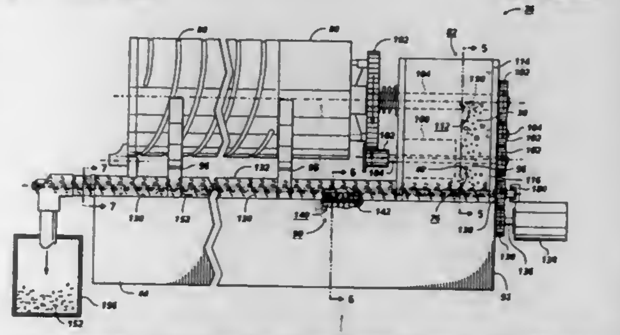


1. An image forming apparatus comprising:
a main switch for manually switching between supply and interruption of electric power to said apparatus;
detection means for detecting whether said main switch is in a power-interruption state or in a power-supply state;
nonvolatile storage means for storing a state which indicates that said main switch is in a power-interruption state when said detection means detects that said main switch is in the power interruption state;
control means for placing said apparatus in a standby state in which an image can be formed or in a shutdown state in which an image cannot be formed, during a preset time period; and
supply means for supplying said control means with electric power,
wherein said control means places said apparatus in a standby state even during a set shutdown time period in the case said storage means stores a power-interruption state when said supply means has supplied said control means with electric power, and wherein said control means places said apparatus in a shutdown state during the set shutdown time period in the case said storage means does not store a power-interruption state when said supply means has supplied said control means with electric power.

5,710,960
POINT OF USE TONER FILTRATION

Steven C. Hart; Cyril G. Edmunds, and Thomas J. Behe, all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 11, 1994, Ser. No. 321,632
Int. Cl.^{6} G03G *15/08*
U.S. Cl. 399—253 **20 Claims**

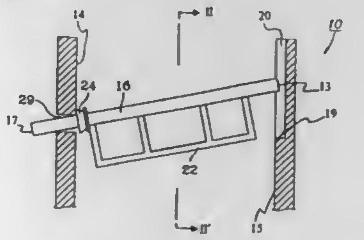


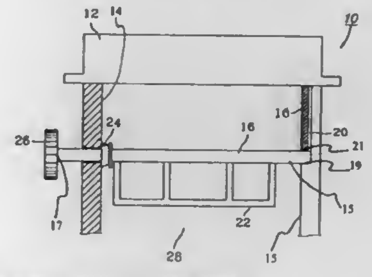
1. An apparatus for filtering contaminants from new marking particles in a container, comprising:
a conduit, connectable to the container;
means for moving the marking particles from the container and through the conduit;
a screen positioned adjacent said conduit;
a vessel for collecting the contaminants, said vessel operably connected to said conduit; and
a developer housing defining a chamber therein for mixing the marking particles, said developer housing adapted to receive the marking particles from said screen, said screen positioned adjacent said developer housing, said screen defining a passage for the marking particles from said conduit to said developer housing so that substantially all the marking particles discharged from said conduit pass through said screen and directly into said developer housing and so that at least a portion of the contaminants are carried by said moving means in said conduit toward said vessel.

5,710,961
AGITATOR OF DEVELOPING DEVICE

Ki-Hyun Jeong, Songtan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 30, 1996, Ser. No. 652,694
Claims priority, application Rep. of Korea, May 30, 1995, 11910/1995
Int. Cl.^{6} G03G *15/08*
U.S. Cl. 399—256 **11 Claims**





1. A developing device, comprising:
a hopper;

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- a housing having a first interior sidewall and a second interior sidewall opposite to said first interior sidewall;
- an agitator positioned to move toner within said hopper;
- a shaft for driving said agitator, said shaft having a first end and a second end;
- said first interior sidewall of said housing containing an aperture for accommodating said first end of said shaft;
- a seal formed around said shaft of said agitator, said seal located adjacent to said first interior sidewall of said housing and covering said aperture, blocking passage of the toner from said housing via said aperture;
- a slot formed on said second interior sidewall of said housing opposite to said first interior sidewall, accommodating radial movement of said second end of said shaft of said agitator into said housing of said developing device; and
- a rib obstructing movement of said second end of said shaft along said slot during rotation of said agitator.

5,710,962
TONER REPLENISHING METHOD FOR USE IN DEVELOPMENT PROCESS, AND DEVELOPMENT UNIT EMPLOYING THE TONER REPLENISHING METHOD

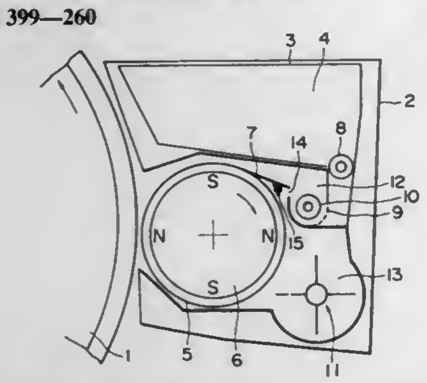
Tetsuo Isoda, Numazu, and Masanori Suzuki, Shizuoka-ken, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 25, 1996, Ser. No. 591,159

Claims priority, application Japan, Jan. 30, 1995, 7-033055; Dec. 28, 1995, 7-354372

Int. Cl.^{6} G03G *15/08*

U.S. Cl. 399—260 **6 Claims**



5. A method for replenishing toner in a development unit including a developer supply member which supplies a two part dry developer from a developer container to an electrophotographic photoconductor, whereby toner in the developer is diminished, thereby leaving a used dry developer portion with a decreased toner concentration, said method comprising the steps of:
- scraping the used dry developer portion from said developer supply member;
- discharging the scraped developer to a mixing chamber;
- supplying at least part of the toner into said mixing chamber at substantially a lowermost portion of said mixing chamber;
- mixing the toner and the used dry developer portion in the mixing chamber to form a mixed developer; and
- transporting the mixed developer from said mixing chamber to said developer container.

5,710,963
TONER POWDER BOTTLE

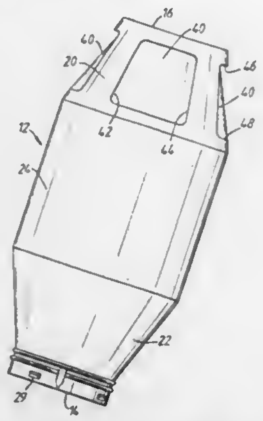
Lleven Dirx, Oud-Turnhout, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 2, 1995, Ser. No. 552,201

Claims priority, application European Pat. Off., Nov. 4, 1994, 94203219

Int. Cl.^{6} G03G *15/08*

U.S. Cl. 399—262 **12 Claims**



1. A toner powder bottle comprising a base, a top, side walls including an upper frusto-conical portion, a lower frusto-conical portion and an intermediate cylindrical portion, a powder discharge opening formed in said base, bayonet connecting means for co-operating with corresponding bayonet connecting means of a bottle receiving member to which said toner bottle is connected in use; and finger recesses formed in said side walls adjacent said top in said upper frusto-conical portion, said finger recesses including lateral and axial function edges to facilitate axial and rotational manipulation of said bottle to enable connection of said bottle to said bottle receiving member.

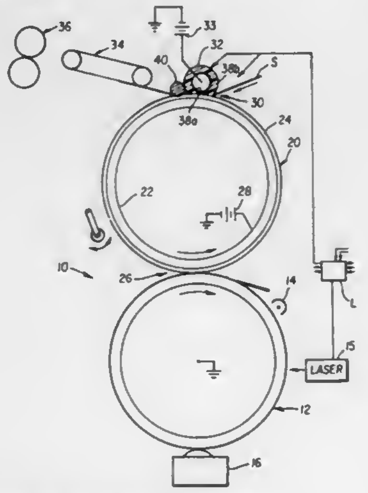
5,710,964
MECHANISM FOR FACILITATING REMOVAL OF RECEIVER MEMBER FROM AN INTERMEDIATE IMAGE TRANSFER MEMBER

Thomas N. Tombs, Brockport; Edward T. Miskinis, Rochester; Donald S. Rimai, and Robert E. Zeman, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1996, Ser. No. 681,637

Int. Cl.^{6} G03G *15/14*

U.S. Cl. 399—303 **15 Claims**



1. A reproduction apparatus comprising:
- a primary image forming member;
- an intermediate image transfer member including a compliant outer surface;
- means for electrostatically transferring a marking particle image formed on said primary image forming member from said primary image forming member to said intermediate image transfer member and, thereafter, to a receiver member brought into intimate contact with said intermediate image transfer member; and
- a compressing member, for facilitating removal of said receiver member from intimate contact with said intermediate image transfer member, said compressing member including a roller of relatively small diameter in the range of 5 up to 30 mm, said roller having an outer surface of a high Young's modulus when compared to that of said compliant outer surface of said intermediate image transfer member, said roller located downstream of said transfer means, in substantial pressure contact with said intermediate image transfer member to compress said compliant outer surface of said intermediate image transfer member, so as to be able to pinch a receiver member off said intermediate image transfer member.

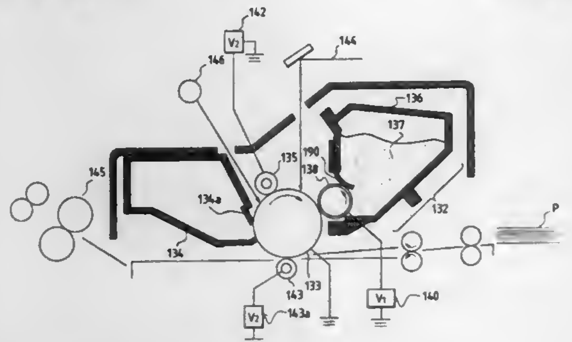
5,710,965
DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGES AND IMAGE FORMING METHOD

Keita Nozawa; Tsutomu Kukimoto, both of Yokohama; Satoshi Matsunaga, and Kazuyoshi Hagiwara, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,327

Int. Cl.^{6} G03G *15/16*

U.S. Cl. 399—313 **64 Claims**



1. An image forming method comprising:
- electrostatically charging a latent image bearing member;
- forming an electrostatic image on the latent image bearing member thus charged;
- developing the electrostatic image by the use of a developer to form a toner image on the latent image bearing member; and
- transferring the toner image formed on the latent image bearing member, to a transfer medium through a contact transfer means to which a bias voltage is applied;
- wherein said developer comprises 100 parts by weight of a toner and 0.01 part by weight to 10 parts by weight of an aggregate of fine particles,
- said aggregate holds a silicone compound selected from the group consisting of a silicone oil and a silicone varnish, in an amount of from 20% by weight to 90% by weight, and has a dissolving matter in a quantity not less than 10% by weight as measured by Soxhlet extraction using chloroform.

5,710,966
CLEANING DEVICE FOR REMOVING NON-TRANSFERRED TONER

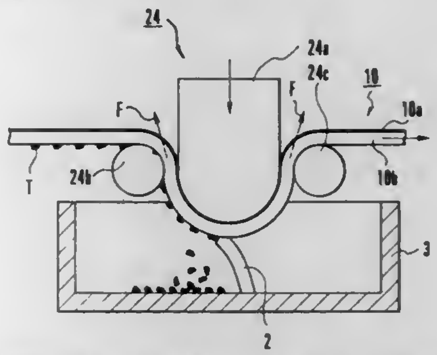
Yasubiro Otsuka, and Masakazu Okuda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,305

Claims priority, application Japan, Oct. 31, 1994, 6-266854

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—343 **7 Claims**



1. A cleaning device for a piezoelectric layer having a first surface on which a toner is disposed by an electrostatic force, said cleaning device comprising:
- removing means adapted for removing said toner held on said first surface of said piezoelectric layer; and
- distorting means for mechanically distorting said piezoelectric layer by pressing said piezoelectric layer between a pair of members to reduce said toner holding force of said piezoelectric layer, said removing means removing the toner from a portion of said piezoelectric layer which is distorted by said distorting means.

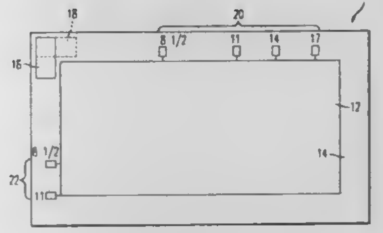
5,710,967
APPARATUS WHICH INDICATES TO A USER THE PROPER PLACEMENT OF PAGES TO BE SCANNED

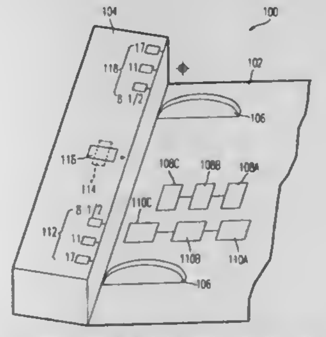
Tetsuro Motoyama, Santa Clara, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Filed Jul. 12, 1996, Ser. No. 679,113

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—377 **23 Claims**





1. A scanning system which indicates where to place a page to be scanned, comprising:
- a paper support surface including:
  - a transparent contact surface;

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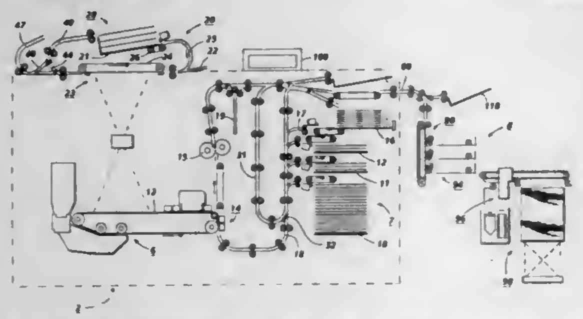
- a paper orientation indicator which indicates how a user is to orient the page to be scanned on the contact surface, the paper orientation indicator representing a page and whether the page to be scanned is to be placed in a portrait or landscape orientation, the paper orientation indicator further being a miniature representation of how a user should place a page on the transparent contact surface in order for the page to be properly scanned; and
- a scanning mechanism disposed under the paper support surface.

5,710,968
BYPASS TRANSPORT LOOP SHEET INSERTION SYSTEM

Lawrence A. Clark, Webster; Terrence R. Docteur, Canandaigua; Richard E. Eisemann, Rochester, all of N.Y., and Ted A. Beer, Oklahoma City, Okla., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1995, Ser. No. 520,354
Int. Cl.^{6} G03G *21/00*
U.S. Cl. 399—382 **15 Claims**



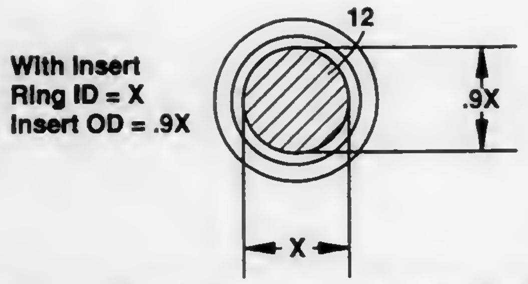
1. A printing apparatus, including a processing section for transferring a developed image onto a copy sheet and a finishing section for receiving plural copy sheets and at least one insert sheet to generate a print set, comprising:
- a sheet feeding tray for storing sheets to be utilized in producing the print set;
- a sheet feeding apparatus associated with said sheet feeding tray for dispensing sheets therefrom;
- a main supply transport path coupled between said sheet feeding tray and the processing section for delivering copy sheets thereto;
- a bypass transport loop coupled between said main supply transport path and the finishing section for delivering insert sheets thereto;
- a movable gate situated adjacent said bypass transport loop for selectively directing sheets along a predetermined path of travel. said movable gate being selectively positionable between a first position for directing the sheets through the main supply transport path and a second position for directing the sheets to the bypass transport loop; and
- means for providing a control signal to said movable gate such that sheets can be selectively dispensed from said sheet feeding tray to either said main supply transport path or said bypass transport loop at various selected times during generation of a print set.

5,710,969
INSERT SINTERING

David P. Newman, Arvada, Colo., assignor to Camax Tool Co., Arvada, Colo.

Filed Mar. 8, 1996, Ser. No. 613,215
Int. Cl.^{6} B22F *3/10*
U.S. Cl. 419—5 **7 Claims**

1. A method of sintering in which a removable ceramic insert is placed in conjunction with a preform to be sintered whereby final shape of a chosen preform geometry is limited by the shape of the insert.

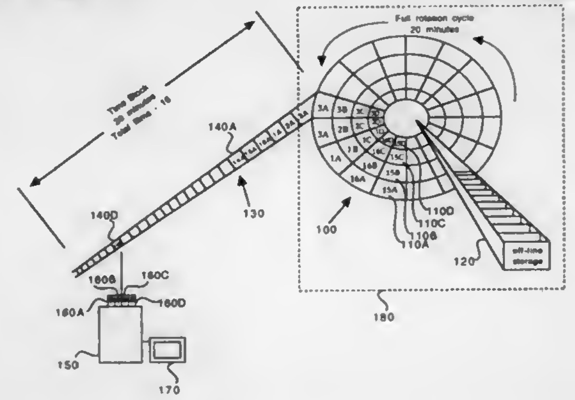


4. A sintered product made according to the method of claim 1.

5,710,970
BROADCAST VIDEO BURST TRANSMISSION CYCLIC DISTRIBUTION METHOD

Eric Hall Walters, Phoenix, Ariz.; Richard A. Lang, Mendocino, Calif., and Earl I. Mincer, Scottsdale, Ariz., assignors to Instant Video Technologies, Inc., San Francisco, Calif.

Division of Ser. No. 11,972, Feb. 1, 1993, Pat. No. 5,440,334. This application Aug. 8, 1995, Ser. No. 512,481
Int. Cl.^{6} H04N *7/10*
U.S. Cl. 455—3.1 **63 Claims**

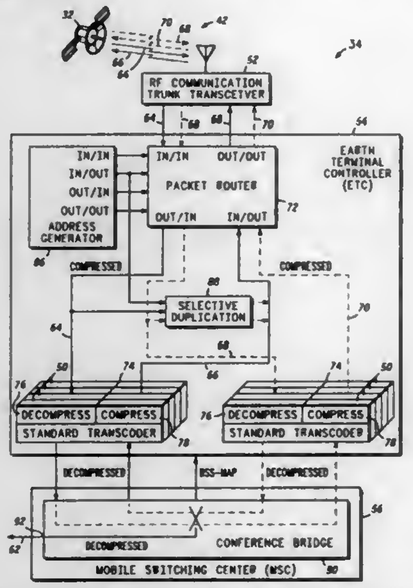


1. A broadcast video burst transmission cyclic distribution method comprising:
- providing on-line storage means for storing a predetermined number of audio/video programs and for permitting access to said audio/video programs for burst transmission thereof;
- providing burst transmission means coupled to said on-line storage means for accessing said audio/video programs stored in said on-line storage means in a predetermined sequence and for burst transmitting said audio/video programs to a multiplicity of subscriber locations in said predetermined sequence in which they are accessed from said on-line storage means, said burst transmission means being further operative for repeatedly burst transmitting the predetermined sequence of audio/video programs accessed from said on-line storage means; and
- providing receiving means at each subscriber location, each of said receiving means being coupled to said burst transmission means and operative for receiving the audio/video programs stored in said on-line storage means and burst transmitted in said predetermined sequence by said burst transmission means and for selectively storing one or more of the audio/video programs for real-time playback by the subscriber.

5,710,971
RADIO COMMUNICATION NETWORK AND METHOD FOR UNOBSTRUSIVE CALL INTERCEPTION VIA DATA DUPLICATION

Peter Joseph Armbruster, Tempe; Johanna Alexandra Wild, Scottsdale; Dean Paul Vanden Heuvel, Chandler, and Scott David Blanchard, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 18, 1995, Ser. No. 574,060
Int. Cl.^{6} H04B *7/185;* H04M *3/22*
U.S. Cl. 455—12.1 **17 Claims**

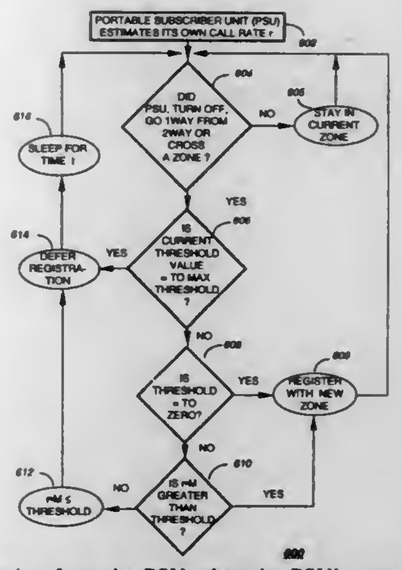


1. A method of unobtrusively intercepting a call routed through a radio link of a telecommunication network, the method comprising the steps of:
- a) establishing the call and a departing portion of a call path between a subscriber unit and a second device;
- b) receiving compressed call data from the subscriber unit at a network node, the compressed call data being received through the call path that includes an RF communication link;
- c) duplicating the compressed call data at the network node to obtain first compressed call data and second compressed call data;
- d) routing the first compressed call data from the network node toward the second device;
- e) routing the second compressed call data toward a monitoring center; and
- f) refraining from performing more than one compressing operation within the departing portion of the call path.

5,710,972
METHOD AND APPARATUS FOR DEFERRING ZONE RESISTRATIONS FROM A PSU-PAGER WHEN THE PSU'S OWN CALL RATE IS LESS THAN OR EQUAL TO A TRANSMITTED THRESHOLD

Jyh-Han Lin, Keller, Tex., assignor to Motorla, Inc., Schaumburg, Ill.

Filed Nov. 16, 1995, Ser. No. 559,583
Int. Cl.^{6} H04Q *7/00;* H04M *15/00*
U.S. Cl. 455—33.1 **28 Claims**

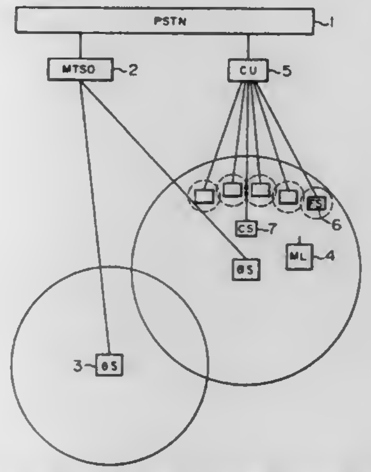

PORTABLE SUBSCRIBER UNIT (PSU) ESTIMATES ITS OWN CALL RATE r
802
804
DID PSU. TURN OFF, GO 1WAY FROM 2WAY OR CROSS A ZONE ?
NO
805
STAY IN CURRENT ZONE
816
SLEEP FOR TIME t
YES
806
IS CURRENT THRESHOLD VALUE = TO MAX THRESHOLD ?
814
YES
DEFER REGISTRATION
NO
808
IS THRESHOLD = TO ZERO?
YES
809
REGISTER WITH NEW ZONE
NO
810
612
NO
IS r≤M GREATER THAN THRESHOLD ?
YES
r≤M ≤ THRESHOLD
800

1. A method of controlling zone registrations in a radio communication system providing radio coverage to a wireless portable subscriber unit (PSU) within a plurality of zones where the PSU determines its own call rate, the method comprising in a fixed portion of the radio communication system the steps of:
- transmitting to the PSU a threshold value based on communication activity associated with the PSU, wherein the threshold value is between 0 and a maximum threshold value; and
- accepting zone registrations from the PSU when the PSU's own call rate is greater than the threshold value and deferring zone registration from the PSU when the PSU's own call rate is less than or equal to the threshold value until the PSU's own call rate exceeds the threshold value.

5,710,973
METHOD FOR ALLOCATING IDLE CHANNELS OF A CELLULAR MOBILE TELEPHONE SYSTEM FOR USE IN A MICROCELLULAR SYSTEM

Jun Yamada; Masaki Terashima; Kenichi Ooyama, all of Yokohama, and Eiji Ohmori, Hoya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 959,722, Oct. 13, 1992, Pat. No. 5,483,666. This application Dec. 1, 1995, Ser. No. 565,965
Claims priority, application Japan, Oct. 21, 1991, 3-272246
Int. Cl.^{6} H04Q *7/34*
U.S. Cl. 455—33.1 **10 Claims**



1. A method by which a microcellular system (MCS) sharing voice channels in a frequency band allocated to a cellular mobile telephone system (CMTS) selects channels therefrom for allocation to said MCS, said MCS operating in the same area as a local cell of said CMTS to which said CMTS has allocated particular ones of said CMTS voice channels, wherein said MCS performs the steps of:
- (a) repetitively scanning said CMTS voice channels for a scanning time period substantially longer than the duration of any single voice communication with a receiver in said MCS, said scanning including CMTS voice channels not allocated to said local cell, to determine a maximum reception level for each of

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said CMTS voice channels during said scanning time period;
- (b) generating and storing a list of idle voice channels based solely upon information obtained as a result of said scanning, wherein said maximum reception level of each CMTS voice channel on said list is below a predetermined threshold value;
- (c) allocating at least one channel from said list to said MCS for use as a MCS control channel; and
- (d) allocating channels from said list to said MCS for use as voice channels by said MCS.

5,710,974
METHOD FOR IMPROVING THE RELIABILITY OF A HANDOVER AND CALL ESTABLISHMENT, AND A CELLULAR RADIO SYSTEM

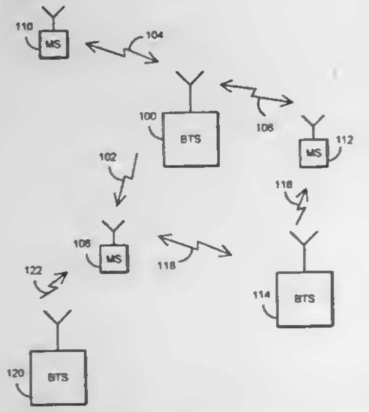
Seppo Granlund, Helsinki; Hannu Häkkinen, and Seppo Hämäläinen, both of Espoo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed May 15, 1996, Ser. No. 648,656

Claims priority, application Finland, May 17, 1995, 952396

Int. Cl.^{6} H04Q *7/00;9/00*

U.S. Cl. 455—33.2 **15 Claims**



1. A method for improving the reliability of a handover in a cellular radio system which comprises at least one base station in each cell, and a group of subscriber terminal equipments which communicate with one or more base stations, comprising steps of:
- measuring at a base station a total interference level of signals received from the terminal equipments, and
- transmitting a pilot signal with a known transmit power,
- measuring at a subscriber terminal equipment, in order to determine the need for a handover, the power levels of pilot signals received from those base stations which are on a terminal equipment maintained list of near-by base stations, and in which
- a path loss between the terminal equipment and the base stations is estimated by means of the received pilot signals,
- wherein the signal to noise ratio between the terminal equipment and the base station in the transmission direction from the terminal equipment to the base station is estimated on the basis of the total interference measured at the base station, the path loss, and the terminal equipment transmit power, and wherein
- the list maintained by each subscriber terminal equipment of near-by base stations is updated on the basis of said estimate.

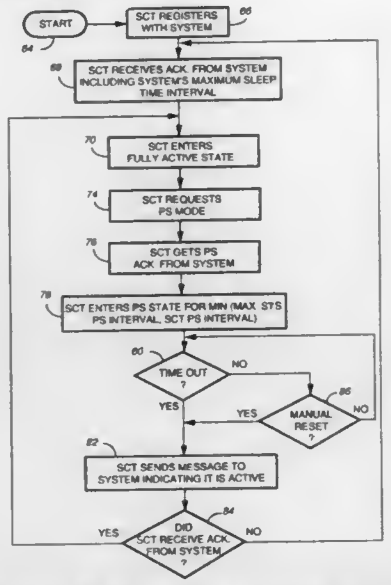
5,710,975
SELECTIVE CALL TRANSCEIVER WITH SYSTEM APPROVED POWER SAVING STATE

Richard C. Bernhardt, Wellington, and Clinton C. Powell, II, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 578,755

Int. Cl.^{6} H04Q *7/14*

U.S. Cl. 455—38.3 **13 Claims**


START
64
SCT REGISTERS WITH SYSTEM
66
68
SCT RECEIVES ACK. FROM SYSTEM INCLUDING SYSTEM'S MAXIMUM SLEEP TIME INTERVAL
70
SCT ENTERS FULLY ACTIVE STATE
74
SCT REQUESTS PS MODE
76
SCT GETS PS ACK. FROM SYSTEM
78
SCT ENTERS PS STATE FOR MIN (MAX. SYS PS INTERVAL, SCT PS INTERVAL)
80
TIME OUT ?
NO
YES
86
MANUAL RESET ?
YES
NO
82
SCT SENDS MESSAGE TO SYSTEM INDICATING IT IS ACTIVE
84
DID SCT RECEIVE ACK. FROM SYSTEM ?
YES
NO

1. For use with an asynchronous communication system that exchanges information with a selective call transceiver by transmissions that occur at random intervals, a method of establishing a power saving state within the selective call transceiver without losing information comprising:
- a) establishing a communication link between the selective call transceiver and the communication system;
- b) sending from the selective call transceiver to the communication system a signal requesting that the selective call transceiver. be permitted to enter a power saving state for a predetermined, uninterrupted power saving interval;
- c) if the communication system approves the request, sending an acknowledgment signal from the communication system to the selective call transceiver;
- d) if the acknowledgement signal indicating request aaproval is received by the selective call receiver, causing the selective call transceiver to enter the power saving state; and
- e) during the power saving interval, storing messages intended for the selective call transceiver.

5,710,976
METHOD AND APPARATUS FOR REDUCING NOISE INTERFERENCE TO IMPROVE OUTBOUND MESSAGE RELIABILITY IN A TWO-WAY MESSAGING SYSTEM

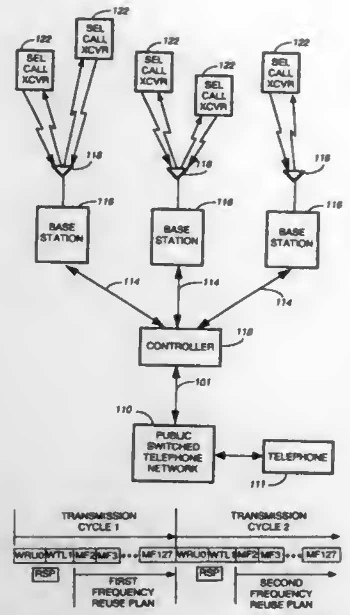
Thomas Casey Hill, Wellington, and Thomas V. D'Amico, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 18, 1996, Ser. No. 588,502

Int. Cl.^{6} H04Q *7/36*

U.S. Cl. 455—56.1 **21 Claims**

1. A method of transmitting an outbound message in a two-way messaging system having a plurality of cells employing frequency reuse, the method comprising the steps of:
- transmitting the outbound message utilizing a first frequency reuse plan throughout the plurality of cells;
- awaiting a positive acknowledgment confirming that the outbound message was received with an acceptable quality; and
- retransmitting the outbound message utilizing a second frequency reuse plan throughout the plurality of cells, in response to receiving a negative acknowledgment and also in response to failing to receive any acknowledgment within a predetermined time after transmitting the outbound message.



5,710,977
APPARATUS FOR MEASURING MULTIPATH PROPAGATION CHARACTERISTICS

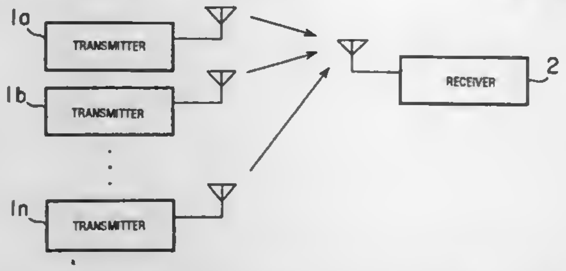
Isao Nakazawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 7, 1995, Ser. No. 472,397

Claims priority, application Japan, Aug. 31, 1994, 6-206857

Int. Cl.^{6} H04B *1/10;15/00*

U.S. Cl. 455—65 **18 Claims**



1. An apparatus for measuring multipath propagation characteristics based on a plurality of received transmitted waves that have been propagated over a plurality of different propagation paths while being subjected to multipath fading, comprising:
- a plurality of transmitters located in different spatial positions, respectively, for generating respective waves to be transmitted that each comprise a plurality of discrete spectral components which are arranged in the frequency domain such that they do not overlap each other in the same frequency band; and
- a movable receiver for simultaneously receiving the waves which have been transmitted from said respective transmitters and each propagated over a plurality of different propagation paths while being subjected to multipath fading, and measuring multipath propagation characteristics relative to the paths based on the received waves.

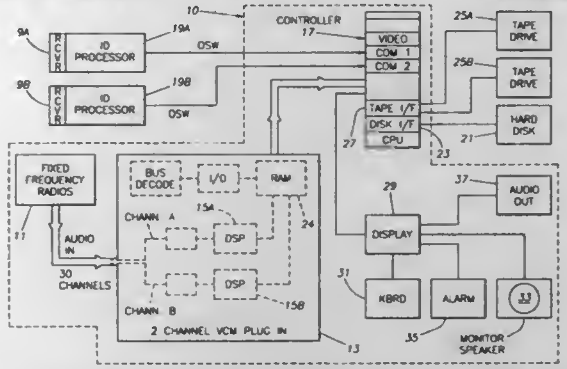
5,710,978
LOGGING RECORDER SYSTEM FOR TRUNKING RADIO

Carl J. Swift, Houston, Tex., assignor to Swift Computers, Inc., Stafford, Tex.

Continuation-in-part of Ser. No. 85,124, Jun. 29, 1993, abandoned. This application May 25, 1995, Ser. No. 450,029

Int. Cl.^{6} H04B *17/00;* **H04Q** *7/34*

U.S. Cl. 455—67.1 **40 Claims**



1. A logging recorder for a trunking radio system having a plurality of channels that carry streams of segments from unrelated conversations according to channel assignment information generated by a trunking controller, comprising:
- a plurality of fixed frequency radios each of which monitors a selected one of said plurality of channels;
- a controller which monitors said fixed frequency radios and generates identification information corresponding to said segments based upon said channel assignment information;
- means for combining each of said segments with said corresponding identification information; and
- means for storing said segments and said identification information on a storage device.

5,710,979
MONITORING A LOCAL STATION WITH FIRST AND SECOND MESSAGES USED WHEN THE LOCAL STATION IS IN NORMAL OPERATION AND IS NOT AND IS BUSY

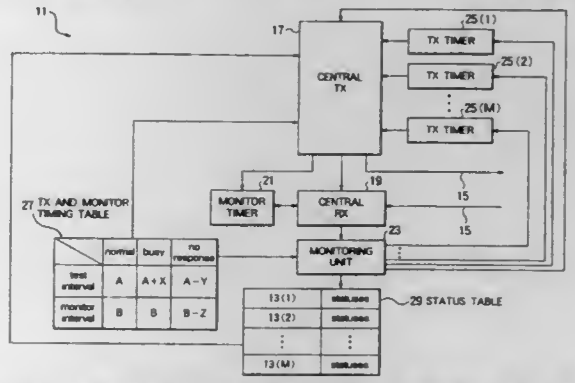
Masayoshi Tamai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,535

Claims priority, application Japan, Sep. 30, 1994, 6-261631

Int. Cl.^{6} H04B *17/00*

U.S. Cl. 455—67.1 **20 Claims**



1. A local station monitoring method of monitoring, in a communication network comprising a control station, a local station, and a transmission path for communication between said control station and said local station, said local station by said control station with transmission of a communication test command to said local station at a test interval and with reception of a response signal from said local station as regards whether or not said local station is in normal operation, comprising the steps of:

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transmitting at said local station back to said control station a first and a second response message as said response signal upon reception of said communication test command when said local station is not busy and is busy, respectively; and

using at said control station a longer interval than said test interval on subsequently transmitting said communication test command to said local station while said control station receives said second response message.

5,710,980
CELL SITE TESTING METHOD FOR PORTABLE RADIO COMMUNICATION SYSTEM

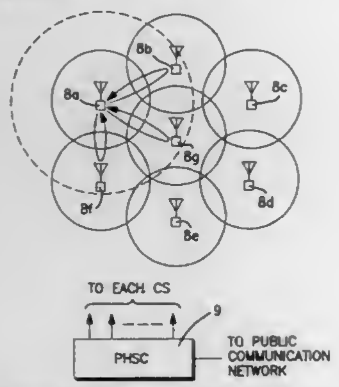
Keiichi Ueda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 630,345

Claims priority, application Japan, Apr. 21, 1995, 7-096473

Int. Cl.^{6} H04B *17/00*

U.S. Cl. 455—67.4 **2 Claims**



1. A cell site testing system for a portable radio communication system comprising a plurality of cell sites each of which is located at the center of individual cell range and performs radio communication with a portable radio terminal residing in the cell range of the cell site and allows communication between the portable radio terminal and another terminal of another communication network via a connection control equipment, wherein

each of said plurality of cell sites includes means for increasing the transmitting and receiving capacities in response to a testing instruction from said connection control equipment so that the cell range of the cell site may include adjacent ones of said cell sites, and means of transmitting a test call for producing and transmitting a test call, and

said connection control equipment performs collation between a received signal and a transmitted signal from and to an adjacent one of said plurality of cell sites, to which the testing instruction has been delivered, successively for all of said cell sites and performs determination between the normality and the abnormality of said cell sites based on obtained results of the collation.

5,710,981
PORTABLE RADIO POWER CONTROL DEVICE AND METHOD USING INCREMENTALLY DEGRADED RECEIVED SIGNALS

Seung Kil Kim, Chapel Hill, and Yongbing Wan, Cary, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

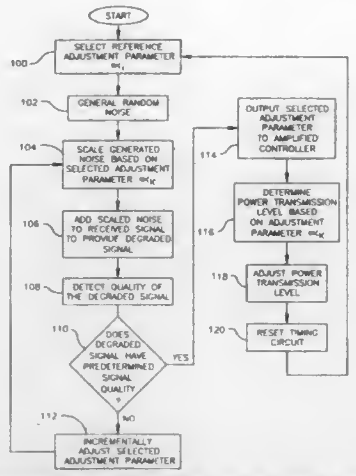
Filed May 23, 1995, Ser. No. 447,600

Int. Cl.^{6} H04B *7/00*

U.S. Cl. 455—69 **18 Claims**

1. A radio having a receiver for receiving a down-link signal and having a transmitter for transmitting an up-link signal, the radio comprising:

a. signal adjusting means for incrementally adjusting the received signal to produce a degraded signal having a predetermined signal quality, wherein each incremental degradation of the received signal produces a degraded signal having an adjustment parameter associated therewith;


START
100
SELECT REFERENCE ADJUSTMENT PARAMETER α_1
102
GENERAL RANDOM NOISE
104
SCALE GENERATED NOISE BASED ON SELECTED ADJUSTMENT PARAMETER α_K
106
ADD SCALED NOISE TO RECEIVED SIGNAL TO PROVIDE DEGRADED SIGNAL
108
DETECT QUALITY OF THE DEGRADED SIGNAL
110
DOES DEGRADED SIGNAL HAVE PREDETERMINED SIGNAL QUALITY ?
YES
NO
112
INCREMENTALLY ADJUST SELECTED ADJUSTMENT PARAMETER
114
OUTPUT SELECTED ADJUSTMENT PARAMETER TO AMPLIFIED CONTROLLER
116
DETERMINE POWER TRANSMISSION LEVEL BASED ON ADJUSTMENT PARAMETER α_K
118
ADJUST POWER TRANSMISSION LEVEL
120
RESET TIMING CIRCUIT

b. detecting means for detecting the degraded signal having the predetermined signal quality, wherein the adjustment parameter associated with the degraded signal having the predetermined signal quality is a threshold adjustment parameter; and

c. means for determining the transmission power level for the radio based on the threshold adjustment parameter.

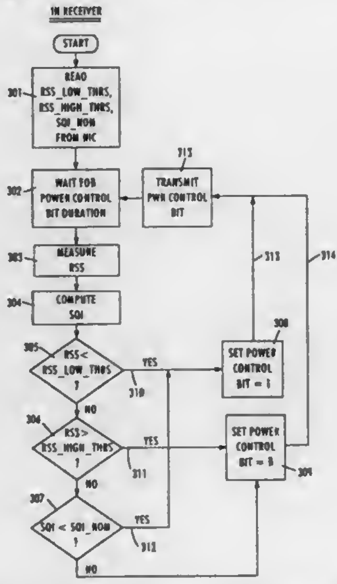
5,710,982
POWER CONTROL FOR TDMA MOBILE SATELLITE COMMUNICATION SYSTEM

Enrique Laborde, Gaithersburg; James Eryx Malcolm, Bethesda; Robert Carroll Marquart, Germantown, and Adrian Morris, Gaithersburg, all of Md., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 29, 1995, Ser. No. 496,633

Int. Cl.^{6} H04B *1/00;7/00*

U.S. Cl. 455—69 **9 Claims**



1. A method of adjusting transmission power of a transmitter during a communication with a receiver, said transmitter transmitting a burst signal to said receiver, said method comprising the steps of:

broadcasting an upper threshold signal strength value, a lower threshold signal strength value, and a nominal signal quality value to the receiver;

measuring a received signal strength of said burst signal received by said receiver;

developing a signal quality value for said burst signal received by said receiver;

setting a power control bit to a first value if said received signal strength is lower than said lower threshold signal strength value;

setting said power control bit to a second value if said received signal strength is higher than said upper threshold signal strength value;

setting said power control bit to the first value if said signal quality value is lower than said nominal signal quality value and said received strength signal is both higher than said lower threshold signal strength value and lower than said upper threshold signal strength value; and,

setting said power control bit to the second value if said signal quality value is higher than said nominal signal quality value and said received strength signal is both higher than said lower threshold signal strength value and lower than said upper threshold signal strength value.

5,710,983
CHANNEL SELECTING SYSTEM UTILIZING A RANDOM NUMBER GENERATOR HAVING A SHIFT REGISTER, SWITCHES AND BOOLEAN FUNCTION CIRCUIT TO RANDOMLY SELECT A CHANNEL FREQUENCY

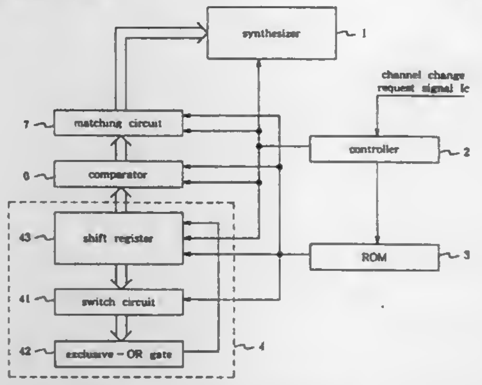
Ulrich Faber, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 16, 1996, Ser. No. 648,956

Claims priority, application Japan, May 16, 1995, 7-117162

Int. Cl.^{6} H04B *1/40*

U.S. Cl. 455—76 **8 Claims**



1. A channel selecting system comprising:

a synthesizer for generating a signal in a predetermined frequency range with established data of a frequency-dividing ratio;

a random data generator having a shift register having a certain number of output terminals, a switch circuit having a certain number of switches connected respectively to the output terminals of said shift register, and an exclusive-OR gate for exclusive-ORing output signals respectively from said switches and feeding an output signal back to an input terminal of said shift register, to generate data of the frequency-dividing ratio for supplying an output signal from said shift register to randomly select a channel of said synthesizer; and

a memory for storing initial settings for said shift register and open and closed states of said switches.

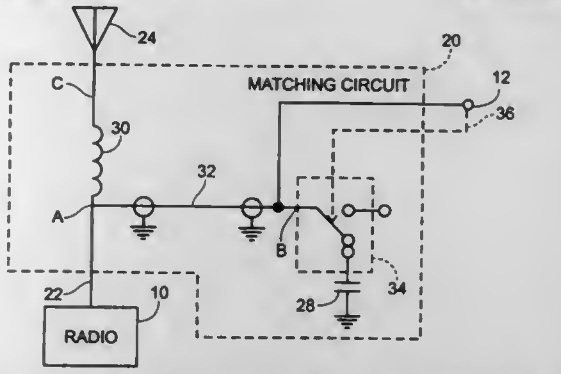
5,710,984
RADIO TRANSCEIVER WITH IMPEDANCE MATCHED TEST PORT

Douglas James Millar; Tatsuya Uetake, and Tai Won Youn, all of Vancouver, Wash., assignors to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 20, 1995, Ser. No. 546,175

Int. Cl.^{6} H04B *1/44*

U.S. Cl. 455—80 **20 Claims**



1. A radio transceiver for sending and receiving signals, with an antenna interconnect having a first impedance, the radio transceiver comprising:

a) a selectively enabled matching circuit operatively connected to the antenna interconnect, for transforming the impedance of an external antenna having a second impedance to match the first impedance;

b) a test port operatively connected to the antenna interconnect;

c) at least a first tuning element which is operatively connected to said matching circuit to enable said matching circuit when no external device is connected to said test port, said first tuning element being operatively disconnected from said matching circuit to disable said matching circuit when an external device is connected to said test port, the impedance of said test port matching the first impedance whenever said matching circuit is disabled, whereby external devices having impedances that match the first impedance are selectively connectable to said test port.

5,710,985
WIRELESS PORTABLE TELEPHONE HAVING ANTENNA RETRACTION DETECTION MEANS

Kiyoshi Matsumoto, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 383,103

Claims priority, application Japan, Feb. 17, 1994, 6-020685

Int. Cl.^{6} H04B *1/38*

U.S. Cl. 455—89 **7 Claims**

1. A wireless portable telephone for use in a wireless telephone system, comprising:

means for carrying out a communication transmission and reception sequence with a base station whereby a communication link is established between said wireless telephone and said base station;

data transmission means for carrying out a selected portion of said sequence by data transmission from said wireless telephone to said base station;

data transmission monitor means for detecting whether said data transmission by said data transmission means has succeeded or not in said sequence of establishing a communication link between said wireless telephone and said base station;

an antenna section;

antenna retraction monitor means for detecting whether said antenna section is retracted or not; and

warning means for giving warning to a user of said telephone when said data transmission monitor means detects that the data transmission by said data transmission means has failed

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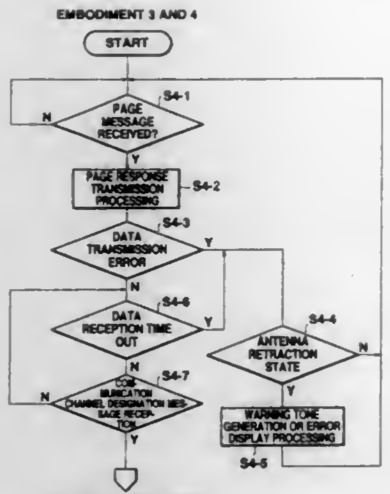

EMBODIMENT 3 AND 4
START
PAGE MESSAGE RECEIVED?
S4-1
N
Y
PAGE RESPONSE TRANSMISSION PROCESSING
S4-2
DATA TRANSMISSION ERROR
S4-3
DATA RECEPTION TIME OUT
S4-6
ANTENNA RETRACTION STATE
S4-4
COMMUNICATION CHANNEL DESIGNATION MESSAGE RECEPTION
S4-7
WARNING TONE GENERATION OR ERROR DISPLAY PROCESSING
S4-5
CALL-IN COMMUNICATION PROCESSING

and said antenna retraction monitor means detects that said antenna section is retracted.

5,710,986
DUAL MODE RADIO COMMUNICATION APPARATUS HAVING FUNCTION OF SELECTIVELY DESIGNATING ANALOG OR DIGITAL MODE

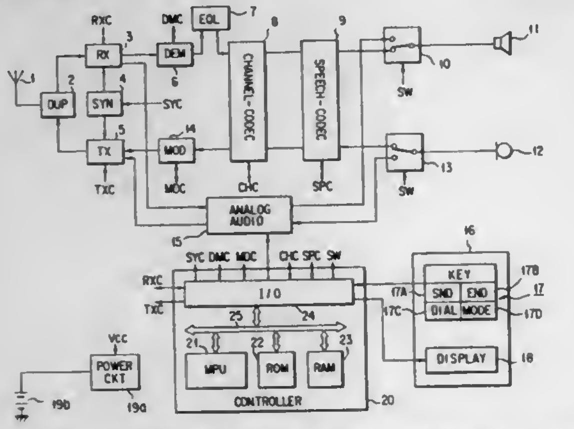
Arata Obayashi; Takumi Haga; Naoyuki Wakabayashi, and Takashi Sakagawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 13,644, Feb. 4, 1993. This application Mar. 15, 1996, Ser. No. 617,942

Claims priority, application Japan, Feb. 5, 1992, 4-20075; Feb. 5, 1992, 4-20076; Feb. 5, 1992, 4-20077; Feb. 5, 1992, 4-20078

Int. Cl.^{6} H04Q *7/22;7/32*

U.S. Cl. 455—89 **8 Claims**



5. A radio communication apparatus used in a dual mode cellular radio system for selectively transmitting a communication signal in an analog or digital mode through a radio link established between a base station and said radio communication apparatus, comprising:

- a mode designation input apparatus for selectively designating and inputting a desired mode from the analog mode and the digital mode;
- a mode comparison circuit for comparing the desired mode with the mode currently used in transmission of the communication signal when said mode designation input apparatus designates and inputs the desired mode during the transmission of the communication signal; and
- a change control circuit for transmitting to said base station a mode change request signal for changing the mode currently used in the transmission of the communication signal into the desired mode when said mode comparison circuit detects that the mode currently used in the transmission of the communication signal does not coincide with the desired mode, and for inhibiting the mode change request signal from being transmitted to said base station when said mode comparison circuit detects that the mode currently used in the transmission of the communication signal coincides with the desired mode.

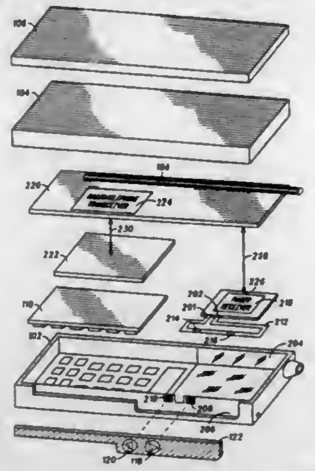
5,710,987
RECEIVER HAVING CONCEALED EXTERNAL ANTENNA

Thomas Eugene Paulick, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 23,234, Feb. 25, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,376

Int. Cl.^{6} H04B *1/03;1/08*

U.S. Cl. 455—90 **23 Claims**



1. A combination radiotelephone/pager unit including a user interface, comprising:

- a housing enclosing radiotelephone and pager circuitry;
- a radiotelephone antenna coupled to the radiotelephone circuitry; and
- a pager antenna coupled to the pager circuitry;
- wherein the pager antenna forms a loop surrounding at least a portion of the user interface and is disposed between an outside surface of the housing and the at least a portion of the user interface.

5,710,988
MOBILE DATA COMMUNICATION DEVICE

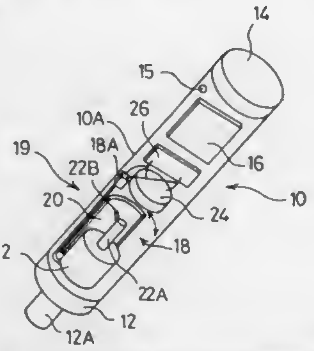
Makoto Suzuki, and Takemi Yamamoto, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 18, 1996, Ser. No. 665,797

Claims priority, application Japan, Jul. 12, 1995, 7-176157

Int. Cl.^{6} H04B *1/38*

U.S. Cl. 455—90 **27 Claims**



1. A mobile data communication device comprising:

- an elongated body frame having a longitudinal axis and opposed ends and forming a holding part configured to be held by an operator;
- a data communication device for at least one of transmitting and receiving data installed on at least one end of the body frame;
- a control circuit installed within said body frame coupled to the data communication device; and
- a power generating device installed within the body frame for generating and supplying power to the control circuit,
- wherein said power generating device is permanently secured within the body frame and does not include electric contacts to an external power source and comprises a generator that generates power due to movement of the device during operation.

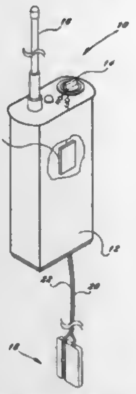
5,710,989
WATER-ACTIVATED EMERGENCY RADIO BEACON

John F. Flood, Plantation, Fla., assignor to ACR Electronics, Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 453,446, May 30, 1995, which is a continuation of Ser. No. 116,465, Sep. 3, 1993. This application Sep. 17, 1996, Ser. No. 714,829

Int. Cl.^{6} H04B *1/034*

U.S. Cl. 455—100 **4 Claims**



1. An emergency position indicating radio beacon for personal use and for attachment to personal floatation devices, comprising:

- a waterproof housing arranged to be worn by a user or attached to a personal floatation device;
- an electrical power supply mounted within said housing;
- circuit means mounted inside said housing for generating radio frequency signals for broadcast;
- an antenna connected to said housing exterior and electrically connected to said circuit means for broadcasting and transmitting said radio frequency signals from said antenna as a radio beacon;
- a manually actuated electrical switch having an on and an off mode for connecting said power supply to said radio frequency generating circuit means;
- a water-activated electrical switch connected to said circuit means, said water-activated electrical switch being remotely disposed from said waterproof housing, said water-activated switch being tethered to said housing by electrical conductors, whereby whenever said water-activated switch is immersed in water and said manually activated switch is in an on mode, said radio beacon will transmit radio frequency signals; and
- memory circuit means connected to said water-activated switch for activating said radio frequency circuit means for a predetermined period of time whenever said water-activated switch is removed from said water immersion to provide uninterrupted radio frequency signal transmissions while said emergency position indicating radio beacon is in use;
- said water activated switch includes:
- an essentially planar electrically insulated barrier having a pair of recessed grooves separated from each other by a first predetermined distance, said grooves offset from each other by a second predetermined distance, said grooves essentially parallel to each other, said first predetermined distance equal to the separation between said parallel grooves, said grooves positioned on opposite surfaces of said electrically insulated barrier, said second predetermined distance defined by a predetermined thickness of said electrically insulated barrier; and
- first and second electrical conductors, each connected at one end to said radio frequency transmitting circuitry and said power supply, and at the opposite end, each connected within said separated grooves mounted in said electrically insulated barrier, said conductors including an insulating means covering said wire conductors up to near the ends of the conductors, said conductors having an exposed electrical portion mounted within said grooves, said conductive wire ends strategically spaced apart by said first and said second predetermined distances to require immersion in an ionizing liquid to complete circuit contact across said electrical conductor ends.

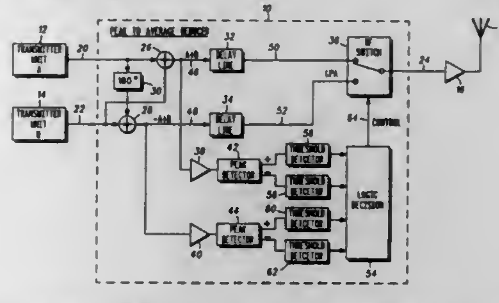
5,710,990
TRANSMITTER WHICH ADJUSTS PEAK-TO-AVERAGE POWER OF A MULTICARRIER SIGNAL BY SWITCHING BETWEEN A GROUP OF CHANNELS AND A PHASE-ADJUSTED GROUP OF CHANNELS

James Frank Long, Glen Ellyn, Ill., and Yuda Y. Luz, Euless, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 21, 1996, Ser. No. 619,391

Int. Cl.^{6} H04B *1/02;* **H01Q** *11/12;1/04*

U.S. Cl. 455—103 **22 Claims**



1. An apparatus for adjusting peak-to-average power of a multicarrier signal, the apparatus comprising:

- a first combiner responsive to a first group of channels and a second group of channels and producing a first combined signal;
- a phase-changing device responsive to the first group of channels and producing a group of phase-adjusted channels;
- a second combiner responsive to the phase-adjusted channels and the second group of channels and producing a second combined signal; and
- a switch responsive to the first and second combiners, the switch selecting one of the first and second combined signals.

5,710,991
APPARATUS AND METHOD FOR CONTROLLING AND MEASURING OUTPUT POWER OF TRANSMITTER

Chang-Yong Lee, Ahnyang, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 31, 1995, Ser. No. 454,722

Claims priority, application Rep. of Korea, May 31, 1994, 12168/1994

Int. Cl.^{6} H01Q *11/12*

U.S. Cl. 455—126 **36 Claims**

34. A method for controlling the output power of a transmitter, said method comprising the steps of:

- sensing said output power of said transmitter and outputting a voltage level signal indicative of the sensed output power;
- generating an attenuated signal by attenuating said voltage level signal in response to an attenuation ratio control signal;
- comparing a maximum power level of said attenuated signal to a reference voltage;

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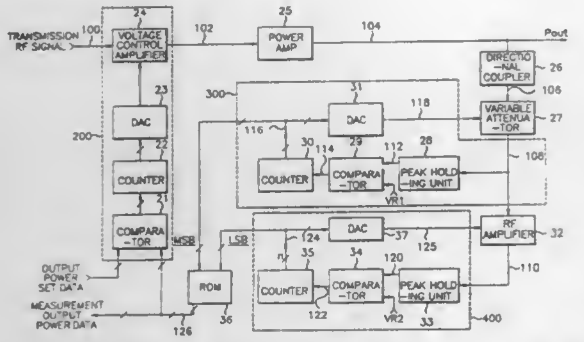
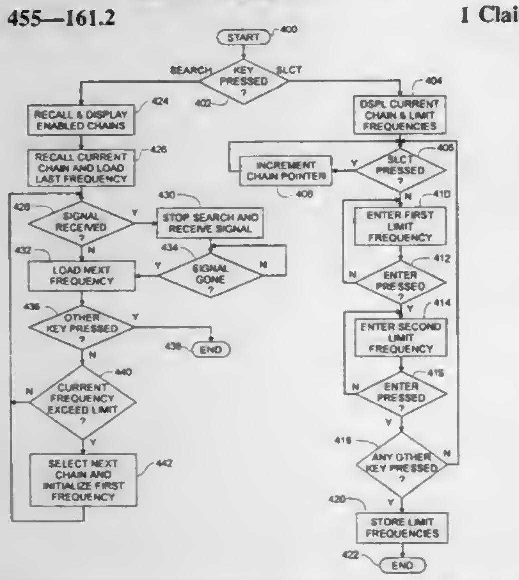


generating first address data in response to a result of said comparing step;
outputting correction data from a read only memory as measured output power data in response to said first address data;
inputting output power set data indicative of a desired output power level; and
amplifying a voltage level of a radio frequency signal to be transmitted in response to a difference between said measured output power data and said output power set data.

5,710,992
CHAIN SEARCH IN A SCANNING RECEIVER

Daisuke Sawada, Dallas, and Paul E. Kearney, Tarrant, both of Tex., assignors to Uniden America Corporation, Fort Worth, Tex.

Filed Jul. 12, 1996, Ser. No. 678,961
Int. Cl.⁶ H04B *1/18*
U.S. Cl. 455—161.2 **1 Claim**

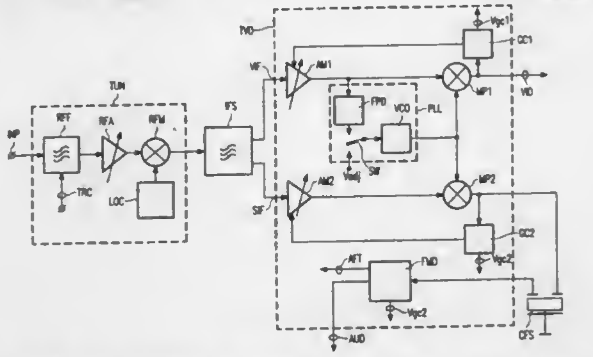


1. A method of searching for active signal frequencies from within a plurality of bands of frequencies in a scanning receiver having a controller and a chain memory, the chain memory being suitable for storing a plurality of chains and each chain having an upper limit frequency storage location and a lower limit frequency storage location, and each chain having an enable bit storage location and each chain identified by a chain number, the method comprising the steps of:
specifying at least two of said plurality of chains;
specifying an upper and lower limit frequency for said at least two of said chains;
storing said upper and lower limit frequencies in the chain memory;
enabling at least two of the enable bits in the chain memory;
automatically scanning a plurality of frequencies within the bands of frequencies defined by said at least two of said plurality of chains in accordance with said upper and lower limit frequencies, and
upon detecting a signal on one of said plurality of frequencies, receiving said signal.

5,710,993
COMBINED TV/FM RECEIVER

Johannes H. A. Brekelmans, Singapore, Singapore, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1995, Ser. No. 575,536
Claims priority, application European Pat. Off., Dec. 23, 1994, 94203743
Int. Cl.⁶ H04B *1/18;* **H04N** *5/46*
U.S. Cl. 455—188.1 **4 Claims**

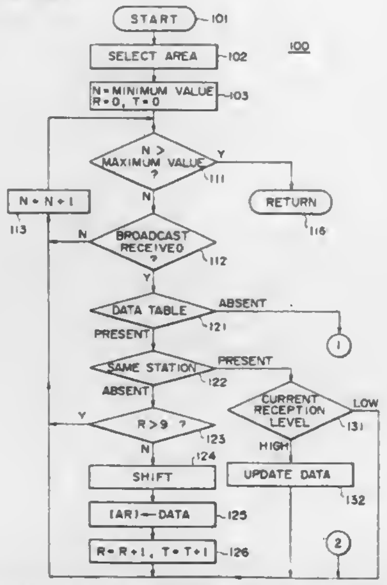


1. An arrangement for receiving both TV and FM broadcast signals, the arrangement comprising a TV tuner for a first frequency conversion of an FM broadcast signal, and a combination of a mixer and an oscillator for a second frequency conversion of the FM broadcast signal, characterized in that said oscillator is included in a phase-lock loop for synchronous detection of a TV intermediate frequency signal, and in that said phase-lock loop comprises means for de-activating the phase-lock loop in the case of FM broadcast signal reception.

5,710,994
SYNTHESIZED TYPE RECEIVER WITH PLL

Shinichi Shiota, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 29, 1996, Ser. No. 697,781
Claims priority, application Japan, Sep. 6, 1995, 7-254707; Sep. 13, 1995, 7-260880
Int. Cl.⁶ H04B *1/18*
U.S. Cl. 455—260 **4 Claims**

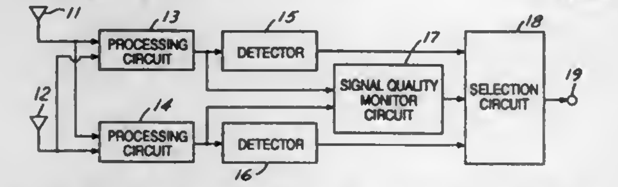


1. A synthesizer type receiver wherein frequency conversion of a received signal is performed by the use of a signal formed in a phase locked loop (PLL), and the frequency of said signal is changed through change of the frequency division ratio of a variable frequency divider in said PLL to thereby change the reception frequency, said receiver comprising:
a detector for detecting reception of a broadcast wave signal;
a memory where data areas correspond respectively to a plurality of station selector keys; and
a control unit having a data table with a data section relative to frequencies of broadcasting stations receivable in each of plural divided areas of the whole area where said receiver is to be used, said control unit being so constituted that, in a preset mode, the reception frequency band is scanned by changing the frequency of said signal through change of said frequency division ratio, and when the reception frequency at the time of detection of the broadcast wave signal by said detector during such scan is included in the frequency data in any preselected one of the divided areas in said data table, the data relative to the reception frequency is stored in the data area of said memory, and the broadcasting station being currently received is preset in a station selector key corresponding to a data stored area in accordance with such storage.

5,710,995
ADAPTIVE ANTENNA RECEIVER

Yoshihiko Akaiwa, Munakata; Mitsunori Morishima, and Shunji Miyahara, both of Yokohama, all of Japan, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1997, Ser. No. 782,187
Int. Cl.⁶ H04B *1/06*
U.S. Cl. 455—277.2 **11 Claims**



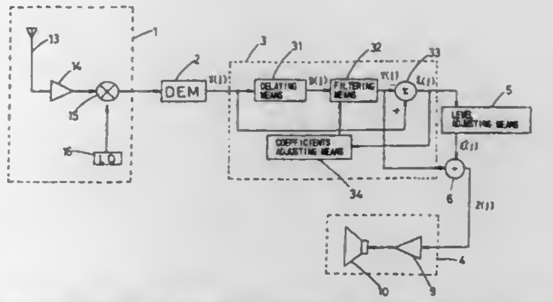
1. A radio receiver adapted to be coupled to at least two spaced-apart receiving antennas generating antenna signals in response to radio broadcast signals, said receiver comprising:
a correction circuit for receiving said antenna signals and synthesizing a corrected signal as a weighted combination of said antenna signals;
a diversity selecting circuit for receiving said antenna signals and generating a diversity signal corresponding to a selection of a best one of said antenna signals according to a diversity criterion;
a signal quality monitor circuit coupled to said correction circuit and said diversity selecting circuit for measuring a predetermined quality of said corrected signal and said diversity signal; and
a selection circuit for outputting either said corrected signal or said diversity signal in response to said measured predetermined quality.

5,710,996
ADAPTIVE NOISE CANCELING SYSTEM AND FM RADIO COMMUNICATION RECEIVER USING SAID SYSTEM

Shigeki Kajimoto, Osaka, and Weimin Sun, Nara, both of Japan, assignors to Icom Incorporated, Osaka, Japan

Filed May 26, 1995, Ser. No. 452,282
Claims priority, application Japan, Sep. 30, 1994, 6-237455
Int. Cl.⁶ H04B *1/12*
U.S. Cl. 455—309 **3 Claims**

1. A frequency modulation radio communication receiver using an adaptive noise canceling system for improving clarity of an output signal, said receiver comprising:

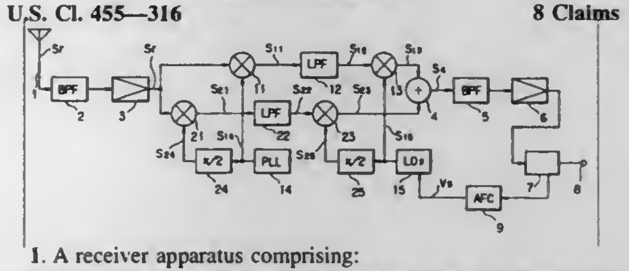


a radio receiving means for receiving a radio frequency signal;
a demodulating means for demodulating the radio frequency signal, an output of said demodulating means being a signal X(j);
an adaptive noise canceling system for improving a S/N ratio and clarity of an output signal Z(j);
an audio frequency signal outputting means for outputting an audio signal of the output signal Z(j) of said adaptive noise canceling system;
wherein said adaptive noise canceling system includes:
a delaying means for delaying the demodulated signal X(j) by a fixed time delay δ, an output of said delaying means being a signal D(j);
a filtering means, having as an input the signal D(j), for filtering the delayed signal D(j), an output of said filtering means comprising a signal Y(j);
a subtracting means, having as inputs the signals X(j) and Y(j), for subtracting the signal Y(j) from the signal X(j), an output of said subtracting means being an error signal ϵ(j);
a coefficients adjusting means, having as an input the error signal ϵ(j), for adaptively adjusting coefficients of said filtering means using a least-means-square (LMS) algorithm, an output of said coefficients adjusting means being the coefficients of said filtering means;
a level adjusting means, having as an input the error signal ϵ(j), for adjusting a level of the error signal ϵ(j), an output of said level adjusting means being a signal ϵ'(j);
an adding means for adding the level adjusted signal ϵ'(j) to the output signal Y(j) of said filtering means, an output of the adding means being the output signal Z(j).

5,710,997
SUPERHETERODYNE RECEIVER APPARATUS

Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,885
Claims priority, application Japan, Jan. 25, 1995, 7-028795
Int. Cl.⁶ H04B *1/06*
U.S. Cl. 455—316 **8 Claims**



1. A receiver apparatus comprising:
first local oscillating means for generating a pair of first locally oscillated signals out of phase with each other by ninety degrees;
a first pair of mixer circuits for mixing a received signal having a high frequency with said pair of first locally oscillated signals to produce a pair of first intermediate frequency signals having a relatively low frequency;
second local oscillating means for generating a pair of second locally oscillated signals out of phase with each other by ninety degrees;
a second pair of mixer circuits for mixing said pair of first intermediate frequency signals with said pair of second

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locally oscillated signals, respectively, to produce a pair of second intermediate frequency signals having a predetermined frequency;

an adding circuit for adding said pair of second intermediate frequency signals to each other;

a bandpass filter for receiving an output signal from said adding circuit; and

a demodulation circuit for reproducing an original received signal from the output of said bandpass filter,

wherein said second local oscillating means comprises a capacitor and a resistor connected to determine a second locally oscillated intermediate frequency and said bandpass filter comprises a capacitor and a resistor connected to determine a center frequency of said bandpass filter.

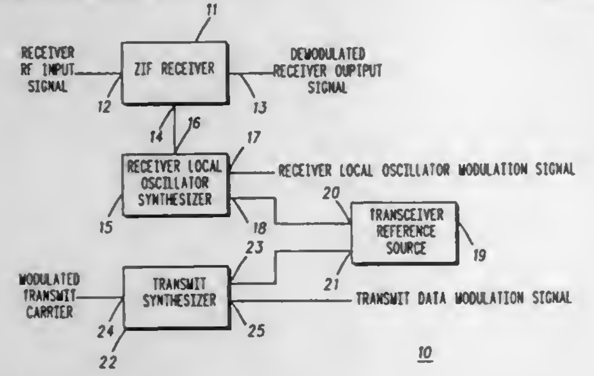
5,710,998
METHOD AND APPARATUS FOR IMPROVED ZERO INTERMEDIATE FREQUENCY RECEIVER LATENCY

George Francis Opas, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1995, Ser. No. 574,542

Int. Cl.^{6} H04B *1/16*

U.S. Cl. 455—324 **7 Claims**


11
RECEIVER RF INPUT SIGNAL
ZIF RECEIVER
DEMODULATED RECEIVER OUTPUT SIGNAL
12
13
14
16
17
RECEIVER LOCAL OSCILLATOR SYNTHESIZER
RECEIVER LOCAL OSCILLATOR MODULATION SIGNAL
20
TRANSCEIVER REFERENCE SOURCE
15
18
23
19
21
MODULATED TRANSMIT CARRIER
TRANSMIT SYNTHESIZER
TRANSMIT DATA MODULATION SIGNAL
24
25
22
10

1. A receiver comprising:

a zero intermediate frequency (ZIF) receiver having a receiver bandwidth and a first input for receiving a carrier frequency having an associated carrier frequency error; and

a receiver local oscillator source having an output which couples a local oscillator frequency to a second input of the ZIF receiver, the local oscillator frequency being offset in frequency from the carrier frequency by an offset greater than a sum of an absolute value of frequency error in the receive local oscillator and an absolute value of the frequency error in the carrier.

5,710,999
RADIO FREQUENCY APPARATUS

Akio Iwase; Shiro Yasue; Nobuyoshi Hizuka, all of Aichi Prefecture; Kohei Tanaka, Gifu Prefecture, and Tomiyasu Chiba, Nagoya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 181,281, Jan. 13, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 640,426

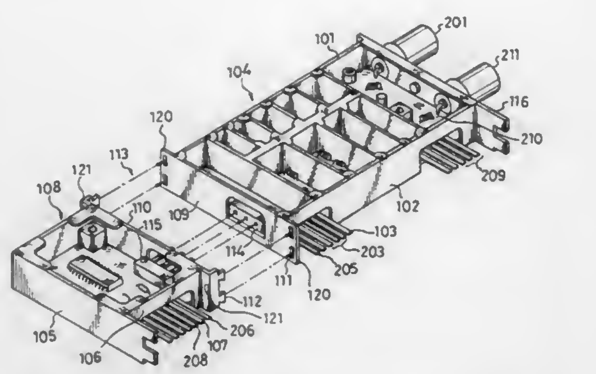
Claims priority, application Japan, Jan. 29, 1993, 5-014163

Int. Cl.^{6} H04B *1/06*

U.S. Cl. 455—349 **29 Clalms**

1. A radio frequency apparatus comprising:

a tuner unit which includes
  a tuner unit metal housing which has a connection portion,
  a tuner input terminal for receiving a radio frequency signal,
  a mixer circuit which is connected for receiving a radio frequency signal of said tuner input terminal,
  an oscillation circuit which outputs a signal having a designated frequency based on a receiving channel to said mixer circuit, and



  a tuner output terminal for outputting an intermediate frequency signal of said mixer circuit,

wherein said mixer circuit and said oscillation circuit are disposed in said tuner unit metal housing, and said tuner unit is selected from a plurality of such tuner units which are of different kinds but which have a common design for said connection portion,

a demodulation unit which includes
  a demodulation unit metal housing which has a connection portion,
  a demodulation input terminal for receiving said intermediate frequency signal of said tuner output terminal,
  a demodulation circuit which is connected to receive an intermediate frequency signal of said demodulation input terminal, and which is disposed in said demodulation unit metal housing, and
  a demodulation output terminal for outputting a signal of said demodulation circuit,

wherein said demodulation unit is selected from a plurality of such demodulation units which are of different kinds but which have a common design for said connection portion, and

connecting means connecting an outside wall of said tuner unit metal housing to an outside wall of said demodulation unit metal housing by attaching said connection portion of said tuner unit metal housing to said connection portion of said demodulation unit metal housing, whereby said tuner unit metal housing and said demodulation unit metal housing are connected together to form a unitary body.

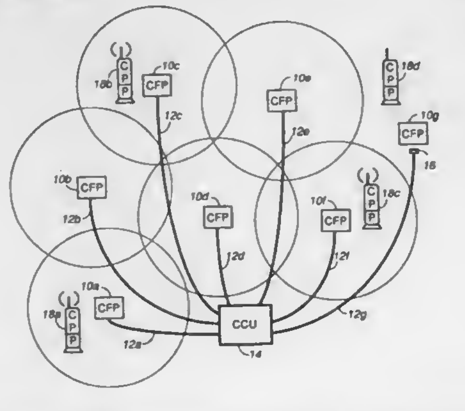
5,711,000
TOPOLOGY VERIFICATION PROCESS FOR CONTROLLING A PERSONAL COMMUNICATION SERVICES SYSTEM

David Charles Ploeg, Dunrobin; Sammy John Onsy, Stittsville, and Kasper Reinink, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 31, 1995, Ser. No. 521,848

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—423 **7 Claims**



1. A topology verification process for a Personal Communication Services (PCS) system which includes a plurality of Cordless Fixed Parts (CFP)s each for transmitting and receiving signals therefrom, comprising the steps of:

a) transmitting a test signal from a selected one of the plurality of CFPs;

b) measuring the Received Signal Strength Indication (RSSI) of the transmitted test signal received by each of the other CFPs to provide a RSSI vector for each CFP;

c) selecting other ones of the plurality of CFPs and repeating steps a) and b);

d) mapping the spatial relationships of the CFPs relative to each other from the RSSI vector measurements;

e) repeating steps a) to d) in response to selected criteria; and

f) comparing the most recent mapped spatial relationships with the initial mapped spatial relationships, to detect changes in the topology of the CFPs in the system, which is highly indicative of a change in geographic area of operation of the PCS system.

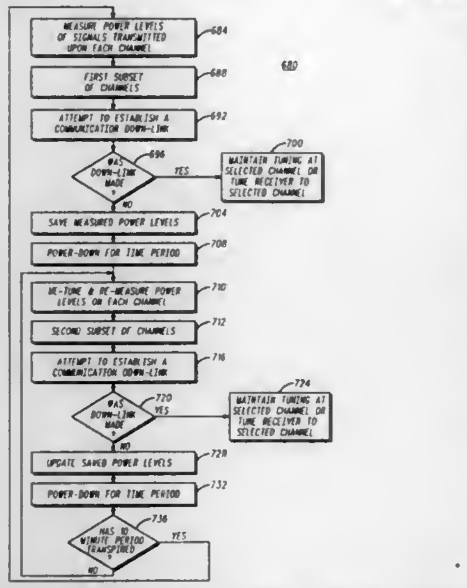
5,711,001
METHOD AND CIRCUIT FOR ACQUISITION BY A RADIO RECEIVER

Christopher F. Bussan, Mundelein; Patrick J. Marry, Crystal Lake; Duane C. Rabe, Hawthorn Woods, all of Ill.; Charles P. Binzel, Bristol, Wis., and Arvind S. Arora, Arlington Heights, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 268,389, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 880,808, May 8, 1992, abandoned, and Ser. No. 379,858, Jan. 27, 1995, abandoned, which is a continuation of Ser. No. 51,108, Apr. 21, 1993, abandoned. This application May 29, 1996, Ser. No. 657,694

Int. Cl.^{6} H04B *7/26;* **H04Q** *7/22*

U.S. Cl. 455—432 **30 Claims**


MEASURE POWER LEVELS OF SIGNALS TRANSMITTED UPON EACH CHANNEL
684
FIRST SUBSET OF CHANNELS
688
680
ATTEMPT TO ESTABLISH A COMMUNICATION DOWN-LINK
692
WAS DOWN-LINK MADE
696
YES
NO
700
MAINTAIN TIMING AT SELECTED CHANNEL OR TUNE RECEIVER TO SELECTED CHANNEL
SAVE MEASURED POWER LEVELS
704
POWER-DOWN FOR TIME PERIOD
708
RE-TUNE & RE-MEASURE POWER LEVELS ON EACH CHANNEL
710
SECOND SUBSET OF CHANNELS
712
ATTEMPT TO ESTABLISH A COMMUNICATION DOWN-LINK
716
WAS DOWN-LINK MADE
720
YES
NO
724
MAINTAIN TIMING AT SELECTED CHANNEL OR TUNE RECEIVER TO SELECTED CHANNEL
UPDATE SAVED POWER LEVELS
728
POWER-DOWN FOR TIME PERIOD
732
HAS 10 MINUTE PERIOD TRANSPIRED ?
736
YES
NO

16. A method for operating a radio receiver to receive a communication signal transmitted upon a channel of a set of channels defined upon a frequency band by a transmitter of a group of remote transmitters, said method comprising the steps of:

(a) initially measuring power levels of communication signals transmitted upon individual ones of channels of a set of channels;

(b) storing measured power levels of channels;

(c) re-measuring power levels of communication signals transmitted upon the channels,

(d) selecting channels re-measured in said step (c) having communication signals exhibiting power levels above a level related to the previously measured power levels stored in said step (b),

(e) forming a subset of channels using at least those channels selected in step (d),

(f) attempting to decode data on the channels of the subset to determine whether a communication link is effectuated between the radio receiver and individual ones of the transmitters, and

(g) when said step (f) determines that a communication link is effectuated, operating the radio receiver on a decodable channel.

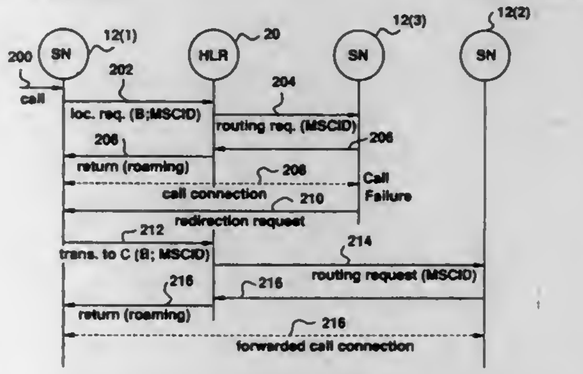
5,711,002
TRANSFER-TO C-NUMBER MESSAGE TRIGGERING OF A ROUTING REQUEST MESSAGE WITHIN A CELLULAR TELEPHONE NETWORK

George Foti, DDO, Canada, assignor to Telefonaktiebolaget LM Ericsson (Publ), Stockholm, Sweden

Filed May 14, 1996, Ser. No. 648,352

Int. Cl.^{6} H04Q *7/38*

U.S. Cl. 455—433 **39 Claims**



1. In a cellular telephone network including a present switching node handling a call dialed to a B-number, a home location register storing transfer-to C-numbers for the dialed B-number, and a serving switching node serving a certain one of the C-numbers, a method for effectuating a call transfer set-up for the call, comprising the steps of:

responsive to a redirection initiator for the call, transmitting a transfer-to C-number request from the present switching node to the home location register, the transfer-to C-number request including the B-number and an identification number for the present switching node;

processing in the home location register of the B-number to retrieve the certain C-number;

processing in the home location register of the certain C-number, without having previously returned the C-number to the present switching node no determine the serving switching node; and

transmitting a routing request from the home location register co the serving switching node to pro-route the call for transfer to the C-number, the routing requesting including the identification number for the present switching node as provided in the transfer-to C-number request.

5,711,003
METHOD FOR DETERMINING TIMING ADVANCE DURING HANDOVER

Pierre Dupuy, Paris, France, assignor to Alcatel Mobile Communication France, Paris, France

PCT No. PCT/FR94/00561, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/27383, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 545,869

Claims priority, application France, May 14, 1993, 93 05833

Int. Cl.^{6} H04B *7/26;* **H04J** *3/16*

U.S. Cl. 455—436 **19 Clalms**

1. A method for handover of a communication link with a mobile from an old base transceiver station of a first cell of a

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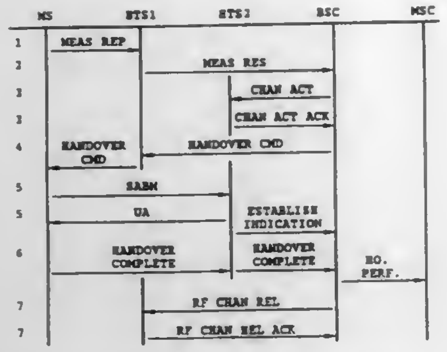


cellular mobile radio network to a new base transceiver station of a second cell of the cellular mobile radio network, the method comprising the steps of

receiving at said mobile a handover command;

instructing, in said handover command, said mobile not to transmit access bursts to said new base transceiver station

determining, by said mobile, a new timing advance with which said mobile must delay transmission of its messages to said new base transceiver station if said new timing advance is not communicated to said mobile in said handover command; and

without transmitting access bursts, transmitting from said mobile a message containing connection set up information or wanted data to said new base transceiver station, said message being transmitted using said new timing advance.

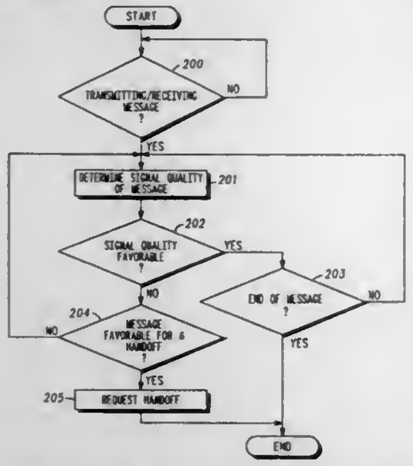
5,711,004
METHOD FOR MINIMIZING MESSAGE INTERRUPTIONS DURING HAND-OFF IN A MULTI-SITE RADIO

Darek Blasiak, Chicago; Jeff Pfeil, Bartlett, and Paul M. Erickson, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 397,307, Mar. 2, 1995, abandoned, which is a continuation of Ser. No. 96,116, Jul. 22, 1993, abandoned. This application Sep. 6, 1996, Ser. No. 709,419

Int. Cl.^{6} H04Q *7/00;9/00*

U.S. Cl. 455—436 **15 Claims**


START
200
TRANSMITTING/RECEIVING MESSAGE ?
NO
YES
DETERMINE SIGNAL QUALITY OF MESSAGE
201
202
SIGNAL QUALITY FAVORABLE ?
YES
NO
203
END OF MESSAGE ?
NO
YES
204
MESSAGE FAVORABLE FOR A HANDOFF ?
NO
YES
205
REQUEST HANDOFF
END

1. In a multi-site, half-duplex, trunked communication system including a first site controller, a second site controller, a transmitting communication unit, and at least one receiving communication unit, a method of minimizing loss of interruptions of a randomly sourced message of unknown duration and varying information rate transmitted over a carrier signal, to cause minimal information loss during a hand-off operation, by any of said at least one receiving unit, from the first site controller to the second site controller, each said at least one receiving unit including a traffic discriminating means for identifying audio holes in the transmission of said message and means for identifying a traffic slow condition, the method comprising the receiving unit performed steps of:

analyzing, by the associated traffic discriminating means, the carrier signal as a function of signal quality to identify a degraded signal condition;

analyzing, by the associated means for identifying a traffic-slow condition, the sourced message, as a function of at least one of its duration and its information rate, to identify a window-of-favorability condition; and

performing a hand-off operation, with minimal information loss, on the basis of said degraded signal condition and said window-of-favorability condition.

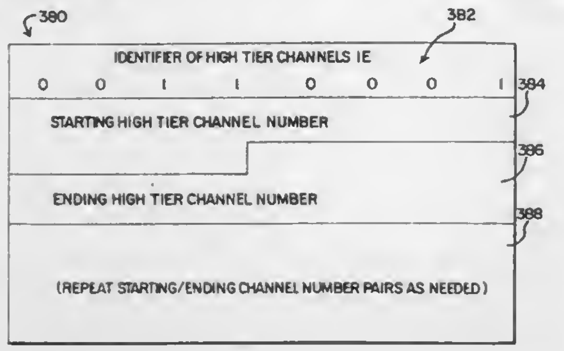
5,711,005
METHOD FOR IMPLEMENTING A PERSONAL ACCESS COMMUNICATION SYSTEM IN A HIGH MOBILITY ENVIRONMENT

Osama Farrag, Gaithersburg, Md., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Aug. 6, 1996, Ser. No. 689,167

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—441 **16 Claims**


380
382
IDENTIFER OF HIGH TIER CHANNELS IE
0 0 1 1 0 0 0 1
384
STARTING HIGH TIER CHANNEL NUMBER
386
ENDING HIGH TIER CHANNEL NUMBER
388
(REPEAT STARTING/ENDING CHANNEL NUMBER PAIRS AS NEEDED)

1. A method of optimizing a personal access communications system (PACS) for use with high and low mobility subscriber units comprising the steps of:

providing a personal access communications system having a plurality of high tier coverage areas for handling high mobility users, and a plurality of low tier coverage areas, each of said high tier coverage areas encompassing a predetermined number of the low tier coverage areas;

transmitting a list of all high tier channels from a radio port controller via a radio port to a subscriber unit in a system information channel within a system broadcast channel, by transmitting a starting high tier channel number and transmitting an ending high tier channel number whereby the subscriber unit will recognize that channels within a range defined by the starting and ending high tier channel numbers are high tier channels;

determining a speed of the subscriber unit at the subscriber unit; and

the subscriber unit selecting a channel in one of a high tier or low tier coverage area based on the determined speed of the subscriber unit, wherein the subscriber unit selects from the high tier channel list when selecting a high tier channel.

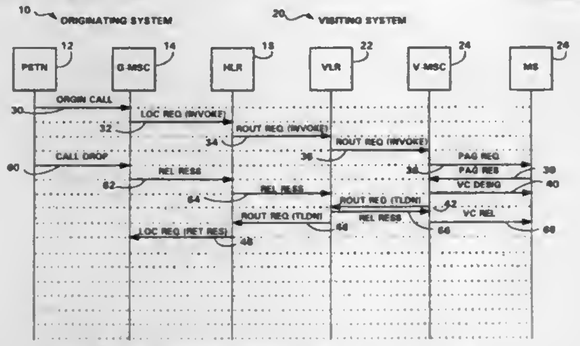
5,711,006
SYSTEM AND METHOD FOR ADDRESSING A RELEASE RESOURCE MESSAGE

Jean-Pierre Brochu, Montreal, and Francois Sawyer, St-Hubert, both of Canada, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Aug. 3, 1995, Ser. No. 510,972

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 455—445 **23 Claims**



1. A mobile telecommunication system, comprising:

a mobile station;

a home location register associated with the mobile station, wherein the home location register stores a mobile subscriber profile and maintains information indicative of a mobile station's location;

a visiting mobile switching center (V-MSC) having a service area wherein said mobile station is presently located, a paging mechanism for paging said mobile station, and a switching mechanism for establishing a voice channel between the V-MSC and the mobile station;

a gateway mobile switching center (G-MSC) for receiving and routing an incoming call to the mobile station, said G-MSC having a signaling mechanism for signaling the home location register and a switching mechanism for routing calls to the V-MSC;

a means for determining that the incoming call will not be completed; and

a means for directing the telecommunication system to drop radio resources prior to call setup between the G-MSC and the V-MSC.

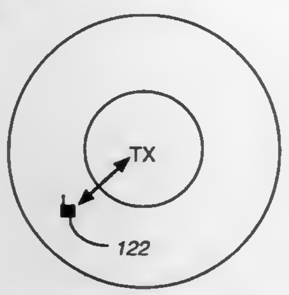
5,711,007
METHOD AND APPARATUS FOR TRANSMITTING AN OUTBOUND MESSAGE IN A TWO-WAY MESSAGING SYSTEM

Jyh-Han Lin, Keller, and Samir Sawaya, Grapevine, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1996, Ser. No. 597,049

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—447 **15 Claims**



1. A method of transmitting an outbound message in a two-way messaging system having a plurality of cells employing frequency reuse, the method comprising in a fixed portion of the system the steps of:

dividing ones of the plurality of cells into a plurality of rings based on radio frequency propagation and interference environment;

sending to a portable selective call transceiver a notification of the outbound message;

receiving in response information sufficient to determine an identity of one of the plurality of rings in which the portable selective call transceiver has determined itself to be located; and

transmitting the outbound message to the portable selective call transceiver, utilizing a frequency reuse plan in accordance with said identity,

wherein the method further comprises in the portable selective call transceiver the steps of:

maintaining a record of N most recently received transmitter color codes, N being a predetermined integer value;

determining the identity of the one of the plurality of rings from the record, comprising the steps of:

selecting from the record a cell-identifying color code and a degree of consistency of reception of the cell-identifying color code; and

deciding the identity of the one of the plurality of rings from the degree of consistency of reception; and

reporting the identity to the fixed portion of the system.

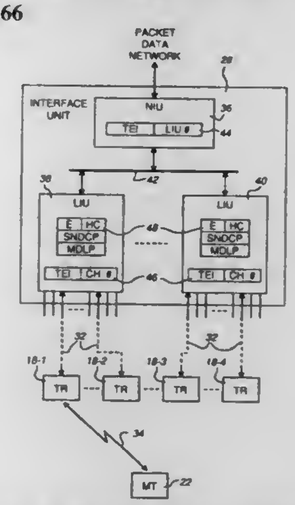
5,711,008
CELLULAR PACKET DATA ARRANGEMENT

Martin Louis Joseph Gallant, Garland; Emad Abdel-Lateef Qaddoura, and Patricia Ann Landgren, both of Plano, all of Tex., assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 1, 1995, Ser. No. 396,607

Int. Cl.^{6} H04Q *7/20;7/24*

U.S. Cl. 455—466 **7 Claims**



1. A cellular packet data arrangement comprising:

a plurality of radio transceivers for providing communications in geographical cells with mobile terminals each having a respective identifier (TEI);

an interface unit (NIU) for providing an interface to a packet data network; and

at least two link interface units (LIUs) each for providing a plurality of channels each for communicating data packets between the NIU and a respective one of the radio transceivers, each LIU storing the TEI of each mobile terminal having communications being handled by the LIU, an indication of the channel for such communications, and protocol data for the communications;

wherein the NIU and the LIUs are arranged so that, in response to communications being received on a channel of a first LIU from a mobile terminal whose TEI is not stored in the first LIU and whose protocol data is stored in another, second, LIU:

the protocol data for the mobile terminal is transferred from the second LIU to the first LIU;

the TEI of the mobile terminal is stored in the first LIU with an indication of the channel of the fast LIU on which the communications from the mobile terminal are received; and

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the stored TEI of the mobile terminal is deleted from the second LIU.

5,711,009

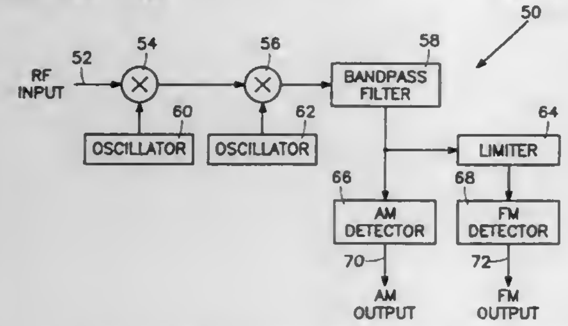
METHOD AND APPARATUS FOR MINIMIZING THE EFFECTS OF FREQUENCY SELECTIVE FADING ON A PCM/FM DATA SIGNAL

Eugene Lloyd Law, Ventura, Calif., assignor to The United States of America as Represented by the Secretary of The Navy, Washington, D.C.

Filed Apr. 1, 1996, Ser. No. 617,726

Int. Cl.^{6} H04B *7/02;* H07B *15/00*

U.S. Cl. 455—504 **16 Claims**



1. A demodulator for minimizing the effects of frequency selective fading in multipath transmission of pulse code modulated/frequency modulated telemetry data, said demodulator comprising:

variable frequency oscillating means for generating a local oscillator signal;

first mixing means for receiving said local oscillator signal and a first radio frequency signal;

said first mixing means combining said first radio frequency signal and said local oscillator signal to generate a second radio frequency signal;

fixed frequency oscillating means for generating a fixed frequency signal;

second mixing means for receiving said fixed frequency signal and said second radio frequency signal, said second mixing means combining said second radio frequency signal and said fixed frequency signal to generate a third radio frequency signal;

each of said first, second and third radio frequency signals being a carrier for said pulse code modulated/frequency modulated telemetry data;

filtering means for receiving said third radio frequency signal and then providing an analog signal, said filtering means attenuating said analog signal in a first state resulting in a detectable difference between the amplitude of said analog signal in said first state and the amplitude of said analog signal in a second state;

said filtering means having an intermediate frequency bandwidth, said local oscillator signal being adjusted to provide a frequency offset to said second radio frequency signal which is about one half of the intermediate frequency bandwidth of said filtering means; and

detecting means for receiving said analog signal, said detecting means detecting the amplitude of said analog signal in said first state and the amplitude of said analog signal in said second state to provide an analog pulse code modulated telemetry data signal having voltage spikes removed from said analog pulse code modulated telemetry data signal.

5,711,010

METHOD OF ESTABLISHING ACCESS TO SECONDARY COMMUNICATION RESOURCES IN A COMMUNICATION SYSTEM

Marc C. Naddell, Schaumburg; Gary W. Grube, Barrington, and Brian K. Bunkenburg, Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1995, Ser. No. 455,383

Int. Cl.^{6} H04B *7/00*

U.S. Cl. 455—509 **15 Claims**

1. In a communication system including a central controller and at least a first communication unit, a method of assigning to the first communication unit, while said first communication unit is presently participating in a first communication on a primary communication resource, a secondary communication resource different from said primary communication resource, to allow the first communication unit to participate in a desired communication immediately after the secondary resource becomes available and upon termination of the first communication, the method comprising the central controller performed steps of:

identifying, while the first communication is still active, a request, from the first communication unit for the secondary communication resource;

identifying when the resource becomes available;

reserving, while the first communication is still active, the secondary resource for the first communication unit when the secondary communication resource becomes available; and

assigning the secondary resource to the first communication unit when the first communication is terminated.

5,711,011

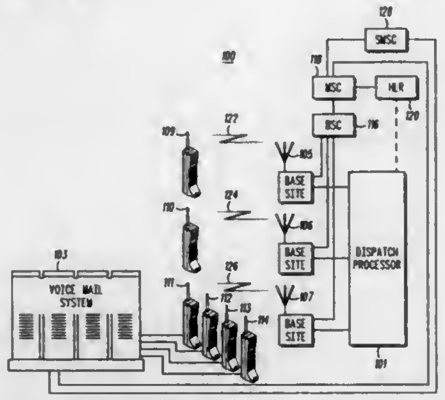
METHOD FOR PROVIDING VOICE MAIL SERVICE IN A DISPATCH RADIO COMMUNICATION SYSTEM AND CORRESPONDING DISPATCH SYSTEM

Kamala D. Urs, Bartlett; Daniel J. Coombes, Glen Ellyn, and Valy Lev, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Shaumburg, Ill.

Filed Jun. 4, 1996, Ser. No. 659,096

Int. Cl.^{6} H04B *7/00;* H04Q *7/20*

U.S. Cl. 455—520 **27 Claims**



1. A method for providing voice mail service in a dispatch radio communication system, the method comprising the steps of:

a) receiving, at a dispatch processor, a first request to communicate from a first communication unit, the first request to communicate including a dispatch identification for a second communication unit that is a target of a communication from the first communication unit;

b) determining, by the dispatch processor, whether the second communication unit can participate in the communication; and

c) when the second communication unit cannot participate in the communication, establishing, by the dispatch processor, a radio communication path between the first communication unit and a third communication unit that is coupled to a voice mail system to allow a user of the first communication unit to provide a voice mail message to the voice mail system for a user of the second communication unit.

5,711,012

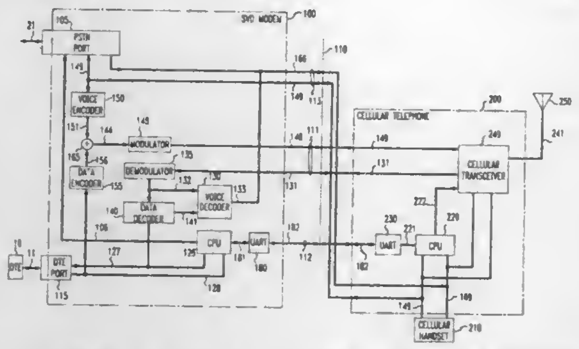
CELLULAR PHONE INTERFACE FOR A SIMULTANEOUS VOICE/DATA MODEM

Stanley Bottoms, Seminole; Gordon Bremer; Kenneth David Ko, both of Clearwater, all of Fla.; D. Randy Roberson, Hampton Cove, Ala., and Robert Earl Scott, Indian Rocks Beach, Fla., assignors to Paradyne Corporation, Largo, Fla.

Continuation of Ser. No. 283,333, Aug. 1, 1994. This application Apr. 26, 1996, Ser. No. 639,359

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 455—557 **17 Claims**



1. Apparatus for use in a cellular telephone arrangement, wherein a cellular telephone comprises a cellular transceiver section and a cellular handset such that the cellular handset is plugged into the cellular transceiver section for communicating via a cellular transceiver over a cellular network, the apparatus comprising:

a cable that couples a modem to the cellular transceiver section, wherein the cable includes a plurality of conductors for a) communicating signaling between the modem and the cellular transceiver for communication over the cellular network and b) communicating signaling between the modem and the cellular handset even though the cellular handset is plugged into the cellular transceiver section for communicating directly with the cellular transceiver.

5,711,013

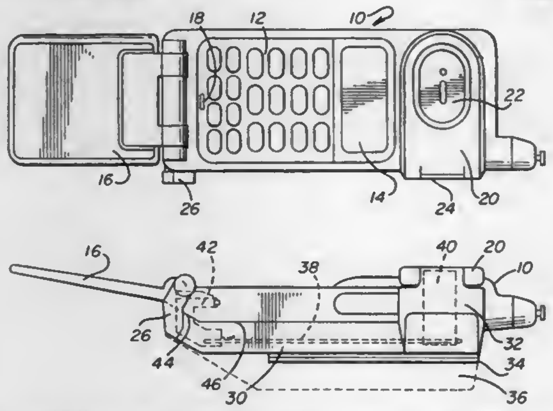
CONFORMANT COMPACT PORTABLE CELLULAR PHONE CASE SYSTEM AND CONNECTOR

Gordon C. Collett, Yamhill, and Donald T. Rose, Beaverton, both of Oreg., assignors to Cycomm Corporation, Lake Oswego, Oreg.

Continuation of Ser. No. 374,926, Jan. 18, 1995, Pat. No. 5,517,683. This application Jan. 18, 1996, Ser. No. 582,336

Int. Cl.^{6} H04B *1/40;* H04Q *7/32*

U.S. Cl. 455—558 **21 Claims**



1. Apparatus coupleable to a compact portable cellular telephone that has an external physical interface for mounting a detachable battery and an electrical interface coupled to internal communications electronics that implements a communications function for said compact portable cellular telephone, said apparatus comprising:

a) a case having an attachment surface for detachably mating with said external physical interface of said compact portable cellular telephone;

b) control electronics, provided within said case, that implements a signal processing function that can be selectively incorporated into the communications function of said compact portable cellular telephone;

c) a connector coupled to said case and said control electronics matable with said electrical interface of said compact portable cellular telephone to transfer signals between said control electronics and said communications electronics of said compact portable cellular telephone; and

d) a speaker unit, coupled to said case and said control electronics, that is positionable over an external surface of said compact portable cellular telephone permit detachable mating of said case with said compact portable cellular telephone.

5,711,014

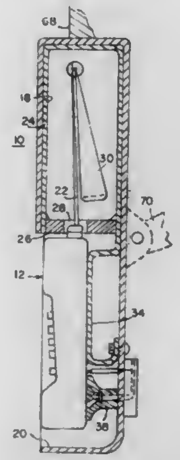
ANTENNA TRANSMISSION COUPLING ARRANGEMENT

Robert J. Crowley, 64 Puritan La., Sudbury, Mass. 01776, and Donald N. Halgren, 35 Central St., Manchester, Mass. 01944

Continuation-in-part of Ser. No. 42,879, Apr. 5, 1993, Pat. No. 5,493,702. This application Dec. 29, 1995, Ser. No. 581,065

Int. Cl.^{6} H04B *1/38*

U.S. Cl. 455—575 **28 Claims**



1. A docking system for capacitively connecting a portable communication device having an externally radiative antenna, to a further signal transmission line for effecting radio signal transmission therebetween, said system comprising:

a housing comprising an open section for receiving said portable communication device; said housing including an RF capacitive coupling element in a separate shielding enclosure segregated from said open section of said housing, and connected to said further signal transmission line;

said separate shielding enclosure holding said RF coupling element offset and to one side of said externally radiative antenna of said portable communication device so as to permit radiative communication to said further signal transmission line via radio frequency energy therebetween.

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5,711,015

CHEMICAL DECONTAMINATION USING NATURAL OR ARTIFICIAL BONE

Andrew J. Tofe, 2195 Urban Dr, Lakewood, Colo. 80215

Filed Jan. 19, 1996, Ser. No. 588,766

Int. Cl.^{6} G21F *9/00*

U.S. Cl. 588—1 **20 Claims**

1. A method of decontaminating a site of metals comprising:
establishing a quantity of bone;
contacting said metals with said quantity of bone:
maintaining said contact for a sufficient time so that at least some of said metals are sorbed by at least some of said quantity of bone; and
terminating contact between said metals and saint quantity of bone
wherein said quantity of bone has had its organic compounds removed prior to said contacting.

5,711,016

PROCESS FOR THE CONDITIONING OF RADIOACTIVE IODINE, PARTICULARLY IODINE 129, USING AN APATITE AS THE CONFINEMENT MATRIX

Joëlle Carpena, Jouques; Fabienne Audubert, Manosque, and Jean-Louis Lacout, Toulouse, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

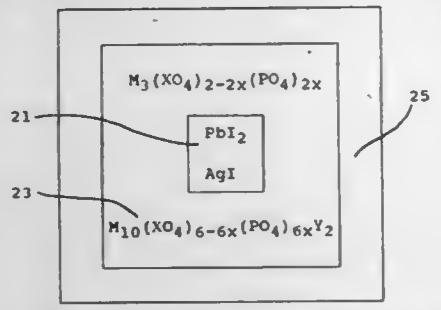
PCT No. PCT/FR95/01454, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO96/18126, PCT Pub. Date Jul. 13, 1996

PCT Filed Nov. 6, 1995, Ser. No. 682,792

Claims priority, application France, Dec. 7, 1994, 94 14706

Int. Cl.^{6} G21F *9/00*

U.S. Cl. 588—10 **25 Claims**


$M_3(XO_4)_{2-2x}(PO_4)_{2x}$
PbI_2
AgI
$M_{10}(XO_4)_{6-6x}(PO_4)_{6x}Y_2$
21
23
25

3. Block for conditioning radioactive iodine in the form of a solid, iodine-containing compound, characterized in that it comprises a core formed by said iodine-containing compound, surrounded by a first compacted powder layer of a compound complying with one of the formulas:

$$M_3(XO_4)_{2-2x}(PO_4)_{2x} \quad (II)$$

or

$$M_{10}(XO_4)_{6-6x}(PO_4)_{6x}Y_2 \quad (III)$$

in which M represents Cd or Pb, X represents V or As, Y represents OH, F, Cl or $O_{1/2}$ and x is such that $0 \leqq x < 1$, and a second outer layer of non-iodine-containing apatite.

5,711,017

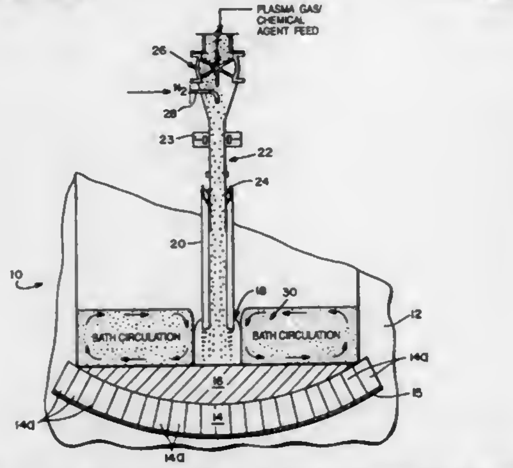
PROCESS FOR THE DESTRUCTION OF CHEMICAL AGENTS AND MUNITIONS

John A. Bitler, Denver; John P. Baranski, Sinking Spring, both of Pa., and Harold R. Larson, Spring, Tex., assignors to Exide Corporation, Reading, Pa.

Filed Sep. 18, 1996, Ser. No. 715,486

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 588—200 **11 Claims**



1. A process for destroying chemical agents comprising forming a plasma arc in a DC plasma arc furnace between a terminal end of a hollow electrode and an electrically conductive heel, and introducing a chemical agent into the hollow of the electrode so that the chemical agent is brought into contact with, and destroyed by, the plasma arc at the electrode's terminal end thereof.

5,711,018

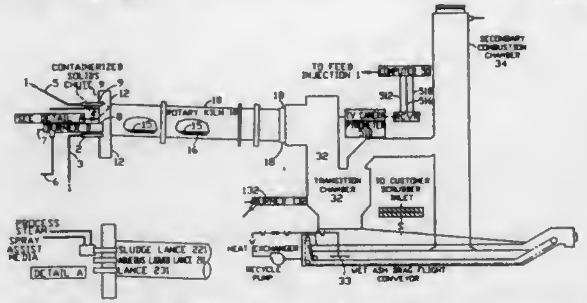
ROTARY KILN TREATMENT OF POTLINER

Herman J. Hittner, Lower Burrell; R. Lee Byers, Upper St. Clair, both of Pa.; John N. Lees, Jr., Brookfield, Wis.; David W. Rierson, Elm Grove, Wis., and Ludmila Dinter-Brown, South Milwaukee, Wis., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 084,896, Jun. 29, 1993. This application Feb. 21, 1995, Ser. No. 392,002

Int. Cl.^{6} A62D *3/00*; C01F *7/02*; B09D *3/00*

U.S. Cl. 588—201 **10 Claims**



1. In a process for treating spent potlining from the electrolytic smelting of aluminum, comprising:
- (i) heating spent potlining in a rotary kiln vessel by admixing spent potlining into a molten salt bath comprising sodium, aluminum, fluoride, calcium, and silicon salts in said rotary kiln vessel at a bath temperature in the range of about 1150° C. to 1250° C. while maintaining said salt bath in a pool at a depth of at least about 24 inches in said rotary kiln over the entire length of said rotary kiln vessel;
- (ii) admixing a solid oxygenating and gasifying compound into said pool of spent potlining in said salt bath, thereby oxygenating and gasifying spent potlining carbon to form carbon monoxide in said pool of spent potlining in said salt bath by decomposing said solid oxygenating and gasifying compound to form carbon dioxide gas, reacting and gasifying said carbon with said carbon dioxide gas in the said salt bath to form said carbon monoxide gas;
- (iii) burning said carbon monoxide gas above the molten salt bath surface;
- (iv) adding siliceous material to said bath; and
- (v) discharging and cooling a portion of said bath to form a display residue suitable for landfill;

wherein the improvement for feeding spent potlining into said rotary kiln, comprises:
- (a) admixing spent potlining from the electrolytic smelting of aluminum with, solid oxygenating compound, and SiO_2 sand to form a feed mixture of spent potlining, solid oxygenating compound, and SiO_2 sand;
- (b) injecting said feed mixture into a rotary kiln;
- (c) controlling the feed volume and distribution pattern of said feed mixture injected into said rotary kiln by pneumatic slinger injection distribution onto an elliptical surface area of molten slag in said rotary kiln by adjusting the angle and velocity of said slinger injection distribution;
- (d) monitoring the temperature at a plurality of locations in a molten bath in said rotary kiln; and
- (e) adjusting and controlling the feed volume and distribution pattern of said feed mixture of spent potlining fed to said rotary kiln to maintain a temperature profile in said rotary kiln to produce a reduction in the level of carbon in the spent potlining wherein the spent potlining is heated to a carbon reducing set point of at least 1100° C. while not exceeding a fluoride gas generation maximum temperature of 1250° C.

5,711,019

METHOD FOR TREATING ELECTROLYTE TO REMOVE LI$_2$0

Zygmunt Tomczuk, Lockport; William E. Miller, Naperville; Gerald K. Johnson, Downers Grove, and James L. Willit, Batavia, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 31, 1996, Ser. No. 594,974

Int. Cl.^{6} A62D *3/00*; C01D *15/00*

U.S. Cl. 588—201 **16 Claims**

8. A method of removing Li_2O present in an electrolyte predominantly of LiCl and KCl comprising maintaining the electrolyte at a temperature not less than about 500° C., introducing Al into the electrolyte in an amount in excess of the stoichiometric amount needed to convert the Li_2O to a Li-Al alloy and lithium aluminate salt and maintaining salt and aluminum in contact for a time sufficient to convert the Li_2O.

5,711,020

METHOD FOR REMEDIATING ENVIRONMENTAL CONTAMINANTS

N. Lee Wolfe, Athens; Laura H. Carreira, Danielsville, and Mark C. Delgado, Athens, all of Ga., assignors to The United States of America as Represented by the Environmental Protection Agency, Washington, D.C., and Dyncorp, Inc., Reston, Va.

Continuation of Ser. No. 447,483, May 23, 1995, abandoned, which is a division of Ser. No. 45,966, Apr. 9, 1993, abandoned. This application Apr. 16, 1996, Ser. No. 632,884

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 588—203 **13 Claims**

1. A method for the remediation of an environmental contaminant comprising the steps of:
- a) incubating the contaminant with a reducing agent under anaerobic conditions for a sufficient amount of time to reduce the contaminant; wherein the reducing agent is a sediment plant enzyme, and,
- b) oxidizing the reduced contaminant.

5,711,021

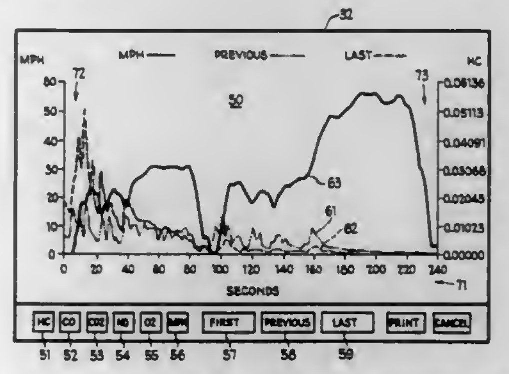
METHOD FOR GRAPHICALLY DISPLAYING VEHICLE TEST DATA

Jeffrey J. Book, Streamwood, Ill., assignor to Snap-on Technologies, Inc., Lincolnshire, Ill.

Filed Aug. 7, 1995, Ser. No. 511,888

Int. Cl.^{6} G01M *15/00*; F02B *27/04*

U.S. Cl. 701—33 **20 Claims**



1. A method of automatically graphically displaying, on a display screen, emission test data collected and stored by an engine analyzer, the method comprising the engine analyzer performed steps of:
generating and displaying on the screen at least one time-based first waveform representative of gas emission output levels of at least one selected ingredient gas, which levels are collected, measured and stored by the analyzer during a first emission test; and
generating and displaying on the screen, superimposed over said at least one first waveform, at least one second time-based waveform representative of gas emission output levels of said at least one selected ingredient gas, which levels are collected by the analyzer during a second emission test.

5,711,022

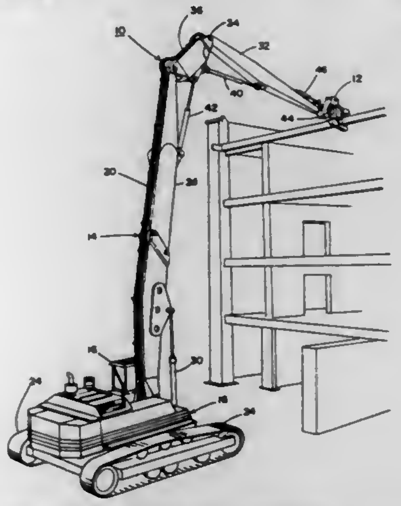
STARTING POSITION CONTROL FOR DEMOLITION APPARATUS

Timothy E. Steenwyk, Grand Rapids, Mich., assignor to Laser Alignment, Inc., Grand Rapids, Mich.

Filed Dec. 14, 1995, Ser. No. 572,090

Int. Cl.^{6} E04G *23/00;23/08*

U.S. Cl. 701—50 **25 Claims**



5. A hydraulic crusher apparatus, comprising:
a base member, a crusher member and a connecting member interconnecting said crusher member with said base member;
a first monitor for monitoring the relative positioning of said crusher member with respect to said connecting member and

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a second monitor for monitoring the relative positioning of said connecting member with respect to said base member; and

a control that is responsive to said first and second monitors for determining a height of said crusher member with respect to said base member in order to guide said crusher member to return to a reference height above said base member.

5,711,023
SYSTEM FOR DETERMINING SIDE SLIP ANGLE

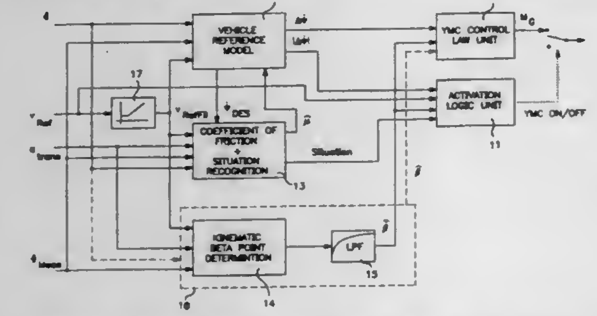
Alfred Eckert, Bodenbeim, and Benno Lammen, Flörsbeim, both of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

Division of Ser. No. 475,389, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 477,583

Claims priority, application Germany, Nov. 25, 1994, P4441956.2; Nov. 25, 1994, P4441957.0; Nov. 25, 1994, P4441958.9; Nov. 25, 1994, 4441959.7; Dec. 31, 1994, P4447313.3; Apr. 27, 1995, P19515046.5

Int. Cl.^{6} B60T *8/00;* B60K *28/16;* G01P *3/44*

U.S. Cl. 701—70 **13 Claims**



1. In a vehicle which has a yaw rate, a lateral acceleration, and a reference velocity, a system for determining a side slip angle, comprising:

means for measuring the yaw rate, the lateral acceleration and the reference velocity;

means for determining a velocity of the side slip angle of the vehicle according to the equation:

$$\dot{\beta} = \frac{\alpha_{trans}}{v} - \dot{\psi} - \frac{\dot{v}}{v}\,\beta$$

wherein β is the velocity of the side slip angle, a_{trans} is the lateral acceleration, v is the reference velocity, Ψ is the yaw rate, $\dot{v}$ is the time derivative of the reference velocity, and β is the side slip angle; and

means for determining the side slip angle by integrating the velocity of the side slip angle.

5,711,024
SYSTEM FOR CONTROLLING YAW MOMENT BASED ON AN ESTIMATED COEFFICIENT OF FRICTION

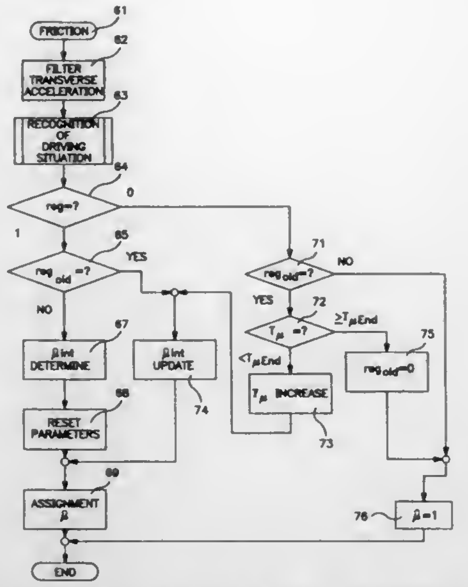
Peter Wanke, Frankfurt, Germany, assignor to ITT Automotive Europe GmbH, Frankfurt, Germany

Division of Ser. No. 475,389, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 473,120

Claims priority, application Germany, Nov. 25, 1994, 44 41 956.2; Nov. 25, 1994, 44 41 958.9; Nov. 25, 1994, 44 41 957.0; Nov. 25, 1994, 44 41 959.7; Dec. 31, 1994, 44 47 313.3; Apr. 27, 1995, 195 15 061.9

Int. Cl.^{6} G01P *3/44;* B60T *8/00*

U.S. Cl. 701—82 **12 Claims**



1. Yaw moment control apparatus for improving the driving behavior of an automotive vehicle tending to oversteering or understeering, the vehicle including means for determining a vehicle velocity, a vehicle steering angle, a measured yaw rate, and a vehicle lateral acceleration, said apparatus comprising:

yaw control means for generating a value representing a desired yaw rate adjustment based on the vehicle steering angle, the vehicle velocity and the measured yaw rate;

means for calculating an estimated coefficient of friction based on the vehicle velocity, the lateral acceleration, the measured yaw rate and the steering angle, said estimated coefficient of friction being used by the yaw control means for determining the desired yaw rate adjustment; and

means, responsible to the vehicle steering angle, for enabling said estimated coefficient of friction determining means only while the vehicle is traveling through a curve.

5,711,025
DRIVING STABILITY CONTROL SYSTEM WITH SELECTIVE BRAKE ACTUATION

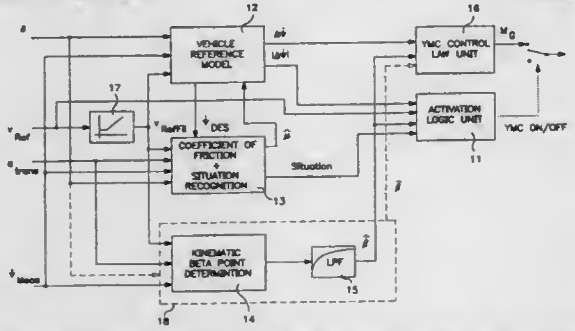
Alfred Eckert, Bodenheim, and Thomas Kranz, Rosbach, both of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

Division of Ser. No. 475,389, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 474,683

Claims priority, application Germany, Nov. 25, 1994, 44 41 956.2; Nov. 25, 1994, 44 41 958.9; Nov. 25, 1994, 44 41 957.0; Nov. 25, 1994, 44 41 959.7; Dec. 31, 1994, 44 47 313.3; Apr. 27, 1995, 195 15 056.2

Int. Cl.^{6} B60T *8/00;* B60K *23/16*

U.S. Cl. 701—83 **22 Claims**



1. Apparatus for controlling an automotive vehicle, the vehicle having a plurality of wheels which contact a surface, each wheel having an individually operable brake, said apparatus comprising:

yawing moment control means for determining a moment that is to be applied to the vehicle to prevent any one of the group consisting of an undesirable yaw angle, yaw rate and yaw acceleration;

slip determining means for determining a longitudinal slip value of each of the wheels, individually;

distribution logic means responsive to the yawing moment control means and the slip determining means for determining an

individual braking control operation to be applied to each respective one of the brakes based on said moment, including:

selective actuating means for selectively actuating at least one of the brakes so that the longitudinal slip value of the wheel to which the one brake corresponds is greater than a maximum friction longitudinal slip value at which the coefficient of friction between the wheel and the surface reaches a maximum value, without actuating all of the brakes at longitudinal slip values above the maximum friction longitudinal slip value.

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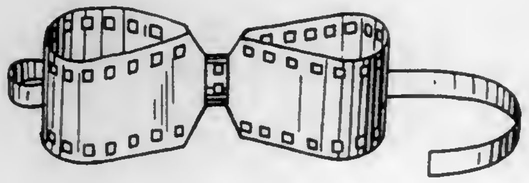
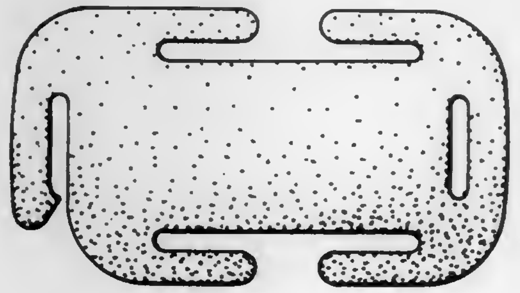
DESIGNS

JANUARY 20, 1998

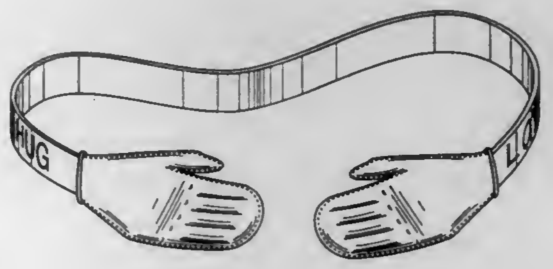
389,285
BOW TIE
Nancy Beth Falloon, 320 W. 87th St., Apt. 22, New York, N.Y. 10024
Filed Dec. 20, 1996, Ser. No. 64,011
Term of patent 14 years
LOC (6) Cl. 02 - *05*
U.S. Cl. D2—608



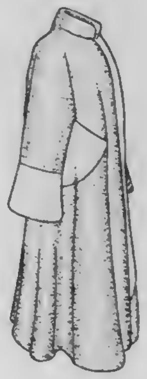
389,286
SHOULDER BELT GUIDE
Maryann C. Celestina-Krevh, Euclid, and David Campbell, Westfield Center, both of Ohio, assignors to Century Products Company, Macedonia, Ohio
Filed Oct. 25, 1996, Ser. No. 61,509
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—624



389,287
APPAREL SASH
Terry Vanwinkle, 2109 Milford La., Modesto, Calif. 95355
Filed Sep. 17, 1996, Ser. No. 59,864
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—627



389,288
COAT
David Leinoff, New York, N.Y., assignor to Fur and Furgery, Inc., New York, N.Y.
Filed May 28, 1996, Ser. No. 55,034
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—828



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389,289

FRONTAL ENHANCEMENT FOR GARMENT

Patrick Raymond Law, 37 Chater Hall, No. 1 Conduit Rd., Hong Kong, Hong Kong

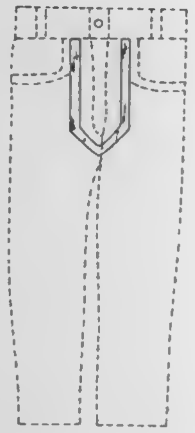
Filed Mar. 19, 1996, Ser. No. 51,830

Claims priority, application United Kingdom, Dec. 7, 1995, 2052524

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—853



389,290

SLEEVED BIB

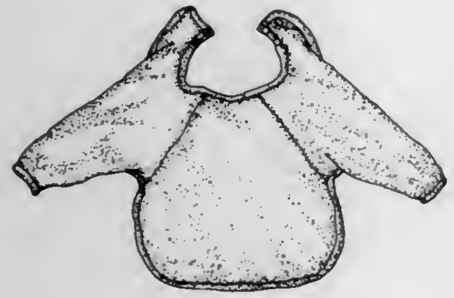
Jayne A. James, 1201 Tremont Ct., Wilmington, N.C. 28405, and Sandra K. Polanco, 8804 Albright Rd., Raleigh, N.C. 27612

Filed Jan. 25, 1996, Ser. No. 49,477

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—861



389,291

NOVELTY HAT

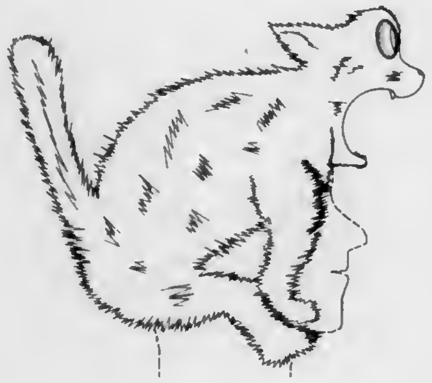
James David Sterrett, 2 Pinemont Pl., #1A, Perry Hall, Md. 21236

Filed Oct. 11, 1996, Ser. No. 62,956

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—870



389,292

LACING ELEMENT FOR FOOTWEAR

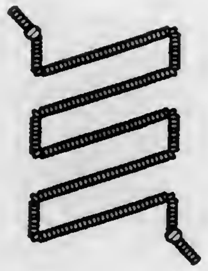
Sinisa Egelja, Oceanside, Calif., assignor to Items International, Inc., Altoona, Pa.

Filed Mar. 14, 1996, Ser. No. 51,630

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—944



389,293

SHOE SOLE

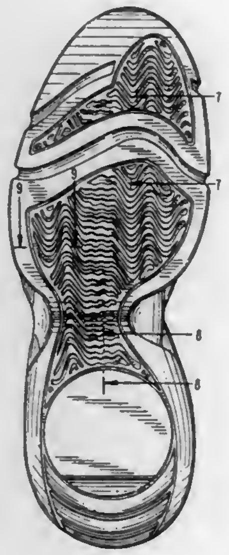
Kevin J. Crowley, Brentwood, N.H., assignor to Fila U.S.A., Inc., Sparks, Md.

Filed Apr. 30, 1996, Ser. No. 53,790

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—953



389,294

PORTION OF A SHOE OUTSOLE

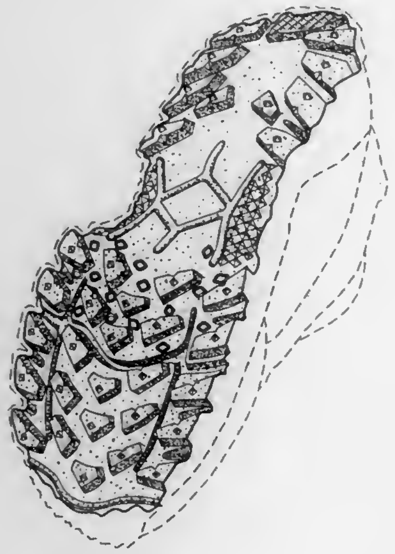
Peter M. Fogg, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Nov. 29, 1996, Ser. No. 62,880

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—959



389,295

SHOE OUTSOLE

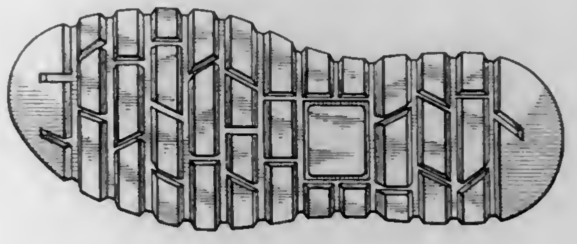
Michelle Kelchak, 228 Manhattan Beach Blvd., Ste. 200, Manhattan Beach, Calif. 90266

Filed Feb. 13, 1997, Ser. No. 66,414

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—960



389,296

FOOTWEAR INSOLE

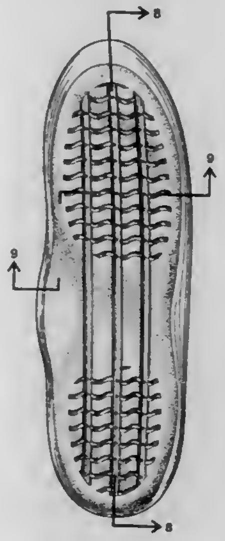
Raymond V. Sessa, 5123 S. Quail Crest Dr., SE., Grand Rapids, Mich. 49546

Filed Jan. 30, 1997, Ser. No. 65,607

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—961



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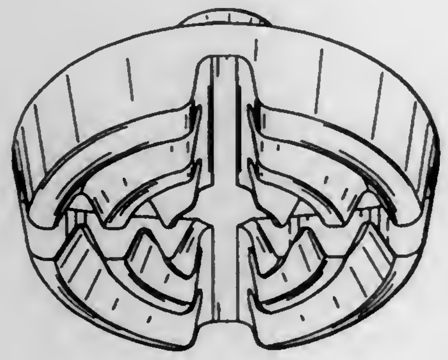
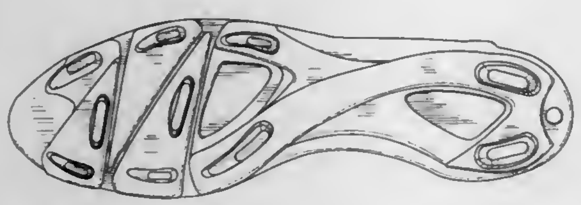
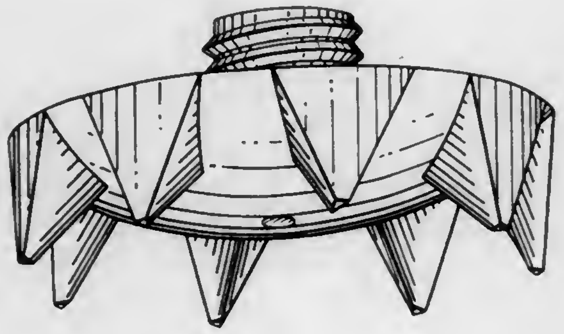
389,297
REMOVABLE CLEAT FOR USE WITH ATHLETIC SHOES
John M. Adam, Marietta, Ga., assignor to Diversified Industrial Technologies, Inc., Marietta, Ga.
Filed Aug. 1, 1996, Ser. No. 57,834
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—962



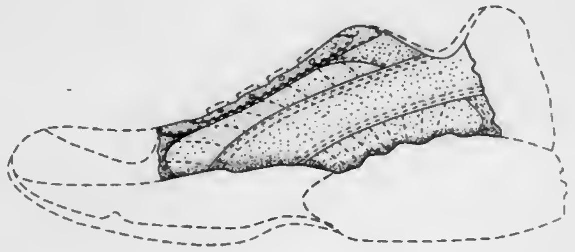
389,298
CLEATED SHOE SOLE
Antoine Briant, Hauptendorfer Str. 30, D-91074 Herzogenaurach, France
Division of Ser. No. 46,914, Nov. 20, 1995. This application Aug. 7, 1996, Ser. No. 58,056
Claims priority, application Germany, May 19, 1995, M9504033.1
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—962



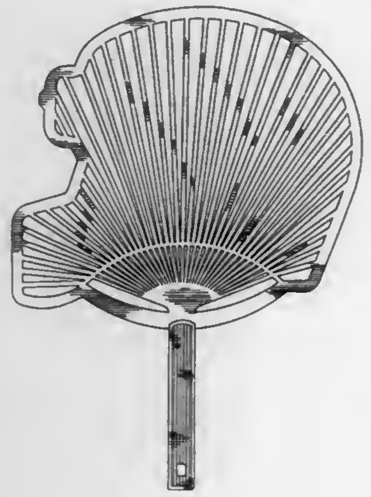
389,299
GOLF CLEAT
Faris W. McMullin, Boise, Id., assignor to Softspikes, Inc., Rockville, Md.
Filed Feb. 25, 1997, Ser. No. 66,949
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—962



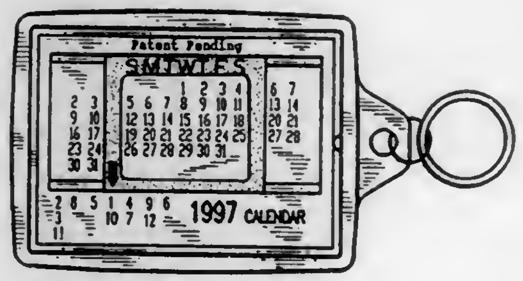
389,300
SIDE ELEMENT OF A SHOE UPPER
Tracy L. Teague, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 29, 1996, Ser. No. 62,882
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



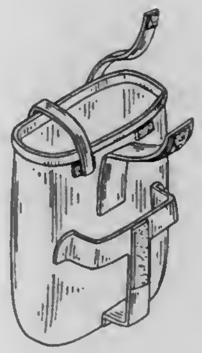
389,301
RIBS FOR FAN
Kaoru Kubota, Osaka, Japan, assignor to Q B Club, Inc., Osaka, Japan
Filed Nov. 19, 1996, Ser. No. 62,575
Term of patent 14 years
LOC (6) Cl. 03 - *04*
U.S. Cl. D3—4



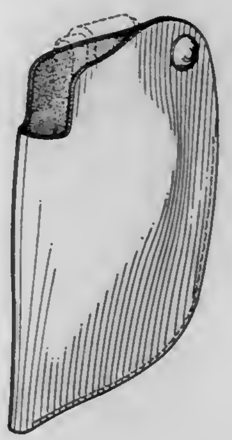
389,302
COMBINED KEY HOLDER AND CALENDAR
Julius C. Ekeoba, P.O. Box 23, Kensington, Md. 20895
Filed Aug. 15, 1996, Ser. No. 58,435
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—208



389,303
CARRIER POUCH
Gayle L. Shafer, 1023 N. 9th St., #48, Plattsmouth, Nebr. 68048
Filed Mar. 20, 1995, Ser. No. 36,396
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—228



389,304
BILLFOLD
Phillip H. Ault, 3765 Church Rd., Ellicott City, Md. 21043, and Patricia P. Landrem, 11217 North Five Points Rd., Knightstown, Ind. 46148
Filed Jan. 23, 1997, Ser. No. 65,187
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—251



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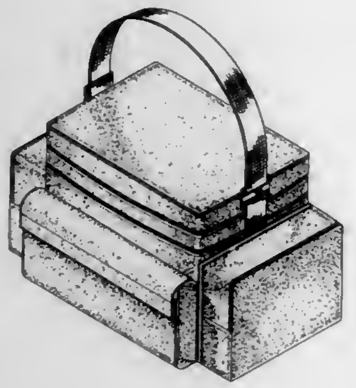
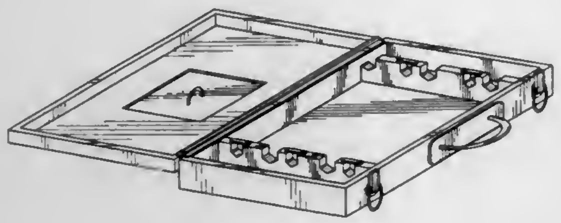
389,305
FLY FISHING CASE
Alan D. Hauschild, 28908 W. Fox Trail, Lake Villa, Ill. 60046
Filed Nov. 20, 1995, Ser. No. 47,077
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—260



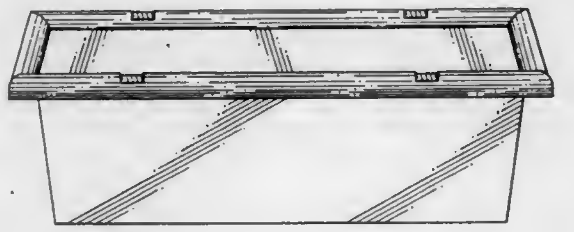
389,306
CARRYING CASE FOR ICE FISHING TRAPS
Mark H. McPherson, R.R. 1, Box 2485, Levant, Me. 04456
Filed Sep. 27, 1996, Ser. No. 60,406
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—260



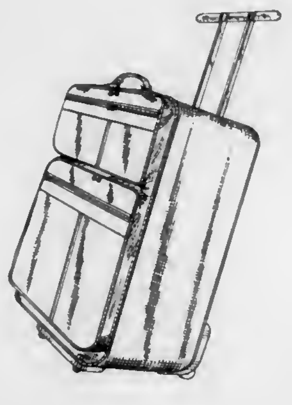
389,307
STACKABLE TWO-PIECE CONTAINER FOR A CYLINDER HEAD
Wade Zimmerman, P.O. Box 3504, Thousand Oaks, Calif. 91359
Filed Apr. 4, 1996, Ser. No. 52,592
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—273



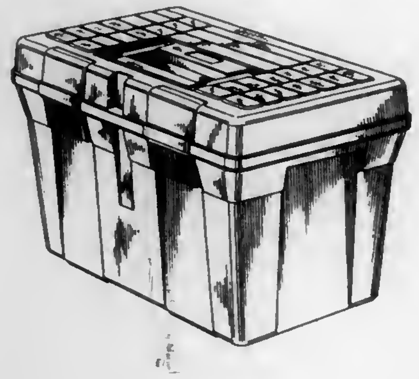
389,308
MULTI-WHEELED LUGGAGE CASE
William L. King, and David A. Crumrine, both of Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Mar. 7, 1996, Ser. No. 51,357
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—279



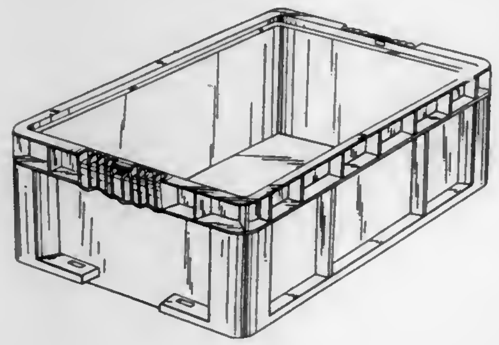
389,309
TOOL BOX
Donald Shaw, 170 Commander Blvd., Agincourt, Ontario, M1S 3C8, Canada
Filed Oct. 23, 1996, Ser. No. 61,409
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—294



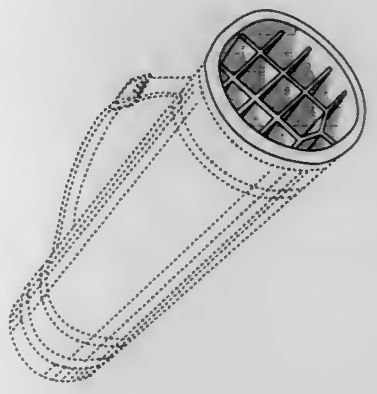
389,310
BOX
Hans Niemann, Winchester, and Henning Rader, McLean, both of Va., assignors to Monoflow International, Inc., Winchester, Va.
Filed Mar. 14, 1996, Ser. No. 51,607
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—312



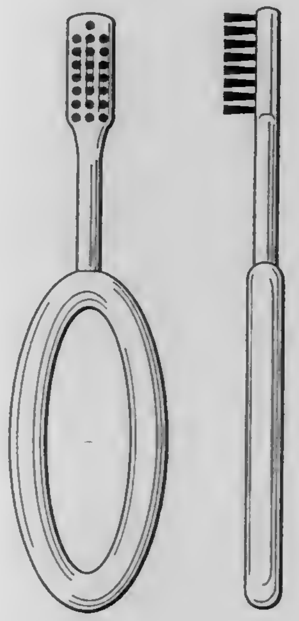
389,311
GOLF BAG PARTITION
Jessie Li-Kuo Wang, 30616 San Antonio St., Hayward, Calif. 94544
Filed Sep. 27, 1996, Ser. No. 60,367
Term of patent 14 years
LOC (6) Cl. 03 - *99*

U.S. Cl. D3—320



389,312
TOOTHBRUSH WITH HANDLE
Timothy R. Porter, P.O. Box 8007, Tulsa, Okla. 74101-8007
Division of Ser. No. 35,092, Feb. 21, 1995, Pat. No. Des. 373,474. This application Jul. 11, 1996, Ser. No. 56,935
Term of patent 14 years
LOC (6) Cl. 04 - *02*

U.S. Cl. D4—104



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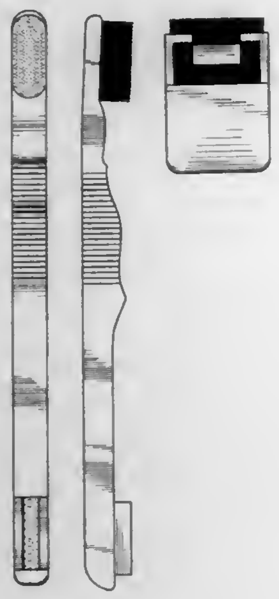
389,313
GUM AND TOOTH BRUSH

Steve Lolis, 409 McKinley St., Fairview, N.J. 07022
Filed Jul. 3, 1995, Ser. No. 41,055
Term of patent 14 years
LOC (6) Cl. 04 - *02*

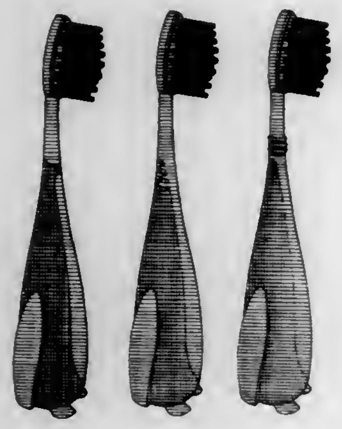
U.S. Cl. D4—106



389,314
CHILDREN'S TOOTH BRUSH

Carl Schiffer, Neustadt, Germany, assignor to M + C Schiffer GmbH, Neustadt, Germany
Filed Nov. 29, 1995, Ser. No. 47,228
Claims priority, application Germany, Jul. 18, 1995, M 95 05 657.2
Term of patent 14 years
LOC (6) Cl. 04 - *02*

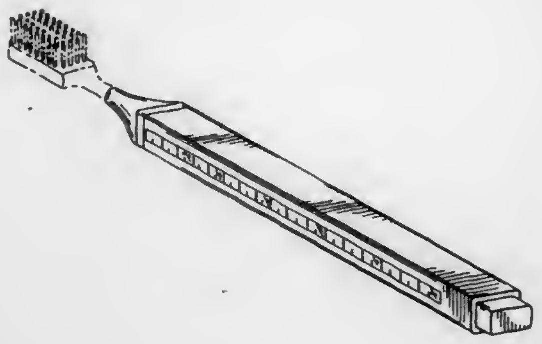
U.S. Cl. D4—107



389,315
COMBINED TOOTHBRUSH HANDLE WITH WINDOW AND TOOTHPASTE DISPENSER

Mauricio Garcia Travesí, 4209 Oak Lawn, Suite 207, Dallas, Tex. 75219
Filed Jul. 3, 1996, Ser. No. 56,627
Term of patent 14 years
LOC (6) Cl. 04 - *02*

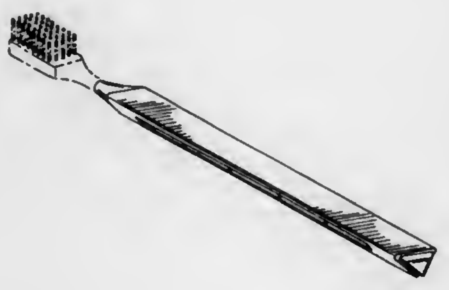
U.S. Cl. D4—108



389,316
COMBINED TOOTHBRUSH HANDLE WITH WINDOW AND TOOTHPASTE DISPENSER

Mauricio Garcia Travesí, 4209 Oak Lawn, Suite 207, Dallas, Tex. 75219
Filed Jul. 3, 1996, Ser. No. 56,636
Term of patent 14 years
LOC (6) Cl. 04 - *02*

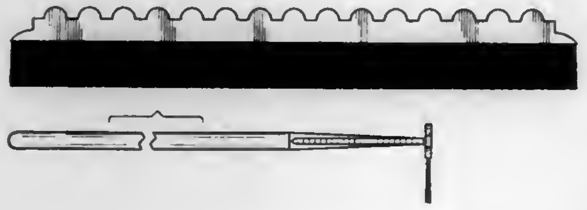
U.S. Cl. D4—114



389,317
COMBINED RAKE AND BRUSH FOR A TRUCK BEDLINER

Dennis C. Thatcher, R.R.#2 Box 278, Waterford, Ohio 45786
Filed Feb. 21, 1997, Ser. No. 66,800
Term of patent 14 years
LOC (6) Cl. 04 - *02*

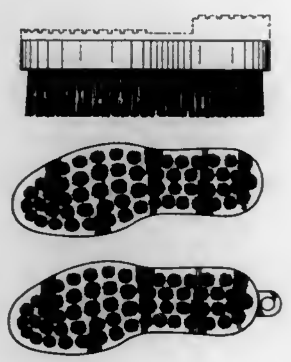
U.S. Cl. D4—118



389,318
SHOE BRUSH

Charles T. Williams, 52 Bow St., Carver, Mass. 02330
Filed Jan. 27, 1997, Ser. No. 65,511
Term of patent 14 years
LOC (6) Cl. 04 - *02*

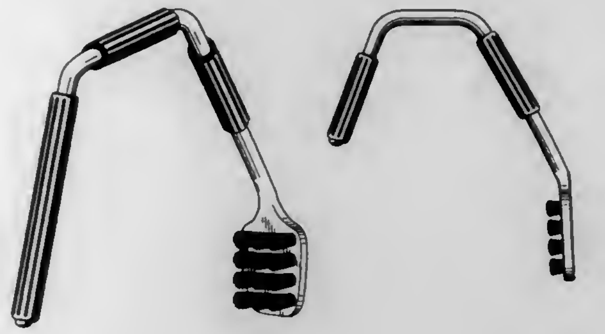
U.S. Cl. D4—130



389,319
SCRUB BRUSH

Joseph R. Gelinas, 3 Aspen Drive, Sylvan Lake, Alberta, Canada, T4S 1H5
Filed Feb. 22, 1996, Ser. No. 50,682
Claims priority, application Canada, Sep. 6, 1995, 1995-1988
Term of patent 14 years
LOC (6) Cl. 04 - *02*

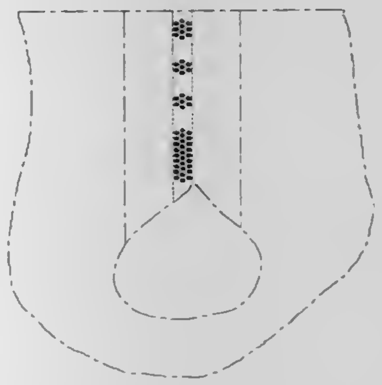
U.S. Cl. D4—132



389,320
SURFACE PATTERN FOR A DISPOSABLE ARTICLE SEAM

William R. Vinnage, and Kenneth B. Buell, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 11, 1996, Ser. No. 59,457
Term of patent 14 years
LOC (6) Cl. 05 - *04*

U.S. Cl. D5—63



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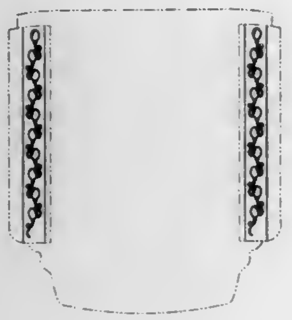
389,321
PAIR OF SEAMS FOR DISPOSABLE ARTICLE

Karin L. Toerner, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 17, 1997, Ser. No. 65,426
Term of patent 14 years
LOC (6) Cl. 05 - *04*

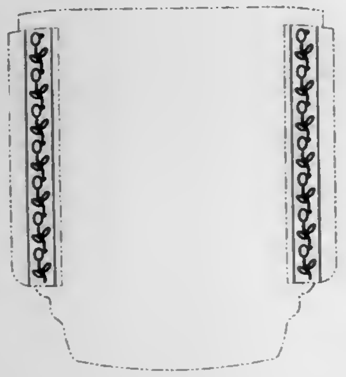
U.S. Cl. D5—64



389,322
PAIR OF SEAMS FOR DISPOSABLE ARTICLE

Karin L. Toerner, Cincinnati, and Dion A. Ruff, Milford, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 17, 1997, Ser. No. 65,423
Term of patent 14 years
LOC (6) Cl. 05 - *04*

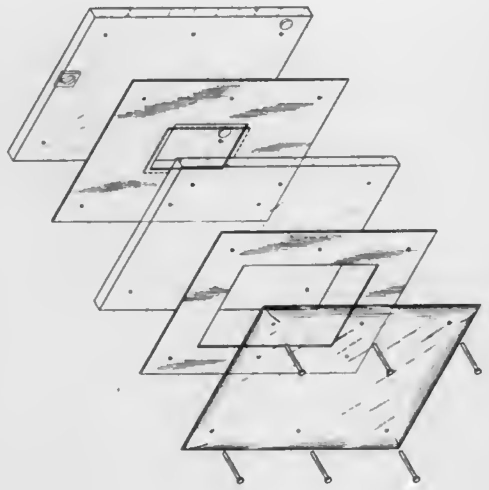
U.S. Cl. D5—66



389,323
SPORTS CARD DISPLAY APPARATUS

Len Buchert, and Brigitte Buchert, both of 152 Muir Cir., Woodland, Calif. 95695
Filed Nov. 21, 1996, Ser. No. 62,667
Term of patent 14 years
LOC (6) Cl. 06 - *07*

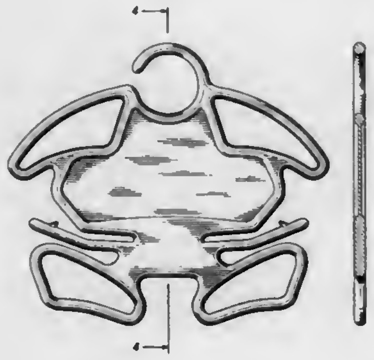
U.S. Cl. D6—314



389,324
HANGER

Michel J. Chiasson, Town of Mount Royal, Canada, assignor to Bauer, Inc., Quebec, Canada
Filed Feb. 25, 1997, Ser. No. 67,054
Term of patent 14 years
LOC (6) Cl. 06 - *08*

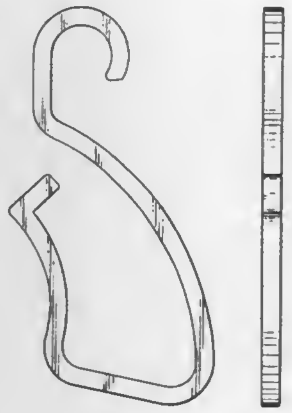
U.S. Cl. D6—315



389,325
VEST HANGER

Paul Kedzior, Warren, Mich., assignor to President Tuxedo Rental, Inc., Warren, Mich.
Filed Mar. 6, 1997, Ser. No. 67,509
Term of patent 14 years
LOC (6) Cl. 06 - *08*

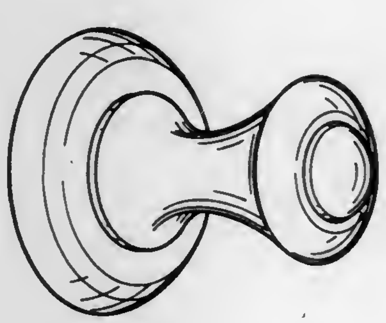
U.S. Cl. D6—315



389,326
ROBE HOOK

Glenn David Moore, Newfoundland, N.J., assignor to Melard Manufacturing Corp., Passaic, N.J.
Filed May 24, 1996, Ser. No. 54,951
Term of patent 14 years
LOC (6) Cl. 06 - *08*

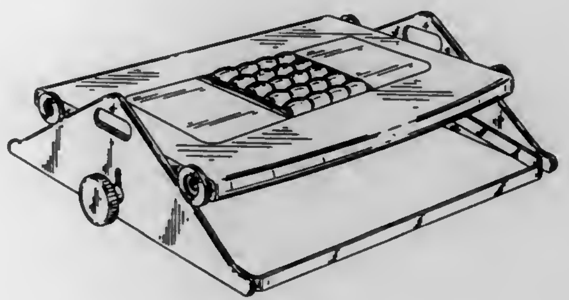
U.S. Cl. D6—323



389,327
FOOT REST

Robert King, New York, N.Y., assignor to Softview Computer Products Corp., New York, N.Y.
Filed Jul. 1, 1996, Ser. No. 56,507
Term of patent 14 years
LOC (6) Cl. 06 - *01*

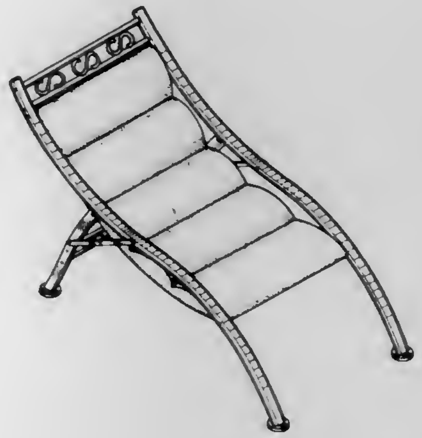
U.S. Cl. D6—353



389,328
CHAISE LOUNGE

Chuen-Shyan Tseng, No. 3, Ting-Hsi-Hsin, Lu-Man Tsun, Chu-Chi Hsiang, Chiayi Hsien, Taiwan
Filed Jun. 28, 1996, Ser. No. 56,448
Term of patent 14 years
LOC (6) Cl. 06 - *01*

U.S. Cl. D6—361



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389,329
STACKABLE CHAIR

Wolf-Dieter Krause, Wilhelmstrasse 82, 48149 Münster, and Rainer Schmitz, Kösliner Strasse 67, 48147 Munster, both of Germany

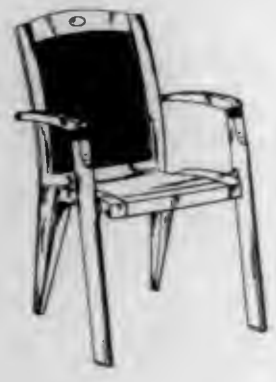
Filed Nov. 26, 1996, Ser. No. 63,068

Claims priority, application Hague Agreement, May 29, 1996, DM/036532

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—370



389,330
SEAT

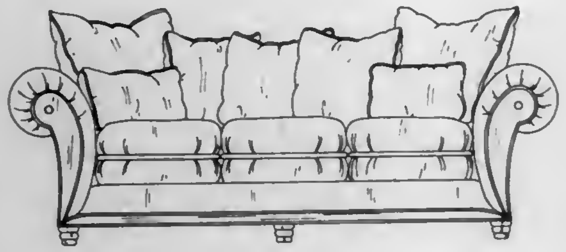
Thomas A. Jordan, Liberty, N.C., assignor to Michael Thomas Furniture, Inc., Liberty, N.C.

Filed Mar. 12, 1996, Ser. No. 51,503

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—381



389,331
SEAT

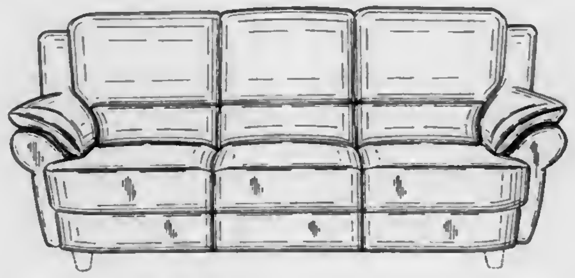
Pasquale Natuzzi, Santeramo In Colle, and Domenico Abbruzzese, Gioia del Colle, both of Italy, assignors to Industrie Natuzzi, Spa, Bari, Italy

Filed Dec. 11, 1996, Ser. No. 63,656

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—381



389,332
CONVERTIBLE CRIB

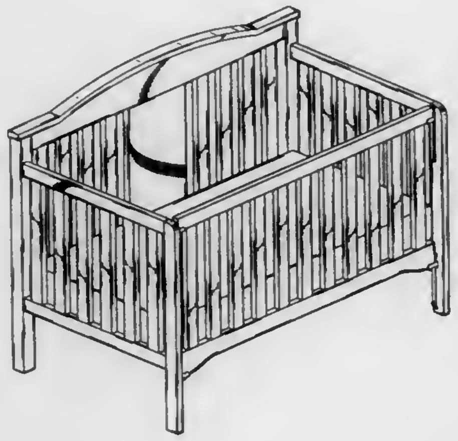
Patrick Lee Pollard, Columbus, Ga., assignor to Baby's Dream Furniture, Inc., Buena Vista, Ga.

Filed Mar. 7, 1997, Ser. No. 67,433

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—390



389,333
PADDED SEAT TOY BOX AND SHEVLES

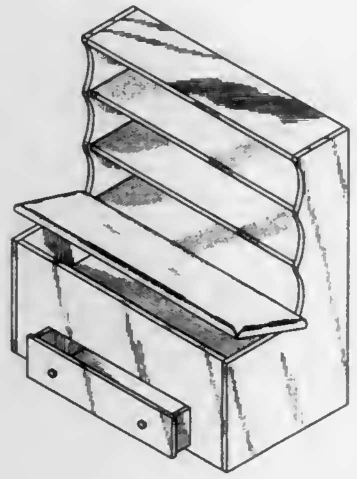
John Griffith, 320 Cricket Lake Dr., Naples, Fla. 33960

Filed Aug. 6, 1996, Ser. No. 58,017

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—397



389,334
UMBRELLA HOLDER

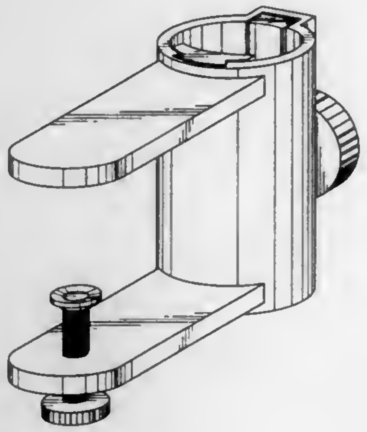
Wayne Attridge, 7440 Reeder Road, Richmond, BC, Canada, V7A 1C3

Filed Oct. 4, 1996, Ser. No. 60,707

Term of patent 14 years

LOC (6) Cl. 06 - *06*

U.S. Cl. D6—418



389,335
DESK WITH REVERSIBLE PEDESTALS

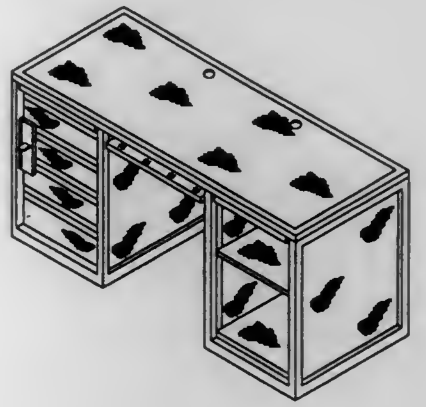
Max L. Tilley, Peyton, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 48,230, Dec. 22, 1995, abandoned, which is a division of Ser. No. 44,001, Aug. 14, 1995, Pat. No. Des. 381,827. This application Nov. 15, 1996, Ser. No. 62,981

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—422



389,336
DESK UNIT

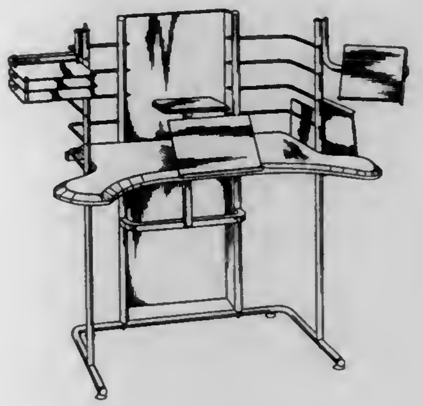
Edward Moore, c/o 215 Grand Pre, L'Acadie, Quebec, Canada, J2Y 1J6

Filed Dec. 23, 1996, Ser. No. 64,172

Term of patent 14 years

LOC (6) Cl. 06 - *03*

U.S. Cl. D6—426



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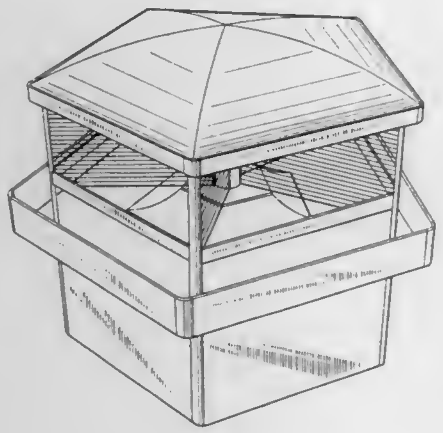
389,337

COOLER FOR BOTTLES

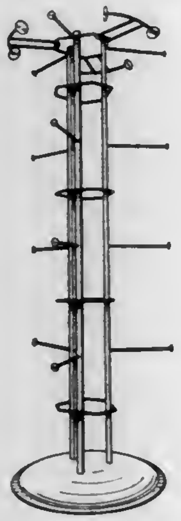
Jan Egil Fløysvik, Sandnes, Norway, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Mar. 27, 1996, Ser. No. 52,277
Claims priority, application Norway, Sep. 28, 1995, 950724
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—455



389,338

DISPLAY RACK

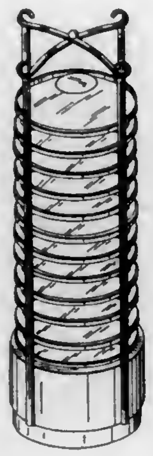
Edward James Vairo, New York, N.Y., assignor to Crown Crafts, Incorporated, Atlanta, Ga.
Filed Jan. 10, 1997, Ser. No. 64,836
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—458



389,339

JEWELRY DISPLAY STAND

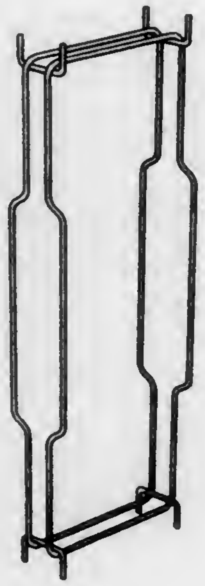
Frank Garafano, Jr., Johnston, R.I., assignor to Displays by Garo, Inc., Johnston, R.I.
Filed Jul. 16, 1996, Ser. No. 57,102
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D6—459



389,340

FRAME

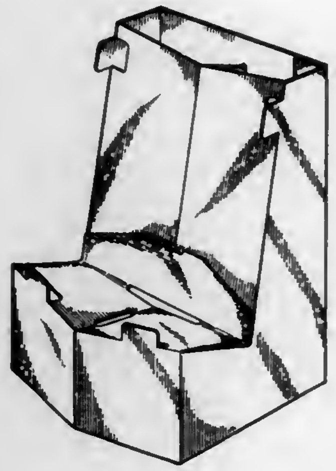
Cheung Chong Kao, Hong Kong, Hong Kong, assignor to Boto (Licenses) Limited, Isle of Man
Filed Jan. 8, 1997, Ser. No. 64,656
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—462



389,341

GUITAR STAND

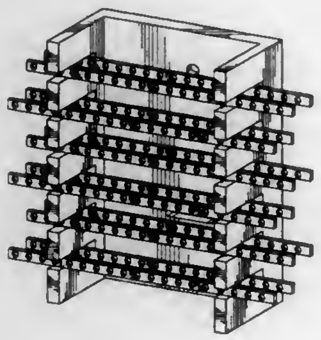
Mark Alan Danner, 400 W. Appleby, #12, Fayetteville, Ark. 72703, and Lee Hite, 904 Highland, Springdale, Ark. 72764
Filed May 1, 1996, Ser. No. 55,801
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—466



389,342

MULTI-PURPOSE ARTICLE ORGANIZER

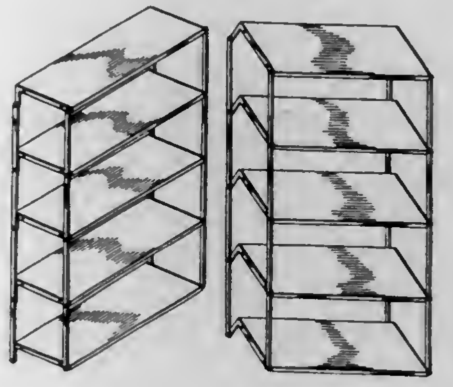
Ricky Stofflet, 215 Deer Run Rd., Bechtelsville, Pa. 19505
Filed Apr. 26, 1996, Ser. No. 53,709
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—468



389,343

SHELVING UNIT

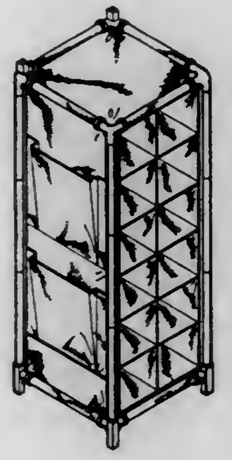
Willem Jacobus Van Der Merwe, and Johannes Abraham Burger, both of P.O. Box 12723, Clubview, South Africa, 0014
Filed Apr. 23, 1996, Ser. No. 53,471
Claims priority, application South Africa, Oct. 30, 1995, A95/1047
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—474



389,344

CABINET

Chen Kun-Tang, P.O. Box 82-144, Taipei, Taiwan
Filed May 20, 1996, Ser. No. 54,688
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—476



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389,345

MULTI LEVEL ARTICLE SUPPORT SHELF

Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France

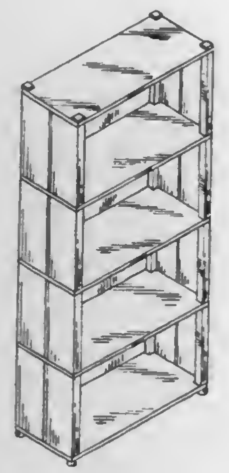
Filed May 10, 1996, Ser. No. 53,508

Claims priority, application Hague Agreement, Nov. 10, 1995, DM/037130

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—478



389,346

TABLE

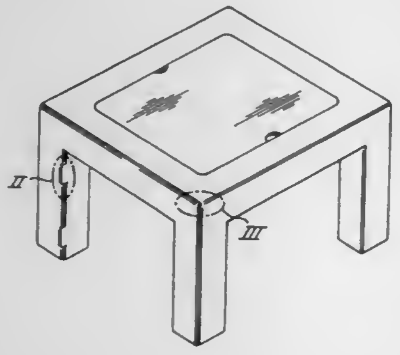
Wolfram Schefcik, Wenedikterstrasse 7, A-9500 Villach, Austria

Division of Ser. No. 34,287, Jan. 31, 1995, Pat. No. Des. 378,028. This application Oct. 1, 1996, Ser. No. 60,582

Term of patent 14 years

LOC (6) Cl. 06 - *03*

U.S. Cl. D6—484



389,347

TRIANGLE COCKTAIL TABLE

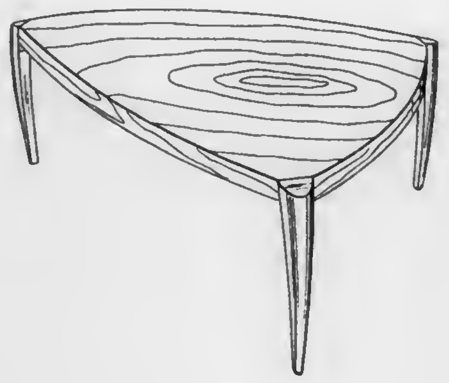
Cari A. Muller, Altadena, Calif., assignor to Elite Manufacturing Corporation, Gardena, Calif.

Filed Dec. 18, 1996, Ser. No. 63,886

Term of patent 14 years

LOC (6) Cl. 06 - *03*

U.S. Cl. D6—484



389,348

SUPPORT LEG

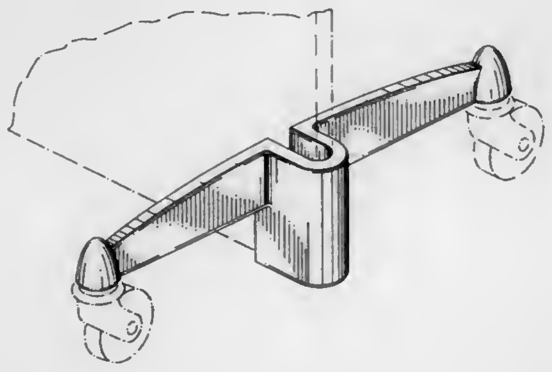
Hugo E. C. Eccles, London, United Kingdom, and Joylene M. Battey, Kentwood, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 7, 1996, Ser. No. 55,547

Term of patent 14 years

LOC (6) Cl. 06 - *06*

U.S. Cl. D6—495



389,349

DISPLAY PANEL

Antonio Canton Gongora; Carlos Jesús Cruz Fernandez; José María Muñagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Madrid, Spain, assignors to Telefonica de España, S.A., Madrid, Spain

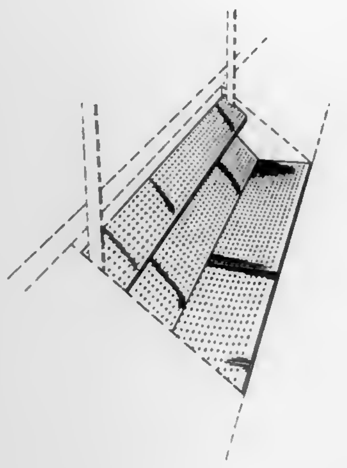
Filed Nov. 21, 1996, Ser. No. 62,705

Claims priority, application Spain, May 21, 1996, 137531

Term of patent 14 years

LOC (6) Cl. 06 - *06*

U.S. Cl. D6—509



389,350

TISSUE CANISTER

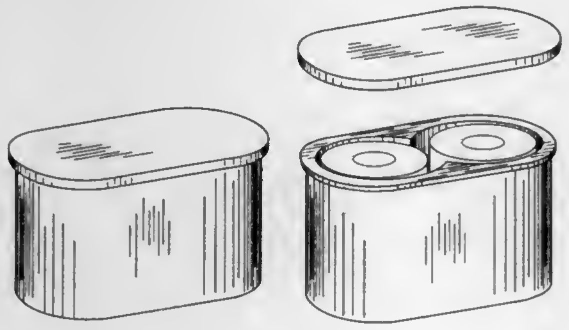
Laureen A. Davis, P.O. Box 211, and Dennis G. Kowalski, 109 Lake Aire Dr., both of Chetek, Wis. 54728

Filed Aug. 28, 1996, Ser. No. 59,634

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D6—520



389,351

SHOWER CABINET

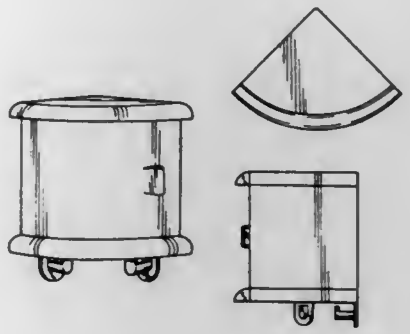
Paul H. Winter, Wilmington, Del., assignor to Zenith Products Corp., New Castle, Del.

Filed Sep. 4, 1996, Ser. No. 59,163

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D6—525



389,352

SHOWER CADDY

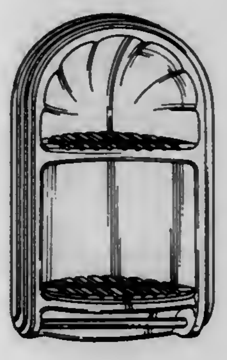
Mariene Pagán-Demirtas, Brookhaven, Pa., assignor to Zenith Products Corp., New Castle, Del.

Filed Sep. 4, 1996, Ser. No. 59,194

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D6—525



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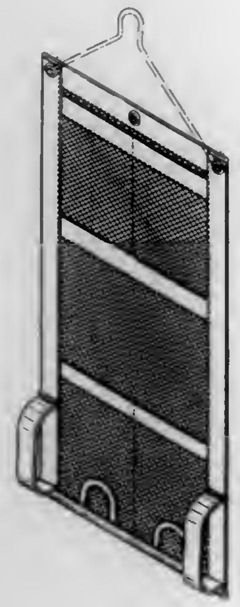
389,353
SHOWER CADDY

Shailesh Patel, Glenview, Ill., assignor to Selfix, Inc., Chicago, Ill.

Filed Dec. 30, 1996, Ser. No. 64,338
Term of patent 14 years
LOC (6) Cl. 07 - *07*

U.S. Cl. D6—525

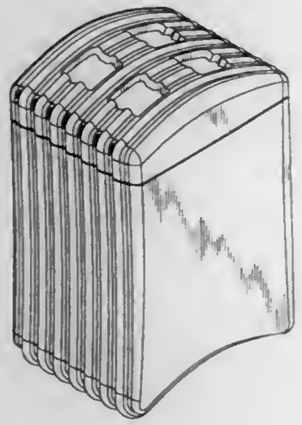


389,354
TOOTHBRUSH HOLDER

Junior Julian Hsu, 3633 Palm Canyon, Northbrook, Ill. 60062

Filed Oct. 25, 1996, Ser. No. 61,544
Term of patent 14 years
LOC (6) Cl. 04 - *02*

U.S. Cl. D6—534

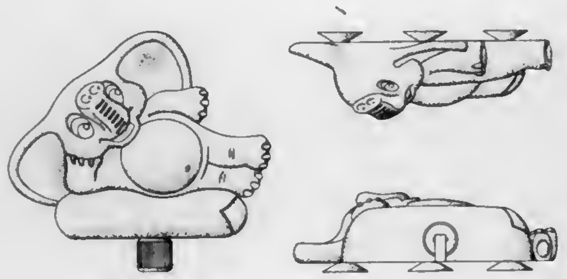


389,355
LIQUID DISPENSER

Gail B. Frankel, Dallas, Tex., assignor to Kel-Gar, Inc., Dallas, Tex.

Filed Oct. 25, 1996, Ser. No. 61,524
Term of patent 14 years
LOC (6) Cl. 07 - *07*

U.S. Cl. D6—545

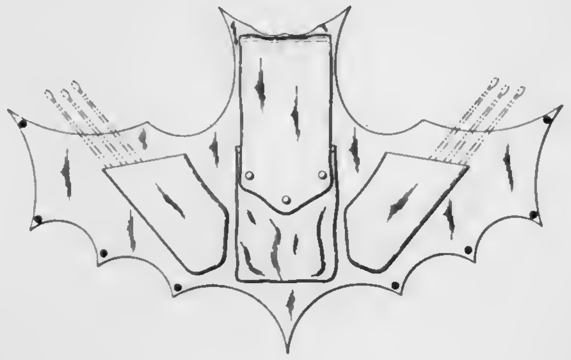


389,356
DRUM STICK HOLDER

David Calabrese, 137 Kennedy Dr., Lodi, N.J. 07644

Filed May 29, 1996, Ser. No. 55,107
Term of patent 14 years
LOC (6) Cl. 07 - *06*

U.S. Cl. D6—569

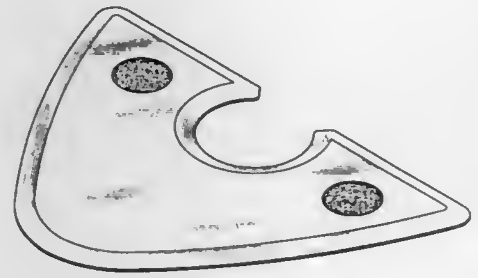


389,357
PUMICE SHOWER BATH MAT

Marijan L. Nelson, 11595 County Hwy. 77W, Nisswa, Minn. 56468

Filed Feb. 14, 1997, Ser. No. 66,545
Term of patent 14 years
LOC (6) Cl. 06 - *11*

U.S. Cl. D6—583

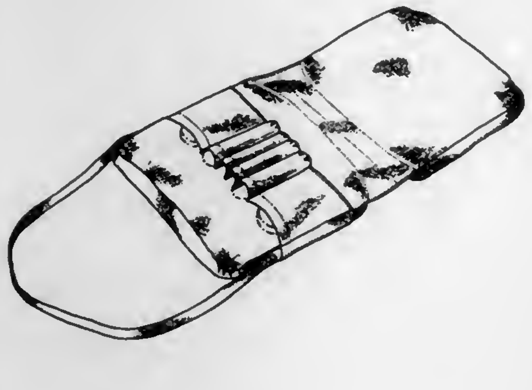


389,358
PORTABLE SEAT

Patricia Coleman, 126 4th St. SW., Chesley, Ontario, Canada, N0G 1L0

Filed Oct. 3, 1996, Ser. No. 60,661
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601

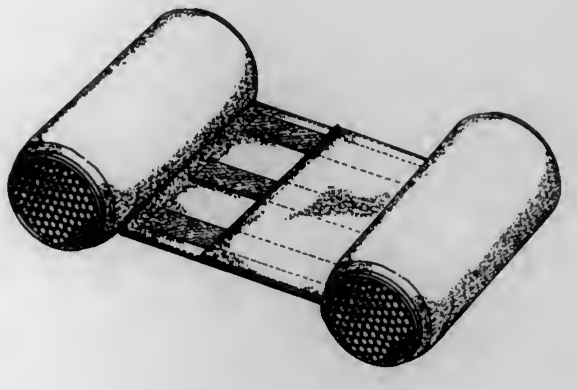


389,359
INFANT SUPPORT CUSHION

Ralph M. Nowak, Marblehead, Mass., assignor to The First Years Inc., Avon, Mass.

Filed Oct. 31, 1996, Ser. No. 61,814
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601

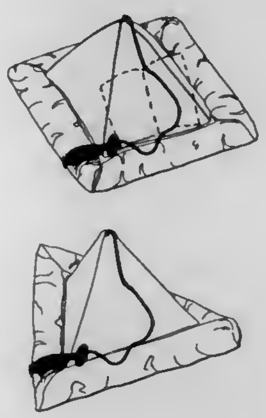


389,360
BOOKREST PILLOW

Charlotte Overton York, 3654 Hedrick St., Jacksonville, Fla. 32205, and Carolyn Overton Morton, 1630 Pineview Dr., Raleigh, N.C. 27606

Filed Jan. 3, 1997, Ser. No. 64,505
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



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389,361

QUILT

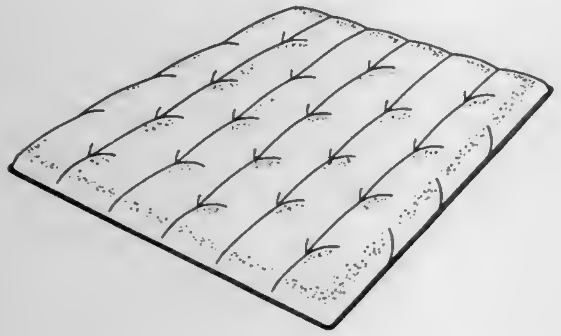
Tage Lennart Nilsson, Delta, Canada, assignor to Northern Feather Ltd., Canada

Filed Jan. 27, 1997, Ser. No. 65,516

Term of patent 14 years

LOC (6) Cl. 06 - *13*

U.S. Cl. D6—603



389,362

BEACH TOWEL WITH HEAD REST STORAGE DEVICE

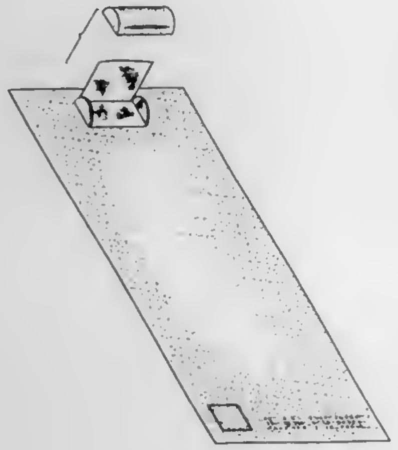
Jean-Pierre Boulatian, 800 E. Acacia #E, Glendale, Calif. 91205

Filed Jan. 23, 1997, Ser. No. 65,191

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D6—608



389,363

COVERING DEVICE FOR A MERCHANDISING DISPLAY

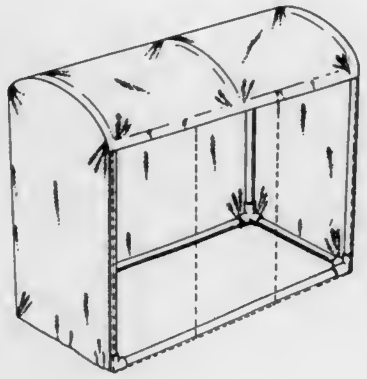
James David Robertson, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 4, 1996, Ser. No. 62,373

Term of patent 14 years

LOC (6) Cl. 06 - *13*

U.S. Cl. D6—610



389,364

ILLUMINATED DEVICE FOR A BEVERAGE GLASS

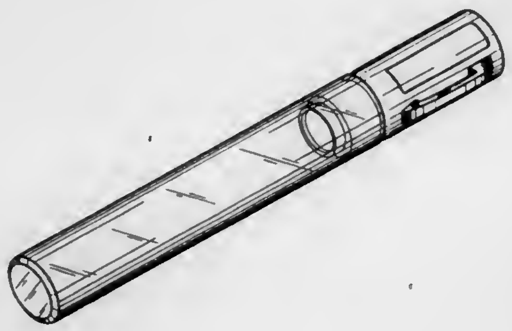
Michael Vallarella, 35 Miller Rd., and Chris Vallarella, 42 Anita Pl., both of Farmingdale, N.Y. 11735

Filed Aug. 9, 1996, Ser. No. 58,198

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—300.2



389,365

WAVY STRAW

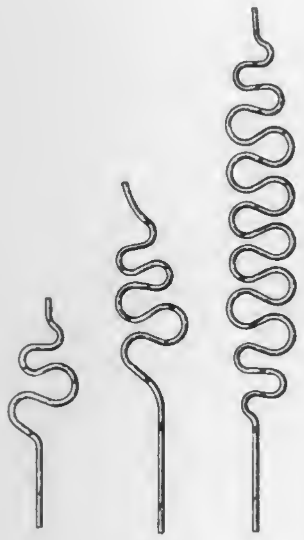
Erik Lipson, Philadelphia, Pa., assignor to Fun-Time International, Inc., Philadelphia, Pa.

Filed Sep. 24, 1996, Ser. No. 60,184

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—300.2



389,366

STRAW

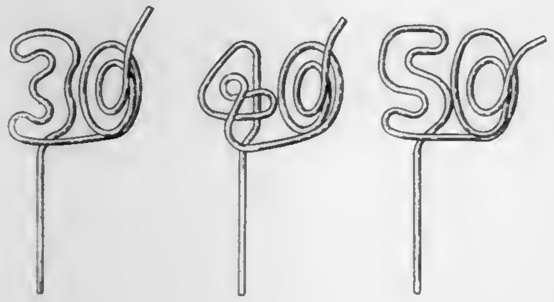
Erik Lipson, Philadelphia, Pa., assignor to Fun-Time International, Inc., Philadelphia, Pa.

Filed Sep. 24, 1996, Ser. No. 60,185

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—300.2



389,367

STRAW

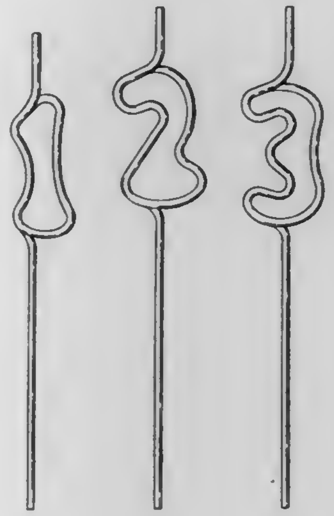
Erik Lipson, Philadelphia, Pa., assignor to Fun-Time International, Inc., Philadelphia, Pa.

Filed Sep. 24, 1996, Ser. No. 60,186

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—300.2



389,368

CHILLED BEVERAGE DISPENSER

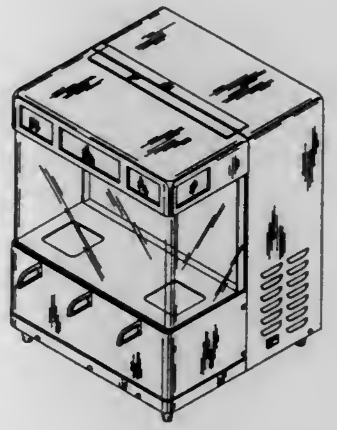
Ronald D. Parks, St. Louis, and Kurt E. Trostel, Brentwood, both of Mo., assignors to Multiplex Company, Inc., St. Louis, Mo.

Filed Jan. 7, 1997, Ser. No. 64,616

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—308



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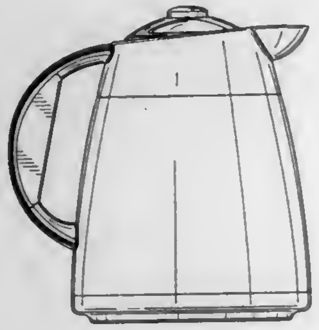
CARAFE

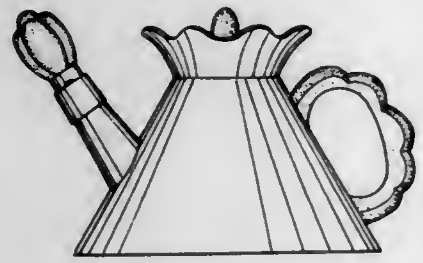
Jan Hippen, Portland, Oreg., assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 29, 1996, Ser. No. 62,874
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—319



389,370

TEA POT

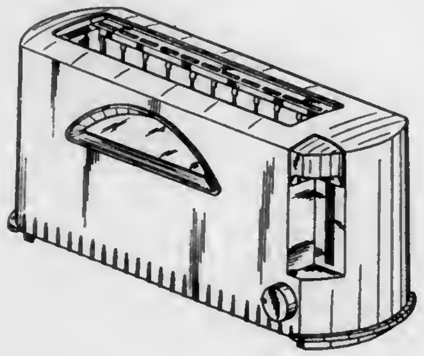
Jeff Lee, No. 280, Yen-Ho St., Yung-Kang City, Tainan Hsien, Taiwan
Filed Mar. 11, 1997, Ser. No. 67,599
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—321



389,371

TOASTER

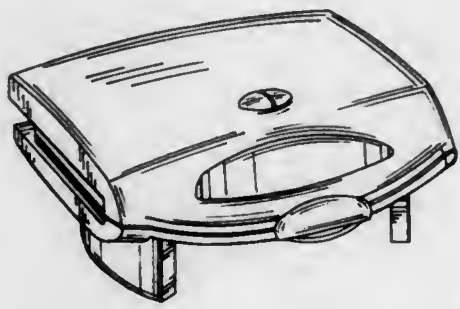
Yann Thiebold, Bures sur Yvette, and Pierre-Louis Ponomareff, Bonnelles, both of France, assignors to SEB, Selongey, France
Filed Nov. 6, 1996, Ser. No. 59,513
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—330



389,372

ELECTRIC GRILL

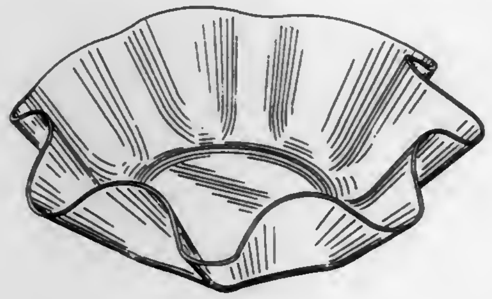
Philippe Saltet, Paris, France, assignor to Moulinex S.A., Paris, France
Filed Aug. 28, 1996, Ser. No. 59,139
Claims priority, application France, Feb. 28, 1996, 96 1251
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—352



389,373

TORTILLA/TACO SHELL BAKE PAN

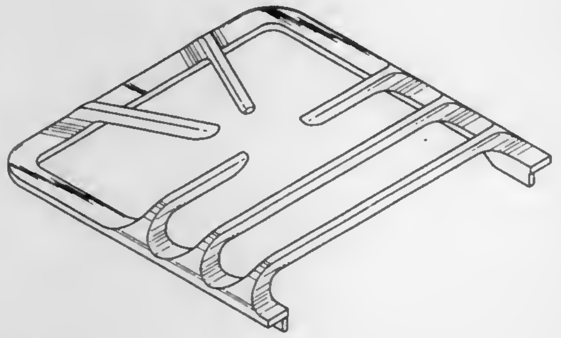
John F. Belue, Hanover Park, Ill., assignor to C.M. Products, Inc., Lake Zurich, Ill.
Filed Dec. 6, 1996, Ser. No. 63,361
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—354



389,374

OVEN GRATE

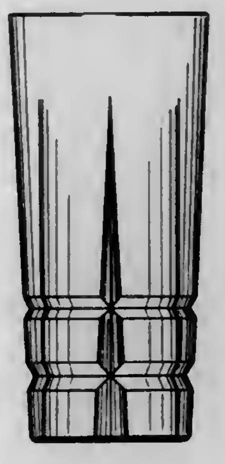
Lisa M. Miller, Iowa City, Iowa, assignor to Maytag Corporation, Newton, Iowa
Filed Jul. 18, 1996, Ser. No. 57,178
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—408



389,375

GLASS

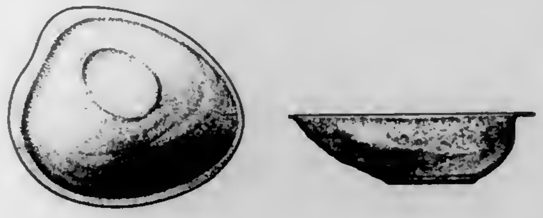
Kenneth R. Benson, Southbury, Conn., assignor to Libbey Glass Inc., Toledo, Ohio
Filed Jan. 24, 1997, Ser. No. 65,683
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—530



389,376

CLAM-LIKE SEAFOOD SERVING DISH

Edward Cooley, 73 Ocean Breeze, Hilton Head, S.C. 29928
Filed Mar. 14, 1996, Ser. No. 53,347
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—564



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389,377

DECORATED PLATE

Franco Giorgi, Civita Castellana, Italy, assignor to Ceramica Quadrifoglio S.r.L., Gallese, Italy

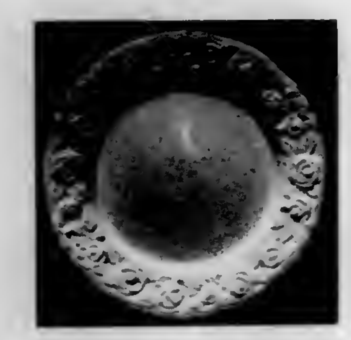
Filed Dec. 23, 1996, Ser. No. 64,177

Claims priority, application Italy, Jul. 31, 1996, RM9600147

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—568



389,378

PLATE

Kay Illingworth, 118 Long Lane, Charlesworth Via Hyde Cheshire SK14 6ES, Great Britain

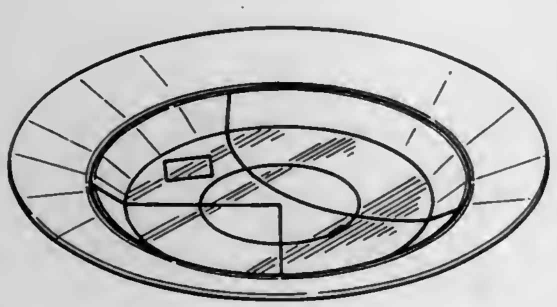
Filed Dec. 26, 1996, Ser. No. 64,281

Claims priority, application United Kingdom, Jun. 27, 1996, 2057287

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—571



389,379

SHEET CAKE PLATE AND COVER

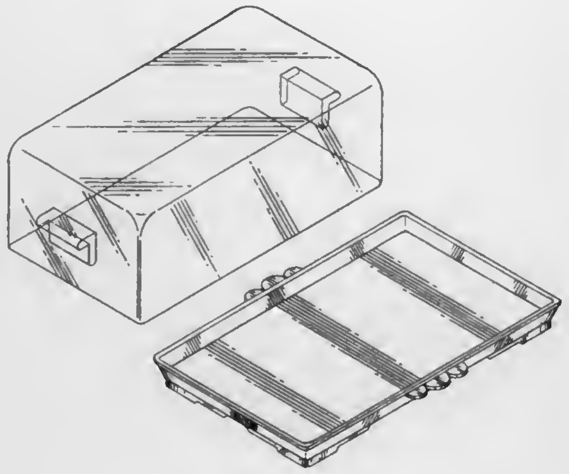
Sara K. Samuels, 8301 Trabue Rd., Richmond, Va. 23235-2540

Filed Sep. 26, 1996, Ser. No. 60,323

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D7—610



389,380

BREAD SLICING RACK

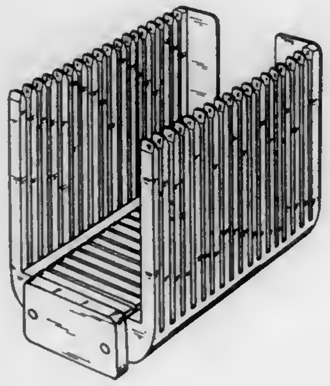
Simon Yiu-Chung Liu, West Bend, Wis., and Cheng Yue-Chun, Kwai Chung, Hong Kong, assignors to West Bend Company, West Bend, Wis.

Filed Sep. 14, 1995, Ser. No. 44,008

Term of patent 14 years

LOC (6) Cl. 07 - *04*

U.S. Cl. D7—673



389,381

INVERTED CONTAINER FOR HOLDING BOTTLES

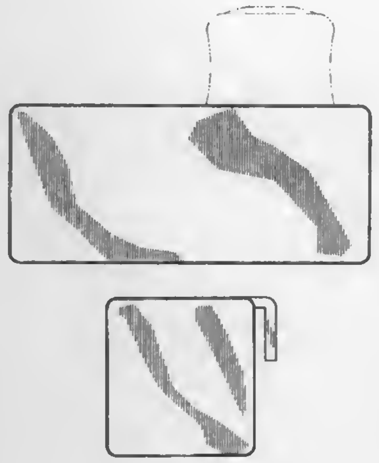
Faith G. Smith, 984 S. Marshall St., Front Royal, Va. 22630

Filed Dec. 4, 1995, Ser. No. 47,426

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—701



389,382

EDGER BLADE

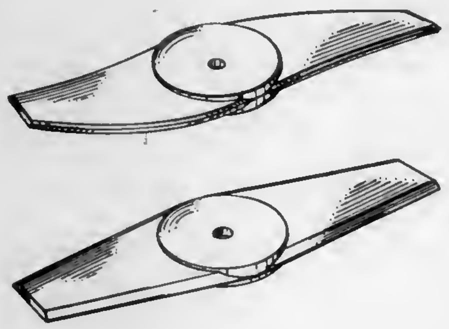
Elmer R. Houle, 2221 N. 40th St., Phoenix, Ariz. 85008

Filed Sep. 25, 1996, Ser. No. 60,249

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—8



389,383

BOTTLE CAP OPENER

Stig Mannberg, Uppsala; Hans Himbert, Bromma; Maria Benktzon, Sollentuna, and Carl-Göran Crafoord, Djursholm, all of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

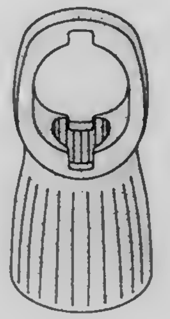
Filed Jul. 23, 1996, Ser. No. 57,342

Claims priority, application Sweden, Jan. 23, 1996, SE960142

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D8—40



389,384

ELECTRIC DRILL

Tat Nin Lui, Aberdeen, Hong Kong, assignor to Choon Nang Electrical Appliance Mfty. Ltd., Aberdeen, Hong Kong

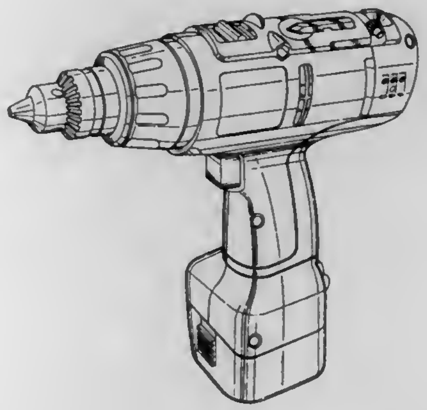
Continuation-in-part of Ser. No. 43,525, Sep. 6, 1995, Pat. No. Des. 377,893. This application Nov. 12, 1996, Ser. No. 62,259

Claims priority, application United Kingdom, Mar. 8, 1995, 2045937

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—68



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389,385
HANDLE FOR POWER SHEARS

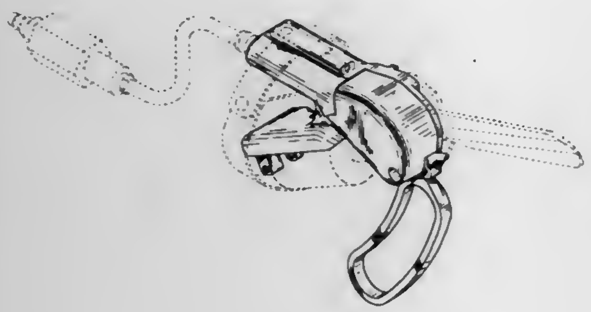
Raymond J. Herrmann, Westlake, and Thomas M. Prast, Huron, both of Ohio, assignors to Bettcher Industries, Inc., Birmingham, Ohio

Division of Ser. No. 445,344, May 19, 1995, which is a continuation-in-part of Ser. No. 330,183, Oct. 27, 1994, abandoned, which is a division of Ser. No. 132,526, Oct. 6, 1993, Pat. No. 5,375,330. This application Dec. 12, 1995, Ser. No. 47,776

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—70



389,386
TRUCKER'S HELPER UNWINDER DRILL BIT FOR TRUCK ROLLER STRAPS UTILIZED ON TRACTOR-TRAILER FLAT BEDS

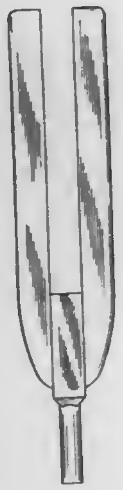
Richard T. Barrett, 12 First Ave., Eatontown, N.J. 07724

Filed Aug. 8, 1996, Ser. No. 58,102

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—70



389,387
TRUCKER'S HELPER REWINDER DRILL BIT FOR TRUCK ROLLER STRAPS UTILIZED ON TRACTOR-TRAILER FLAT BEDS

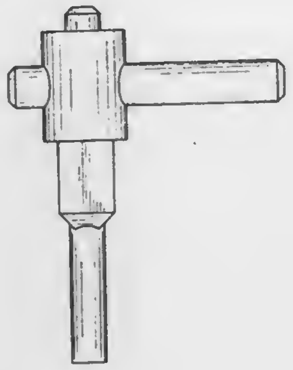
Richard T. Barrett, 12 First Ave., Eatontown, N.J. 07724

Filed Aug. 8, 1996, Ser. No. 58,103

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—70



389,388
SANDING SHEET

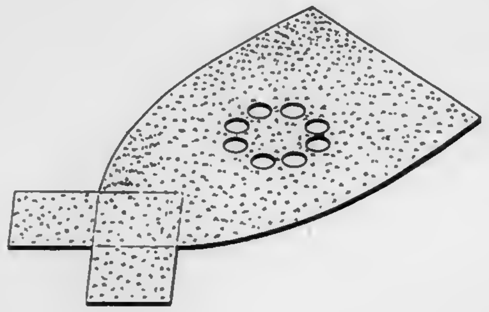
Stephen Longstaff, Bishop Auckland; Michael Martin, Darlington; Eric Cockburn, Spennymoor, and Colin Pugh, Wingate, all of United Kingdom, assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 5, 1996, Ser. No. 51,211

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—90



389,389
FOLDING KNIFE

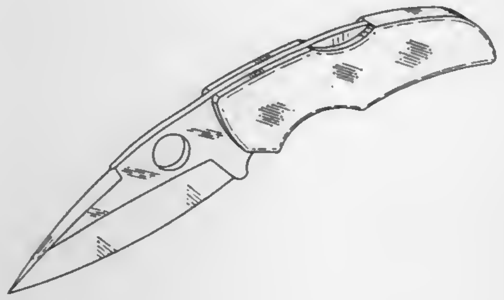
Louis S. Glesser, Golden, Colo., assignor to Spyderco, Inc., Golden, Colo.

Filed Apr. 29, 1996, Ser. No. 53,741

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—99



389,390
CIGAR-SHAPED LETTER OPENER WITH COVER

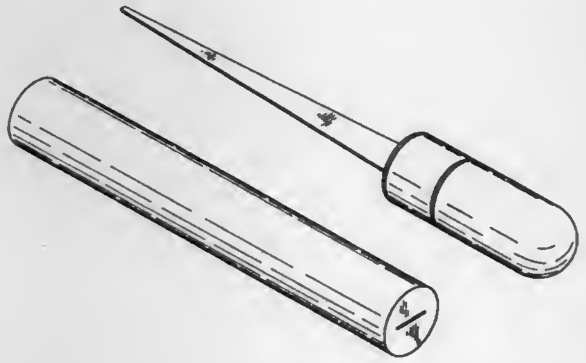
John S. Roberts, 10 Chestnut St., Chatham, N.J. 07928

Filed Jan. 13, 1997, Ser. No. 65,410

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—103



389,391
BICYCLE SHIFTER GRIP WITH SHARKTOOTH DESIGN

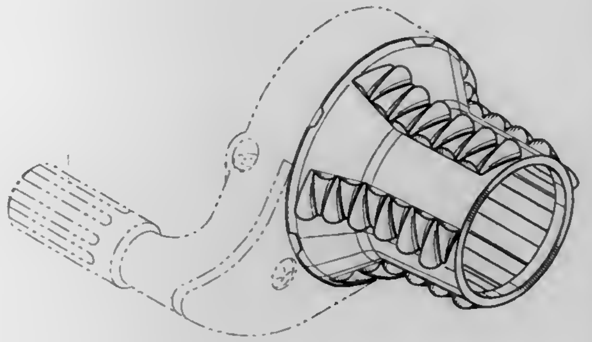
Tyler D. Duston, Chicago, Ill., assignor to Sram Corporation, Chicago, Ill.

Continuation of Ser. No. 330,285, Oct. 27, 1994. This application Nov. 28, 1994, Ser. No. 31,421

Term of patent 14 years

LOC (6) Cl. 08 - *06*

U.S. Cl. D8—303



389,392
DOORKNOB

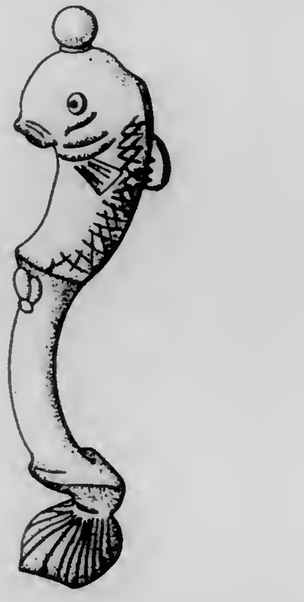
Chen Wan, P.O. Box 63-150, Taichung, Taiwan

Filed Jul. 29, 1996, Ser. No. 57,580

Term of patent 14 years

LOC (6) Cl. 08 - *06*

U.S. Cl. D8—305



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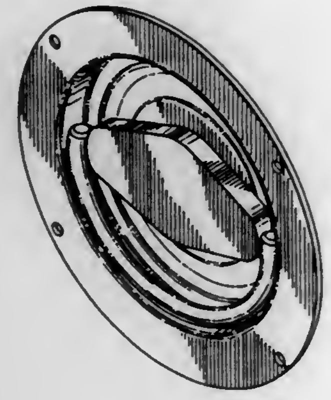
389,393

HANDLE FOR VEHICLES

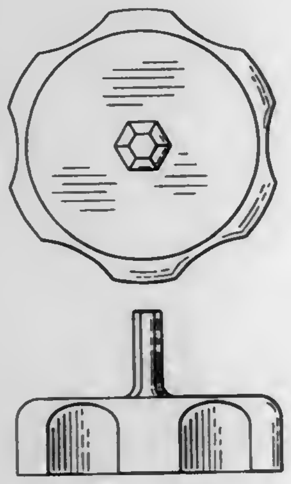
Randall C. Hansen, 6 Old Mill Ct., Columbia, S.C. 29206
Filed Apr. 4, 1996, Ser. No. 52,643
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—310



389,394

WINDOW OPENING AND CLOSING DEVICE

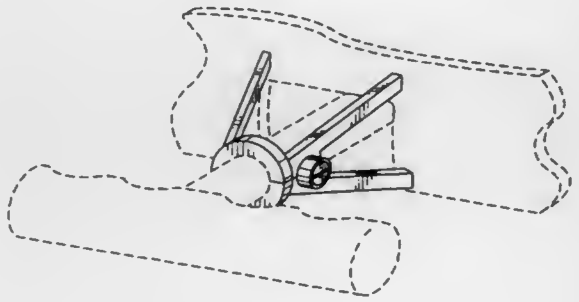
Loren R. Taylor, 1420 NE. 103rd Ct., Vancouver, Wash. 98664
Filed Apr. 1, 1996, Ser. No. 53,135
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—312



389,395

EMERGENCY BRAKE LOCK

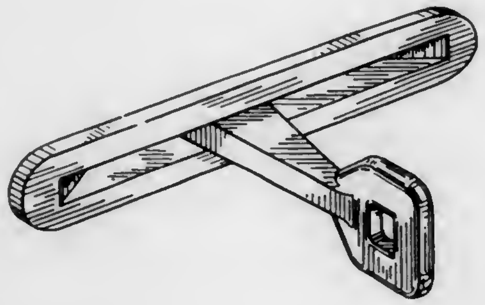
Anthony J. Gencarelli, 94/1026 Aoku St., Waipahu, Hi. 96797
Filed Feb. 1, 1996, Ser. No. 49,859
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—331



389,396

WINDOW LOCK HANDLE AND ESCUTCHEON

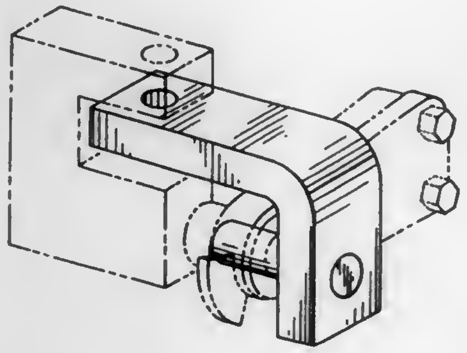
Douglas G. Johnson, Blooming Prairie; Timothy T. Frenzen, Owatonna, and Joseph P. Landherr, Rose Creek, all of Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.
Filed Nov. 26, 1996, Ser. No. 63,074
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—337



389,397

THEFT INHIBITING DEVICE FOR A GLADHAND AIR SUPPLY

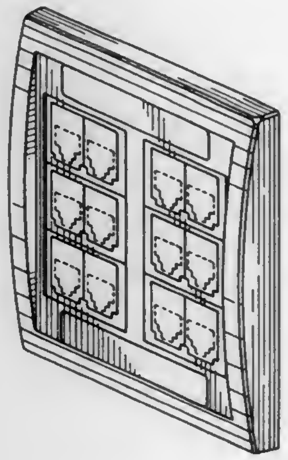
Clyde G. Stech, Smithville, Tex., assignor to Security Masters, Ltd., Austin, Tex.
Filed Aug. 8, 1996, Ser. No. 58,284
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—346



389,398

FACEPLATE

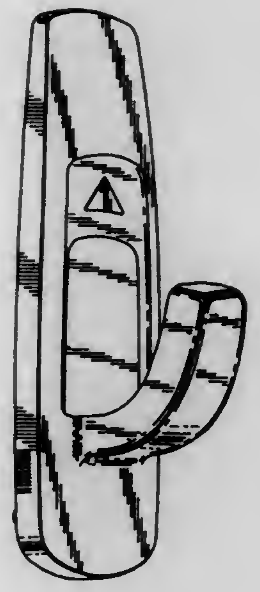
Craig Scherer, Wilmette, and Michael Thuma, Des Plaines, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Nov. 12, 1996, Ser. No. 62,219
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D8—353



389,399

WALL HOOK

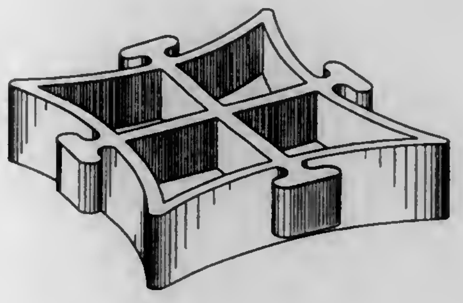
James L. Bries, Cottage Grove; Patrick J. Cappucci, Minneapolis, both of Minn.; David C. Stowers, Nutley, N.J.; James C. Wightman, Bloomfield, N.J., and Michael P. Zambelli, Livingston, N.J., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 1, 1995, Ser. No. 39,674
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—367



389,400

FILTER CONNECTOR CLIP

Li-Shiang Liang, Harvard, Mass., assignor to United States Filter Corporation, Palm Desert, Calif.
Filed Feb. 9, 1996, Ser. No. 50,138
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382



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389,401

PACKAGE FOR AN ELONGATED ARTICLE

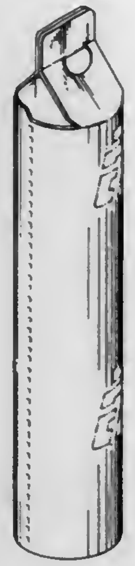
John M. Holley, Jr., Lawrenceville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jul. 16, 1996, Ser. No. 57,080

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—415



389,402

PACKAGING FOR CABLES

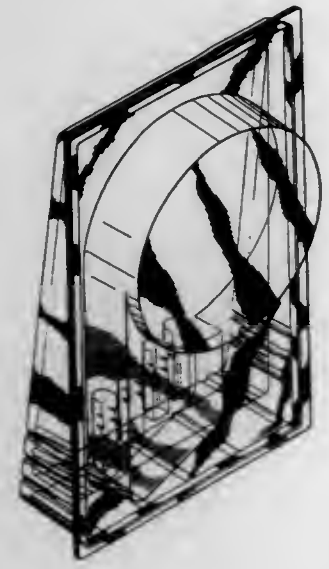
Noel Lee, Daly City, Calif., assignor to Monster Cable International, Ltd., Bermuda

Division of Ser. No. 51,215, Mar. 15, 1996, Pat. No. Des. 380,963, which is a division of Ser. No. 36,673, Mar. 24, 1995, Pat. No. Des. 372,193. This application Oct. 31, 1996, Ser. No. 61,951

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—415



389,403

CONTAINER

Michael John Rahr, London, England, assignor to Symbiotic Sampling Ltd., Seven Oaks, United Kingdom

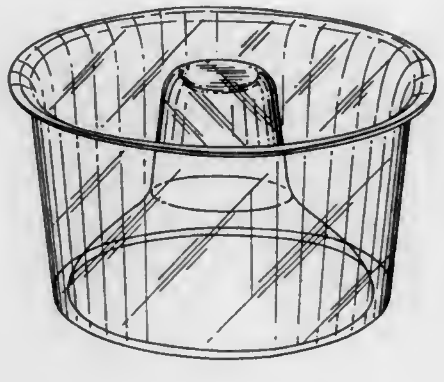
Filed May 20, 1996, Ser. No. 54,675

Claims priority, application United Kingdom, Nov. 20, 1995, 2052118

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—428



389,404

BOTTLE CARRIER WITH FINGER GRIPS

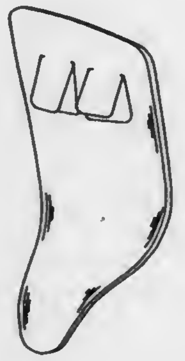
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806

Filed Jan. 29, 1996, Ser. No. 49,563

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—434



389,405

CAP FOR AEROSOL CONTAINERS

Hubertus P. M. van Putte, Bergen op Zoom, Netherlands, assignor to Menken Dairy Food B.V., Netherlands

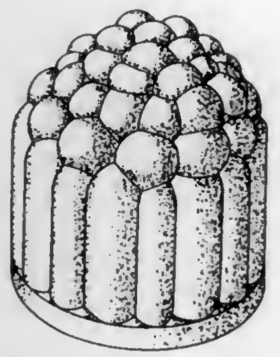
Filed Sep. 5, 1996, Ser. No. 59,243

Claims priority, application Benelux TM/Des. Off., Mar. 6, 1996, 71649-00

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—435



389,406

DISPENSER CAP FOR FLASKS AND BOTTLES

Francesco Mascitelli, Pescara, Italy, assignor to SAR S.p.A., San Giovanni Teatino, Italy

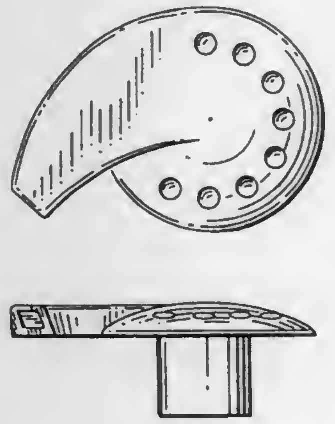
Filed Aug. 12, 1996, Ser. No. 58,360

Claims priority, application Italy, Feb. 13, 1996, RM9600035

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—448



389,407

DISPENSER CAP FOR FLASKS AND BOTTLES

Francesco Mascitelli, Pescara, Italy, assignor to SAR S.p.A., San Giovanni Teatino, Italy

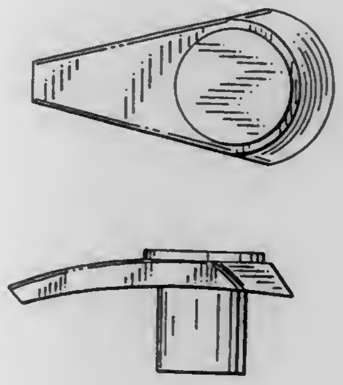
Filed Aug. 12, 1996, Ser. No. 58,362

Claims priority, application Italy, Feb. 13, 1996, RM9600035

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—448



389,408

LID FOR A CONTAINER

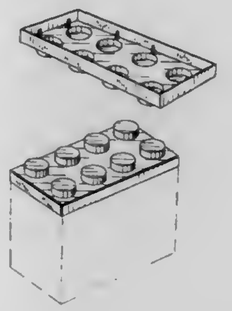
Janne Hvilsted-Carlsen Rask, Bredsten, and Søren Xerxes Frahm, Århus C, both of Denmark, assignors to INTERLEGO AG, Baar, Switzerland

Filed Sep. 22, 1993, Ser. No. 13,320

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—451



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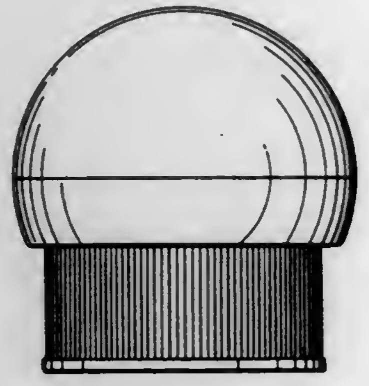
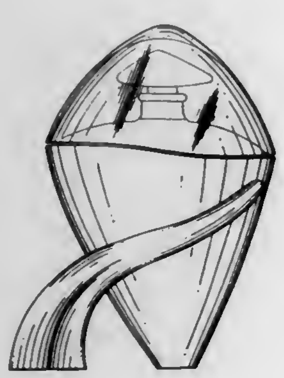
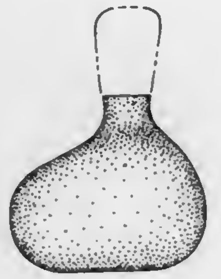
389,409
BEVERAGE BOTTLE CLOSURE CAP
Terence Tucker, Monarch Beach, Calif., assignor to Calico Industries, Inc., San Clemente, Calif.
Filed Sep. 6, 1996, Ser. No. 59,324
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—454



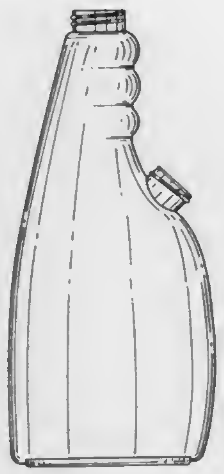
389,410
DECANTER
Thierry Lecoule, Paris, France, assignor to Martell & Co., Cognac, France
Filed Jan. 23, 1997, Ser. No. 65,202
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—517



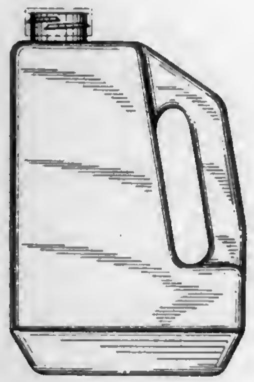
389,411
BOTTLE
Fabien Baron, New York, N.Y., assignor to Elizabeth Arden Co., Divison of Conopco, Inc., New York, N.Y.
Filed Sep. 6, 1996, Ser. No. 58,313
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—523



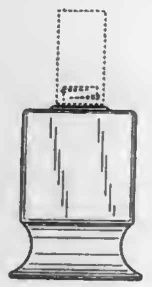
389,412
SPRAY BOTTLE
Walter F. Klima, Jr., Travelers Rest, S.C., and William L. Klima, Stafford, Va., assignors to Sprayex L.L.C., Stafford, Va.
Filed Jun. 21, 1996, Ser. No. 56,103
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—524



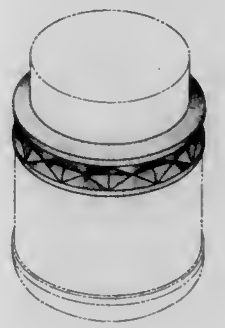
389,413
CONTAINER
David Allen Jennings, 28 Bayberry La., Mountainside, N.J. 07092
Filed Oct. 4, 1996, Ser. No. 60,710
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—528



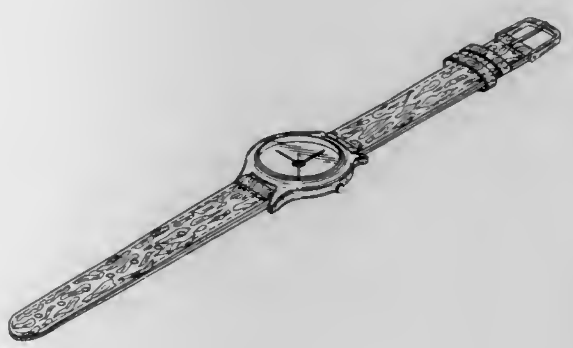
389,414
FLUID DISPENSING CONTAINER WITH FINGER GROOVES
Randolf C. Kotoucek, St. Louis, Mo., assignor to Kranson Industries, Inc., St. Louis, Mo.
Filed Jan. 28, 1997, Ser. No. 65,540
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—542



389,415
UPPER PORTION OF A CONTAINER
Michael Hung-Tai Luh; Aram Jesse Irwin, both of Cincinnati, Ohio; Roland Charriez, Peekskill, N.Y., and Angela Katherine Carter, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 23, 1996, Ser. No. 50,711
The portion of the term of this patent subsequent to Jul. 22, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—566



389,416
WRISTWATCH AND STRAP
Fulvio Borel, rue Beau-Site 17-19, 2400 Le Locle, Switzerland
Filed Dec. 9, 1996, Ser. No. 63,454
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



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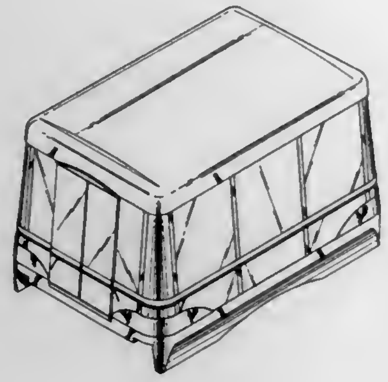
PEOPLE MOVER CABIN

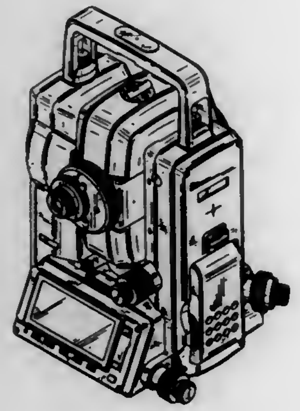
Richard R. Polacek, Farmington; David Kaiser, North Haven, both of Conn., and Domenic Mercurio, Bellevue, Wash., assignors to Otis Elevator Company, Farmington, Conn.
Filed Apr. 29, 1996, Ser. No. 53,731
Term of patent 14 years
LOC (6) Cl. 12 - *03*
U.S. Cl. D10—40



389,418

ELECTRONIC MEASUREMENT DEVICE

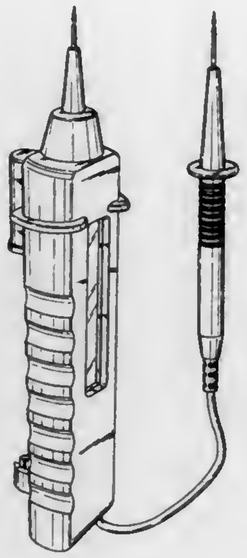
Homu Takayama; Kenji Kaneko, and Masayuki Ueno, all of Tokyo, Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1997, Ser. No. 64,664
Claims priority, application Japan, Jul. 10, 1996, 8-20580
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—66



389,419

VOLTAGE TESTER

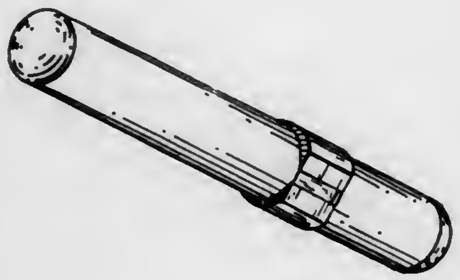
Christian Beha, Glottertal, Germany, assignor to CH. Beha GmbH Technische Neuentwicklungen, Germany
Filed Nov. 12, 1996, Ser. No. 64,077
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—78



389,420

TRAFFIC MASTER LIGHT WAND

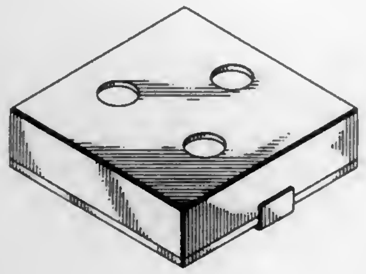
James P. Campman, 329 Bend Hill Rd., Fredonia, Pa. 16124
Filed Apr. 7, 1997, Ser. No. 68,439
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—114



389,421

AUDIBLE SIGNAL FOR ALARM UNITS

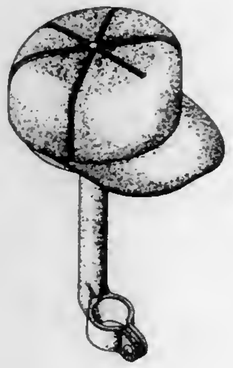
Isao Fushimi, and Yoshio Imahori, both of Shizuoka, Japan, assignors to Star Micronics Co., Ltd., Shizuoka-ken, Japan
Filed Mar. 26, 1997, Ser. No. 69,301
Claims priority, application Japan, Sep. 27, 1996, 8-28950
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—116



389,422

RINGER FOR A BICYCLE

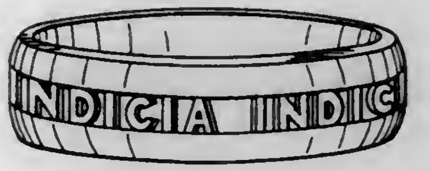
Shen-Keng Lin, No. 387-16, Fan-Hua Rd., Hsiu-Shui Hsiang, Changhua Hsien, Taiwan
Filed Apr. 24, 1997, Ser. No. 69,912
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—116



389,423

RIG

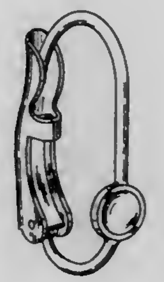
Joseph H. Wein, 871 Fairview Rd., Highland Park, Ill. 60035, assignor to Joseph H. Wein, Highland Park, Ill.
Filed Mar. 29, 1996, Ser. No. 52,398
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—37



389,424

EARRING CLIP

Robert A. Montaquila, Cranston, R.I., assignor to Aro-Sac, Inc., North Providence, R.I.
Filed Jun. 7, 1996, Ser. No. 55,613
The portion of the term of this patent subsequent to Nov. 11, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—88



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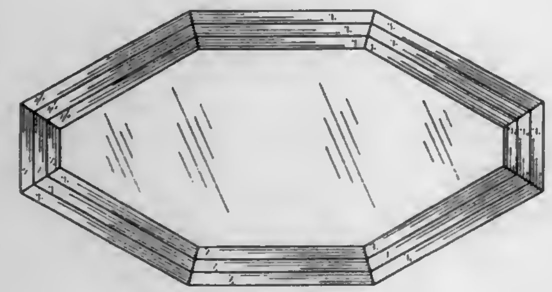
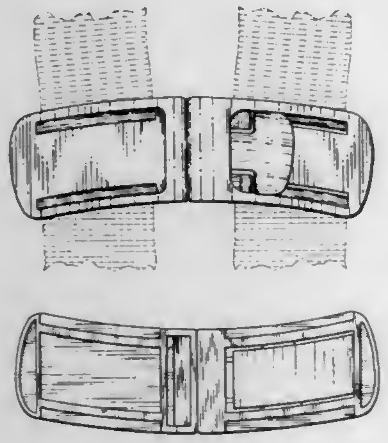
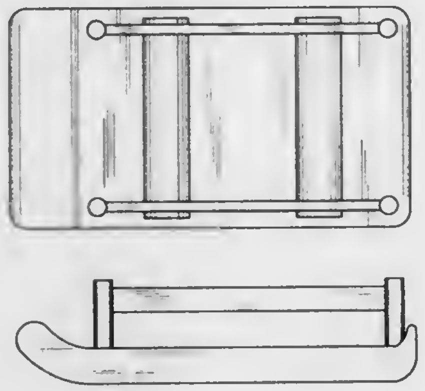
389,425
MULTIPLE CULET GEM
Steven F. Rosenberg, 3920 Mystic Valley Pkwy., Medford, Mass. 02155
Filed Sep. 22, 1994, Ser. No. 53,320
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—90



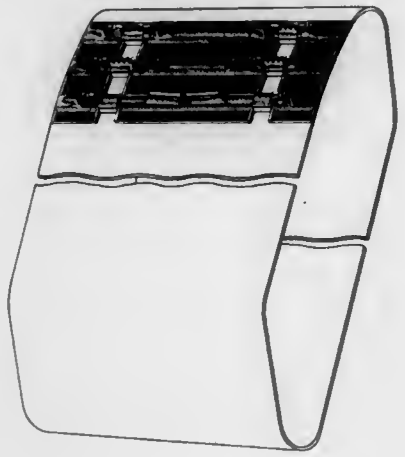
389,426
CONTOURED HARNESS CLIP
David D. Merrick; Lisa A. Rose, both of Cicero, and Guy R. Dingman, Elwood, all of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.
Filed Jan. 14, 1997, Ser. No. 64,898
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D11—216



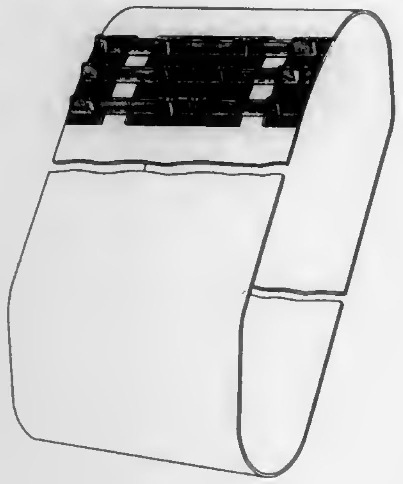
389,427
COMBINATION SLED AND STROLLER HOLDER
Glenn W. Fehrn, 362 Pollard Way, Windsor, Calif. 95492
Filed Aug. 30, 1996, Ser. No. 59,008
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—6



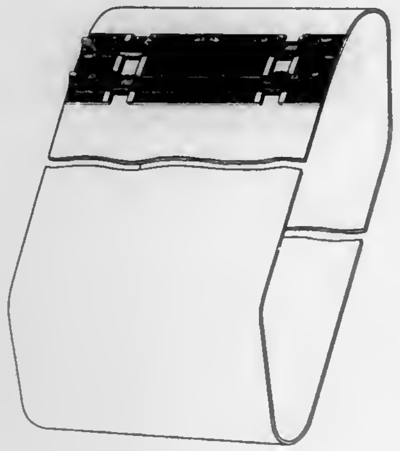
389,428
SNOWMOBILE TRACK
Jules Dandurand, Valcourt, Canada, assignor to Camoplast, Sherbrooke, Canada
Filed Oct. 28, 1996, Ser. No. 61,654
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—7



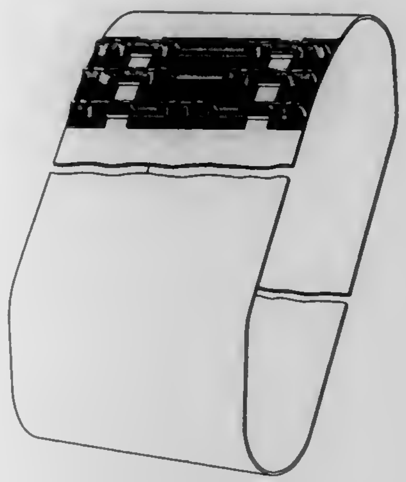
389,429
SNOWMOBILE TRACK
Jules Dandurand, Valcourt, Canada, assignor to Camoplast Inc., Sherbrooke, Canada
Filed Oct. 28, 1996, Ser. No. 61,655
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—7



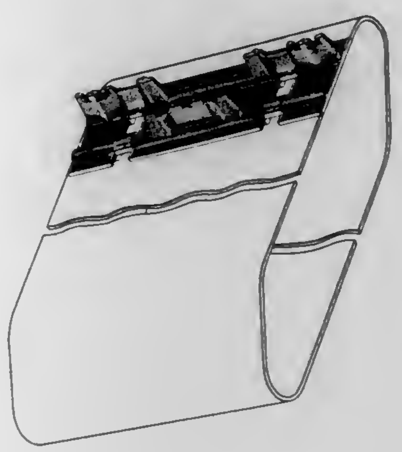
389,430
SNOWMOBILE TRACK
Jules Dandurand, Valcourt, Canada, assignor to Camoplast Inc., Sherbrooke, Canada
Filed Oct. 28, 1996, Ser. No. 61,668
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—7



389,431
SNOWMOBILE TRACK
Jules Dandurand, Valcourt, Canada, assignor to Camoplast Inc., Sherbrooke, Canada
Filed Oct. 28, 1996, Ser. No. 61,669
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—7



389,432
SNOWMOBILE TRACK
Jules Dandurand, Valcourt, Canada, assignor to Camoplast Inc., Sherbrooke, Canada
Filed Oct. 28, 1996, Ser. No. 61,670
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—7



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389,433
SNOWMOBILE TRACK

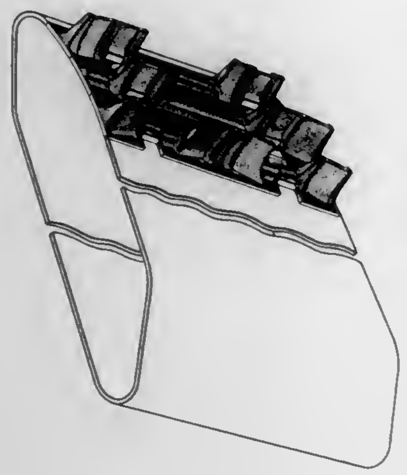
Jules Dandurand, Québec, Canada, assignor to Camoplast Inc., Sherbrooke, Canada

Filed Oct. 28, 1996, Ser. No. 61,671

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—7



389,434
SNOWMOBILE TRACK

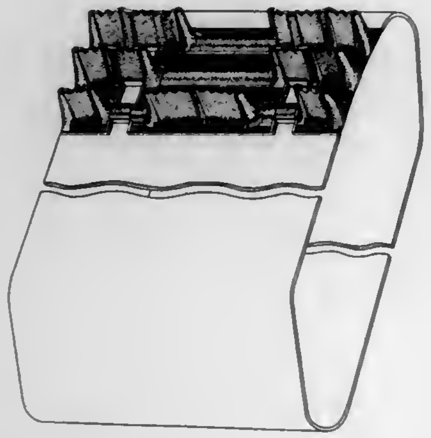
Jules Dandurand, Valcourt, Canada, assignor to Camoplast, Sherbrooke, Canada

Filed Oct. 28, 1996, Ser. No. 61,674

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—7



389,435
SNOWMOBILE TRACK

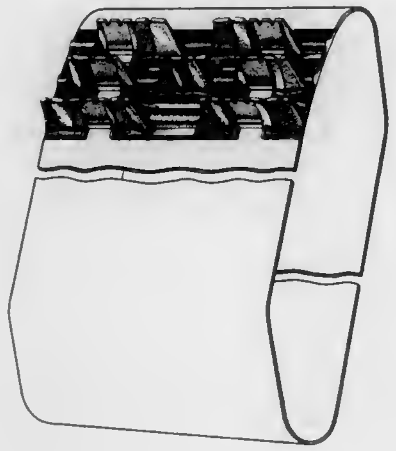
Jules Dandurand, Valcourt, Canada, assignor to Camoplast Inc., Sherbrooke, Canada

Filed Oct. 28, 1996, Ser. No. 61,675

Term of patent 14 years

LOC (6) Cl. 12 - *14*

U.S. Cl. D12—7



389,436
MOTOR CAR

Lorenzo Ramaciotti, Revigliasco, Italy, assignor to Ferrari S.p.A., Modena, Italy

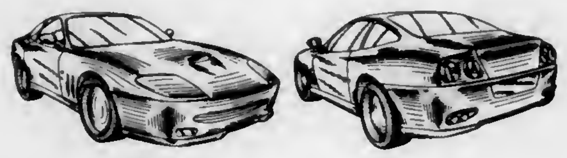
Filed Jun. 17, 1996, Ser. No. 55,915

Claims priority, application Italy, Dec. 20, 1995, TO9500259; Dec. 20, 1995, TO9500260

Term of patent 14 years

LOC (6) Cl. 12 - *08*

U.S. Cl. D12—92



389,437
DRIVER'S CAB

Ernst Olausson, Göteborg, Sweden, assignor to AB Volvo, Sweden

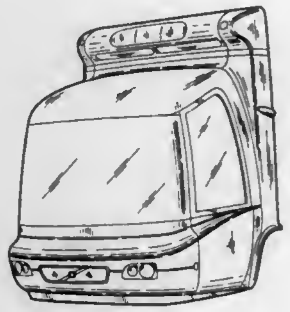
Filed Jan. 30, 1996, Ser. No. 49,728

Claims priority, application Sweden, Aug. 1, 1995, 95-1461

Term of patent 14 years

LOC (6) Cl. 12 - *08*

U.S. Cl. D12—96



389,438
VEHICLE BODY

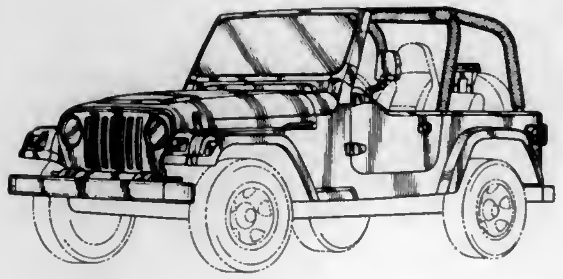
Gary D. Guichard; John P. Sgalia, both of Farmington Hills; Trevor M. Creed, West Bloomfield, all of Mich.; Michael Santoro, La Costa, Calif.; Ricardo Z. Aneiros, Dearborn, and Clyde W. Ney, Waterford, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 14, 1994, Ser. No. 24,426

Term of patent 14 years

LOC (6) Cl. 12 - *08*

U.S. Cl. D12—98



389,439
BODY OF A TRAILER FOR VEHICLES

Gerhard Friedrich, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

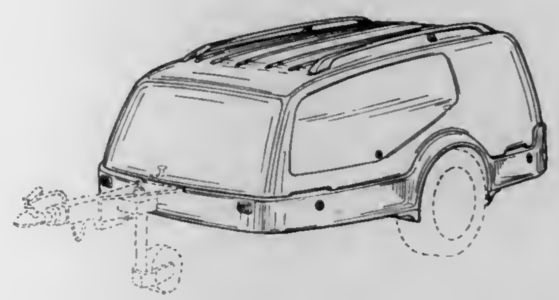
Filed Nov. 13, 1996, Ser. No. 62,337

Claims priority, application Germany, May 13, 1996, M9604362.8

Term of patent 14 years

LOC (6) Cl. 12 - *10*

U.S. Cl. D12—102



389,440
FOOT REST FOR OFF-ROAD UTILITY/RECREATIONAL VEHICLE

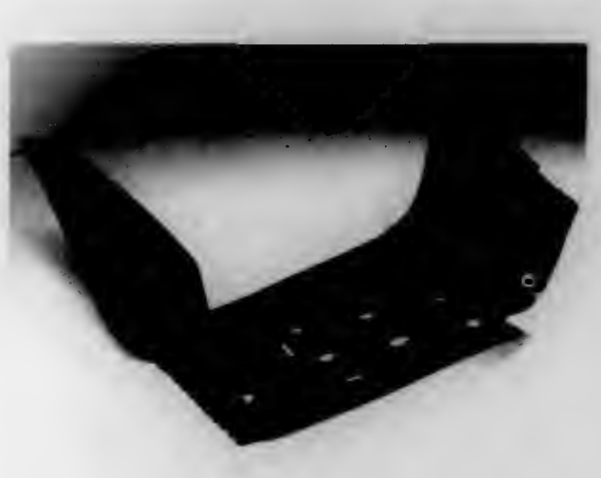
Richard Scott Walters, and Glenn Thomas Walters, both of Port Washington, Wis., assignors to Polaris Industries Partners L.P., Minneapolis, Minn.

Filed Sep. 29, 1995, Ser. No. 44,756

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—120



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389,441

TREAD FOR A TIRE

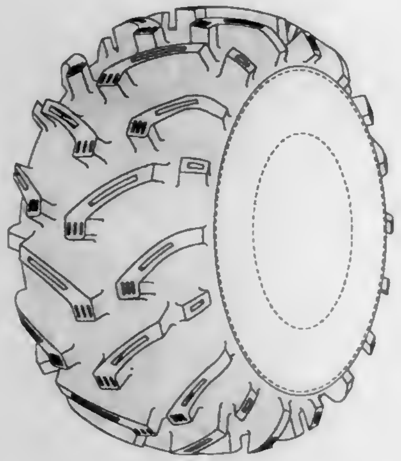
Timothy Michael Rooney, Munroe Falls, Ohio, assignor to The Gooyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 18, 1996, Ser. No. 57,188

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—136



389,442

CHASSIS CLAMP

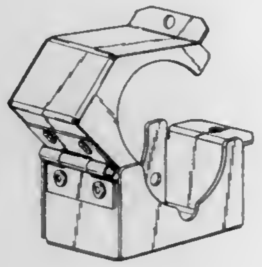
John F. Kantor, 928 Squire Dr., Wellington, Fla. 33414

Filed Dec. 3, 1996, Ser. No. 63,261

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—162



389,443

REARVIEW MIRROR

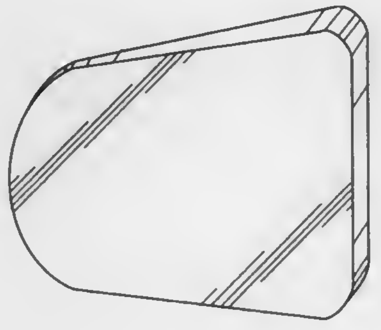
Raymond Bialowas, and Neva Bialowas, both of 2067 Envoy Ct., Clearwater, Fla. 34624-2560

Filed Jul. 17, 1995, Ser. No. 41,532

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—187



389,444

ANKLE HOLDER FOR A WHEELCHAIR

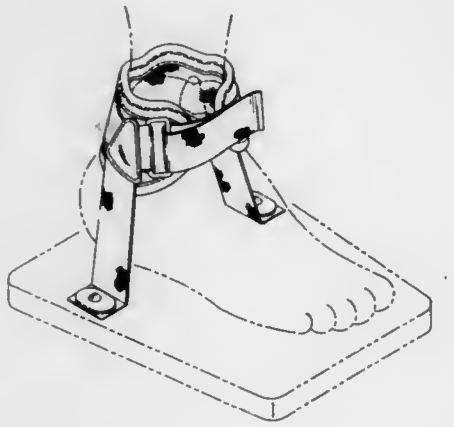
Matthew Kosh, Seattle, Wash., assignor to Bodypoint Designs, Inc., Seattle, Wash.

Filed May 24, 1996, Ser. No. 54,895

Term of patent 14 years

LOC (6) Cl. 12 - *12*

U.S. Cl. D12—133



389,445

WHEEL COVER

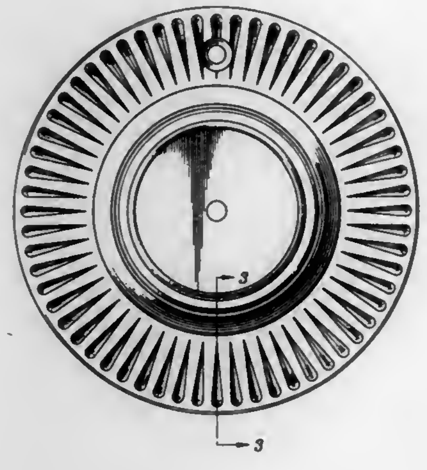
Frank T. Noriega, Pico Rivera, Calif., assignor to Mondera Wheel, Inc., Long Beach, Calif.

Filed Oct. 23, 1996, Ser. No. 61,390

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—211



389,446

RIM FOR VEHICLE WHEEL

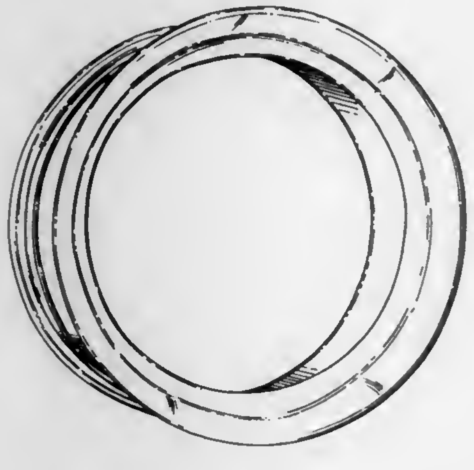
Robert A. Bradley, Fullerton, Calif., assignor to Ultra Wheel Co., Buena Park, Calif.

Filed Mar. 29, 1996, Ser. No. 52,424

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—208



389,447

AUTOMOBILE AND TRUCK WHEEL

Chrysanto, Surabaya, Indonesia, assignor to PT Prima Alloy Steel Universal, Gendangan, Indonesia

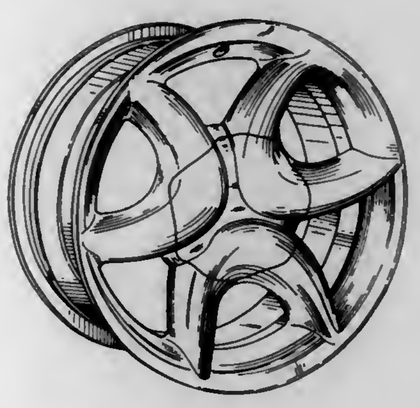
Filed Oct. 3, 1995, Ser. No. 44,921

The portion of the term of this patent subsequent to Sep. 23, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



389,448

FRONT FACE OF A WHEEL

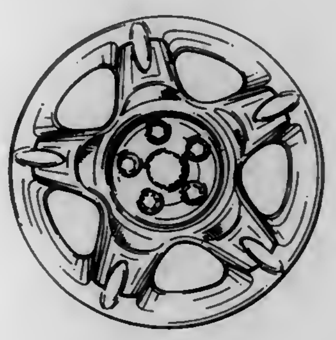
Gerhard Steinle, Newport Beach; Andre Frey, Irvine, and Benjamin Dimson, Santa Ana, all of Calif., assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jul. 29, 1996, Ser. No. 57,586

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



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WIPER ARM ADAPTOR

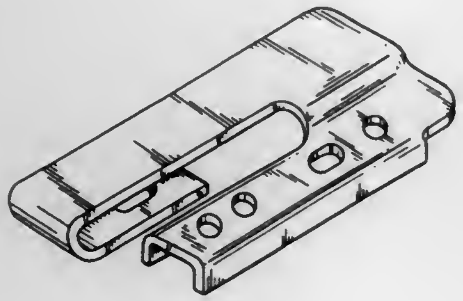
Saied Hussaini, Miami, Fla., assignor to Rally Manufacturing, Inc., Miami, Fla.

Filed Jun. 11, 1996, Ser. No. 55,705

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—220



389,450

ACCESSORY SUPPORT CLAMP FOR TRUCKS

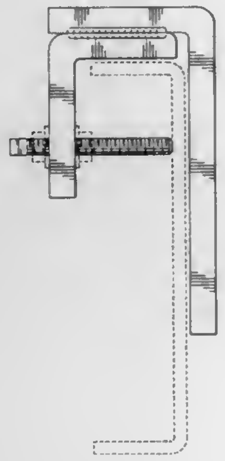
Dallas W. Wilson, 14888 NE. Thompson, Portland, Oreg. 97230

Filed Jul. 30, 1996, Ser. No. 57,690

Term of patent 14 years

LOC (6) Cl. 12 - *06*

U.S. Cl. D12—223



389,451

WEIGHTED TARP

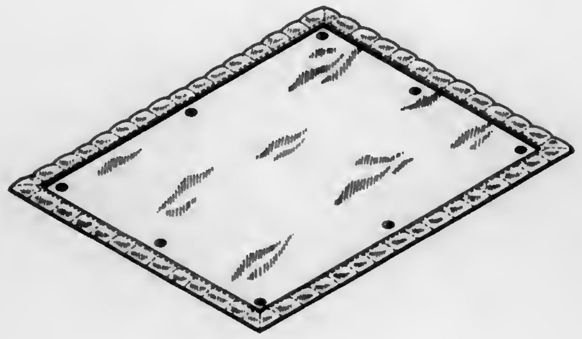
George P. Wilson, 2736 Bennett, Wichita, Kans. 67217-1812

Filed Oct. 2, 1995, Ser. No. 44,843

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—401



389,452

AUTOMOBILE TAILGATE PARTY TABLE

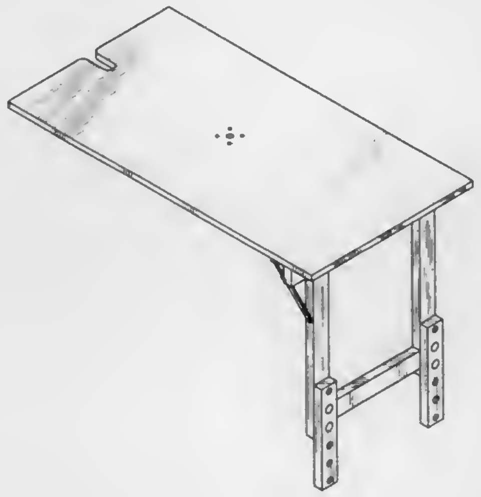
Charles W. Scott, 3216 Crane Ferry Rd., Augusta, Ga. 30907

Filed Jun. 17, 1994, Ser. No. 24,618

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—415



389,453

CHARCOAL BRIQUET

James D. Mitchell, Alamo; Towanda W. Yancy, Sacramento; Max F. Eckert, Livermore, all of Calif.; Jeffery P. Caddell, Crestwood, Ky.; Michael L. Himmelfarb, San Francisco, Calif.; Samuel J. Mitchell, Oakland, Calif., and Robert C. Doster, Danville, Calif., assignors to The Clorox Company, Oakland, Calif.

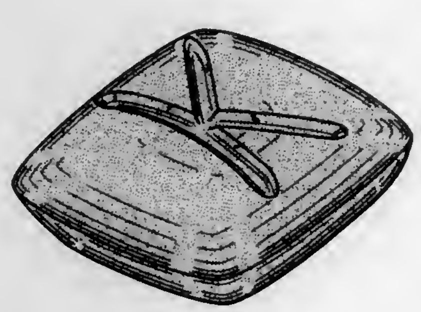
Continuation of Ser. No. 21,114, Apr. 11, 1994, abandoned.

This application Jun. 24, 1996, Ser. No. 56,129

Term of patent 14 years

LOC (6) Cl. 23 - *05*

U.S. Cl. D13—100



389,454

ROOF PLATE WITH SOLAR BATTERY

Masahiro Mori, Kyoto, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

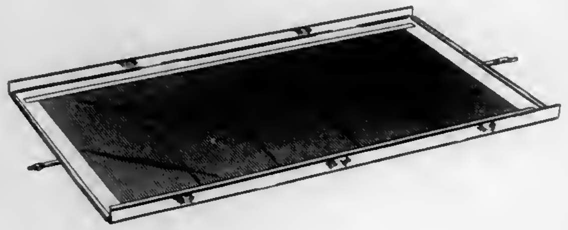
Filed Nov. 18, 1996, Ser. No. 62,532

Claims priority, application Japan, May 23, 1996, 8-15313

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—102



389,455

BATTERY

Richard Lindahl, Malmö , Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

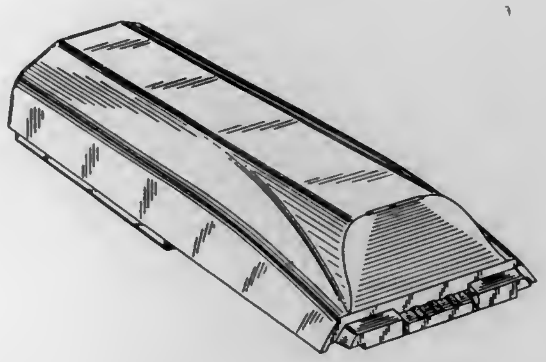
Filed Sep. 14, 1994, Ser. No. 28,393

Claims priority, application Sweden, Mar. 14, 1994, 940588

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



389,456

BATTERY FOR A MOBILE PHONE

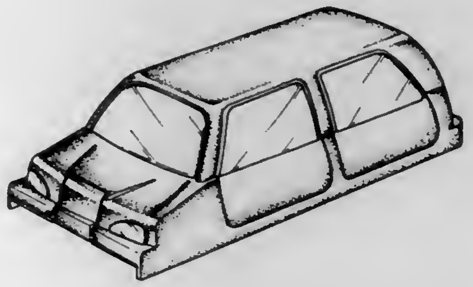
Gin-shen Wang, No. 30, Alley 68, Lane 66, Sec. 2, Hsiwan Rd., Hsichih Chen, Taipei Hsien, Taiwan

Filed Jul. 8, 1996, Ser. No. 56,751

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



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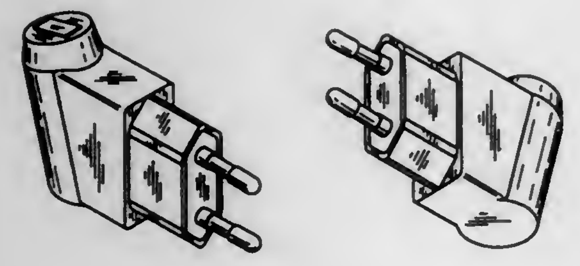
389,457
ELECTRICAL POWER SUPPLY PLUG

Ernst Beranek, Vienna, Austria, assignor to Egston Eggenburger System Elektronik Ges.M.b.H., Eggenburg, Austria
Filed Jan. 19, 1995, Ser. No. 33,721
Claims priority, application Austria, Jul. 21, 1994, 2887/94; Jul. 21, 1994, 2891/94; Jul. 21, 1994, 2892/94; Jul. 21, 1994, 2893/94; Jul. 21, 1994, 2894/94; Jul. 21, 1994, 2895/94; Jul. 21, 1994, 2896/94; Jul. 21, 1994, 2897/94; Jul. 21, 1994, 2899/94; Jul. 21, 1994, 2900/94; Jul. 21, 1994, 2901/94; Jul. 21, 1994, 2903/94; Jul. 21, 1994, 2904/94; Jul. 21, 1994, 2905/94; Jul. 21, 1994, 2906/94; Jul. 21, 1994, 2907/94; Jul. 21, 1994, 2908/94; Jul. 21, 1994, 2909/94; Jul. 21, 1994, 2910/94; Jul. 21, 1994, 2911/94; Jul. 21, 1994, 2912/94; Jul. 21, 1994, 2913/94; Jul. 21, 1994, 2914/94; Jul. 21, 1994, 2915/94; Jul. 21, 1994, 2916/94; Jul. 21, 1994, 2917/94; Jul. 21, 1994, 2918/94
Term of patent 14 years
LOC (6) Cl. 13 - *03*

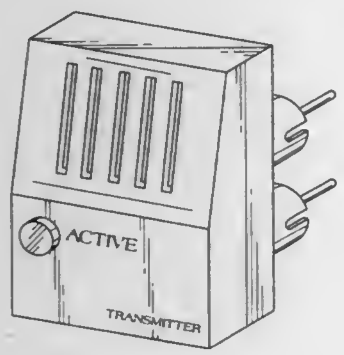
U.S. Cl. D13—133



389,458
AUDIO COUPLER

Ron Brooks, 3149 Sun Valley Ave., Walnut Creek, Calif. 94596
Filed Aug. 25, 1995, Ser. No. 43,093
Term of patent 14 years
LOC (6) Cl. 13 - *03*

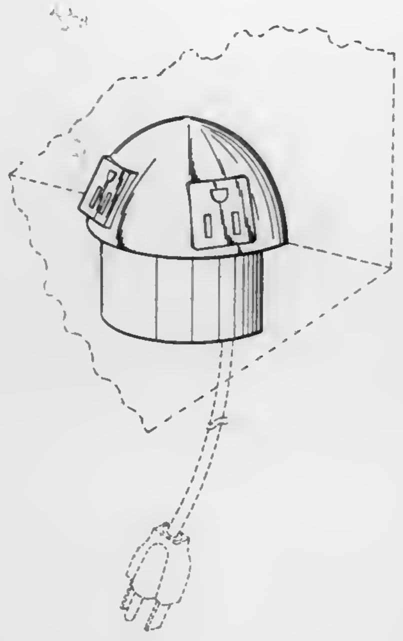
U.S. Cl. D13—133



389,459
ELECTRICAL SERVICE OUTLET

Norman R. Byrne, 2736 Honey Creek, NE., Ada, Mich. 49301
Filed Nov. 23, 1994, Ser. No. 31,356
Term of patent 14 years
LOC (6) Cl. 13 - *03*

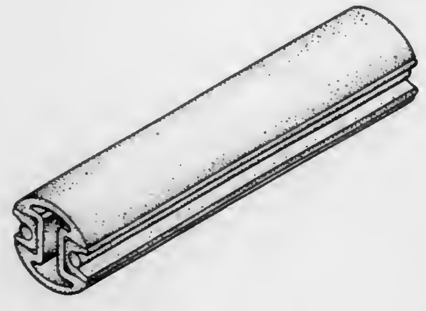
U.S. Cl. D13—143



389,460
LIGHTING FIXTURE TRACK

Shen Wei-Hong, Taiepi, Taiwan, assignor to Davinci Industrial Inc., Taipei Hsien, Taiwan
Filed Jul. 16, 1996, Ser. No. 57,106
Claims priority, application China, Jun. 19, 1996, 85305024
Term of patent 14 years
LOC (6) Cl. 13 - *03*

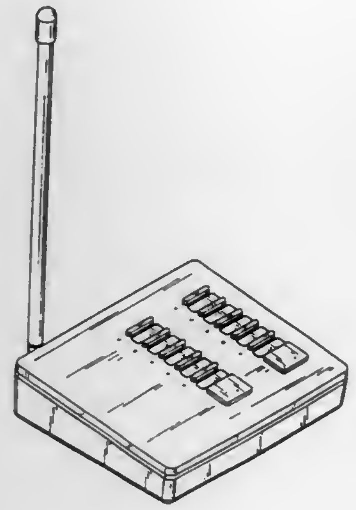
U.S. Cl. D13—155



389,461
MASTER CONTROL UNIT FOR A RADIO FREQUENCY CONTROLLED LIGHTING CONTROL SYSTEM

Noel Mayo, Philadelphia; James E. Swain, Bethlehem, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronics Co. Inc., Coopersburg, Pa.
Filed Feb. 7, 1996, Ser. No. 50,036
Term of patent 14 years
LOC (6) Cl. 13 - *03*

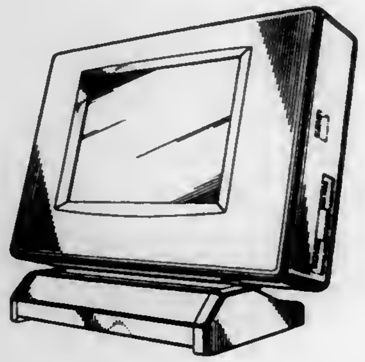
U.S. Cl. D13—164



389,462
COMPUTER

H. Douglas Johns, Atlanta; Nicholas G. Forlenza, Marietta, and Scott V. Wells, Atlanta, all of Ga., assignors to Monorail, Inc., Marietta, Ga.
Filed Sep. 30, 1996, Ser. No. 60,544
Term of patent 14 years
LOC (6) Cl. 14 - *02*

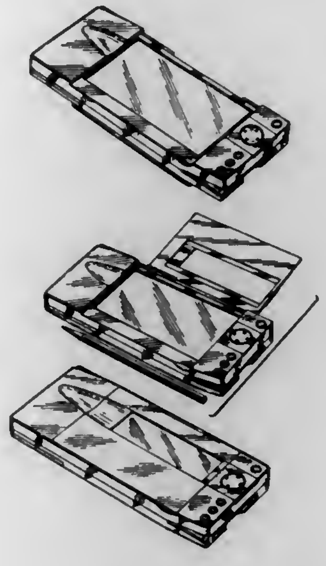
U.S. Cl. D14—100



389,463
INFORMATION INPUT/OUTPUT MANAGING MACHINE EQUIPPED WITH A TEXT CREATING FUNCTION

Naoko Kasahara, Hachiouji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 26, 1996, Ser. No. 62,826
Claims priority, application Japan, May 29, 1996, 8-15407
Term of patent 14 years
LOC (6) Cl. 14 - *02*

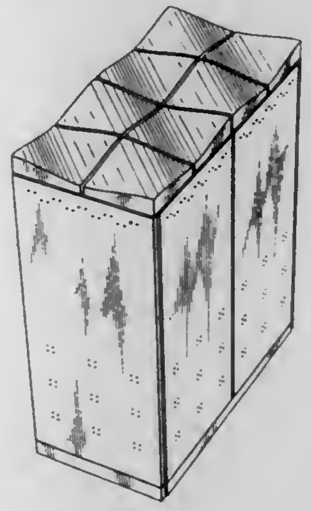
U.S. Cl. D14—100



389,464
COMPUTER

Toshiyuki Utsuki, Tachikawa; Takashi Yamamoto, Kodaira; Kenta Kumagai, Tokyo; Tohru Higashihara, Sayama; Tamotsu Tsukaguchi, Hiratsuka; Mitsuharu Nagai, Tokyo; Fumio Kishida, Isehara, and Yoshito Hayashi, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 13, 1996, Ser. No. 63,727
Claims priority, application Japan, Jul. 1, 1996, 8-19183
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



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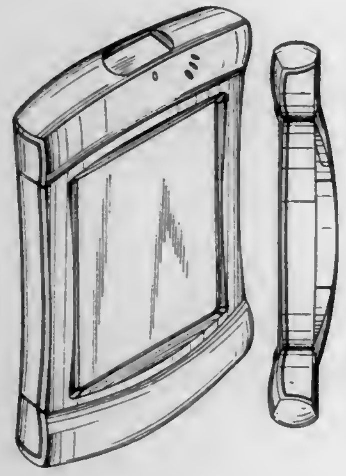
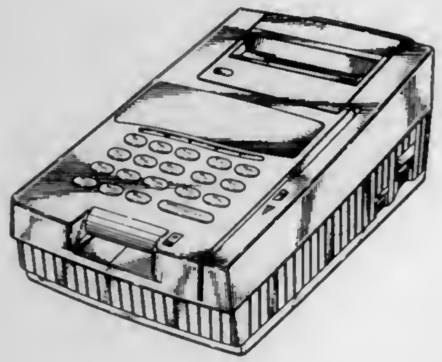
389,465
PORTABLE TERMINAL
Fred Heiman, Los Gatos; Robert E. Beach, Los Altos, both of Calif., and Margaret Hetfield, East Northport, N.Y., assignors to Symbol Tecnologies, Inc., Holtsville, N.Y.
Filed Jan. 24, 1997, Ser. No. 65,348
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100

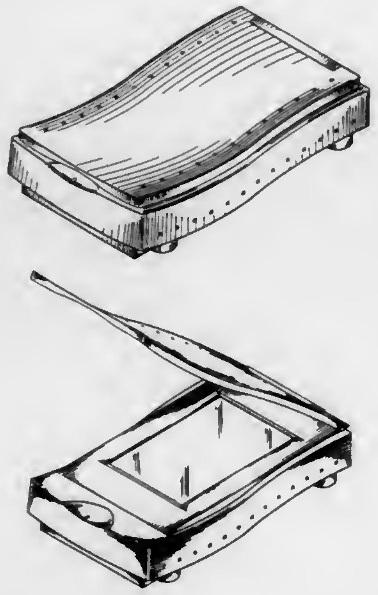


389,466
SMART CARD AUTHORIZATION TERMINAL FOR ELECTRONIC COMPUTER
Koji Nakao, and Hiroharu Hirata, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1997, Ser. No. 67,527
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—105

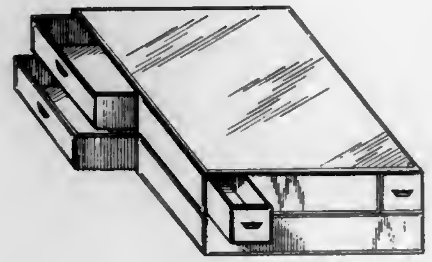


389,467
EXPANSION UNIT FOR DATA STORAGE SUBSYSTEMS
Morio Nakayama, Tsurugashima, and Kuniaki Edo, Tokyo, both of Japan, assignors to Alwa Co., Ltd., Tokyo, Japan
Filed Mar. 27, 1996, Ser. No. 52,285
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107

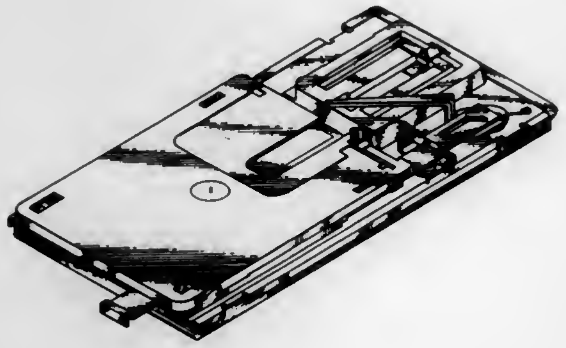
389,468
WAVE SHAPED SCANNER
Thomas Chang, and Tony Chen, both of Hsinchu, Taiwan, assignors to Umax Data Systems Inc., Hsinchu, Taiwan
Filed Nov. 8, 1996, Ser. No. 62,183
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



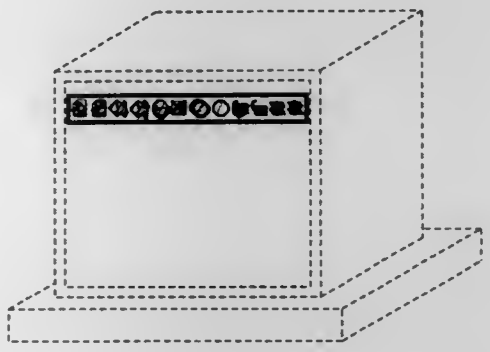
389,469
COMPUTER STAND WITH DRAWERS
Joey Stovall, 910 Benton Dr. #13, Iowa City, Iowa 52246
Filed May 22, 1995, Ser. No. 39,153
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



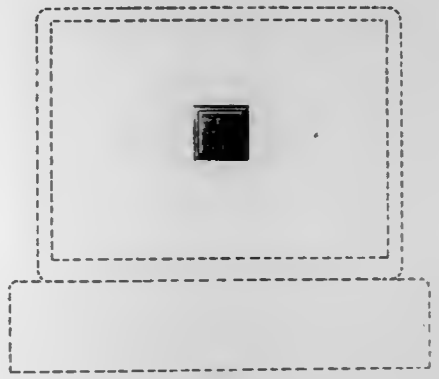
389,470
DISK CARTRIDGE AND/OR DRIVE
Brian Schick, Eden; Fred C. Thomas, III, Ogden; Allen T. Bracken, Layton, and Jay Muse, Clearfield, all of Utah, assignors to Iomega Corporation, Roy, Utah
Filed Nov. 6, 1996, Ser. No. 62,053
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



389,471
ICON FOR A COMPUTER SCREEN
James W. Newton, Belmont, and Larry M. Hoffman, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Mar. 25, 1996, Ser. No. 52,185
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.2



389,472
ICON FOR A COMPUTER DISPLAY
Marcia Rough, Bolton, Mass., assignor to Boston Technology, Inc., Wakefield, Mass.
Filed Feb. 6, 1995, Ser. No. 34,430
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.3



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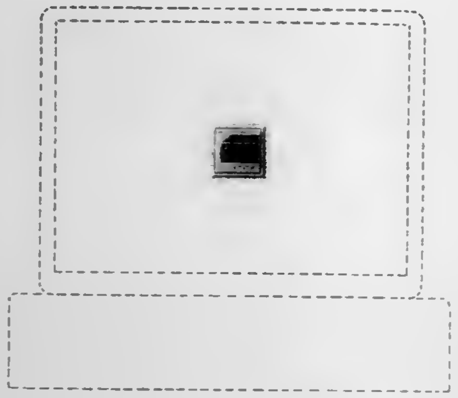
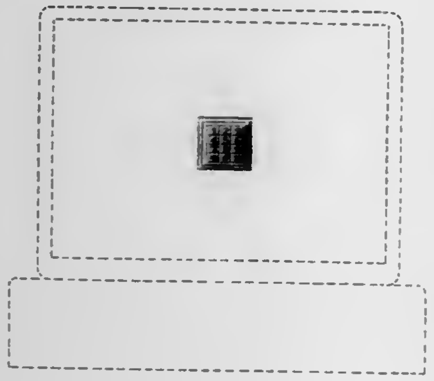
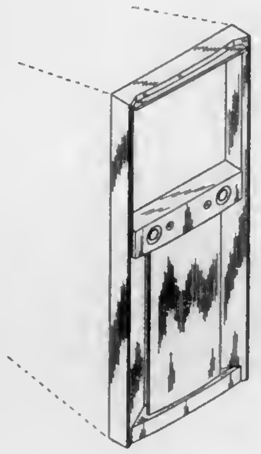
389,473
ICON FOR A COMPUTER DISPLAY
Susan Rafuse, Maynard, Mass., assignor to Boston Technology, Inc., Wakefield, Md.
Filed Jan. 6, 1995, Ser. No. 33,194
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.4



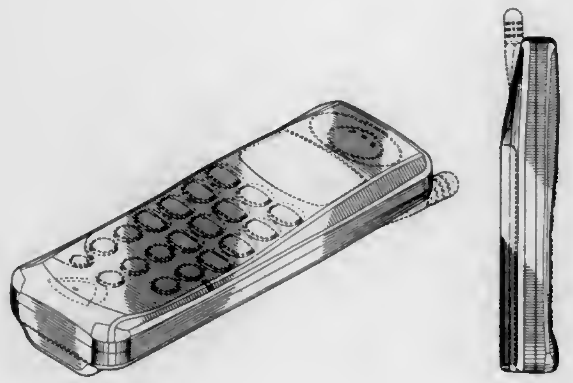
389,474
ICON FOR A COMPUTER DISPLAY
John Norton, Merrimack, N.H., assignor to Boston Technology, Inc., Wakefield, Mass.
Filed Jan. 6, 1995, Ser. No. 33,203
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.4



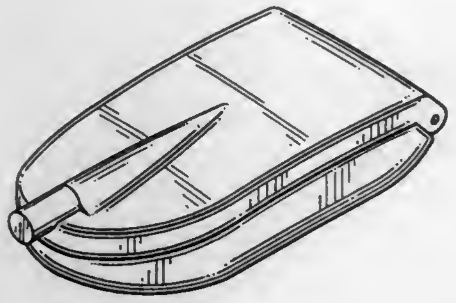
389,475
FRONT BEZEL FOR A TOWER PERSONAL COMPUTER
Sidney David Autry, Dakota Dunes, S. Dak.; Ronald Hancock, Prescott, Ariz.; Loriann M. Tague, and Jeffrey Schindler, both of Sioux City, Iowa, assignors to Gateway 2000, North Sioux City, S. Dak.
Filed Jun. 3, 1996, Ser. No. 55,275
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



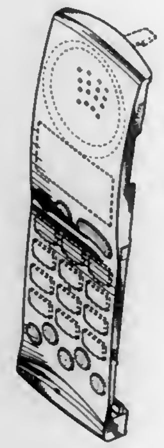
389,476
PORTABLE TELEPHONE
Phillip E. Lindeman, Gurnee; Steven M. Mina, Lake Villa, and Thomas E. Paulick, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 21, 1996, Ser. No. 54,069
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



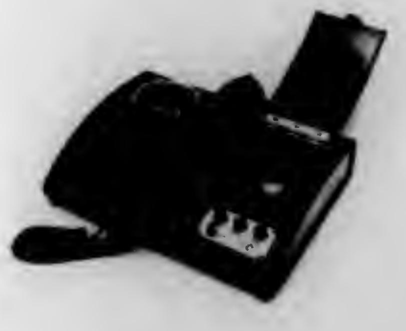
389,477
PORTABLE HINGED PHONE
Ira J. Tabankin, Hillsboro, and Haydn Piper, Aloha, both of Oreg., assignors to Meridian Wireless Technologies, Tualatin, Oreg.
Filed Jan. 13, 1997, Ser. No. 64,874
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



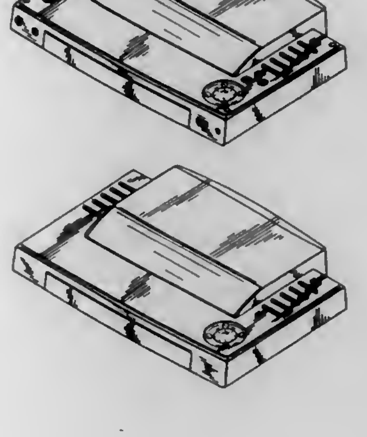
389,478
FACEPLATE FOR A CORDLESS PORTABLE TELEPHONE
Albert L. Nagele, Wilmette; Leonid Soren, Lincolnwood; James D. Palmer, Deerfield, and Jose T. Lo, Wheeling, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 57,705, Jul. 30, 1996, which is a continuation-in-part of Ser. No. 44,939, Oct. 3, 1995, abandoned. This application Apr. 21, 1997, Ser. No. 69,207
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



389,479
TELEPHONE WITH ANSWERING DEVICE
Tjeerd Dijkstra, Leiderdorp, Netherlands, assignor to Pollyflame International B.V., Netherlands
Filed Jul. 5, 1996, Ser. No. 56,679
Claims priority, application WIPO, Jan. 5, 1996, DM/035145
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—151



389,480
DISC PLAYER COMBINED WITH RADIO TUNER AND AN AMPLIFIER
Takuya Niitsu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 3, 1996, Ser. No. 55,332
Claims priority, application Japan, Dec. 4, 1995, 7-36319
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168



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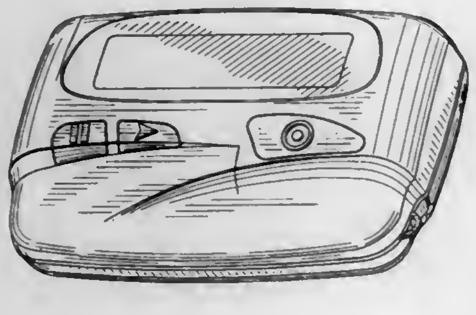
389,481
COMMUNICATION DEVICE

Wai Kee Chan; Choog Heng Choy, and Choon Ming Yap, all of Singapore, Singapore, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1997, Ser. No. 64,602
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—191



389,482
RADIO

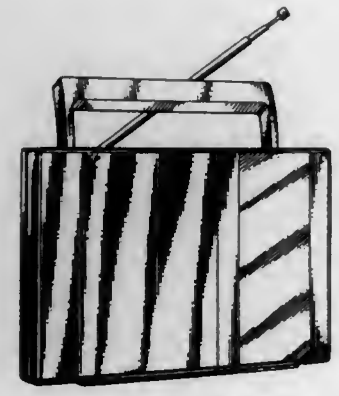
Serge Kokkinis, Hong Kong, Hong Kong, assignor to Alfa Technology Ltd., Hong Kong, Hong Kong

Filed Nov. 13, 1995, Ser. No. 46,386

Claims priority, application United Kingdom, May 11, 1995, 2047363

Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—198

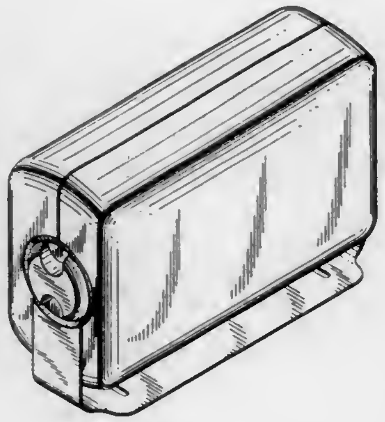


389,483
HOUSING FOR LOUDSPEAKER

Cary Christie, Incline Village, Nev., and Kimberly Nielsen, Chatsworth, Calif., assignors to Christie Design Corp., Benicia, Calif.

Filed Apr. 26, 1996, Ser. No. 53,630
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—214

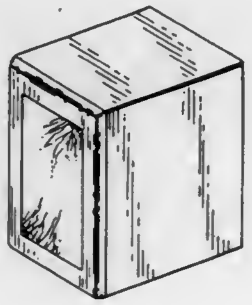


389,484
LOUDSPEAKER

T. Leif Blackmon, Norwood, Mass., assignor to MB Quart Electronics U.S.A., Inc., Walpole, Mass.

Filed May 6, 1996, Ser. No. 54,018
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—214



389,485
CONTROL UNIT FOR A HI-FIDELITY SYSTEM

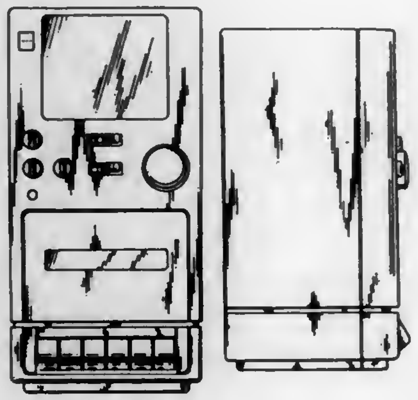
Serge Kokkinis, Hong Kong, Hong Kong, assignor to Alfa Technology Ltd., Hong Kong, Hong Kong

Filed Nov. 13, 1995, Ser. No. 46,346

Claims priority, application United Kingdom, May 11, 1995, 2047358

Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—221



389,486
CONTROL UNIT FOR A HI-FIDELITY SYSTEM

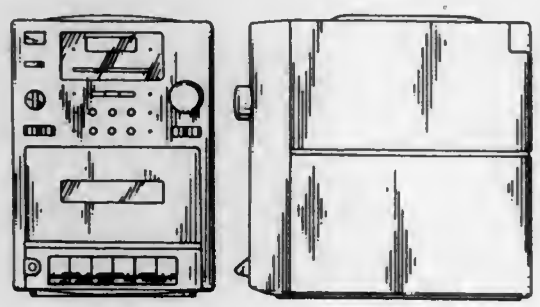
Serge Kokkinis, Hong Kong, Hong Kong, assignor to Alfa Technology Ltd., Hong Kong, Hong Kong

Filed Nov. 13, 1995, Ser. No. 46,384

Claims priority, application United Kingdom, May 11, 1995, 2047359

Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—221

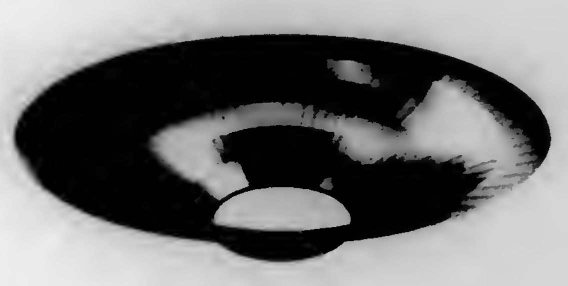


389,487
CONE FOR SPEAKER

Sergio Paulo Saraiva Lino Pires, Sao Paulo, Brazil, assignor to Bravox S/A Industria E Comercio Eletronico, San Paulo/SP, Brazil

Filed Jun. 28, 1996, Ser. No. 56,404
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—221

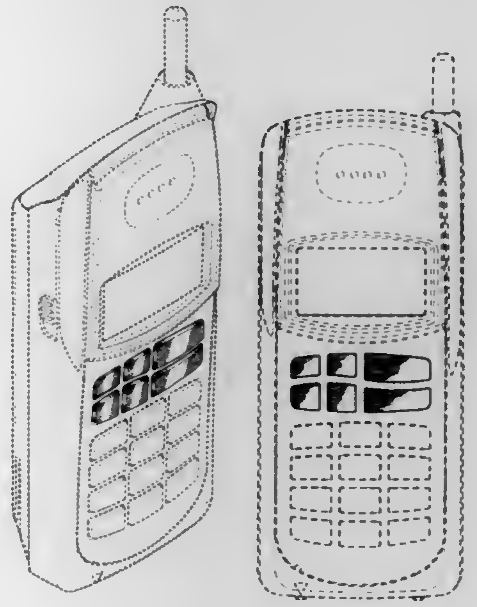


389,488
KEY ARRANGEMENT

Daniel L. Williams, Vernon Hills, Ill.; Miles Hawley, London, United Kingdom, and Norman Ho, Deerfield, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 35,168, Feb. 22, 1995, abandoned. This application Oct. 28, 1996, Ser. No. 61,663
Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—247



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389,489
COMBINED AIR COMPRESSOR AND EMERGENCY LIGHT

Paul Wai Kan Wong, New Territories, Hong Kong, assignor to Good Hope Industries Ltd., Hong Kong, Hong Kong

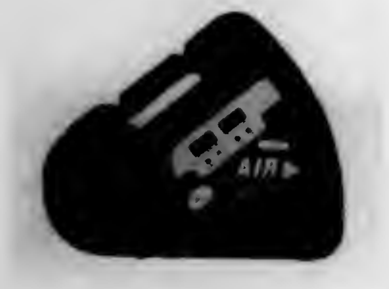
Filed Aug. 21, 1995, Ser. No. 42,957

Claims priority, application United Kingdom, Apr. 24, 1995, 2046947

Term of patent 14 years

LOC (6) Cl. 15 - *02*

U.S. Cl. D15—9



389,490
RIDING-TYPE MOWER

Teruo Shimamura; Akio Matsui; Yoshihiro Kawahara; Osami Fujiwara; Yoshikazu Togoshi; Hironori Tsuchihashi; Kenichi Chujo; Hideya Umemoto, and Niro Bando, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

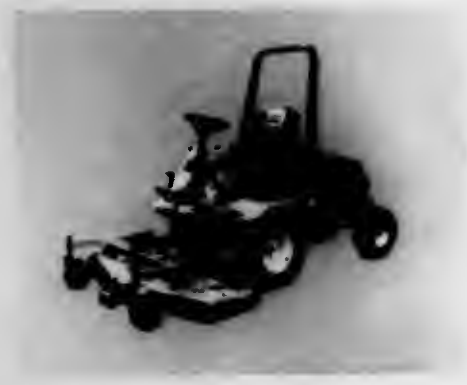
Filed Feb. 29, 1996, Ser. No. 50,983

Claims priority, application Japan, Aug. 31, 1995, 7-25830

Term of patent 14 years

LOC (6) Cl. 15 - *03*

U.S. Cl. D15—15



389,491
MOWER STEERING COLUMN

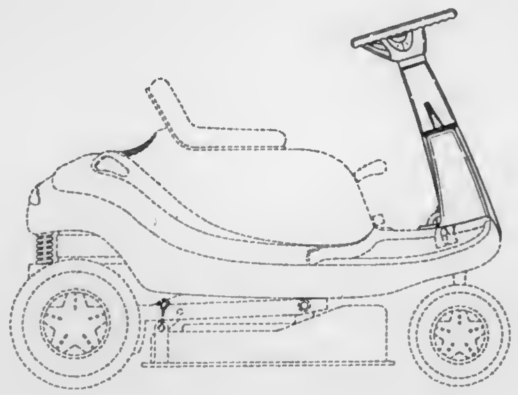
Bradley John Wolf, N. Royalton, Ohio, assignor to MTD Products Inc.

Filed Sep. 5, 1996, Ser. No. 59,237

Term of patent 14 years

LOC (6) Cl. 15 - *03*

U.S. Cl. D15—17



389,492
TRACTOR HOOD

John Schmidt, Grosse pointe Woods, and Milton Antonick, Royal Oak, both of Mich., assignors to Massey Ferguson Group Limited, England

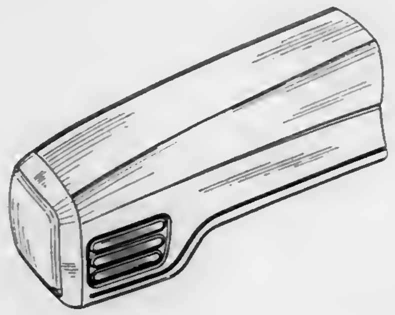
Filed Apr. 4, 1996, Ser. No. 52,638

Claims priority, application United Kingdom, Oct. 6, 1995, 2050971

Term of patent 14 years

LOC (6) Cl. 15 - *03*

U.S. Cl. D15—31



389,493
DIE GRINDER

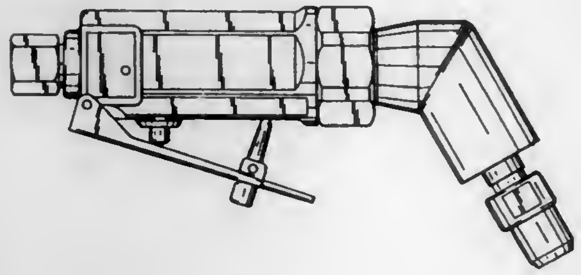
Michael Allen Orf, Wentzville, Mo., assignor to Stanley Mechanics Tools, Inc., Dallas, Tex.

Filed Sep. 17, 1996, Ser. No. 59,807

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—122



389,494
MITER SAW

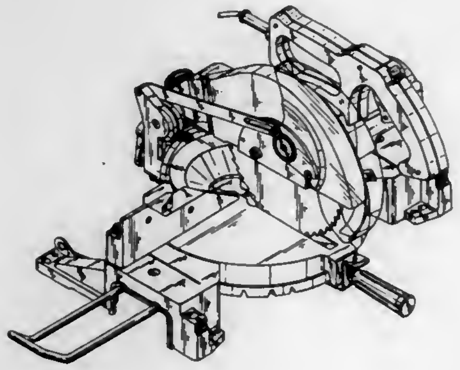
Ruey-Zon Chen, Taichung, Taiwan, assignor to Rexon Industrial Corp., Ltd., Taichung, Taiwan

Filed Nov. 4, 1996, Ser. No. 61,953

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—133



389,495
BANDSAW

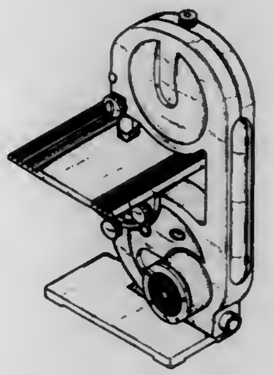
Lee Hsin-Chih Chung, No. 21-8, Shang san cho woo, Wuchang-Li, Chungli City, Taoyuan Hsien, Taiwan

Filed Nov. 1, 1996, Ser. No. 61,881

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—134



389,496
CUTTING INSERT

Sture Murén, Gä vle, and Jörgen Wiman, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

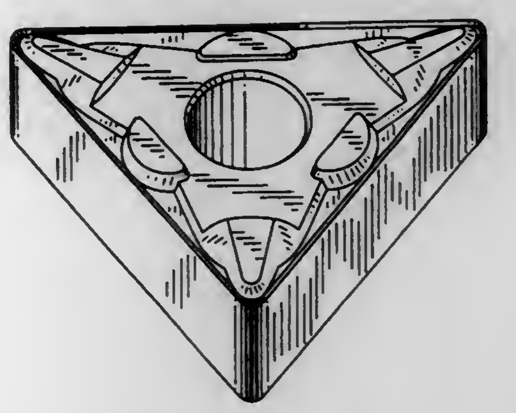
Filed Sep. 27, 1996, Ser. No. 60,377

Claims priority, application Sweden, Mar. 28, 1996, 96-0714

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—139



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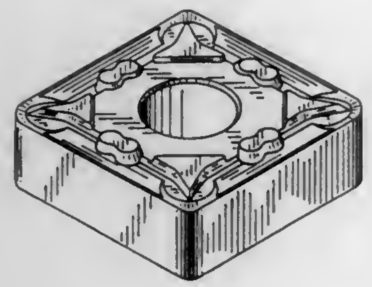
389,497
CUTTING INSERT

Sture Murén, Gävle, and Jörgen Wiman, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Sep. 27, 1996, Ser. No. 60,378
Claims priority, application Sweden, Mar. 28, 1996, 96-0714
Term of patent 14 years
LOC (6) Cl. 15 - *09*

U.S. Cl. D15—139

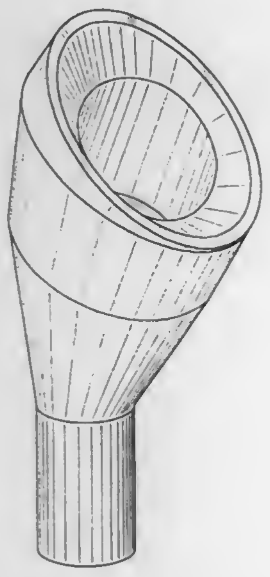


389,498
FUEL SPILL COLLECTOR

David K. Larson, Sharonville, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Oct. 4, 1996, Ser. No. 60,725
Term of patent 14 years
LOC (6) Cl. 15 - *99*

U.S. Cl. D15—150

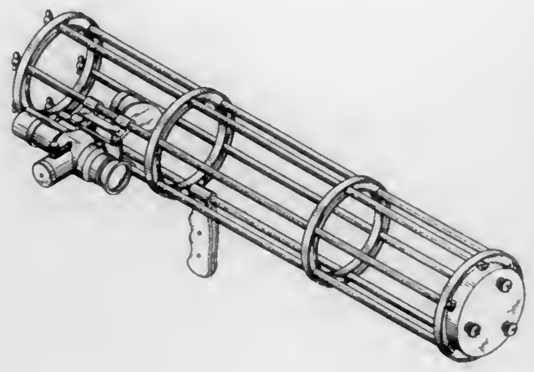


389,499
ASTRONOMICAL TELESCOPE

Ta-Kuei Chen, 4F, 22 Alley 2, Lane 250, Sec. 5, Nan-King E. Rd., Taipei, Taiwan

Filed Dec. 12, 1996, Ser. No. 64,272
Term of patent 14 years
LOC (6) Cl. 16 - *06*

U.S. Cl. D16—132

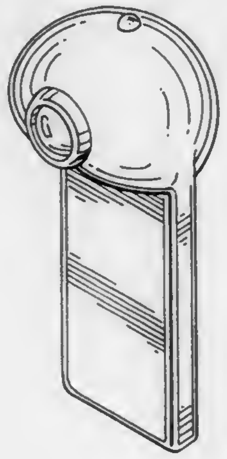


389,500
VIDEO CAMERA

David E. Krekelberg, Minnetonka, Minn., assignor to iREZ Research, Corporation, Minnetonka, Minn.

Filed Nov. 15, 1996, Ser. No. 62,494
Term of patent 14 years
LOC (6) Cl. 16 - *01*

U.S. Cl. D16—202

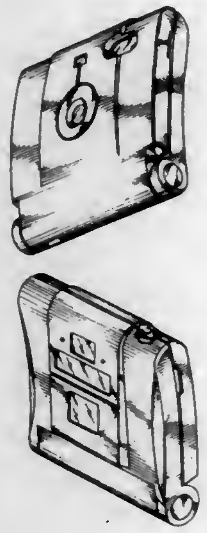


389,501
DIGITAL CAMERA

John M. Mascarenas, Sr., Glendale, Ariz.; Jay Wilson, Portola Valley, Calif.; Hedayat E. Dale, Fountain Hills; Randy R. Dunton, Phoenix, both of Ariz.; Thomas C. Jones, Phoenix, Ariz.; Gary Waymire, Menlo Park, and Loren Stirling, Aptos, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 24, 1997, Ser. No. 67,315
Term of patent 14 years
LOC (6) Cl. 16 - *01*

U.S. Cl. D16—202

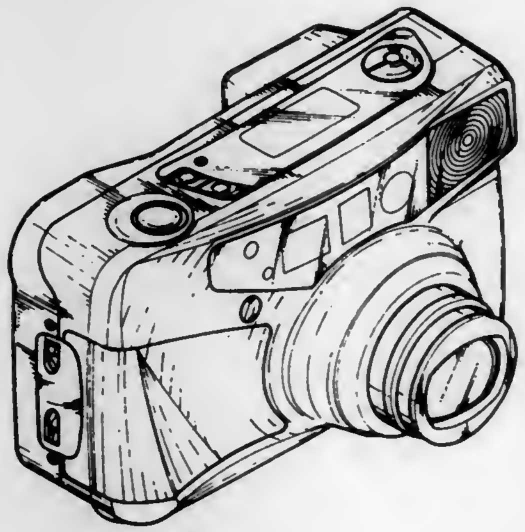


389,502
CAMERA

Ji Gang Lee, and Joo Bok Kim, both of Seoul, Rep. of Korea, assignors to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Dec. 31, 1996, Ser. No. 64,440
Term of patent 14 years
LOC (6) Cl. 16 - *01*

U.S. Cl. D16—209

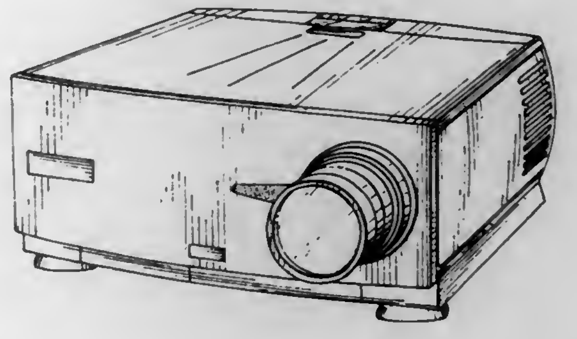


389,503
PROJECTOR

Mikiya Shimizu; Takahisa Yamada, and Manabu Tominaga, all of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Jul. 11, 1996, Ser. No. 56,912
Claims priority, application Japan, Jan. 11, 1996, 8-387
Term of patent 14 years
LOC (6) Cl. 16 - *02*

U.S. Cl. D16—230

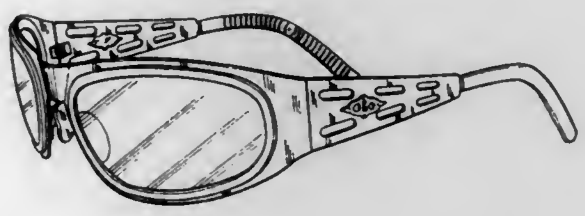


389,504
SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy

Filed Jul. 29, 1996, Ser. No. 57,625
Claims priority, application WIPO, Feb. 7, 1996, DM 035462
Term of patent 14 years
LOC (6) Cl. 16 - *06*

U.S. Cl. D16—321



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389,505
EYEWEAR

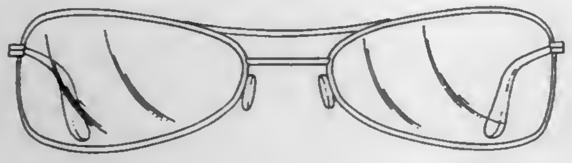
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 46,673, Oct. 20, 1995, abandoned. This application Aug. 1, 1996, Ser. No. 57,816

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



389,506
NOSE PAD FOR EYEWEAR

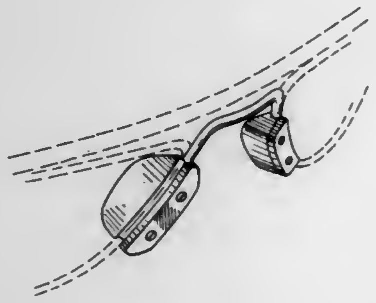
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 46,649, Oct. 20, 1995, Pat. No. Des. 377,365. This application Jul. 10, 1996, Ser. No. 56,872

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—332



389,507
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT

Takashi Honda, Shizuoka-ken, Japan, assignor to Yamaha Corporation, Japan

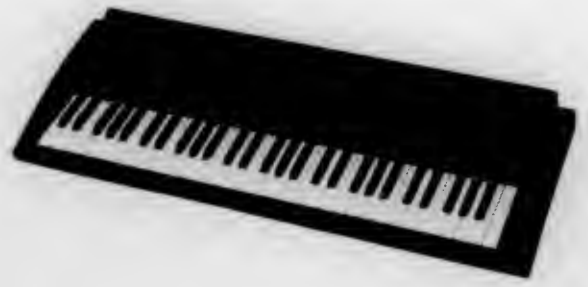
Filed Jan. 13, 1995, Ser. No. 33,521

Claims priority, application Japan, Jul. 15, 1994, 6-21242

Term of patent 14 years

LOC (6) Cl. 17 - *01*

U.S. Cl. D17—1



389,508
MACHINE HEAD FOR GUITAR

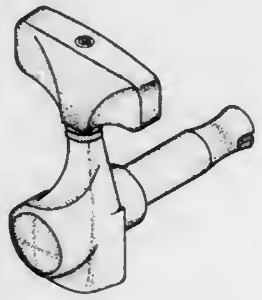
Han Soo Kang, Shihung, Rep. of Korea, assignor to Hanchang Co. Ltd., Kyonggi-do, Rep. of Korea

Filed Jun. 28, 1996, Ser. No. 56,426

Term of patent 14 years

LOC (6) Cl. 17 - *03*

U.S. Cl. D17—20



389,509
COMBINED STAMP PAD AND SUPPORT

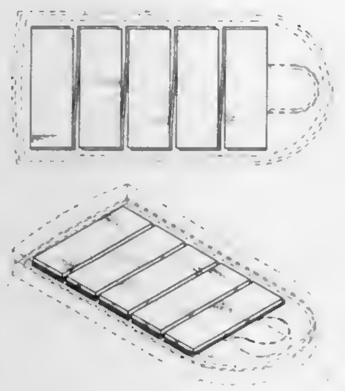
Ryo Yasoshima, Tokyo, Japan, assignor to Tsukineko, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 45,055, Oct. 6, 1995, which is a continuation-in-part of Ser. No. 472,258, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 446,205, May 19, 1995, Pat. No. 5,601,644. This application Aug. 30, 1996, Ser. No. 59,054

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D18—17



389,510
LABEL PRINTER

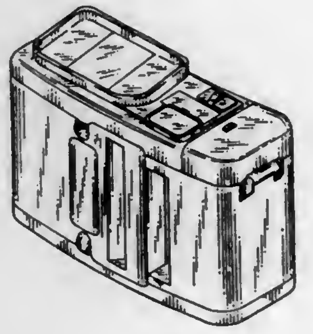
Osamu Mimoto, Kanagawa, Japan, assignor to Kabushiki Kaisha Tec, Shizuoka, Japan

Filed May 9, 1996, Ser. No. 54,333

Term of patent 14 years

LOC (6) Cl. 18 - *99*

U.S. Cl. D18—19



389,511
PRINTER INKSHEET

Fumio Kouzai; Kenichi Haramoto, and Tomoyuki Matsumoto, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

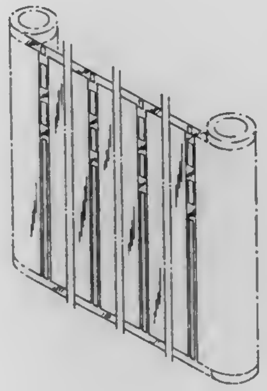
Filed Dec. 19, 1995, Ser. No. 48,069

Claims priority, application Japan, Jul. 19, 1995, 7-20865

Term of patent 14 years

LOC (6) Cl. 18 - *99*

U.S. Cl. D18—56



389,512
PRINTER INKSHEET

Fumio Kouzai; Kenichi Haramoto, and Tomoyuki Matsumoto, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

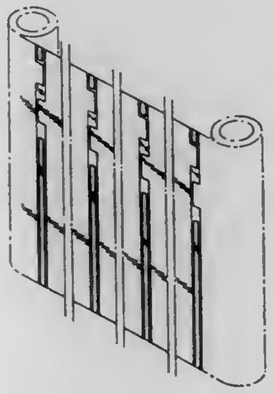
Filed Dec. 22, 1995, Ser. No. 48,247

Claims priority, application Japan, Jul. 19, 1995, 7-20863

Term of patent 14 years

LOC (6) Cl. 18 - *99*

U.S. Cl. D18—56



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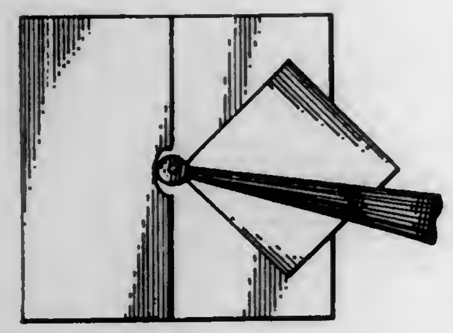
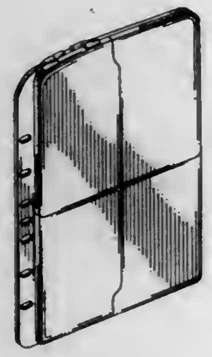
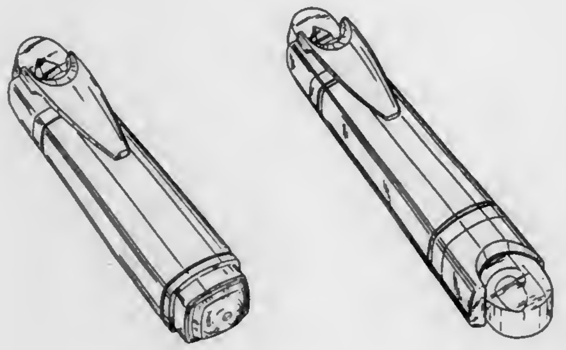
389,513
MORTAR BOARD GRADUATION CARD
Scott V. Bell, P.O. Box 81795, Fairbanks, Ak. 99708-1795
Filed May 15, 1996, Ser. No. 54,586
Term of patent 14 years
LOC (6) Cl. 19 - *01*
U.S. Cl. D19—6



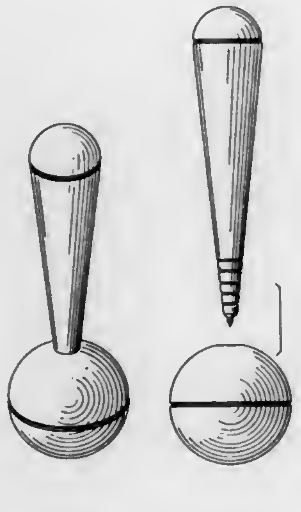
389,514
MODULAR ORGANIZER ASSEMBLY FOR A RINGED BINDER
Mark A. Bedol, P.O. Box 1268, Claremont, Calif. 91711
Filed Dec. 18, 1996, Ser. No. 63,902
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—32



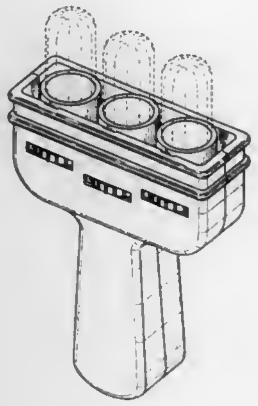
389,515
MARKER
Roy Edwin Van Swieten, Huesden, Netherlands, assignor to Henkel/Raycap Produktie B.V., Ravenstein, Netherlands
Filed Nov. 1, 1995, Ser. No. 45,888
Claims priority, application Hague Agreement, May 3, 1995, DM/032931
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—36



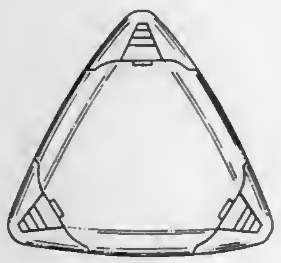
389,516
PEN ASSEMBLY
Joel Gordon Delman, 411 W. Fullerton Pkwy., Ste. 1006W, Chicago, Ill. 60614
Filed Jan. 23, 1997, Ser. No. 65,319
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—36



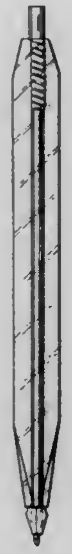
389,517
CHALK HOLDER
Lisa Deborah Frank, 65 N. Camino Espaniol, Tucson, Ariz. 85719
Filed Feb. 11, 1997, Ser. No. 66,443
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—36



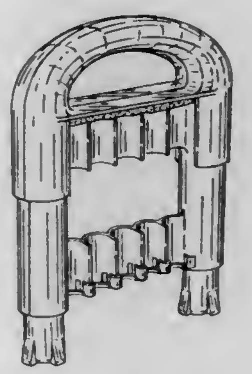
389,518
TRIANGULAR MARKER
Andre Reichmann, Port Washington, N.Y., assignor to Dri Mark Products Inc., Port Washington, N.Y.
Filed Feb. 25, 1997, Ser. No. 67,255
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—36



389,519
MECHANICAL CARPENTER'S PENCIL
J. David Duford, 3196 N. Foothills Dr., Ronan, Mont. 59864
Filed Jul. 3, 1996, Ser. No. 56,635
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—49



389,520
MARKER HOLDER
Bernard J. Kocon, Bethlehem, Pa.; Craig R. Bures, Prospect, Conn., and Frederick W. Kruger, Jr., Churchville, Pa., assignors to Binney & Smith Inc., Easton, Pa.
Filed Feb. 14, 1997, Ser. No. 66,565
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—85



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389,521

COIN SLOT GUARD

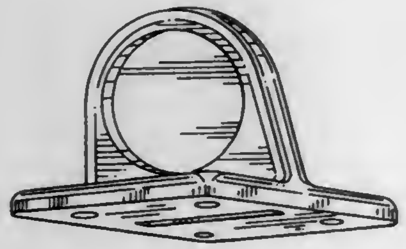
W. Thomas McClellan, 3541 W. State Rd. 84, Fort Lauderdale, Fla. 33312

Filed Apr. 16, 1996, Ser. No. 53,075

Term of patent 14 years

LOC (6) Cl. 20 - *01*

U.S. Cl. D20—9



389,522

MULTIMEDIA TERMINAL HOUSING ON A COLUMN

Udo Hesselbach, Bueren, and Bernd Kruse, Altenbeken, both of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

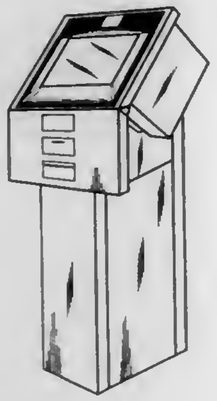
Filed Mar. 19, 1996, Ser. No. 51,887

Claims priority, application Germany, Sep. 28, 1995, M 95 07 882.7

Term of patent 14 years

LOC (6) Cl. 20 - *03*

U.S. Cl. D20—10



389,523

COMBINED TRANSMITTER AND RECEIVER FOR LOCATING LOST DOCUMENTS

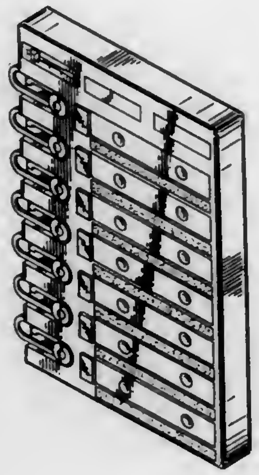
Stephen L. Slebold, and Susan D. Slebold, both of 8208 S. 300 W., Poneto, Ind. 46781

Filed Oct. 16, 1996, Ser. No. 61,150

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D20—18



389,524

DISPLAY SIGN DEVICE

Kenneth Henry Grange, Hampstead, United Kingdom, assignor to More Group PLC, London, United Kingdom

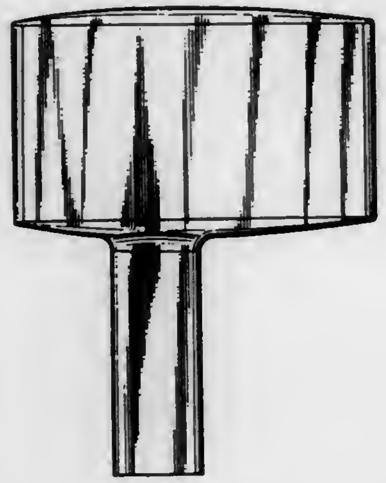
Filed Jul. 23, 1996, Ser. No. 57,343

Claims priority, application United Kingdom, Jan. 26, 1996, 2053678

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D20—41



389,525

DEPENDINGLY SUPPORTED SIGN

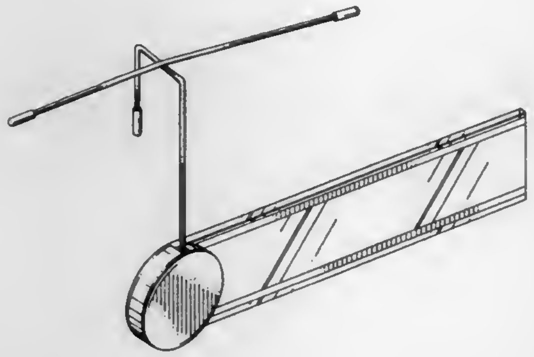
William J. Prokes, 826 E. Dava Dr., Tempe, Ariz. 85283

Filed Apr. 3, 1997, Ser. No. 68,417

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D20—42



389,526

ADJUSTABLE SIGN HOLDER

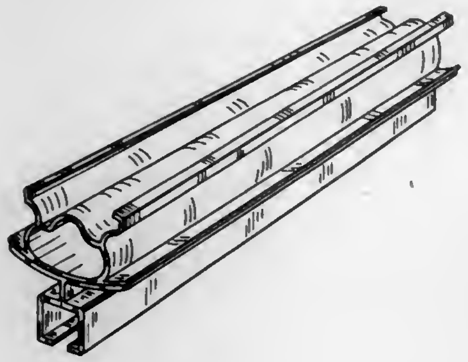
Mike T. Callas, 120 Gideons Point Rd., Tonka Bay, Minn. 55331

Filed Mar. 15, 1996, Ser. No. 51,691

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D20—43



389,527

DART BOARD

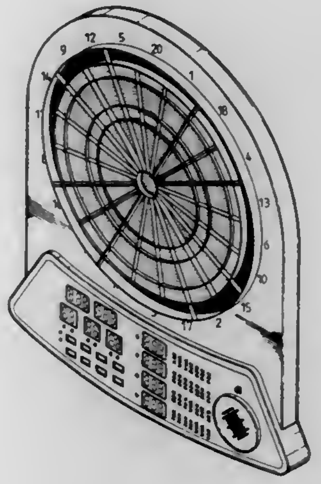
Ying-Tse Chen, Tainan Hsien, Taiwan, assignor to Pai Li Business Co., Ltd., Tainan Hsien, Taiwan

Filed Nov. 25, 1996, Ser. No. 62,777

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—6



389,528

LOTTO NUMBER PICKING DEVICE

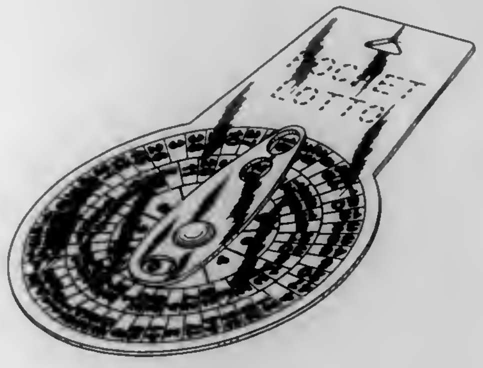
Glen R. Stratmann, 5014 Creek Valley Dr., Arlington, Tex. 76018

Filed Oct. 10, 1996, Ser. No. 60,909

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—37



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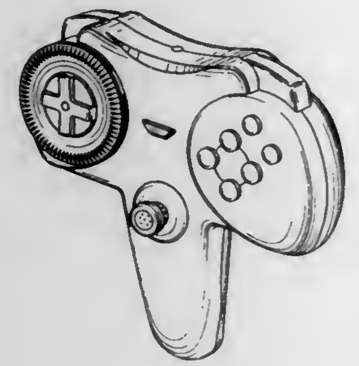
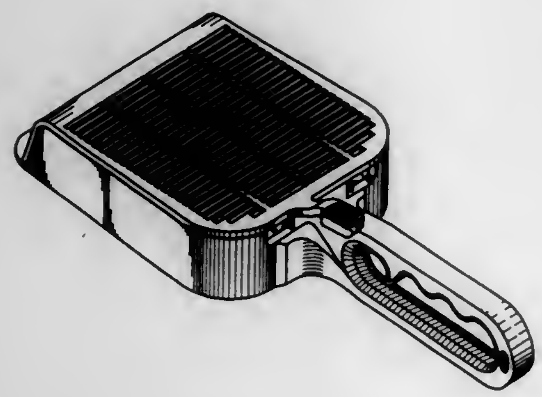
389,529
GAME MACHINE CONTROLLER

Takayuki Hayami, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 7, 1997, Ser. No. 64,638
Claims priority, application Japan, Aug. 8, 1996, 8-23989
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



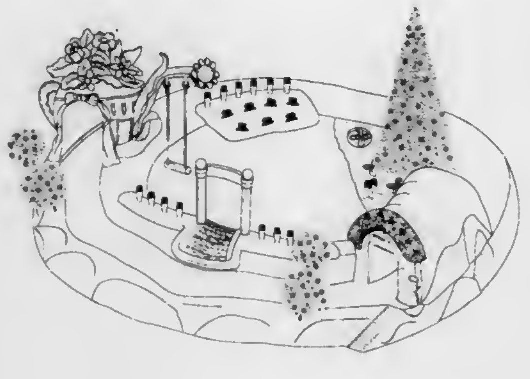
389,530
TOY SIFTER

Dale Kevin Herman, 9308—176A Street, Edmonton, Alberta, Canada, T5T 3G6
Filed Jul. 17, 1996, Ser. No. 57,155
Claims priority, application Canada, Jan. 18, 1996, 1996-0109
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—59



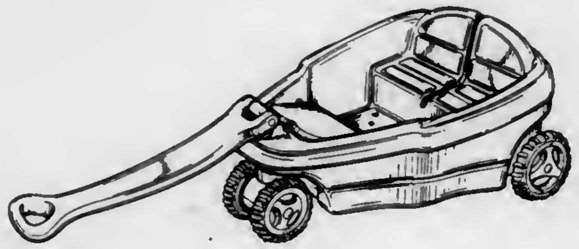
389,531
ELECTRIC EASTER TOY

Ming-Yu Huang, No. 9, Alley 60, Lane 476, Sec. 1, Kwangfu Rd., Hsinchu City, Taiwan
Filed Dec. 17, 1996, Ser. No. 63,831
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—59



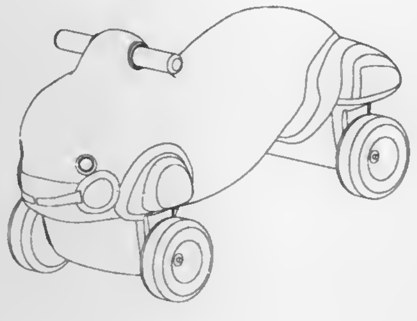
389,532
WAGON

Maarten van Huystee, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Continuation-in-part of Ser. No. 50,050, Feb. 7, 1996, abandoned. This application Nov. 18, 1996, Ser. No. 62,528
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—71



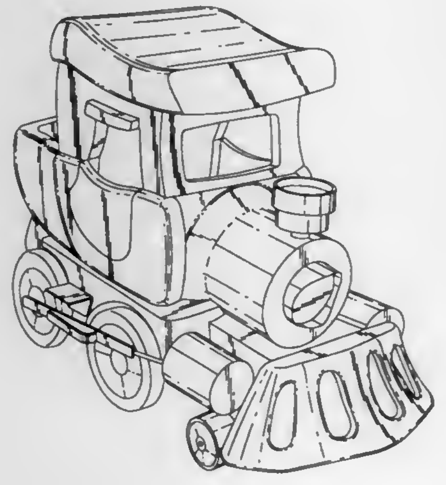
389,533
RIDE-ON TOY

Matthew C. Maxwell, Mogadore, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Feb. 7, 1997, Ser. No. 66,374
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—74



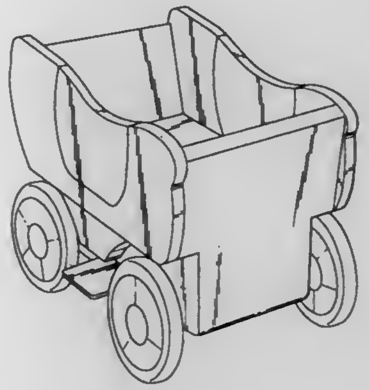
389,534
TRAIN ENGINE

Richard Schulz, 3945 Harvard Ct., Livermore, Calif. 94550
Filed Oct. 8, 1996, Ser. No. 60,825
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—129



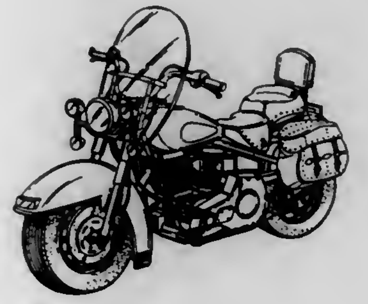
389,535
TRAIN CAR

Richard Schulz, 3945 Harvard Ct., Livermore, Calif. 94550
Filed Oct. 8, 1996, Ser. No. 60,836
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—129



389,536
MINIATURE TOY MOTORCYCLE

Ramon Mira Verdu, Castalla, 21, Ibi (Alicante), Spain
Continuation-in-part of Ser. No. 21,229, Apr. 11, 1994, abandoned. This application Sep. 8, 1995, Ser. No. 43,645
Claims priority, application Spain, Nov. 11, 1993, 131090
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—134



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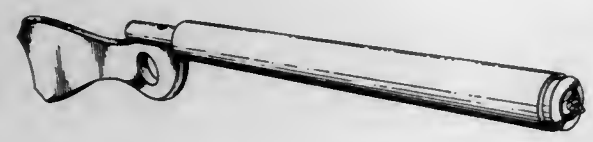
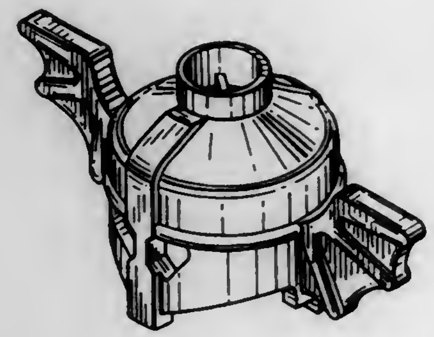
389,537
POPGUN

Jerry M. Fullingim, 118 Cynthia Dr., Kerrville, Tex. 78028
Filed Apr. 3, 1997, Ser. No. 65,067
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—147



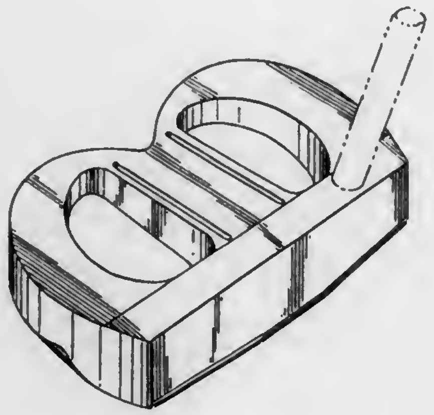
389,538
HELMET FOR A TOY FIGURE

Geir Karsten Riis, Vonge, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Sep. 17, 1996, Ser. No. 59,833
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—190



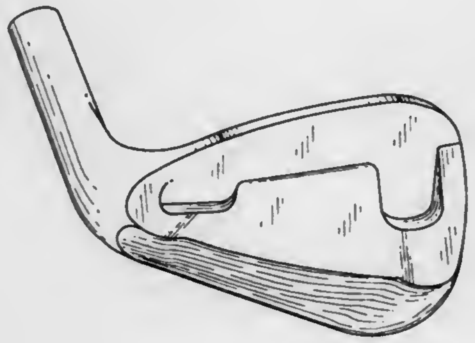
389,539
GOLF PUTTER HEAD

James T. Moore, 2003 Foxcroft Dr., LaGrange, Ga. 30240
Filed Apr. 29, 1996, Ser. No. 53,724
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



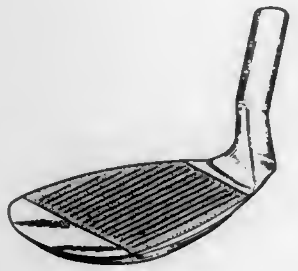
389,540
GOLF CLUB HEAD

Byron R. Mendenhall, 6233 Napoli Ct., Long Beach, Calif. 90802
Filed Jan. 26, 1996, Ser. No. 49,521
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



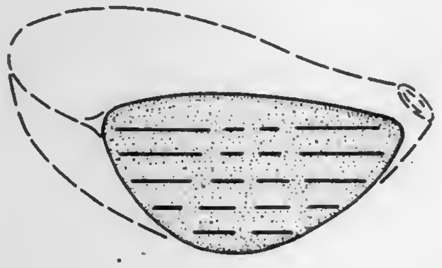
389,541
GOLF CLUB HEAD

Tseng Huan-Chiang, P.O. Box 82-144, Taipei, Taiwan
Filed Dec. 3, 1996, Ser. No. 62,916
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



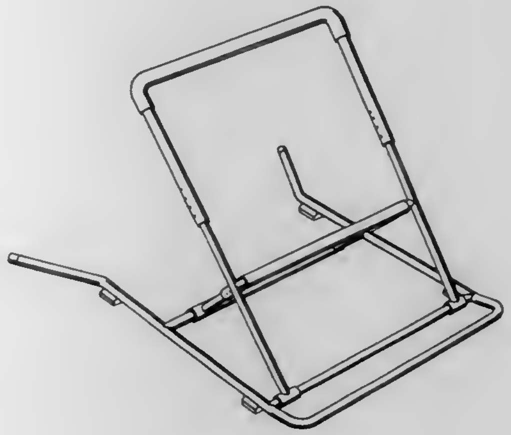
389,542
SCORELINE PATTERN FOR GOLF CLUB HEAD

Augustin W. Rollinson, Carlsbad, and D. Clayton Evans, Vista, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Filed Aug. 29, 1996, Ser. No. 58,272
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



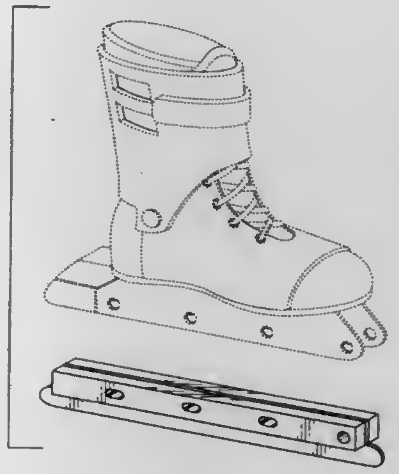
389,543
SKATING AID

Brent Morning, R.R. #1, Kettleby, Ontario, Canada, L0G 1J0
Filed Aug. 1, 1996, Ser. No. 57,852
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—224



389,544
SKATE BLADE

Jeff Adams, 1734 White Oak La., Union City, Calif. 94587
Filed Sep. 30, 1996, Ser. No. 60,456
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—225



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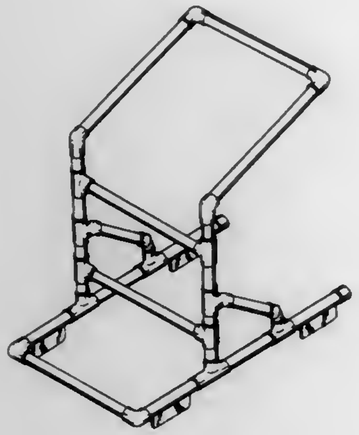
389,545

ICE SKATING AID

Harvey Gertler, 79 Reynolds Dr., Lido Beach, N.Y. 11561
Filed Dec. 30, 1996, Ser. No. 64,377
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—225

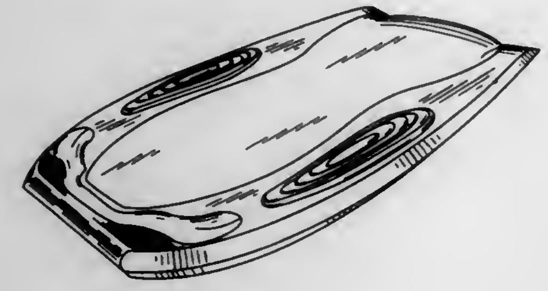


389,546

BODYBOARD

Michael A. Stewart, 22345 LaPalma Ave., Unit 102, Yorba Linda, Calif. 92687
Filed Jul. 24, 1996, Ser. No. 57,413
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—228

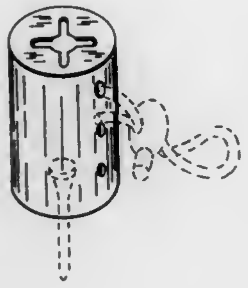


389,547

GOLF TEE DISPENSER

Paul A. Smallwood, and Michael G. Eckman, both of Chesterfield, Mo., assignors to Taylor Nathan Co., Inc., St. Louis, Mo.
Filed May 23, 1996, Ser. No. 54,841
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—234

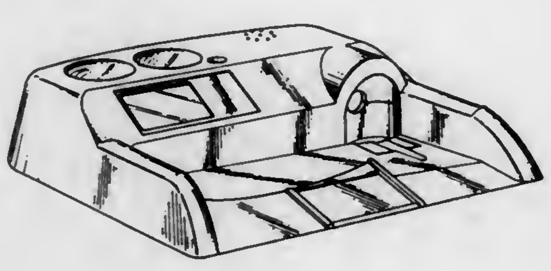


389,548

GOLF BALL RECEIVER & EJECTOR DEVICE FOR PUTTING PRACTICE

Chien-Cheng Liu, 72 Chu-Yun Rd., Pan-Chiao, Taipei Hsien, Taiwan
Filed Dec. 27, 1996, Ser. No. 64,312
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—234

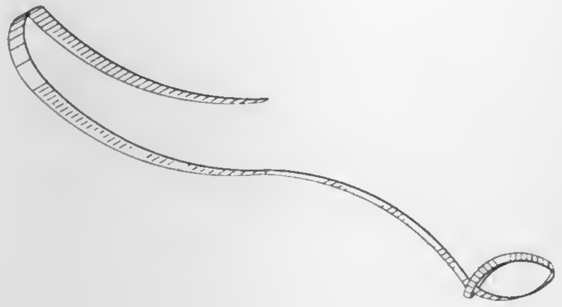


389,549

TETHERED LASSO FOR SWIMMING

John A. Beers, 18605 McCoy Ave., Port Charlotte, Fla. 33948
Filed Feb. 26, 1996, Ser. No. 50,813
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—237

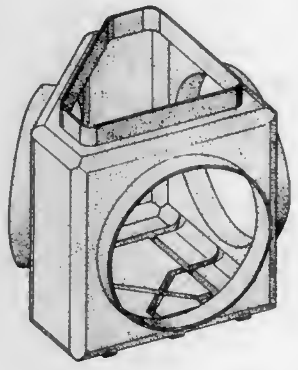


389,550

THREE-WAY JUNCTION BOX FOR RECREATIONAL EQUIPMENT

Barry C. Williams, Statesville, N.C., assignor to Rotomolded Technical Solutions, Inc., Conover, N.C.
Filed Jul. 30, 1996, Ser. No. 57,698
Term of patent 14 years
LOC (6) Cl. 21 - *03*

U.S. Cl. D21—240

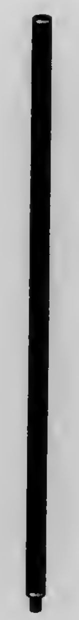


389,551

ARCHERY BOW STABILIZER

James J. Fitzgerald, Jr., Revena, Ky., assignor to Archery Center, Inc., Irvine, Ky.
Filed Nov. 22, 1996, Ser. No. 62,720
Term of patent 14 years
LOC (6) Cl. 22 - *01*

U.S. Cl. D22—107

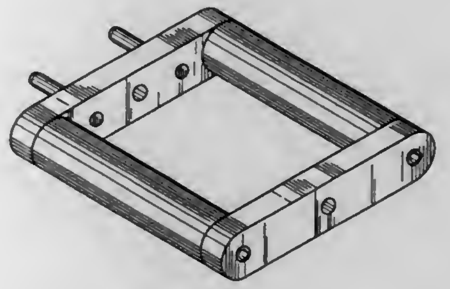


389,552

ARCHERY CROSSBOW STABILIZER

James J. Fitzgerald, Jr., Revena, Ky., assignor to Archery Center, Inc., Irvine, Ky.
Filed Nov. 22, 1996, Ser. No. 62,744
Term of patent 14 years
LOC (6) Cl. 22 - *01*

U.S. Cl. D22—107



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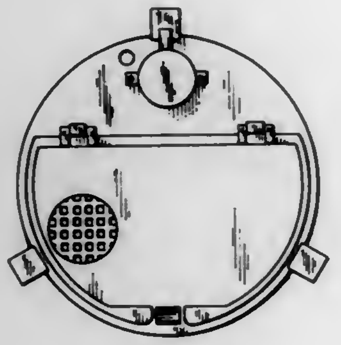
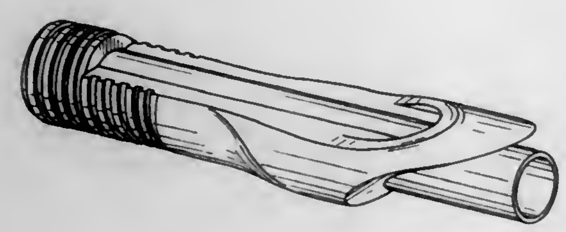
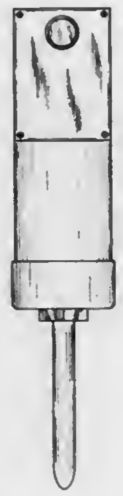
389,553
AERATING BAIT BUCKET COVER
A. Douglas Muto, 1933 Bayview Dr., New Smyrna Beach, Fla. 32168
Filed Apr. 18, 1996, Ser. No. 53,274
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—136



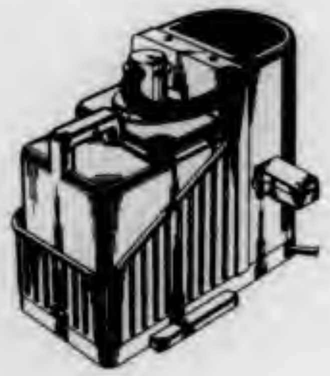
389,554
MAIN BODY OF REEL SEAT FOR FISHING ROD
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka-ken, Japan
Filed Oct. 30, 1996, Ser. No. 61,741
Claims priority, application Japan, May 11, 1996, 8-13533
The portion of the term of this patent subsequent to Dec. 23, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—142



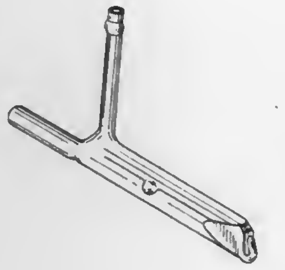
389,555
FISHING ROD HOLDER WITH ALARM SYSTEM
Tyrone Johnson, 13892 Via Rimini, San Diego, Calif. 92129
Filed Feb. 14, 1997, Ser. No. 66,548
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—148



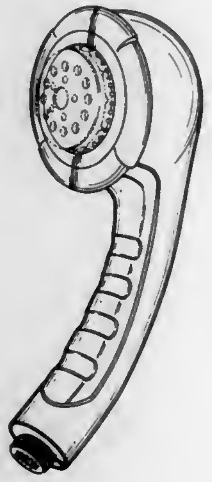
389,556
WATER DISTILLER
Michael Feldman, Toms River, N.J., and Moshe Meller, Haifa, Israel, assignors to MTI Precision Products, Inc., Lakewood, N.J.
Filed Oct. 24, 1996, Ser. No. 61,471
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—207



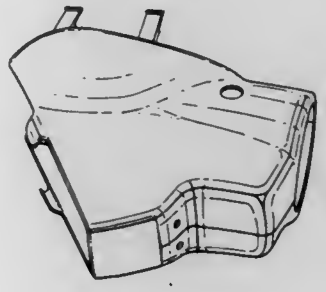
389,557
NEBULIZER
Steven D. Sweat, Englewood, Colo., assignor to Precision Glassblowing of Colorado, Inc., Englewood, Colo.
Filed May 17, 1996, Ser. No. 54,639
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—213



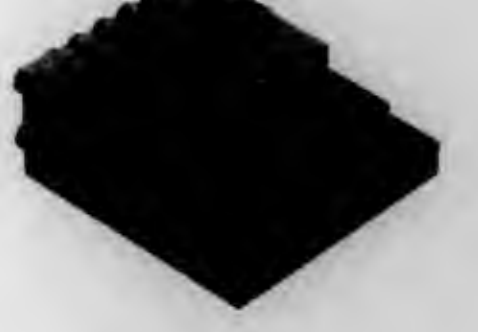
389,558
HAND HELD SHOWER HEAD
Leonard C. Andrus, Plymouth, Mich., assignor to Brass-Craft Manufacturing Company, Novi, Mich.
Division of Ser. No. 26,909, Aug. 9, 1994, Pat. No. Des. 369,204. This application Apr. 2, 1996, Ser. No. 52,313
The portion of the term of this patent subsequent to Apr. 23, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—223



389,559
FUEL FILLER GUN COVER
Stein Alvern, Oslo, Norway, assignor to Alvern Norway A/S, Norway
Filed Jul. 8, 1996, Ser. No. 56,728
Claims priority, application Norway, Jan. 25, 1996, 960061
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—227



389,560
ELECTROMAGNETIC VALVE
Bunya Hayashi; Shinji Miyazoe, and Makoto Ishikawa, all of Ibaraki, Japan, assignors to SMC Corporation, Tokyo, Japan
Filed Feb. 9, 1996, Ser. No. 50,181
Claims priority, application Japan, Aug. 11, 1995, 7-23578
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—233



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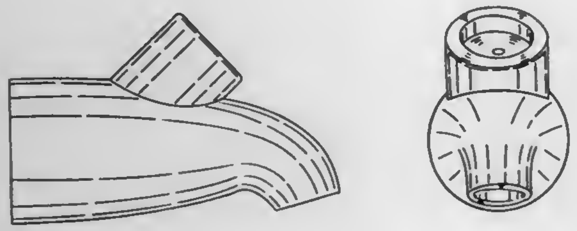
389,561
FAUCET

Peter Horge, 177 Fifth Ave., LaSalle, Québec, Canada, H8P 2K3

Filed Jan. 21, 1997, Ser. No. 65,072
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—255

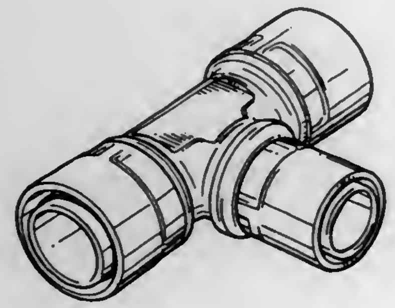


389,562
T-FITTING

David John Picton, P.O. Box 58231, Greenmount, Auckland, New Zealand

Filed May 20, 1996, Ser. No. 54,684
Claims priority, application New Zealand, Dec. 7, 1995, 27250
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—263

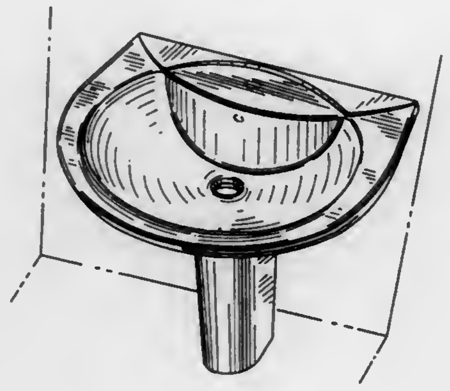


389,563
LAVATORY

Francois Kergoet, Malakoff, France, assignor to Jacob Delafon, Paris, France

Filed Nov. 3, 1995, Ser. No. 46,755
Term of patent 14 years
LOC (6) Cl. 23 - *02*

U.S. Cl. D23—292

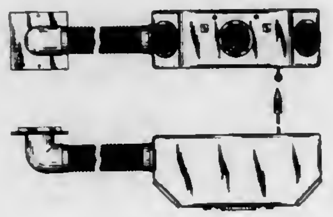


389,564
VENTILATION DEVICE FOR VEHICLES WITH PARTITIONED COMPARTMENTS

Kenneth Owusu, 51 Clifton Ave., Apt. C-1314, Newark, N.J. 07104

Filed Jan. 21, 1997, Ser. No. 65,091
Term of patent 14 years
LOC (6) Cl. 12 - *16*

U.S. Cl. D23—324

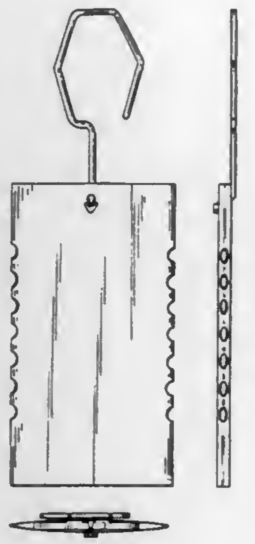


389,565
CONTAINER FOR ODORANT

Jean-Louis Scheuer, 22, Rue de Siewiller, F-67320 Drulingen, and Marc Feiten, 11, Quai Koch, F-6700, Strasbourg, both of France

Filed Mar. 15, 1996, Ser. No. 51,660
Claims priority, application Australia, Sep. 18, 1995, 3386/95
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—368

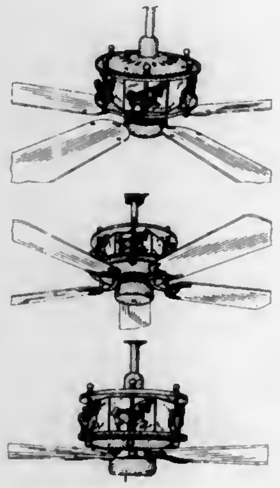


389,566
CEILING FAN

Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting, Inc., Corona, Calif.

Filed Mar. 8, 1995, Ser. No. 35,886
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—377

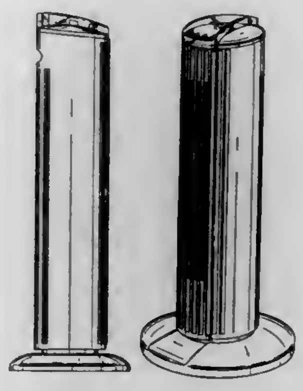


389,567
COMBINED FAN AND COVER THEREFOR

Jacques Gudefin, Saint Priest, France, assignor to Calor S.A., Lyons, France

Filed Nov. 14, 1996, Ser. No. 62,387
Claims priority, application France, May 14, 1996, 96 2889
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—378

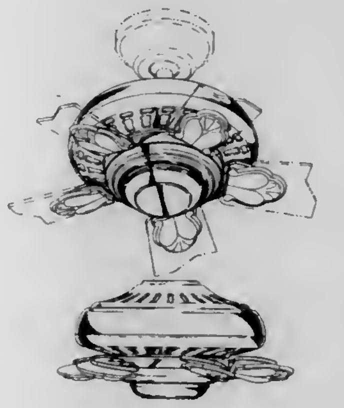


389,568
COMBINED CEILING FAN MOTOR HOUSING, SWITCH HOUSING, AND BLADE IRONS UNIT

Jack W. Gee, II, Memphis, and Masao Tsuji, Germantown, both of Tenn., assignors to Hunter Fan Company, Memphis, Tenn.

Filed Aug. 9, 1996, Ser. No. 58,276
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—411



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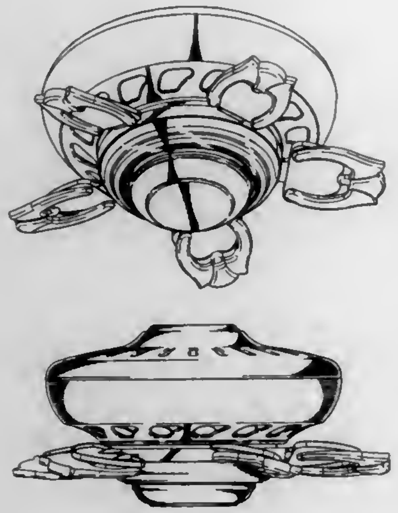
389,569
COMBINED CEILING FAN MOTOR HOUSING, SWITCH HOUSING, AND BLADE IRONS UNIT

Jack W. Gee, II, Memphis, and Masao Tsuji, Germantown, both of Tenn., assignors to Hunter Fan Company, Memphis, Tenn.

Filed Aug. 9, 1996, Ser. No. 58,279
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—411

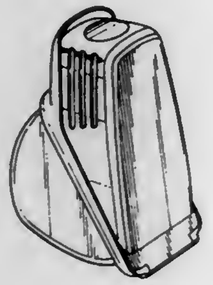


389,570
PROTECTIVE COVERING AGAINST MOISTURE FOR A POWDER INHALER

Jorma Savolainen, Helsinki, Finland, assignor to Orion-Yhtyma Oy, Finland

Filed Dec. 5, 1995, Ser. No. 47,466
Claims priority, application Finland, Jun. 6, 1995, 391/95
Term of patent 14 years
LOC (6) Cl. 24 - *04*

U.S. Cl. D24—110

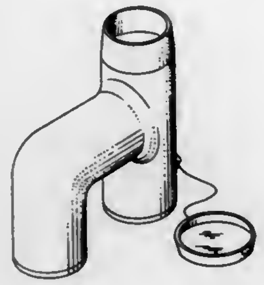


389,571
BREATHING ADAPTER FOR OXYGEN AND MEDICATED MIST

Raymond Duplesse, 360 W. Ocean Blvd. #303, Long Beach, Calif. 90802

Continuation-in-part of Ser. No. 45,134, Oct. 11, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 57,667
Term of patent 14 years
LOC (6) Cl. 29 - *02*

U.S. Cl. D24—110.6

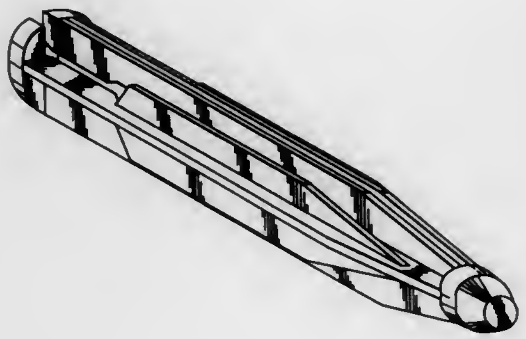


389,572
EIGHT VANED CROWN FOR A SOLID-PHASE REACTION SUPPORT PIN

Andrew Malcolm Bray, Boronia, Australia, assignor to Chiron Corporation, Emeryville, Calif.

Filed Mar. 22, 1996, Ser. No. 52,101
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—130

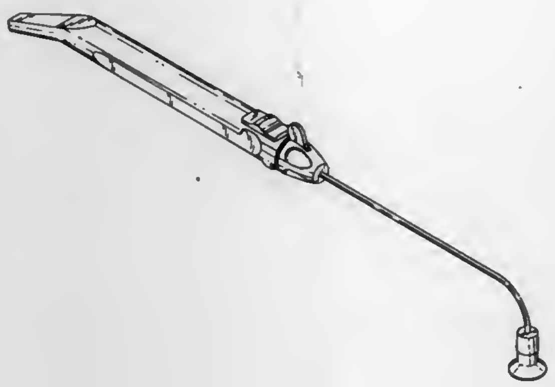


389,573
HAND PIECE FOR SURGICAL LASER FIBER OPTIC DELIVERY SYSTEM

Stuart D. Harman, San Jose, and Richard D. Phipps, Morgan Hill, both of Calif., assignors to Eclipse Surgical Technologies, Inc., Sunnyvale, Calif.

Filed Oct. 8, 1996, Ser. No. 60,819
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—133

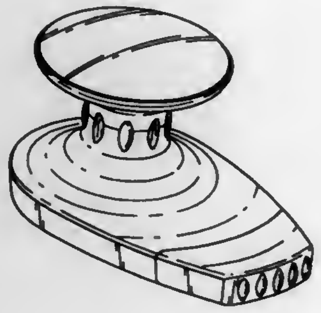


389,574
FINGER GRIP DEVICE FOR A LASER FIBER OPTIC DELIVERY SYSTEM

Rick Emerson, San Jose; Douglas R. Murphy-Chutorian; Richard L. Mueller, both of Sunnyvale; Stuart D. Harman, San Jose, and Steven A. Daniel, Fremont, all of Calif., assignors to Eclipse Surgical Technologies, Inc., Sunnyvale, Calif.

Filed Nov. 27, 1996, Ser. No. 63,126
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—133

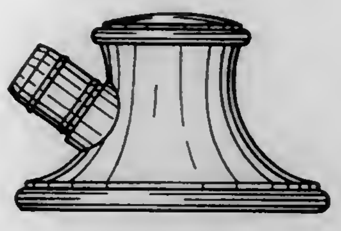


389,575
CHESTPIECE OF A STETHOSCOPE

James A. Grasfield, 235 Moose Hill Pkwy., Sharon, Mass. 02067; David E. Winston, 7 Wainwright Rd. #15, Winchester, Mass. 01890; Peter R. H. Stark, and Daniela Steinhubel, both of 41 Bonad Rd., Stoneham, Mass. 02180

Filed Oct. 22, 1996, Ser. No. 61,328
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—134

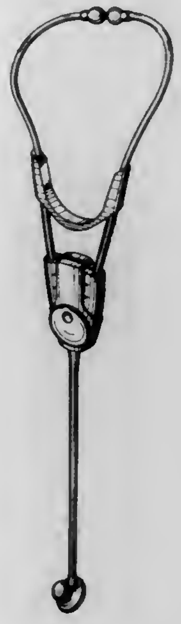


389,576
STETHOSCOPE

James A. Grasfield, 235 Moose Hill Pwky., Sharon, Mass. 02067; David E. Winston, 7 Wainwright Rd. #15, Winchester, Mass. 01890; Peter R. H. Stark, and Daniela Steinhubel, both of 41 Bonad Rd., Stoneham, Mass. 02180

Filed Oct. 22, 1996, Ser. No. 61,329
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—134



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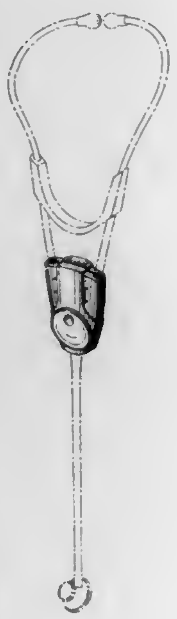
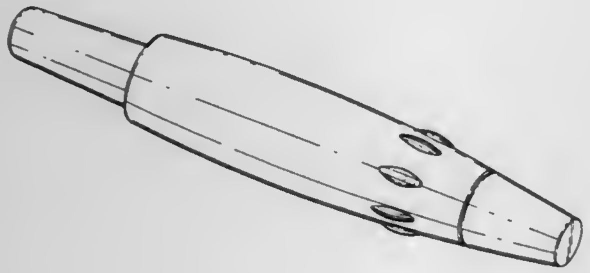
389,577
HOUSING ELEMENT OF A STETHOSCOPE

James A. Grasfield, 235 Moose Hill Pkwy., Sharon, Mass. 02067; David E. Winston, 7 Wainwright Rd. #15, Winchester, Mass. 01890; Peter R. H. Stark, and Daniela Steinhubel, both of 41 Bonad Rd., Stoneham, Mass. 02180
Filed Oct. 22, 1996, Ser. No. 61,331
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—134



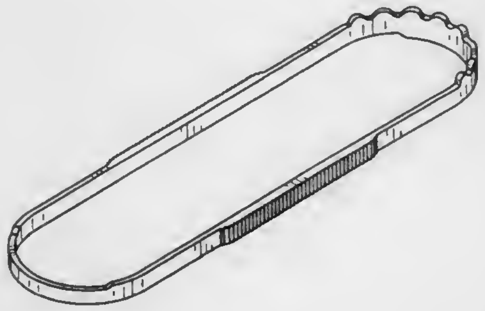
389,578
IN-LINE DEVICE FOR A LASER FIBER OPTIC DELIVERY SYSTEM

Rick Emerson, San Jose; Douglas R. Murphy-Chutorian; Richard L. Mueller, both of Sunnyvale; Stuart D. Harman, San Jose, and Steven A. Daniel, Fremont, all of Calif., assignors to Eclipse Surgical Technologies, Inc., Sunnyvale, Calif.
Filed Nov. 27, 1996, Ser. No. 63,101
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—144



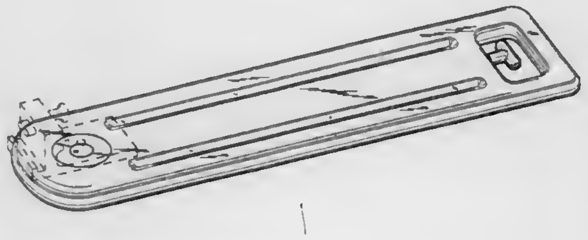
389,579
ERGONOMIC TONGUE CLEANER

Kelly A. Faddis, Sandy; Ashok C. Khandkar, and Sudhir V. Nadkarni, both of Salt Lake City, all of Utah, assignors to Bofa, LLC, Salt Lake City, Utah
Filed Oct. 31, 1996, Ser. No. 61,829
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D24—147



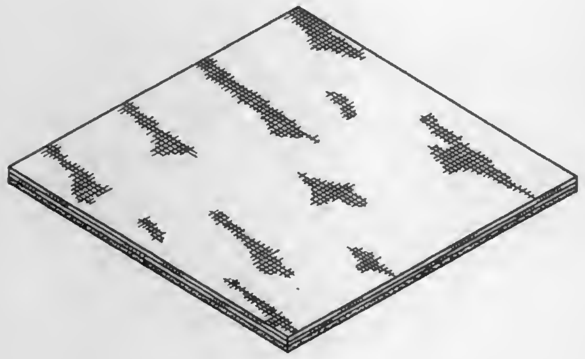
389,580
SURGICAL ARMBOARD

Yury Keselman, Beachwood, and Richard Navarro, Strongsville, both of Ohio, assignors to Allen Medical Systems, Garfield Hts., Ohio
Filed Oct. 28, 1996, Ser. No. 61,628
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—184



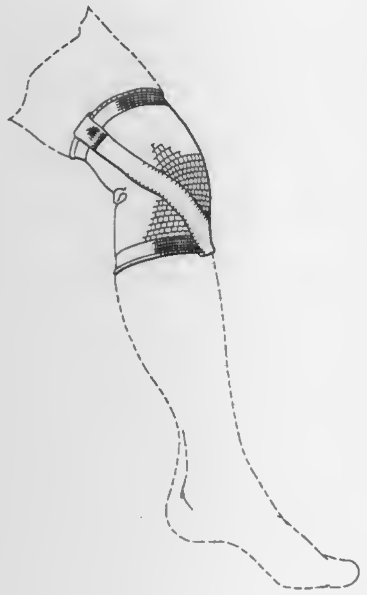
389,581
DUAL MEDICATION DISPENSING PAD

Malcolm Fein, 123 Joralemon St., Brooklyn, N.Y. 11201
Filed Jan. 31, 1995, Ser. No. 34,272
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—189



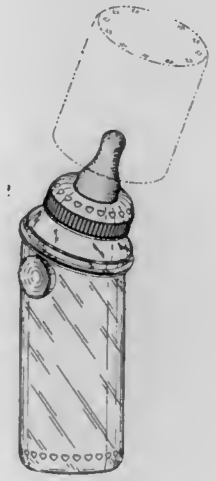
389,582
SUPPORT BRACE FOR KNEE OR ELBOW

Stefan G. A. Bodenschatz, Buxtehude, Germany; Sherry A. Hinds, Goshen, Ohio; Thorsten Stradt, Hamburg, Germany; Richard G. Taylor, Cincinnati, Ohio; John R. Truitt, Cincinnati, Ohio, and S. Michael Wiesemann, Cincinnati, Ohio, assignors to Futuro, Inc., Milford, Ohio
Filed Oct. 10, 1996, Ser. No. 59,465
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



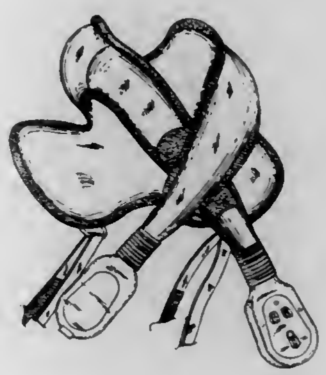
389,583
ANGLED BOTTLE

Paul Thom, Montclair, N.J., assignor to Playtex Products, Inc., Westport, Conn.
Division of Ser. No. 35,442, Feb. 27, 1995, Pat. No. Des. 371,849. This application Jul. 15, 1996, Ser. No. 57,035
The portion of the term of this patent subsequent to Jul. 16, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D24—197



389,584
COMBINED NECK AND SHOULDER MASSAGER

Robert D. Leventhal, 2548 Micheltorena St., Los Angeles, Calif. 90039; Paul B. Thomas, 1257 W. O'Farrell, San Pedro, Calif. 90732, and Guadalupe Martinez, 9119 Louise St., Bellflower, Calif. 90706
Filed Sep. 12, 1996, Ser. No. 59,537
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—215



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389,585

LOWER BACK MASSAGER

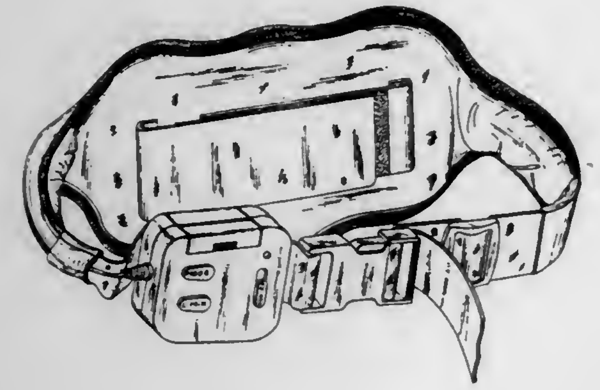
Robert D. Leventhal, 2548 Micheltorena St., Los Angleles, Calif. 90039; Paul B. Thomas, 1257 W. O'Farrell, San Pedro, Calif. 90732, and Guadalupe Martinez, 9119 Louise St., Bellflower, Calif. 90706

Filed Sep. 12, 1996, Ser. No. 59,538

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—215



389,586

COMBINED CAP AND VIAL

V. Jack Brennan, 2850 Lombardy Rd., San Marino, Calif. 91108

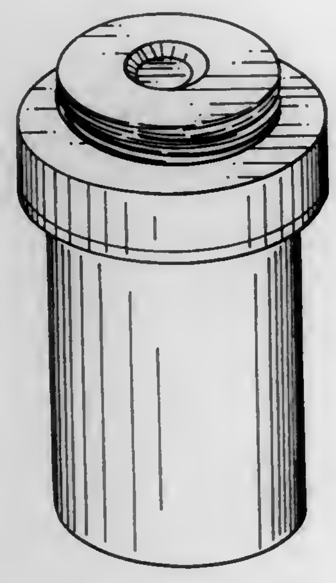
Filed Aug. 18, 1993, Ser. No. 11,928

The portion of the term of this patent subsequent to Sep. 2, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—224



389,587

SLIDE DEVICE FOR TESTING AND DISPLAYING FERTILITY DETERMINATIONS

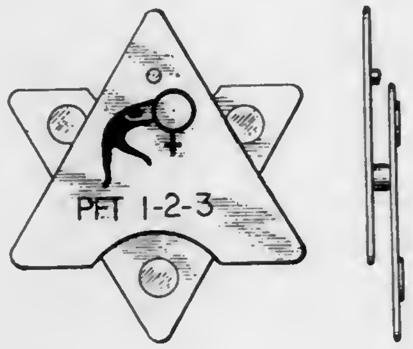
Karen P. Orell Porrazzo, and Edward M. Porrazzo, both of Carmichael, Calif., assignors to Personal Fertility Technologies, Inc., Gold River, Calif.

Filed Jan. 30, 1996, Ser. No. 49,760

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—225



389,588

STAIR TREAD HAVING A SLIP-RESISTANT SURFACE

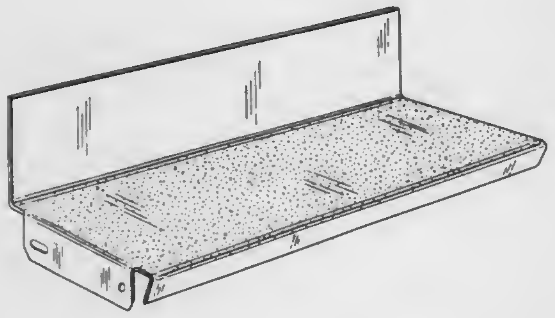
Robert T. Dunk, Brentwood, Tenn., assignor to Harsco Corporation, Camp Hill, Pa.

Continuation of Ser. No. 054,690, May 20, 1996, abandoned. This application Nov. 8, 1996, Ser. No. 62,185

Term of patent 14 years

LOC (6) Cl. 25 - *04*

U.S. Cl. D25—69



389,589

PAVING TILE

Fausto Artajona-Baena, Actor Arturo Lledo, 37, Alicante, Spain, 03008

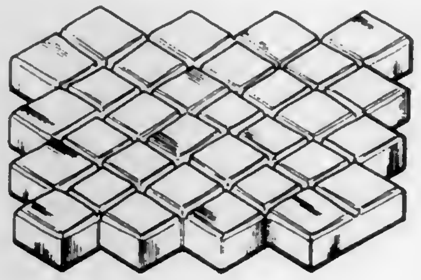
Filed Nov. 27, 1996, Ser. No. 63,072

Claims priority, application Spain, Jun. 12, 1996, 137699

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—113



389,590

WINDOW COMPONENT EXTRUSION 7109

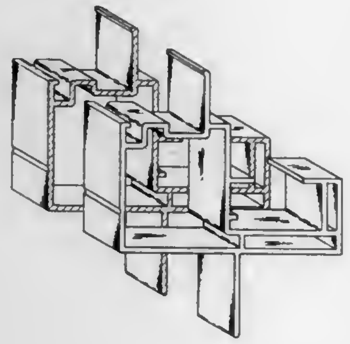
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Inc., Kent, Wash.

Filed Jun. 29, 1995, Ser. No. 41,150

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—124



389,591

FLUORESCENT NIGHT LIGHT

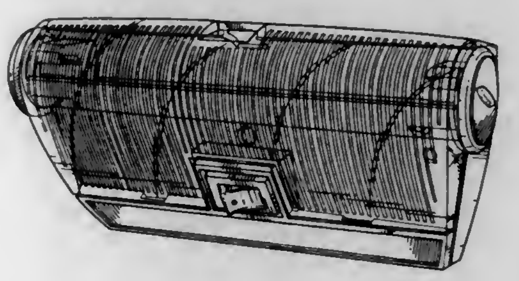
Stephen Blackman, 40 Raven Dr., Mooris Township, N.J. 07960, and Syed M. Afzal Hussain, 2625 Blaze Trail, Diamond Bar, Calif. 91765

Filed Feb. 7, 1997, Ser. No. 66,362

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—26



389,592

LIGHT ASSEMBLY

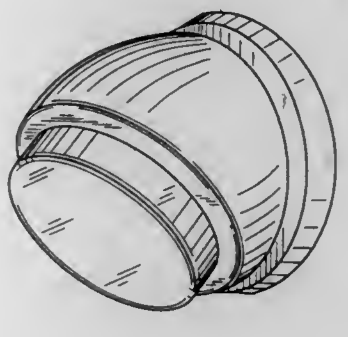
John N. Reiser, Allenton, Wis., assignor to Triton Corporation, Allenton, Wis.

Filed Mar. 29, 1996, Ser. No. 62,976

Term of patent 14 years

LOC (6) Cl. 26 - *06*

U.S. Cl. D26—36



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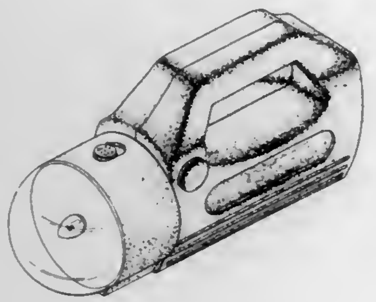
389,593

COMBINED TOOL KIT AND HANDHELD LAMP

Hsuan-Sen Shiao, No. 15-1, Lane 369, Min-Chuan Rd., Taichung City, Taiwan

Filed Apr. 2, 1997, Ser. No. 68,857
Term of patent 14 years
LOC (6) Cl. 26 - *02*

U.S. Cl. D26—38



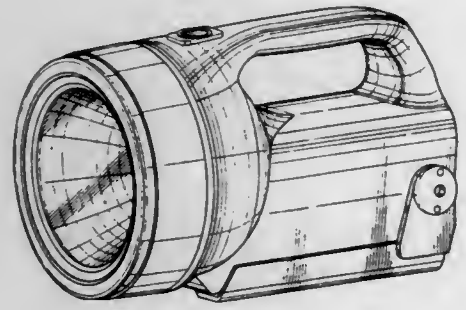
389,594

FLASHLIGHT

Tit-ying Poon, Siu Lik Yuen, Shatin, N.T., Hong Kong, assignor to Flying Dragon Development Ltd., Hong Kong, Hong Kong

Filed Jun. 3, 1997, Ser. No. 71,614
Term of patent 14 years
LOC (6) Cl. 26 - *02*

U.S. Cl. D26—48



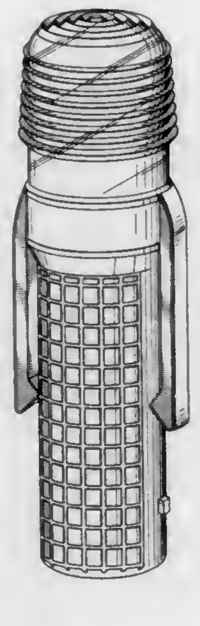
389,595

WARNING LIGHT

William Samuel Hunter, Melbourne, Australia, assignor to Emtech Safety Products Pty Limited, Victoria, Australia

Filed Jun. 28, 1996, Ser. No. 56,406
Claims priority, application Australia, Dec. 29, 1995, 4032/95
Term of patent 14 years
LOC (6) Cl. 26 - *02*

U.S. Cl. D26—49



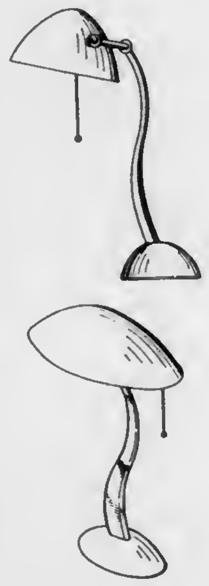
389,596

LAMP

Teng-Chiung Chan, 53-1, Hu Shan Street, Yen Chu Village, Hua Tan Hsiang, Changhua, Taiwan

Filed Nov. 21, 1996, Ser. No. 62,696
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—63



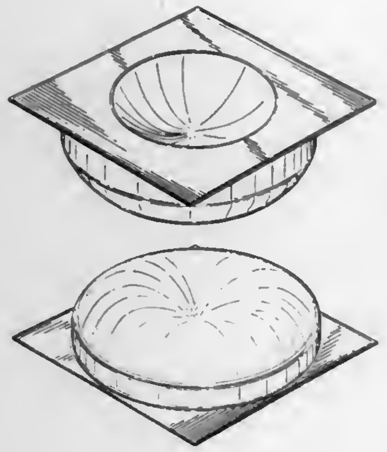
389,597

RECESSED CEILING OR WALL LAMP

Ernesto Gismondi, Milan, Italy, assignor to Artemide S.p.A., Italy

Filed Sep. 28, 1995, Ser. No. 44,811
Claims priority, application Italy, Jun. 7, 1995, TO9500119
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—74



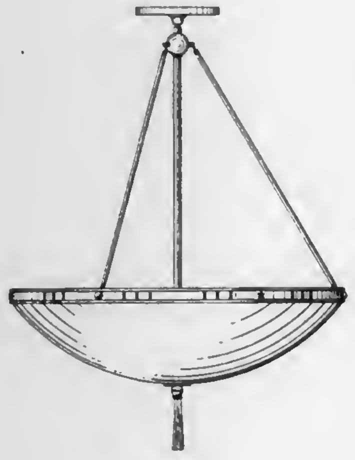
389,598

LIGHTING FIXTURE

Sandra E. Littman, and Kirina S. Kaufman, both of New York, N.Y., assignors to Sandy Littman, Inc., New York, N.Y.

Filed Dec. 26, 1995, Ser. No. 48,311
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—84



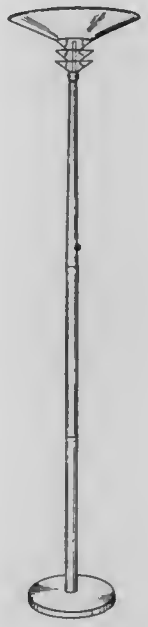
389,599

TORCHIERE WITH CLEAR BREAKS

Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Jan. 31, 1996, Ser. No. 49,783
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—110



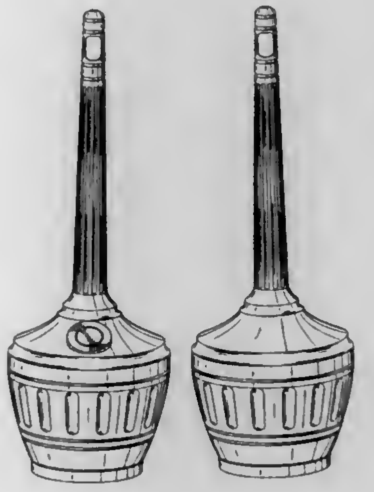
389,600

REPOSITORY FOR SPENT SMOKING MATERIALS

Carol S. Luedecke, 709 Bayou Dr., Destin, Fla. 32541

Filed Jul. 16, 1996, Ser. No. 57,090
Term of patent 14 years
LOC (6) Cl. 27 - *03*

U.S. Cl. D27—118



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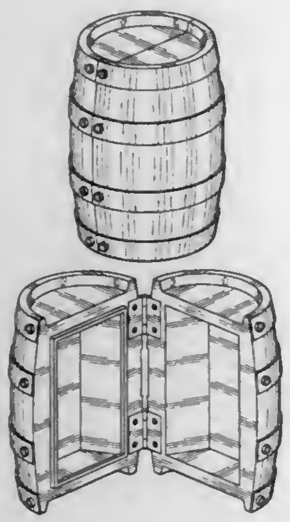
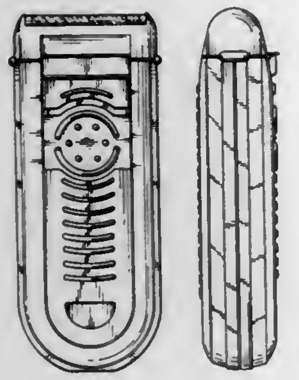
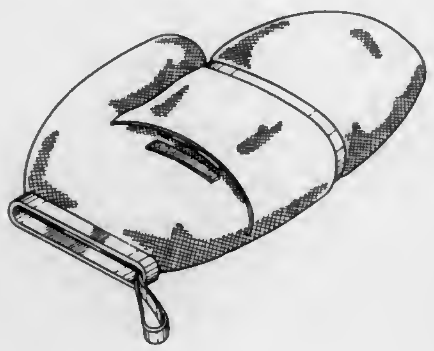
389,601
CIGAR HUMIDOR
Salvatore Bartolotta, 2607 Harway Ave., Brooklyn, N.Y. 11214
Filed Jan. 15, 1997, Ser. No. 64,930
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—188



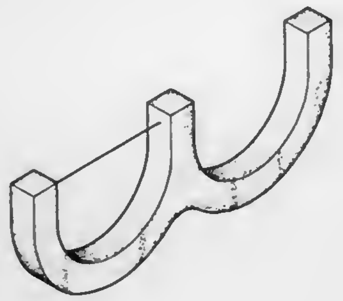
389,602
SHAVER
Robert Lebherz, Villingen-Schwenningen, Germany, assignor to Moser Elektrogeraete GmbH, Unterkirnach, Germany
Filed Oct. 4, 1996, Ser. No. 60,699
Claims priority, application Germany, Apr. 9, 1996, DM/036106
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—51



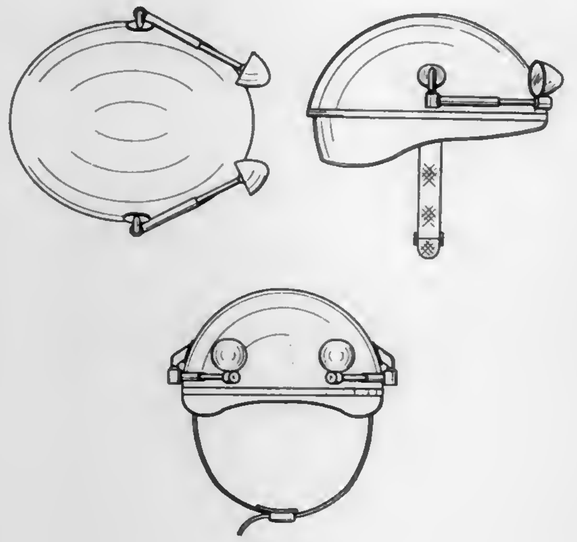
389,603
SOAP GLOVE
Robert Roman, and Eric Roman, both of 226 E. 122nd St., Apt. 2W, New York, N.Y. 10035
Filed Aug. 9, 1996, Ser. No. 58,189
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—63



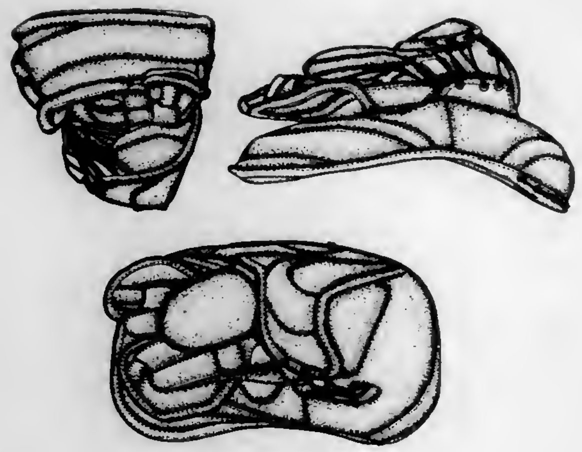
389,604
FLOSS WITH ARC HOLDER
Liang-Cheng Liao, 4F, No. 1-3, Lane 112, Kinmen St., Pan-Ch'ao, Taipei, Taiwan
Filed Feb. 2, 1996, Ser. No. 49,876
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—64



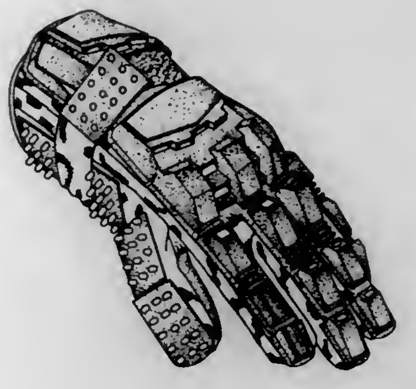
389,605
SPORTSMAN'S HELMET WITH EXTENDED VISION OPTICAL ELEMENTS
Joseph J. Berke, 2063 Long Lake Shore, West Bloomfield, Mich. 48323
Filed Aug. 6, 1996, Ser. No. 58,005
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D29—103



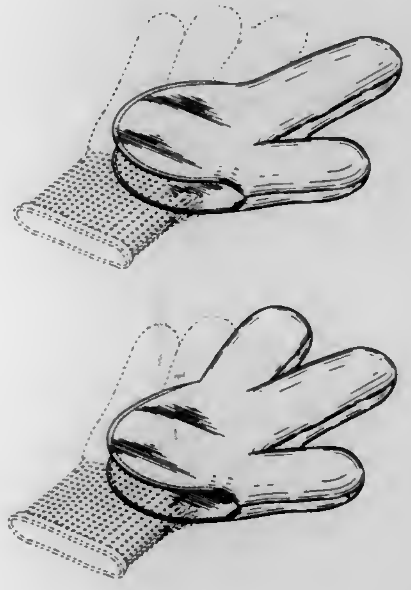
389,606
GOALIE BLOCKER GLOVE
Steven G. Wagner, Waterloo, Canada, assignor to Bauer Inc., Montreal, Canada
Filed Nov. 15, 1996, Ser. No. 62,438
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—117



389,607
ROLLER HOCKEY GLOVE
Mohammad Arshed, 2440 Wingren Rd., #2001, Irving, Tex. 75062
Filed Jan. 15, 1997, Ser. No. 64,933
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—117



389,608
SHEATH FOR A PROTECTIVE GLOVE
Gerald A. Kraatz, Strongsville, Ohio, assignor to Bettcher Industries, Birmingham, Ohio
Filed Oct. 29, 1996, Ser. No. 61,715
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—123



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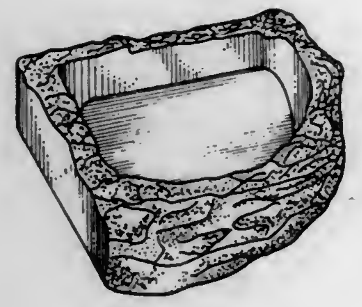
389,609
BOWL FOR REPTILE AQUARIUM

David D. Rose, 30615 Colt Rd., Castaic, Calif. 91384
Filed May 16, 1996, Ser. No. 54,535
Term of patent 14 years
LOC (6) Cl. 30 - *02*

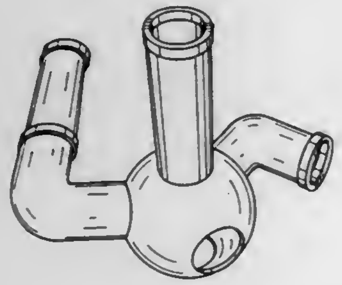
U.S. Cl. D30—106



389,610
PET EXERCISE ENCLOSURE

Robert C. Krause, Arlington Heights, Ill., assignor to Pets International, Ltd., Arlington Heights, Ill.
Filed Dec. 27, 1995, Ser. No. 49,604
Term of patent 14 years
LOC (6) Cl. 30 - *02*

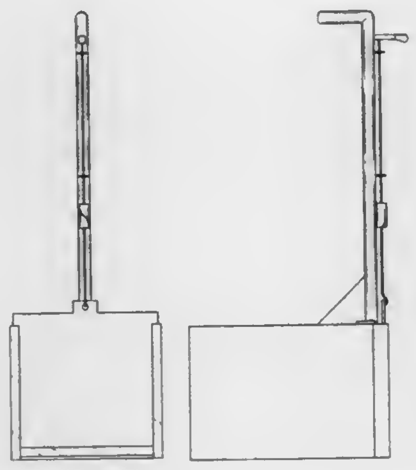
U.S. Cl. D30—108



389,611
ANIMAL TRANSFER CARRIER

Robert Brian Giacomozzl, 1805 Wheeler Ave., Killeen, Tex. 76542-1140
Filed Dec. 2, 1996, Ser. No. 63,580
Term of patent 14 years
LOC (6) Cl. 30 - *02*

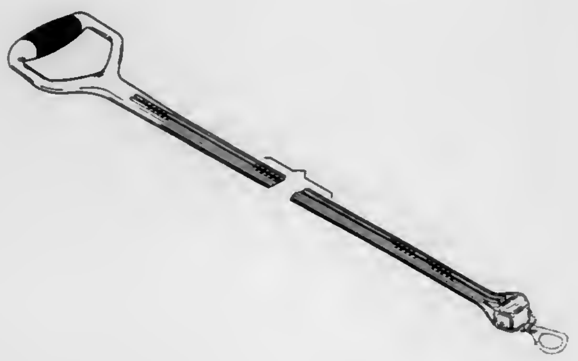
U.S. Cl. D30—109



389,612
ANIMAL LEASH

Chris J. Jacobsen, 2199 Swan Hwy., Bigfork, Mont. 59911
Filed Jan. 22, 1996, Ser. No. 49,265
Term of patent 14 years
LOC (6) Cl. 30 - *09*

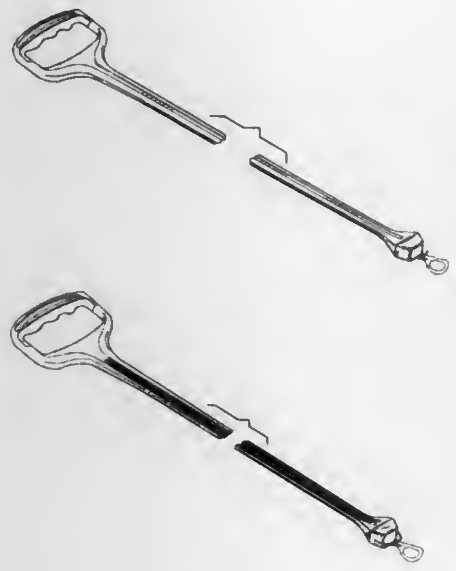
U.S. Cl. D30—153



389,613
ANIMAL LEASH

Chris J. Jacobsen, 2199 Swan Hwy., Bigfork, Mont. 59911
Filed Jan. 22, 1996, Ser. No. 49,267
Term of patent 14 years
LOC (6) Cl. 30 - *09*

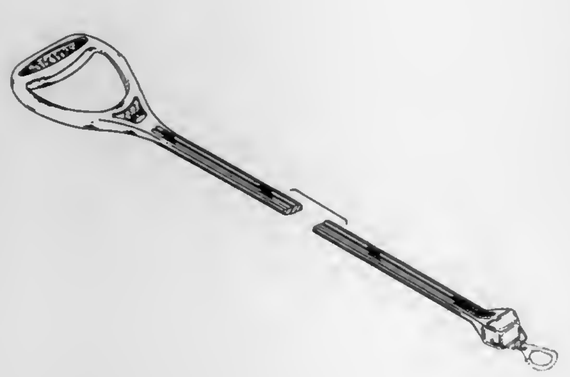
U.S. Cl. D30—153



389,614
ANIMAL LEASH

Chris J. Jacobsen, 2199 Swan Hwy., Bigfork, Mont. 59911
Filed Jan. 22, 1996, Ser. No. 49,313
Term of patent 14 years
LOC (6) Cl. 30 - *09*

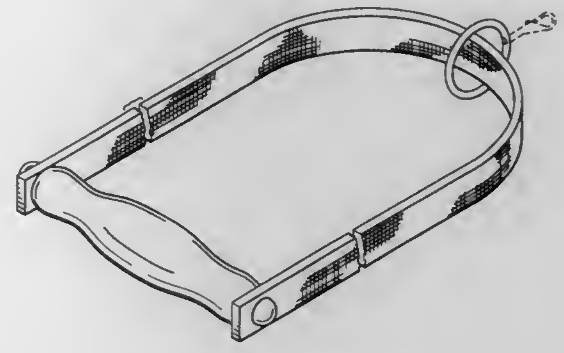
U.S. Cl. D30—153



389,615
WOOD HANDLED DOG LEASH

Michael G. Leslie, 1232 Romayne Ave., Racine, Wis. 53402
Filed Feb. 26, 1997, Ser. No. 66,894
Term of patent 14 years
LOC (6) Cl. 30 - *09*

U.S. Cl. D30—153

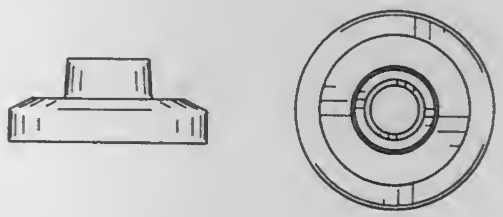


389,616
ANIMAL EARTAG COMPONENT

Petrus Augustinus Van Amelsfort, Palmerston North, New Zealand, assignor to Allflex New Zeland Limited, New Zealand
Filed Mar. 10, 1995, Ser. No. 36,000
Claims priority, application New Zealand, Sep. 12, 1994, 26176

Term of patent 14 years
LOC (6) Cl. 30 - *08*

U.S. Cl. D30—155



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389,617

PROSTHETIC SPUR

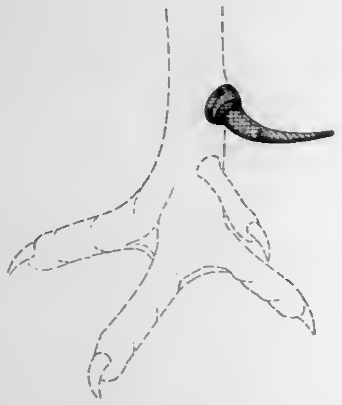
Sandra Zamora, 118 Parkwood Dr., West Columbia, S.C. 29169

Filed May 28, 1996, Ser. No. 54,989

Term of patent 14 years

LOC (6) Cl. 30 - *99*

U.S. Cl. D30—199



389,618

PET VACUUM BRUSH

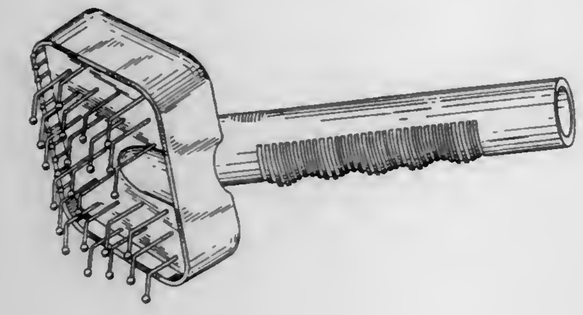
Catherine B. Rosen, 1 Canyon Rd., Denville, N.J. 07834

Filed Oct. 15, 1996, Ser. No. 61,042

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—33



389,619

CLOTHING FUZZ REMOVER

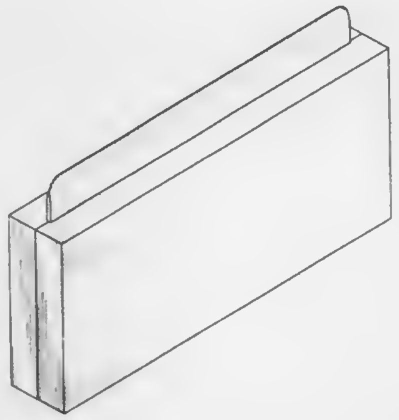
Terry McLeod, 149 Wolfe Cove Rd., Asheville, N.C. 28804

Filed Jun. 12, 1996, Ser. No. 55,763

Term of patent 14 years

LOC (6) Cl. 08 - *99*

U.S. Cl. D32—35



389,620

CLEANING DEVICE FOR SHAVING UNITS

Tah Ching Yang, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

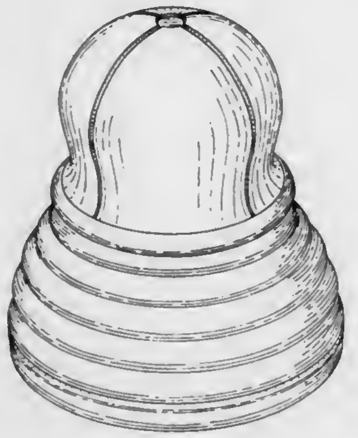
Filed Jan. 14, 1997, Ser. No. 64,909

Claims priority, application Switzerland, Aug. 12, 1996, DMA/003 413

Term of patent 14 years

LOC (6) Cl. 08 - 99

U.S. Cl. D32—35



389,621

LAUNDRY BASKET

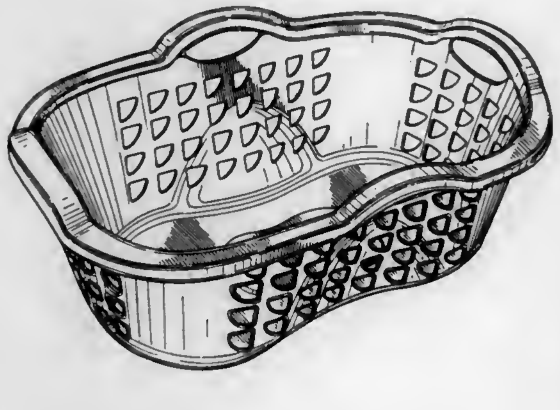
Kevin Short, Midlothian, and Robert O'Neil, Glen Ellyn, both of Ill., assignors to Zeta Consumer Products Corp., Little Falls, N.J.

Filed Dec. 12, 1995, Ser. No. 47,744

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D32—37



389,622

STEAM IRON

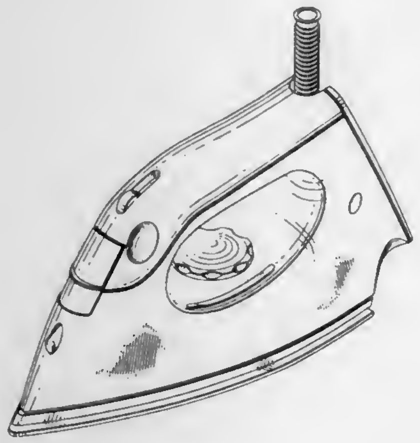
Mark D. Dziersk, Chicago, Ill., assignor to Sunbeam Products, Inc., Delray Beach, Fla.

Filed Dec. 4, 1996, Ser. No. 63,302

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—70



389,623

CLEANING PAD WITH LIQUID SPRAY NOZZLE

Gregor Kohlruss, Pater-Eugen-Breitenstein-Str. 1, D-46325 Borken; Hubert Wiesner, Grüner Weg 21, D-46354 Südlohn; Ulrich Lersch, Rurstrasse 10, D-50259 Pulheim, and Oliver Griebe, Heideweg 12, D-46414 Rhede, all of Germany

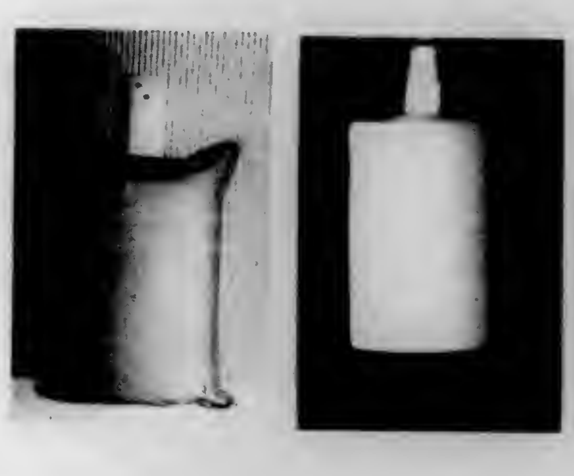
Filed Jun. 7, 1996, Ser. No. 55,836

Claims priority, application Germany, Dec. 11, 1995, M9509683.3

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—42



389,624

LOTTERY TICKET SCRATCHER

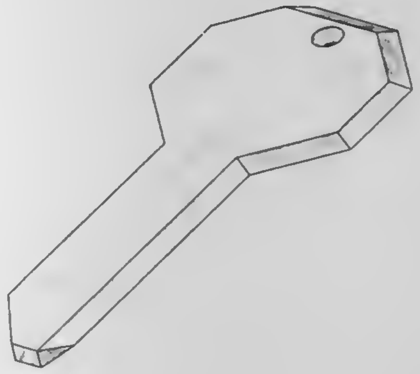
Susan Drimmie, and Dean Drimmie, both of 1716 Templetin Cres RR #1, Peterborough, Ontario, Canada, K9J 6X2

Filed Mar. 13, 1997, Ser. No. 67,993

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—46



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389,625
SPONGE MOP

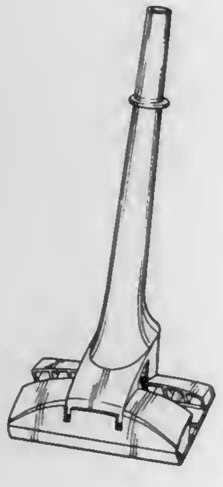
Alan B. Feldman, Salem, Va., and Brad Forrest, Cary, N.C., assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Nov. 12, 1996, Ser. No. 62,298

Term of patent 14 years

LOC (6) Cl. 04 - *01*

U.S. Cl. D32—49



389,626
PAINTER'S BUCKET

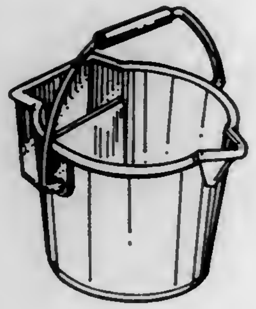
Michael J. Lundy, 2718 W. Onza Cir., Mesa, Ariz. 85202

Filed Mar. 11, 1997, Ser. No. 67,788

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D32—53



389,627
STEAM IRON

Franz-Alban Stützer, Offenbach am Main, and Bernd Figur, Schaafheim/Schlierbach, both of Germany, assignors to Rowenta Werke GmbH, Offenbach a.M., Germany

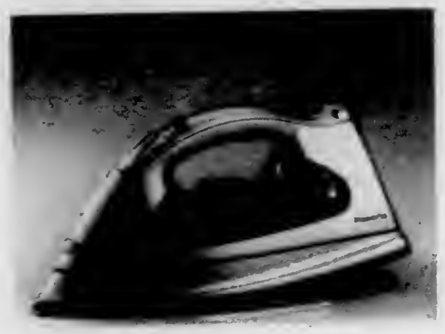
Filed Jul. 22, 1996, Ser. No. 57,300

Claims priority, application Germany, Jan. 22, 1996, M9600529.7

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—70



389,628
HANDLE FOR A SMALL APPLIANCE

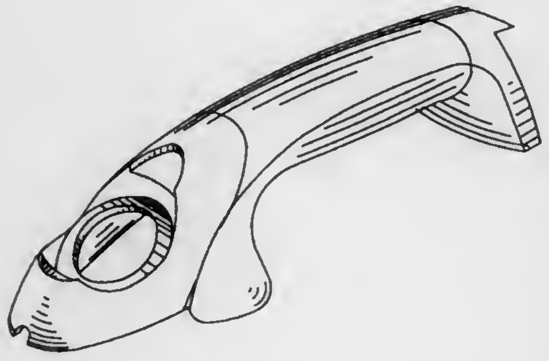
Stuart Naft, Fairfield, Conn., assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 10, 1997, Ser. No. 64,812

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—72



389,629
PORTION OF A DUST PAN

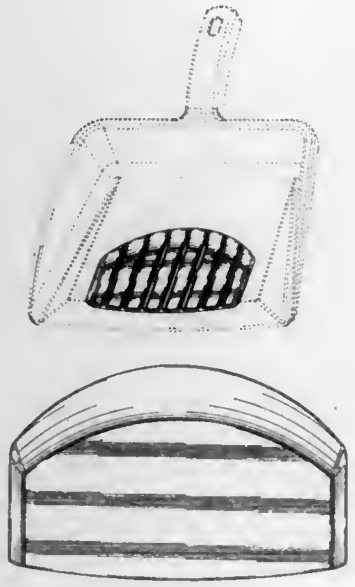
Nicole France, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Oct. 28, 1996, Ser. No. 54,070

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—74



389,630
TRASH RECEPTACLE

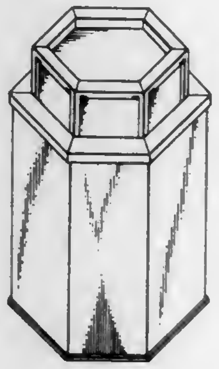
Joseph F. Meade, Jr., Hammondsport, N.Y., assignor to Mercury Aircraft, Inc., Hammondsport, N.Y.

Filed Aug. 8, 1995, Ser. No. 42,347

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—1



389,631
WASTE CONTAINER

Klaus-Tilmann Peters, Baerlo 1, D-41334 Nettetal, Germany

Filed Mar. 20, 1996, Ser. No. 53,317

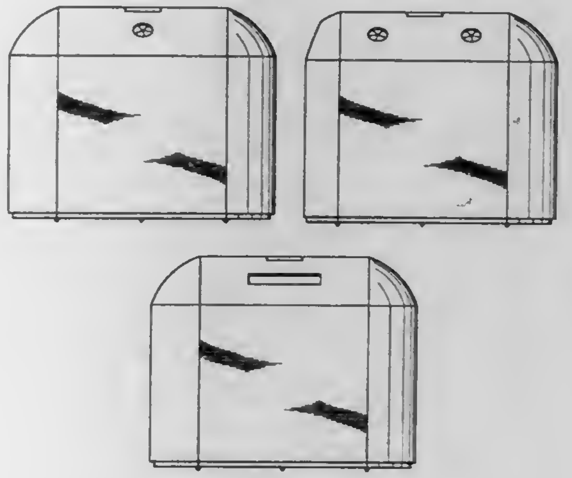
Claims priority, application Germany, Sep. 23, 1995, M9507515.1

The portion of the term of this patent subsequent to Sep. 2, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—1



389,632
TRASH BAG HOLDER

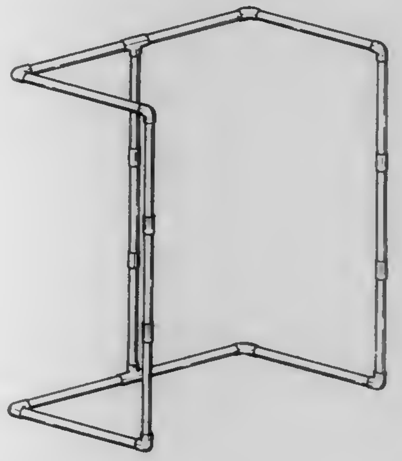
Raymond A. Reddin, 4 Heritage Ct., Totowa, N.J. 07512

Filed Mar. 5, 1996, Ser. No. 51,724

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—6



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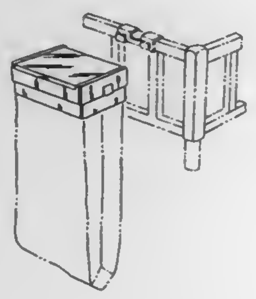
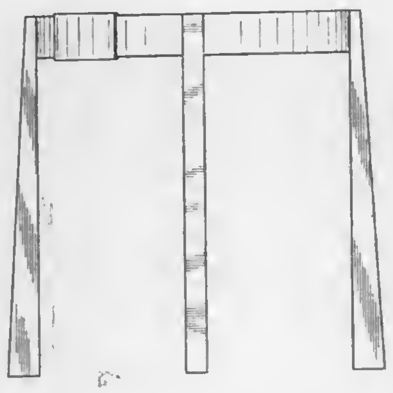
389,633
DIAPER CONTAINMENT APPARATUS
Scott W. Ziegler, 932 Vista Del Monte Way, El Cajon, Calif. 92020
Filed Oct. 25, 1996, Ser. No. 61,548
Term of patent 14 years
LOC (6) Cl. 09 - *09*

U.S. Cl. D34—6



389,634
TRASH BAG EXPANDER
Robert William Shope, 1363 N. Fifth Ave., Upland, Calif. 91786
Filed Jan. 21, 1997, Ser. No. 65,115
Term of patent 14 years
LOC (6) Cl. 09 - *09*

U.S. Cl. D34—6



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF JANUARY, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- AB Volvo Penta: *See—*
  - Skyman, Lars, 5,709,128, Cl. 74-323.000.
- Abar Ipsen Industries, Inc.: *See—*
  - Wurtz, Brian J., 5,709,544, Cl. 432-242.000.
- ABB Patent GmbH: *See—*
  - Kranzmann, Axel; and Weiler, Ludwig, 5,709,919, Cl. 428-67.000.
- ABB Power T&D Company Inc.: *See—*
  - Kambach, Robert S.; Komives, David S.; and Blom, Leo E., 5,710,402, Cl. 218-157.000.
  - Lanoue, Thomas J.; Barber, Terry D.; and Haas, Michael E., 5,710,534, Cl. 336-192.000.
- ABB Research Ltd.: *See—*
  - Ernst, Peter; and Rhyner, Jakob, 5,709,527, Cl. 415-10.000.
  - Rottner, Kurt, 5,710,059, Cl. 437-151.000.
- Abbey, Kirk Joseph; and Quarmby, Ian Christopher, to Lord Corporation. Olefinic and urethane-terminated ester polyalkadiene. 5,710,235, Cl. 528-288.000.
- Abbott, Donald C.; and Fritzsche, Robert M., to Texas Instruments Incorporated. Silver spot/palladium plate lead frame finish. 5,710,456, Cl. 257-666.000.
- Abbott Laboratories: *See—*
  - Funk, Kenneth W.; Lundell, Edwin O.; Miller, Robert B.; Chang, Jane L.; Kishore, Vimal; Napier, James J.; and Staeger, Michael A., 5,710,246, Cl. 530-327.000.
  - Funk, Kenneth W.; Lundell, Edwin O.; Miller, Robert B.; Chang, Jane L.; Kishore, Vimal; Napier, James J.; and Staeger, Michael A., 5,710,247, Cl. 530-327.000.
  - Gil, Angel H.; Jimenez, Jesus L.; and Moreno, Jose C., 5,709,888, Cl. 424-522.000.
  - Marshall, Ronald L.; Jou, Cynthia; Simons, John N.; Leary, Thomas P.; Muerhoff, A. Scott; Desai, Suresh M.; and Mushahwar, Isa K., 5,709,997, Cl. 435-5.000.
  - Mukerji, Pradip; Thurmond, Jennifer Marie; Hansson, Lennart; Baxter, Jeffrey Harris; and Hards, Robert George, 5,710,044, Cl. 435-320.100.
  - Wang, Xiu C.; Liu, Luping; and Bhatia, Ashok V., 5,710,291, Cl. 549-539.000.
- Abbott, Russell Mistretta: *See—*
  - Francis, Michael Eugene; Delaporte, Dany Paul; Brennan, Richard Charles, III; and Abbott, Russell Mistretta, 5,709,450, Cl. 362-61.000.
- Abdala, Luis Fernando Talavera: *See—*
  - Berman, Eric Robert; Abdala, Luis Fernando Talavera; Eller, Marlin; and Pardikar, Shishir P., 5,710,832, Cl. 382-189.000.
- Abe, Akihiko: *See—*
  - Kamegawa, Tatsuhiko; Nakajima, Yukio; and Abe, Akihiko, 5,710,718, Cl. 364-512.000.
- Abe, Shin: *See—*
  - Wada, Hidekazu; Kurisu, Toru; and Abe, Shin, 5,710,530, Cl. 333-219.100.
- Abe, Yasunao, to Yamaha Corporation. Method and apparatus for efficiently controlling access to stored operation control data and tone forming data. 5,710,386, Cl. 84-602.000.
- Abe, Yoshiharu, to Mitsubishi Denki Kabushiki Kaisha. Method of boundary estimation for voice recognition and voice recognition device. 5,710,865, Cl. 395-2.570.
- Abe, Yoshikazu: *See—*
  - Maruyama, Teruo; Takara, Akira; Abe, Yoshikazu; and Ikemoto, Yoshihiro, 5,709,537, Cl. 417-410.400.
- Abend, Thomas P., to Ebnother AG. Method and material mixture for manufacture of reactive hotmelts. 5,710,215, Cl. 525-124.000.
- Abolafia, Andrew. Static field converter. 5,710,531, Cl. 335-216.000.
- Absil, Robert P. L.; and Hatzikos, George H., to Mobil Oil Corporation. Manufacture of improved zeolite beta catalyst. 5,710,085, Cl. 502-68.000.
- Acadia Elastomers, Inc.: *See—*
  - Suggs, Steven M.; and Meyer, Reid M., 5,709,514, Cl. 411-150.000.
- Acaster, James Graeme. Engine. 5,709,088, Cl. 60-624.000.
- Ace Antenna Corporation: *See—*
  - Oh, Jung Kun; Lee, Yong Hee; Lee, Jae Ho; Kim, Jung Sik; and Oh, Byung Ill, 5,710,569, Cl. 343-817.000.
- Acer Peripherals, Inc.: *See—*
  - Liao, Pin-Chien, 5,710,397, Cl. 200-5.00A.
- Ackeret, Peter, to fischerwerke, Artur Fischer GmbH & Co. Storage device for an umbrella for installation in a motor vehicle. 5,709,328, Cl. 224-282.000.
- Ackley, Donald E.; Shieh, Chan-Long; and Lebby, Michael S., to Motorola, Inc. Microcavity LED with photon recycling. 5,710,441, Cl. 257-98.000.
- Acquaviva, Thomas, to Xerox Corporation. Reproduction apparatus transmissivity sensor system for duplex documents. 5,710,957, Cl. 399-45.000.
- ACR Electronics, Inc.: *See—*
  - Flood, John F., 5,710,989, Cl. 455-100.000.
- Acrison, Inc.: *See—*
  - Ricciardi, Ronald J., 5,709,322, Cl. 222-227.000.
- ActiMed Laboratories, Inc.: *See—*
  - Nikolyukin, Yuri A.; and Gibboni, David J., 5,710,012, Cl. 435-28.000.
- Acushnet Company: *See—*
  - Redwood, Michael; Shim, Kenneth; and Sun, Dong Kyu, 5,708,979, Cl. 2-161.100.
- Acuson Corporation: *See—*
  - Green, J. Michael; and Ramamurthy, Bhaskar, 5,709,210, Cl. 128-661.070.
- Adachi, Chihaya; Nagai, Kazukiyo; and Tamoto, Nozomu, to Ricoh Company, Ltd. Organic thin film electroluminescence device. 5,709,959, Cl. 428-690.000.
- Adam, Jean-Marie; and Sutter, Peter, to Ciba Specialty Chemicals Corporation. Azo dyes. 5,710,258, Cl. 534-643.000.
- Adamou, John E.; and Elshourbagy, Nabil, to SmithKline Beecham Corporation. Polynucleotides that encode the calcitonin gene-related peptide receptor coponent factor (HOUNDC44). 5,710,024, Cl. 435-69.100.
- Adams, Dale R.: *See—*
  - Shaw, Michael F.; Suppelsa, Anthony J.; and Adams, Dale R., 5,709,905, Cl. 427-8.000.
- Adams, Kenneth M.; Fox, Brian J.; Wallace, James; Van Wyk, Robert A.; Heisler, Gary R.; Castagnetta, David; and Van Varsseveld, Cris, to Linvatec Corporation. Irrigating/aspirating shaver blade assembly. 5,709,698, Cl. 606-180.000.
- Adams, Mark D.: *See—*
  - Greene, John M.; and Adams, Mark D., 5,710,035, Cl. 435-218.000.
  - Li, Yi; Adams, Mark D.; and White, Owen R., 5,710,019, Cl. 435-69.100.
- Adams, Richard C.; Kimes, Donald F.; and Josephy, Karl, to Avery Dennison Corporation. Clear conformable oriented films and labels. 5,709,937, Cl. 428-332.000.
- Adams, Theodore P.: *See—*
  - Perttu, Joseph S.; Brumwell, Dennis A.; Brewer, James E.; and Adams, Theodore P., 5,709,215, Cl. 128-708.000.
- Adamski, Maxmilian, Jr.: *See—*
  - Pagett, Stephen J.; Adamski, Maxmilian, Jr.; Kurtz, Richard J.; and Fernandez, Conrad L., 5,709,162, Cl. 112-470.070.
- Adang, Michael J., to Mycogen Plant Science, Inc. *Bacillus thuringiensis* α-endotoxin fragments. 5,710,020, Cl. 435-69.100.
- Adiletta, Joseph G., to Pall Corporation. Fibrous nonwoven web. 5,709,798, Cl. 210-651.000.
- Adriaanse, Jan P.; Bohlander, Johannes H.; and Van Der Poel, Willibrordus A.J.A., to U.S. Phillips Corporation. Color display tube comprising an in-line electron gun with astigmatism tuning element. 5,710,479, Cl. 313-412.000.
- ADS Pump Production: *See—*
  - Algers, Bengt; and Kotkaniemi, Leo, 5,709,389, Cl. 277-65.000.
- Advanced Cardiovascular Systems, Inc.: *See—*
  - Sirhan, Motasim M.; Kotmel, Robert F.; and Feltovich, Susan M., 5,709,658, Cl. 604-102.000.
- Advanced Design Group, LLC: *See—*
  - Coccoluto, Robert T., 5,709,258, Cl. 160-168.10R.
- Advanced Micro Devices, Inc.: *See—*
  - Alvis, Roger L.; and Erickson, Andrew N., 5,710,052, Cl. 437-8.000.
  - Foote, David K.; and Gupta, Subash, 5,710,067, Cl. 437-238.000.
  - Gardner, Mark I.; Dawson, Robert; Fulford, H. Jim, Jr.; Hause, Frederick N.; Michael, Mark W.; Moore, Bradley T.; and Wristers, Derick J., 5,710,054, Cl. 437-44.000.
  - Sikes, Roger A., 5,709,262, Cl. 165-47.000.
- Advantest Corporation: *See—*
  - Suda, Masakatsu, 5,710,744, Cl. 368-120.000.
- Aeroquip Corporation: *See—*
  - Wells, Michael P.; Vogel, Todd J.; and Densel, David S., 5,709,243, Cl. 137-614.030.
- Aerospace Corporation, The: *See—*
  - Platus, Daniel H., 5,709,471, Cl. 374-57.000.
- Aerospace Design and Development, Inc.: *See—*
  - Gier, Harold L., 5,709,203, Cl. 128-201.210.
- Aerospatiale Societe Nationale Industrielle: *See—*
  - Avenet, Jean-Pierre; and Gondot, Pascal, 5,709,356, Cl. 244-1.00A.
- Aesculap AG: *See—*
  - Kienzle, Karl-Ernst; Mayenberger, Rupert; Nesper, Markus; and Weishaupt, Dieter, 5,709,706, Cl. 606-205.000.
- Affymetrix, Inc.: *See—*

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- Sapolsky, Ronald J.; Lipshutz, Robert J.; and Gingeras, Thomas R., 5,710,000, Cl. 435-6.000.
- Agarwala, Unmesh: *See—*
    - Chengson, David P.; Schmidt, William L.; Agarwala, Unmesh; Foster, Alan D.; Priest, Edward C.; Manton, John C.; and Mira, Ali, 5,710,733, Cl. 365-52.000.
- Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
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- Ahtila, Pekka; and Haapio, Jaakko, to Kvaerner Pulping Oy. Method and apparatus for controlling combustion air in a boiler plant. 5,709,173, Cl. 122-1.00C.
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- Akamatsu, Shoji; and Okada, Toshiyuki, to Dow Corning Toray Silicone Co., Ltd. Water repellent for application to glass and water-repellent glass. 5,709,741, Cl. 106-287.110.
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- Armbruster, Peter Joseph; Wild, Johanna Alexandra; Heuvel, Dean Paul Vanden; and Blanchard, Scott David, to Motorola, Inc. Radio communication network and method for unobstrusive call interception via data duplication. 5,710,971, Cl. 455-12.100.
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  - Funk, Kenneth W.; Lundell, Edwin O.; Miller, Robert B.; Chang, Jane L.; Kishore, Vimal; Napier, James J.; and Staeger, Michael A., 5,710,247, Cl. 530-327.000.
- Chao, Hung Ya, to Moore Business Forms, Inc. Article having microencapsulated adhesive thereon. 5,709,340, Cl. 229-80.000.
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- Chau, Robert S.; Chern, Chan-Hong; Jan, Chia-Hong; Weldon, Kevin R.; Packan, Paul A.; and Yau, Leopoldo D., to Intel Corporation. Transistor with ultra shallow tip and method of fabrication. 5,710,450, Cl. 257-344.000.
- Chaudhary, Bharat I., to Dow Chemical Company, The. Foams containing treated titanium dioxide and processes for making. 5,710,186, Cl. 521-60.000.
- Cheah, Chris, to Sound Minds Technology, Inc. Audio communications system with built in expansion capability for a desktop computer. 5,710,821, Cl. 381-90.000.
- Chelliah, Raman; Cornez, Jason S.; Dellar, Carl; Harrison, Stephen; Hempe, John A.; Hsu, Chih-Cheng; Golin, Eric J.; Price, Charles A.; Rutta, Neal S.; Wood, Thomas A.; and Yamamoto, Wayne K., to Broadvision. Computer system and method for electronic commerce. 5,710,887, Cl. 395-226.000.
- Chemia Corporation: *See—*
  - Van Rees, Norman A., 5,709,872, Cl. 424-420.000.
- Chen, Chien-chang, to Evercool Technology Co., Ltd. Adjustable radiation fin fastening device for an integrated circuit chip. 5,710,694, Cl. 361-703.000.
- Chen, Ching-Chen. Method of making a bath scrubber. 5,709,434, Cl. 300-21.000.
- Chen, Elaine; Eberman, Brian; and Marcus, Beth A., to Microsoft Corporation. Method and apparatus to create a complex tactile sensation. 5,709,219, Cl. 128-782.000.
- Chen, Ian: *See—*
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- Chen, Janglin; Castle, Richard A.; and Gleasman, Karen E., to Eastman Kodak Company. Coating composition for electrically-conductive layer comprising vanadium oxide gel. 5,709,984, Cl. 430-527.000.
- Chen, Jiann Hsing; Demejo, Lawrence Paul; and Aslam, Muhammed, to Eastman Kodak Company. Process for controlling gloss in electrostatic images. 5,709,973, Cl. 430-42.000.
- Chen, Jiann-Hsing; Demejo, Lawrence Paul; Roberts, Gary Frederick; Kosakowski, Richard John; Aslam, Muhammed; and Derimiggio, John Euguene, to Eastman Kodak Company. Coated fuser members and methods of making coated fuser members. 5,709,949, Cl. 428-421.000.
- Chen, Jiunn-Liang. Drinking device for divers. 5,709,478, Cl. 383-80.000.
- Chen, Juin-Hwey. Speech signal quantization using human auditory modelsin predictive coding systems. 5,710,863, Cl. 395-2.390.
- Chen, Lie-Rong: *See—*
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- Chen, May: *See—*
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- Chen, Meng-Chieh: *See—*
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- Chen, Ming C., to Pitney Bowes. Communication system for control applications. 5,710,755, Cl. 370-24.000.

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- Chen, Stephen L. Device and method for vertical slab gel casting and electrophoresis in a single enclosure. 5,709,788, Cl. 204-619.000.
- Chen, Teh-Hsuan: *See—*
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- Chen, Tsuhan; and Swain, Cassandra Turner, to Lucent Technologies Inc. System and method for focused-based image segmentation for video signals. 5,710,829, Cl. 382-173.000.
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- Chengson, David P.; Schmidt, William L.; Agarwala, Unmesh; Foster, Alan D.; Priest, Edward C.; Manton, John C.; and Mira, Ali, to Silicon Graphics, Inc. Processor-inclusive memory module. 5,710,733, Cl. 365-52.000.
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- Cherpeck, Richard E., to Chevron Chemical Company. Aromatic ethers of polyalkylphenoxyalkanols and fuel compositions containing the same. 5,709,720, Cl. 44-413.000.
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- Chi, Min-hwa; Merrill, Richard Billings; and Bergemont, Albert, to National Semiconductor Corporation. Active pixel sensor cell that utilizes a parasitic transistor to reset the photodiode of the cell. 5,710,446, Cl. 257-225.000.
- Chiang, Shiuh-Kao; Prokop, Mary K.; and Kalnoki-Kis, Tibor, to Gould Electronics Inc. Metallic body with vapor-deposited treatment layer(s) and adhesion-promoting layer. 5,709,957, Cl. 428-615.000.
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- Chiba, Katsutoshi: *See—*
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- Chiesi, Paolo; Ventura, Paolo; Servadio, Vittorino; Del Canale, Maurizio; De Fanti, Renato; and Amari, Gabriele, to Chiesi Farmaceutici S.p.A. Process for the preparation of 5-6-dihydroxy-2-amino-1, 2, 3, 4-tetrahydronaphthalene derivatives. 5,710,336, Cl. 564-428.000.
- Chihoub, Abdelaziz: *See—*
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- Chisari, Francis V.; and Cerny, Andreas, to Scripps Research Institute, The. Hepatitis C virus-derived peptides capable of inducing cytotoxic T lymphocyte responses. 5,709,995, Cl. 435-5.000.
- Chisso Corporation: *See—*
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- Chopping, Geoffrey; Barker, Andrew James; and Stoney, David Paul, to GPT Limited. Switch protection arrangement. 5,710,759, Cl. 370-244.000.
- Chou, Chun-Ming; Hsieh, Jia-Der; and Yang, Tsen-Shau, to Myson Technology, Inc. Clock synthesizer for low EMI applications. 5,710,524, Cl. 331-1.00A.
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- Christensen, Siegfried, IV; and Forster, Cornelia Jutta, to SmithKline Beecham Corporation. Phenethylamine compounds. 5,710,180, Cl. 514-630.000.
- Christner, Juergen; and Wick, Gertrud, to Roehm GmbH Chemische Fabrik. Stable enzymatic aqueous liquid composition for the production of leather. 5,710,040, Cl. 435-265.000.
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- Guay, Daniel; Girard, Yves; Ducharme, Yves; Blouin, Marc; Hamel, Pierre; and Girard, Mario, to Merck Frosst Canada, Inc. Tri-aryl ethane derivatives as PDE IV inhibitors. 5,710,170, Cl. 514-332.000.
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  - Shirai, Mitugu; Sasaki, Hideaki; and Takahashi, Takeshi, 5,709,338, Cl. 228-226.000.
  - Takano, Hideaki; Sano, Hirohisa; Kanetake, Tatsuo; Ohira, Masaki; Suzuki, Makoto; and Inoue, Hiroaki, 5,710,847, Cl. 385-28.000.
  - Uchida, Go; Shirai, Shoji; and Oshita, Kazuhisa, 5,710,480, Cl. 313-414.000.
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  - Watanabe, Atsuo; and Saito, Katsuaki, 5,710,442, Cl. 257-107.000.
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- Hittner, Herman J.; Byers, R. Lee; Lees, John N., Jr.; Rierson, David W.; and Dinter-Brown, Ludmila, to Aluminum Company of America. Rotary kiln treatment of potliner. 5,711,018, Cl. 588-201.000.
- Hizuka, Nobuyoshi: *See—*
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- Hodgkin, Jonathan Howard; Jackson, Mervyn Benjamin; and Loder, John West, to Commonwealth Scientific and Industrial Research Organisation. Epoxy resins based on diaminobisimide compounds. 5,709,947, Cl. 428-413.000.
- Hodson, Lester L.; Skowronek, Ulrich; and Primm, Charles E., to Texas Instruments Incorporated. Video memory device for color-sequential-type displays. 5,710,604, Cl. 348-717.000.
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  - Andersen, Per Just; and Hodson, Simon K., 5,709,913, Cl. 428-34.500.
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- Marzullo, Joseph H.; Kayser, David E.; Makarchuk, Irena; Hubbard, David W.; and Wolog, Walter, to Pitney Bowes Inc. Envelope stacker. 5,709,525, Cl. 414-798.700.
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- Tamura, Nobuhiko, to Omron Corporation. Heterodyne measurement device and method. 5,710,621, Cl. 356-5.150.
- Tan, Haw-Chan; and Wu, Kun-Tsan, to Hon Hai Precision Ind. Co., Ltd. Connector with auxiliary alignment plate. 5,709,556, Cl. 439-79.000.
- Tan, Shiro; and Kawabe, Yasumasa, to Fuji Photo Film Co., Ltd. Positive working photoresist composition. 5,709,977, Cl. 430-192.000.
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- Tanaka, Keiji; and Sataka, Munekazu, to Sanyo Chemical Industries, Ltd. Process for producing ogranophosphorus ester compound and reactive flame retardant. 5,710,308, Cl. 558-97.000.
- Tanaka, Kohei: *See—*
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- Tomasini, Luciano; Castello, Rinaldo; Bietti, Ivan; and Clerici, Giancarlo, to SGS-Thomson Microelectronics, S.r.l. Speech circuit for subscriber telephone apparatus. 5,710,811, Cl. 379-394.000.
- Tombs, Thomas N.; Miskinis, Edward T.; Rimai, Donald S.; and Zeman, Robert E., to Eastman Kodak Company. Mechanism for facilitating removal of receiver member from an intermediate image transfer member. 5,710,964, Cl. 399-303.000.
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- Nahm, Steven H., to Metton America, Inc. Cycloolefin copolymerization method, feed composition and product. RE. 35,717, Cl. 526-166.000.
- Stapleton, Marilyn J.; and Jewett, Warren R., to Gene Tec Corporation. Temperature control apparatus and method. RE. 35,716, Cl. 435-3.000.

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  - Kohlruss, Gregor; Wiesner, Hubert; Lersch, Ulrich; and Griebe, Oliver, 389,623, Cl. D32-42.000.
- Wightman, James C.: *See—*
  - Bries, James L.; Cappucci, Patrick J.; Stowers, David C.; Wightman, James C.; and Zambelli, Michael P., 389,399, Cl. D8-367.000.
- Williams, Barry C., to Rotomolded Technical Solutions, Inc. Three-way junction box for recreational equipment. 389,550, Cl. D21-240.000.
- Williams, Charles T. Shoe brush. 389,318, Cl. D4-130.000.
- Williams, Daniel L.; Hawley, Miles; and Ho, Norman, to Motorola, Inc. Key arrangement. 389,488, Cl. D14-247.000.
- Wilson, Dallas W. Accessory support clamp for trucks. 389,450, Cl. D12-223.000.
- Wilson, George P. Weighted tarp. 389,451, Cl. D12-401.000.
- Wilson, Jay: *See—*
  - Mascarenas, John M., Sr.; Wilson, Jay; Daie, Hedayat E.; Dunton, Randy R.; Jones, Thomas C.; Waymire, Gary; and Stirling, Loren, 389,501, Cl. D16-202.000.
- Wiman, Jörgen: *See—*
  - Murén, Sture; and Wiman, Jörgen, 389,496, Cl. D15-139.000.
  - Murén, Sture; and Wiman, Jörgen, 389,497, Cl. D15-139.000.
- Winston, David E.: *See—*
  - Grasfield, James A.; Winston, David E.; Stark, Peter R. H.; and Steinhubel, Daniela, 389,575, Cl. D24-134.000.
  - Grasfield, James A.; Winston, David E.; Stark, Peter R. H.; and Steinhubel, Daniela, 389,576, Cl. D24-134.000.
  - Grasfield, James A.; Winston, David E.; Stark, Peter R. H.; and Steinhubel, Daniela, 389,577, Cl. D24-134.000.
- Winter, Paul H., to Zenith Products Corp. Shower cabinet. 389,351, Cl. D6-525.000.
- Wolf, Bradley John, to MTD Products Inc. Mower steering column. 389,491, Cl. D15-17.000.
- Wong, Paul Wai Kan, to Good Hope Industries Ltd. Combined air compressor and emergency light. 389,489, Cl. D15-9.000.
- Yamada, Takahisa: *See—*
  - Shimizu, Mikiya; Yamada, Takahisa; and Tominaga, Manabu, 389,503, Cl. D16-230.000.
- Yamaha Corporation: *See—*
  - Honda, Takashi, 389,507, Cl. D17-1.000.
- Yamamoto, Takashi: *See—*
  - Utsuki, Toshiyuki; Yamamoto, Takashi; Kumagai, Kenta; Higashihara, Tohru; Tsukaguchi, Tamotsu; Nagai, Mitsuharu; Kishida, Fumio; and Hayashi, Yoshito, 389,464, Cl. D14-100.000.
- Yancy, Towanda W.: *See—*
  - Mitchell, James D.; Yancy, Towanda W.; Eckert, Max F.; Caddell, Jeffery P.; Himmelfarb, Michael L.; Mitchell, Samuel J.; and Doster, Robert C., 389,453, Cl. D13-100.000.
- Yang, Tah Ching, to U.S. Philips Corporation. Cleaning device for shaving units. 389,620, Cl. D32-35.000.
- Yap, Choon Ming: *See—*
  - Chan, Wai Kee; Choy, Chong Heng; and Yap, Choon Ming, 389,481, Cl. D14-191.000.
- Yasoshima, Ryo, to Tsukineko, Inc. Combined stamp pad and support. 389,509, Cl. D18-17.000.
- York, Charlotte Overton; and Morton, Carolyn Overton. Bookrest pillow. 389,360, Cl. D6-601.000.
- Yue-Chun, Cheng: *See—*
  - Liu, Simon Yiu-Chung; and Yue-Chun, Cheng, 389,380, Cl. D7-673.000.
- Zambelli, Michael P.: *See—*
  - Bries, James L.; Cappucci, Patrick J.; Stowers, David C.; Wightman, James C.; and Zambelli, Michael P., 389,399, Cl. D8-367.000.
- Zamora, Sandra. Prosthetic spur. 389,617, Cl. D30-199.000.
- Zenith Products Corp.: *See—*
  - Pagán-Demirtas, Marlene, 389,352, Cl. D6-525.000.
  - Winter, Paul H., 389,351, Cl. D6-525.000.
- Zeta Consumer Products Corp.: *See—*
  - Short, Kevin; and O'Neil, Robert, 389,621, Cl. D32-37.000.
- Ziegler, Scott W. Diaper containment apparatus. 389,633, Cl. D34-6.000.
- Zimmerman, Wade. Stackable two-piece container for a cylinder head. 389,307, Cl. D3-273.000.

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LIST OF PLANT PATENTEES

Chrysanthemum Breeders Association, N.V.: *See—*
  Noodelijk, Robert, 10,204, Cl. Plt.-74.100.
  Noodelijk, Robert, 10,205, Cl. Plt.-74.100.
  Noodelijk, Robert, 10,206, Cl. Plt.-74.100.

Howard, Eric, to Koala Blooms Pty. Ltd. Scaevola plant named 'Outback Mini Pink Fan'. 10,202, Cl. Plt.-68.100.

Koala Blooms Pty. Ltd.: *See—*
  Howard, Eric, 10,202, Cl. Plt.-68.100.
  Marriott, Neil R., 10,201, Cl. Plt.-68.100.
  Shaw, Patricia Valencia, 10,203, Cl. Plt.-68.100.

Marriott, Neil R., to Koala Blooms Pty. Ltd. Scaveola plant named 'Blue Fandango'. 10,201, Cl. Plt.-68.100.

Noodelijk, Robert, to Chrysanthemum Breeders Association, N.V. Chrysanthemum plant named 'Remix'. 10,204, Cl. Plt.-74.100.

Noodelijk, Robert, to Chrysanthemum Breeders Association, N.V. Chrysanthemum plant named 'Splendid Reagan'. 10,205, Cl. Plt.-74.100.

Noodelijk, Robert, to Chrysanthemum Breeders Association, N.V. Chrysanthemum plant named 'Yellow Remix'. 10,206, Cl. Plt.-74.100.

Noodelijk, Robert. Chrysanthemum plant named 'Cream Reagan'. 10,209, Cl. Plt.-82.200.

Oglesby Plant Laboratories, Inc.: *See—*
  Osiecki, Marian W., 10,210, Cl. Plt.-88.100.

Osiecki, Marian W., to Oglesby Plant Laboratories, Inc. Anthurium plant "A2". 10,210, Cl. Plt.-88.100.

Pieters, Dirk. Chrysanthemum plant named 'Tripoli'. 10,207, Cl. Plt.-74.100.

Pieters, Dirk. Chrysanthemum plant named 'Pinos'. 10,208, Cl. Plt.-78.000.

Shaw, Patricia Valencia, to Koala Blooms Pty. Ltd. Brachycome plant named 'Sunburst'. 10,203, Cl. Plt.-68.100.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 20, 1998

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

69	5,708,976
80	5,708,977
102	5,708,978
161.1	5,708,979
163	5,708,980
170	5,708,981
171	5,708,982
	5,708,983
239	5,708,984
	5,708,985
406	5,708,986
409	5,708,987
425	5,708,988

CLASS 4

237	5,708,989
324	5,708,990
415	5,708,991
565.1	5,708,992

CLASS 5

86.1	5,708,993
102	5,708,994
486	5,708,995
613	5,708,996
618	5,708,997
636	5,708,998
644	5,708,999
655	5,709,000

CLASS 8

94.21	5,709,714
115.51	5,709,715
401	5,709,716
549	5,709,717

CLASS 15

55	5,709,001
97.3	5,709,002
106	5,709,003
111	5,709,004
145	5,709,005
247	5,709,006
329	5,709,007

CLASS 16

45	5,709,008
79	5,709,009

CLASS 19

145.3	5,709,010
157	5,709,011

CLASS 24

3.11	5,709,012
66.9	5,709,013
614	5,709,014

CLASS 26

33	5,709,015

CLASS 27

2	5,709,016

CLASS 29

213.1	5,709,017
235	5,709,018
243.5	5,709,019
404	5,709,020
423	5,709,021
434	5,709,022
559	5,709,023
747	5,709,024
748	5,709,025
771	5,709,026
861	5,709,027
890.047	5,709,028
890.053	5,709,029

CLASS 30

251	5,709,030
308.1	5,709,031
382	5,709,032

CLASS 33

27.01	5,709,033
377	5,709,034

CLASS 34

167	5,709,035
179	5,709,036
330	5,709,037
475	5,709,038
558	5,709,039
565	5,709,040
595	5,709,041

CLASS 36

62	5,709,042

CLASS 37

458	5,709,043

CLASS 38

103	5,709,044

CLASS 40

544	5,709,045

CLASS 42

69.01	5,709,046

CLASS 43

42.31	5,709,047

CLASS 44

383	5,709,718
399	5,709,719
413	5,709,720

CLASS 47

1.1	5,709,048
27	5,709,049

CLASS 49

109	5,709,050

CLASS 52

12	5,709,051
36.1	5,709,052
145	5,709,053
167.1	5,709,054
204	5,709,055
235	5,709,056
301	5,709,057
404.1	5,709,058
410	5,709,059
426	5,709,060
	5,709,061
604	5,709,062

CLASS 53

154	5,709,063
399	5,709,064
400	5,709,065
429	5,709,066
430	5,709,067
449	5,709,068
459	5,709,069

CLASS 54

47	5,709,070

CLASS 55

212	5,709,721
499	5,709,722

CLASS 56

327.1	5,709,071

CLASS 57

67	5,709,072
212	5,709,073
408	5,709,074

CLASS 59

4	5,709,075

CLASS 60

39.281	5,709,079
39.35	5,709,076
39.55	5,709,077
274	5,709,080
	5,709,081
276	5,709,082
394	5,709,083
453	5,709,084
456	5,709,085
556	5,709,087
624	5,709,088

CLASS 62

4	5,709,089
81	5,709,090
85	5,709,091
114	5,709,092
	5,709,093
126	5,709,094
136	5,709,095
155	5,709,096
206	5,709,097
228.4	5,709,098
235	5,709,099
259.2	5,709,100
285	5,709,101
324.1	5,709,102
402	5,709,103
457.1	5,709,104
457.4	5,709,105
507	5,709,106

CLASS 65

29.11	5,709,723
59.4	5,709,724
134.3	5,709,725
157	5,709,726
481	5,709,727
482	5,709,728

CLASS 66

179	5,709,107
205	5,709,108

CLASS 68

23.2	5,709,109

CLASS 70

58	5,709,110
104	5,709,111
177	5,709,112
233	5,709,113
278	5,709,114
495	5,709,115

CLASS 71

9	5,709,729

CLASS 72

57	5,709,116
149	5,709,117
213	5,709,118
250	5,709,119
290	5,709,120
316	5,709,121
326	5,709,122
405.1	5,709,123
409.03	5,709,124
451	5,709,125

CLASS 73

1.35	5,710,370
53.01	5,710,371
	5,710,372
53.05	5,710,373
54.24	5,710,374
117.3	5,710,375
514.32	5,710,376
584	5,710,377
601	5,710,378
861.28	5,710,379
861.85	5,710,380
864.91	5,710,381

CLASS 74

57	5,709,127
323	5,709,128
336 R	5,709,129
378	5,709,130
481	5,709,131
502.4	5,709,132
531	5,709,133
606 R	5,709,134
607	5,709,135

CLASS 75

10.63	5,709,730
230	5,710,382
238	5,710,383
246	5,710,384
712	5,709,731

CLASS 81

57.13	5,709,136
467	5,709,137

CLASS 83

18	5,709,138
54	5,709,139

CLASS 84

403	5,710,385
602	5,710,386
663	5,710,387

CLASS 89

1.811	5,710,388
194	5,710,389

CLASS 91

459	5,709,140

CLASS 92

12.2	5,709,141

CLASS 95

45	5,709,732
51	5,709,733
131	5,709,734

CLASS 96

17	5,709,735
144	5,709,736

CLASS 99

420	5,709,142

CLASS 100

5	5,709,143
218	5,709,144

CLASS 101

109	5,709,145
128.21	5,709,146
350	5,709,147
	5,709,148
415.1	5,709,149
	5,709,150
477	5,709,151

CLASS 102

275.4	5,710,390
430	5,710,391

CLASS 104

89	5,709,152
162	5,709,153

CLASS 105

29.1	5,709,154

CLASS 106

31.43	5,709,737
31.67	5,709,738
38.22	5,709,739
272	5,709,740
287.11	5,709,741
690	5,709,742
713	5,709,743

CLASS 108

42	5,709,155
50	5,709,156
78	5,709,157
186	5,709,158

CLASS 109

2	5,709,159

CLASS 110

262	5,709,160

CLASS 112

116	5,709,161
470.07	5,709,162

CLASS 114

211	5,709,163

CLASS 117

95	5,709,744
96	5,709,745

CLASS 118

31.5	5,709,746
211	5,709,747
262	5,709,748
302	5,709,749
410	5,709,750
413	5,709,751
420	5,709,752
719	5,709,753

CLASS 119

28.5	5,709,164
51.01	5,709,165
51.04	5,709,166
61	5,709,167
	5,709,168
62	5,709,169
72.5	5,709,170
170	5,709,171
797	5,709,172

CLASS 122

1 C	5,709,173
17	5,709,174

CLASS 123

41.49	5,709,175
56.3	5,709,176
65 PE	5,709,177
90.12	5,709,178
90.15	5,709,179
90.16	5,709,180
90.46	5,709,181
184.55	5,709,182
193.3	5,709,183
193.6	5,709,184
196 R	5,709,185
196 W	5,709,186
198 D	5,709,187
204	5,709,188
260	5,709,189
302	5,709,190
	5,709,191
333	5,709,193
436	5,709,192
446	5,709,194
509	5,709,195
672	5,709,196
679	5,709,197
684	5,709,198

CLASS 124

69	5,709,199

CLASS 125

13.01	5,709,200

CLASS 126

247	5,709,201

CLASS 128

200.14	5,709,202
201.21	5,709,203
205.25	5,709,204
633	5,709,205
653.1	5,709,206
653.2	5,709,207
	5,709,208
660.07	5,709,209
661.07	5,709,210
661.08	5,709,211
681	5,709,212
696	5,709,213
702	5,709,214
708	5,709,215
710	5,709,216
721	5,709,217
745	5,709,218
782	5,709,219
849	5,709,220
	5,709,221
885	5,709,222
898	5,709,223
	5,709,224
899	5,709,225

CLASS 131

94	5,709,226
341	5,709,227
365	5,709,228
375	5,709,229

CLASS 132

218	5,709,230
278	5,709,231
295	5,709,232
322	5,709,233

CLASS 134

1.3	5,709,754
	5,709,755
	5,709,756
22.14	5,709,757
92	5,709,234
111	5,709,235
167 R	5,709,236
174	5,709,237

CLASS 135

87	5,709,238

CLASS 137

465	5,709,239
527.2	5,709,240
527.6	5,709,241
533.11	5,709,242
614.03	5,709,243
614.04	5,709,244
625.64	5,709,245
627.5	5,709,246
884	5,709,247

CLASS 138

30	5,709,248
162	5,709,249

CLASS 139

383 A	5,709,250

CLASS 140

92.1	5,709,251

CLASS 141

18	5,709,252
	5,709,253

CLASS 144

34.1	5,709,254
208.9	B1 4,774,987
220	5,709,255
286.1	5,709,256
341	5,709,257

CLASS 148

514	5,709,758
645	5,709,759

CLASS 152

556	5,709,760

CLASS 156

159	5,709,761
195	5,709,762
242	5,709,763
275.7	5,709,764
293	5,709,765
307.3	5,709,766
344	5,709,767
406.2	5,709,768
423	5,709,769
447	5,709,770
474	5,709,771
646.1	5,709,772
647.1	5,709,773

CLASS 160

168.1 R	5,709,258
201	5,709,259

CLASS 162

9	5,709,774
117	5,709,775
135	5,709,776
216	5,709,777
358.3	5,709,778

CLASS 164

453	5,709,260
454	5,709,261

CLASS 165

47	5,709,262
80.3	5,709,263
115	5,709,264

CLASS 166

55.2	5,709,265
75.15	5,709,266
280	5,709,267
301	5,709,268
376	5,709,269

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67	B1 5,280,135
74 R	5,710,393

CLASS 175

122	5,709,276
203	5,709,277
374	5,709,278
430	5,709,279

CLASS 180

68.5	5,709,280
272	5,709,281
307	5,709,282
428	5,709,283

CLASS 181

152	5,710,394
153	5,710,395
208	5,710,396

CLASS 184

5.1	5,709,284

CLASS 187

205	5,709,286

CLASS 188

106 F	5,709,285
196 B	5,709,287
218 XL	5,709,288
298	5,709,289
322.15	5,709,290

CLASS 191

10	5,709,291
65	5,709,292

CLASS 194

200	5,709,293
230	5,709,294
350	5,709,295

CLASS 198

658	5,709,296

CLASS 200

5 A	5,710,397
	5,710,398
17 R	5,710,399
61.54	5,710,400
83 J	5,710,401

CLASS 202

100	5,709,779
158	5,709,780

CLASS 203

57	5,709,781

CLASS 204

192.18	5,709,783
192.38	5,709,784
298.25	5,709,785
421	5,709,786
425	5,709,787
619	5,709,788

CLASS 205

437	5,709,789
	5,709,790
464	5,709,791
775	5,709,792

CLASS 206

6.1	5,709,297
198	5,709,298
308.1	5,709,300
361	5,709,301
455	5,709,302
459.1	5,709,303
501	5,709,304
536	5,709,305
	5,709,306
548	5,709,307
557	5,709,308

CLASS 210

169	5,709,793
351	5,709,794
460	5,709,795
632	5,709,796
635	5,709,797
651	5,709,798
748	5,709,799
762	5,709,800
770	5,709,801

CLASS 216

2	5,709,802
11	5,709,803
12	5,709,804
18	5,709,805
41	5,709,806
48	B1 5,421,955

CLASS 218

157	5,710,402

CLASS 219

60 A	5,710,403
68	5,710,404
121.46	5,710,405
267	5,710,406
405	5,710,407
481	5,710,408
506	5,710,409
602	5,710,411
633	5,710,412
	5,710,413
	5,710,414

CLASS 220

229	5,709,309
270	5,709,310
278	5,709,311
287	5,709,312
601	5,709,313
802	5,709,314

CLASS 221

155	5,709,315
304	5,709,316

CLASS 222

135	5,709,317
153.06	5,709,318
170	5,709,319
175	5,709,320
181.3	5,709,321
227	5,709,322
321.9	5,709,324
383.1	5,709,325
600	5,709,807

CLASS 223

76	5,709,326
111	5,709,327

CLASS 224

282	5,709,328
402	5,709,329

CLASS 226

4	5,709,331
92	5,709,330

CLASS 227

66	5,709,332
130	5,709,333
175.3	5,709,334
176.1	5,709,335

CLASS 228

116	5,709,336
124.6	5,709,337
226	5,709,338

CLASS 229

80	5,709,340

CLASS 235

7 R	5,710,415
383	5,710,416
462	5,710,417
472	5,710,418
487	5,710,419
	5,710,420
492	5,710,421

CLASS 236

12.2	5,709,339

CLASS 239

92	5,709,341
585.5	5,709,342
730	5,709,343

CLASS 241

7	5,709,344
17	5,709,345
169.1	5,709,346

CLASS 242

46.4	5,709,347
334.6	5,709,348
390.1	5,709,349
390.8	5,709,350
391.3	5,709,351
417.1	5,709,352
439.5	5,709,353
551	5,709,354
555.3	5,709,355

CLASS 244

1 A	5,709,356
3.1	5,710,423
7 R	5,709,357

CLASS 248

27.1	5,709,358
201	5,709,359
278.1	5,709,360
300	5,709,361
352	5,709,362
421	5,709,363
	5,709,364
454	5,709,365
530	5,709,366
551	5,709,367

CLASS 249

39	5,709,808
195	5,709,809

CLASS 250

208.2	5,710,424
234	5,710,425
237 G	5,710,426
282	5,710,427
332	5,710,428
358.1	5,710,429
	5,710,430
504 R	5,710,431
559.32	5,710,432

CLASS 251

30.02	5,709,368
86	5,709,369
129.15	5,709,370

CLASS 252

8.81	5,709,810
62.57	5,709,811
70	5,709,812
	5,709,813
180	5,709,814
182.2	5,710,434
186.39	5,709,815
188.28	5,709,816
299.61	5,709,817
	5,709,818
	5,709,819
	5,709,820
	5,710,433
315.01	5,709,821

CLASS 257

11	5,710,435
14	5,710,436
32	5,710,437
69	5,710,438
85	5,710,439
96	5,710,440
98	5,710,441
107	5,710,442
110	5,710,443
140	5,710,444
147	5,710,445
225	5,710,446
230	5,710,447
288	5,710,448
336	5,710,449
344	5,710,450
347	5,710,451
355	5,710,452
360	B2 4,692,781
411	5,710,453
413	5,710,454
472	5,710,455
666	5,710,456
	5,710,457
679	5,710,458
717	5,710,459
752	5,710,460
754	5,710,461
758	5,710,462
777	5,710,463

CLASS 261

44.2	5,709,822

CLASS 264

16	5,709,823
34	5,709,824
40.1	5,709,825
	5,709,826
42	5,709,827
46.5	5,709,828
156	5,709,829
219	5,709,830
238	5,709,831
272.11	5,709,832
328.1	5,709,833

CLASS 266

217	5,709,834
	5,709,835

CLASS 267

167	5,709,371

CLASS 269

6	5,709,372
16	5,709,373

CLASS 270

1.02	5,709,374
52.26	5,709,375
58.11	5,709,376

CLASS 271

9.02	5,709,377
100	5,709,378
105	5,709,379
125	5,709,380
147	5,709,381
209	5,709,382

CLASS 273

256	5,709,384
317.3	5,709,385
370	5,709,386

CLASS 277

35	5,709,387
53	5,709,388
65	5,709,389
166	5,709,390

CLASS 279

19.4	5,709,391
62	5,709,392
97	5,709,393

CLASS 280

6.11	5,709,394
11.2	5,709,395
11.28	5,709,396
47.17	5,709,397
47.24	5,709,398
96.1	5,709,399
650	5,709,400
728.2	5,709,401
	5,709,402
735	5,709,403
	5,709,404
736	5,709,405
737	5,709,406
751	5,709,407
804	5,709,408

CLASS 281

29	5,709,409

CLASS 283

67	5,709,410

CLASS 285

110	5,709,411
158	5,709,412
219	5,709,413
242	5,709,414
304	5,709,415
330	5,709,416
382	5,709,417
382.2	5,709,418

CLASS 290

53	5,710,464
55	5,709,419

CLASS 292

216	5,709,420
251.5	5,709,421
288	5,709,422

CLASS 294

25	5,709,423
148	5,709,424
162	5,709,425

CLASS 296

185	5,709,426
214	5,709,427

CLASS 297

16.2	5,709,428
188.04	5,709,429
201	5,709,430
228.1	5,709,431
411.32	5,709,432

CLASS 299

30	5,709,433

CLASS 300

21	5,709,434

CLASS 303

7	5,709,435
86	5,709,436
113.4	5,709,437
	5,709,438
146	5,709,439

CLASS 305

178	5,709,440

CLASS 307

10.1	5,710,465

CLASS 310

40 MM	5,710,466
64	5,710,467
90	5,710,468
90.5	5,710,469
	5,710,470
114	5,710,471
236	5,710,473
254	5,710,474
	5,710,475
268	5,710,476

CLASS 312

107	5,709,441
221	5,709,442
314.14	5,709,443
348.2	5,709,444

CLASS 313

336	5,710,478
412	5,710,479
414	5,710,480
	5,710,481
497	5,710,483
504	5,710,484
634	5,710,485

CLASS 315

111.21	5,710,486
205	5,710,487
224	5,710,488
309	5,710,489

CLASS 318

116	5,710,491
156	5,710,492
254	5,710,493
366	5,710,494
434	5,710,495
573	5,710,490
610	5,710,496
632	5,710,497
	5,710,498
696	5,710,499
799	5,710,500

CLASS 320

2	5,710,501
	5,710,502
6	5,710,503
	5,710,504
8	5,710,505
35	5,710,507
522	5,710,506

CLASS 323

284	5,710,508

CLASS 324

207.25	5,710,509
210	5,710,510
303	5,710,511
402	5,710,512
424	5,710,513
635	5,710,514
763	5,710,515

CLASS 326

115	5,710,516

CLASS 327

163	5,710,517
538	5,710,519

CLASS 330

10	5,710,520
52	5,710,521
291	5,710,522
293	5,710,523

CLASS 331

1 A	5,710,524
16	5,710,525
25	5,710,526
57	5,710,527

CLASS 333

193	5,710,529
219.1	5,710,530

CLASS 335

216	5,710,531
239	5,710,532

CLASS 336

100	5,710,533
192	5,710,534
	5,710,535
200	5,710,536

CLASS 338

195	5,710,538

CLASS 340

384.1	5,710,422
444	5,710,539
572	5,710,540
628	5,710,541
664	5,710,542
691	5,710,543
825.22	5,710,544
825.36	5,710,545
825.44	5,710,546
	5,710,547
825.5	5,710,549
825.69	5,710,548
825.79	5,710,550
870.09	5,710,551
870.21	5,710,552
903	5,710,553
905	5,710,554
916	5,710,555
928	5,710,556
932.2	5,710,557
933	5,710,558
963	5,710,559
982	5,710,560

CLASS 341

63	5,710,561
107	5,710,562
161	5,710,563

CLASS 342

1	5,710,564
70	5,710,565
457	5,710,566

CLASS 343

702	5,710,567
719	5,710,568
817	5,710,569

CLASS 345

3	5,710,570
94	5,710,571
115	5,710,572
127	5,710,573
145	5,710,574
161	5,710,575
169	5,710,576
189	5,710,577
419	5,710,875
429	5,710,578

CLASS 347

7	5,710,579
32	5,710,580
35	5,710,581
42	5,710,582
62	5,710,583
70	5,710,584
86	5,710,585
103	5,710,586
104	5,710,587
153	5,710,588
262	5,710,589

CLASS 348

14	5,710,590
15	5,710,591
56	5,710,592
181	5,710,593
254	5,710,594
372	5,710,597
408	5,710,598
419	5,710,595
563	5,710,600
564	5,710,601
586	5,710,602
699	5,710,603
717	5,710,604
734	5,710,605

CLASS 349

42	5,710,606
125	5,710,608

126	5,710,609
	5,710,610
129	5,710,611
149	5,710,612
660	5,710,607

CLASS 351

45	5,710,613
48	5,710,614
169	5,710,615

CLASS 352

92	5,710,616

CLASS 353

70	5,709,445

CLASS 355

32	5,710,617
40	5,710,618
50	5,710,619
53	5,710,620

CLASS 356

5.15	5,710,621
39	5,710,622
141.5	5,710,623
237	5,710,624
244	5,710,625
301	5,710,626
328	5,710,627
344	5,710,628
345	5,710,629
	5,710,630
351	5,710,631
357	5,710,632
445	5,710,633

CLASS 358

296	5,710,634
	5,710,635
298	5,710,636
400	5,710,637
404	5,710,638
426	5,710,639
461	5,710,640
462	5,710,641
474	5,710,642
487	5,710,643
518	5,710,644

CLASS 359

1	5,710,645
14	5,710,646
15	5,710,647
110	5,710,648
123	5,710,649
133	5,710,650
145	5,710,651
152	5,710,652
187	5,710,653
205	5,710,654
249	5,710,655
291	5,710,656
295	5,710,657
328	5,710,658
341	5,710,659
	5,710,660
364	5,710,661
368	5,710,662
389	5,710,663
463	5,710,666
569	5,710,667
634	5,710,668
686	5,710,669
691	5,710,670
742	5,710,671
819	5,710,672

CLASS 360

21	5,710,673
31	5,710,674
69	5,710,675
72.1	5,710,676
77.08	5,710,677
85	5,710,679
99.08	5,710,678
104	5,710,680
106	5,710,681
	5,710,682
126	5,710,683
128	5,710,684
130.21	5,710,685
132	5,710,686
133	5,710,687
137	5,710,688

CLASS 361

57	5,710,689
94	5,710,690
	5,710,691
212	5,710,692
686	5,710,693
703	5,710,694
813	5,710,695

CLASS 362

30	5,709,446
31	5,709,447
32	5,709,448
34	5,709,449
61	5,709,450
	5,709,451
66	5,709,452
80	5,709,453
	5,709,454
83.3	5,709,455
84	5,709,456
96	5,709,457
	5,709,458
105	5,709,459
147	5,709,460
239	5,709,461
249	5,709,462
268	5,709,463
276	5,709,464
400	5,709,465

CLASS 363

21	5,710,697
37	5,710,696
56	5,710,698
132	5,710,699

CLASS 364

149	5,710,700
185	5,710,701
423.098	5,710,702
424.034	5,710,703
426.027	5,710,704
426.028	5,710,705
464.19	5,710,706
464.2	5,710,707
470.1	5,710,708
474.26	5,710,709
484	5,710,710
491	5,710,711
492	5,710,712
498	5,710,713
508	5,710,714
	5,710,715
	5,710,716
510	5,710,717
512	5,710,718
514 R	5,710,719
	5,710,721
525	5,710,722
551.01	5,710,723
	5,710,724
559	5,710,725
574	5,710,720
578	5,710,726
579	5,710,727
707	5,710,728
716.02	B1 4,225,934
724.01	5,710,729
734	5,710,732
761	5,710,730
786.01	5,710,731

CLASS 365

52	5,710,733
139.07	5,710,736
185.09	5,710,734
185.26	5,710,735
201	5,710,737
203	5,710,738
205	5,710,739
222	5,710,740
226	5,710,741
230.05	5,710,742

CLASS 366

30	5,709,466
130	5,709,467
337	5,709,468

CLASS 368

90	5,710,743
120	5,710,744

CLASS 369

13	5,710,745
	5,710,746
	5,710,747
44.35	5,710,748
58	5,710,749
59	5,710,750
97	5,710,751
	5,710,752
109	5,710,753

CLASS 370

24	5,710,755
207	5,710,754
216	5,710,756
232	5,710,757
241	5,710,758
244	5,710,759
249	5,710,760
252	5,710,761
280	5,710,762
307	5,710,763
315	5,710,764
321	5,710,765
329	5,710,766
335	5,710,767
342	5,710,768
355	5,710,769
368	5,710,770
436	5,710,771
458	5,710,772
512	5,710,773
513	5,710,774

CLASS 371

5.1	5,710,775
	5,710,776
20.6	5,710,777
22.2	5,710,778
22.3	5,710,779
22.4	5,710,780
31	5,710,781
37.1	5,710,782
37.4	5,710,783
43	5,710,784
46	5,710,785

CLASS 372

6	5,710,786
	B1 5,309,452
25	5,710,787
99	5,710,788

CLASS 374

5	5,709,469
16	5,709,470
57	5,709,471
106	5,709,472
131	5,709,473
140	5,709,474
141	5,709,475
208	5,709,476

CLASS 375

202	5,710,789
219	5,710,790
224	5,710,791
229	5,710,792
232	5,710,793
234	5,710,794
317	5,710,795
344	5,710,796
346	5,710,797
347	5,710,798
349	5,710,799
370	5,710,800

CLASS 378

98.7	5,710,801

CLASS 379

41	5,710,803
58	5,710,804
59	5,710,805
96	5,710,806
114	5,710,807
201	5,710,808
207	5,710,809
355	5,710,810
394	5,710,811
438	5,710,812

CLASS 380

4	5,710,813
9	5,710,814
20	5,710,815
21	5,710,816
25	5,710,817

CLASS 381

1	5,710,818
68.2	5,710,819
68.4	5,710,820
71.12	5,710,822
83	5,710,823
90	5,710,821

CLASS 382

145	5,710,825
162	5,710,824
166	5,710,826
167	5,710,827
172	5,710,828
173	5,710,829
	5,710,830
189	5,710,831
	5,710,832
228	5,710,833
232	5,710,834
233	5,710,835
237	5,710,836
242	5,710,838
259	5,710,837
264	5,710,839
266	5,710,840
274	5,710,841
283	5,710,842
305	5,710,843
317	5,710,844

CLASS 383

4	5,709,477
80	5,709,478
209	5,709,479

CLASS 384

100	5,709,480
219	5,709,481
434	5,709,482
538	5,709,483

CLASS 385

16	5,710,845
17	5,710,846
28	5,710,847
43	5,710,848
50	5,710,849
71	5,710,850
86	5,710,851
123	5,710,852
	5,710,853
132	5,710,854
135	5,710,855
146	5,710,856

CLASS 386

52	5,710,857
74	5,710,858
111	5,710,859
118	5,710,860

CLASS 392

405	5,710,861

CLASS 395

2.35	5,710,862
2.39	5,710,863
2.47	5,710,864
2.57	5,710,865
2.65	5,710,866
3	5,710,867
	5,710,868
21	5,710,869
98	5,710,870
109	5,710,871
	5,710,872
115	5,710,873
	5,710,874
126	5,710,876
127	5,710,877
129	5,710,878
141	5,710,879
168	5,710,880
200.12	5,710,882
200.17	5,710,883
200.3	5,710,881
200.47	5,710,884
200.54	5,710,885
214	5,710,886
226	5,710,887
244	5,710,889
286	5,710,890
299	5,710,891
307	5,710,892
311	5,710,893
326	5,710,894
327	5,710,895
333	5,710,896
334	5,710,897
338	5,710,898
339	5,710,899
	5,710,900
	5,710,901
392	5,710,902
401	5,710,903
405	5,710,904
445	5,710,905
473	5,710,906
475	5,710,907
497.01	5,710,909
500	5,710,908
551	5,710,910
555	5,710,911
561	5,710,912
588	5,710,913
595	5,710,914
603	5,710,915
609	5,710,916
610	5,710,917
	5,710,918
612	5,710,919
614	5,710,920
617	5,710,922
676	5,710,921
680	5,710,923
683	5,710,924
	5,710,925
701	5,710,926
709	5,710,927
710	5,710,928
750	5,710,929
	5,710,930
	5,710,931
800	5,710,932
	5,710,933
	5,710,934
	5,710,935
	5,710,936
	5,710,937
800.13	5,710,938
821	5,710,939
834	5,710,941
872	5,710,942
	5,710,943
875	5,710,944

CLASS 396

13	5,710,945
25	5,710,946
26	5,710,947
50	5,710,948
132	5,710,949
263	5,710,950
311	5,710,951
335	5,710,953
374	5,710,954
518	5,710,952

CLASS 399

13	5,710,955
24	5,710,956
45	5,710,957
49	5,710,958
88	5,710,959
253	5,710,960
256	5,710,961
260	5,710,962
262	5,710,963
303	5,710,964
313	5,710,965
343	5,710,966
377	5,710,967
382	5,710,968

CLASS 400

188	5,709,484
208	5,709,485
	5,709,486
	5,709,487
234	5,709,488
472	5,709,489

CLASS 401

19	5,709,490
88	5,709,491
208	5,709,492
219	5,709,493

CLASS 402

60	5,709,494
73	5,709,495
79	5,709,496

CLASS 403

24	5,709,497
196	5,709,498
316	5,709,499
364	5,709,500

CLASS 405

3	5,709,501
87	5,709,502
154	5,709,503
	5,709,504
258	5,709,505

CLASS 406

1	5,709,506
67	5,709,507

CLASS 407

101	5,709,508
114	5,709,509

CLASS 408

156	5,709,510

CLASS 409

199	5,709,511

CLASS 410

129	5,709,512

CLASS 411

107	5,709,513
150	5,709,514
544	5,709,516

CLASS 414

140.9	5,709,517
401	5,709,518
416	5,709,519
427	5,709,520
462	5,709,521
563	5,709,522
715	5,709,523
796.9	5,709,524
798.7	5,709,525

CLASS 415

1	5,709,526
10	5,709,527
90	5,709,528
119	5,709,529
170.1	5,709,530
208.2	5,709,531

CLASS 416

39	5,709,532

CLASS 417

18	5,709,533
53	5,709,534
269	5,709,535
383	5,709,536
410.4	5,709,537
477.3	5,709,539

CLASS 418

156	5,709,540

CLASS 419

5	5,710,969

CLASS 420

41	5,709,836

CLASS 422

56	5,709,837
61	5,709,838
81	5,709,839
99	5,709,840
292	5,709,842

CLASS 423

283	5,709,841

CLASS 424

9.2	5,709,843
	5,709,844
9.452	5,709,846
9.6	5,709,845
59	5,709,847
	5,709,848
63	5,709,849
70.16	5,709,850
78.07	5,709,851
78.08	5,709,852
85.6	5,709,853
93.45	5,709,857
93.51	5,709,856
93.7	5,709,854
	5,709,855
134.1	5,709,859
143.1	5,709,858
184.1	5,709,860
	5,709,861
191.1	5,709,862
195.1	5,709,863
	5,709,864
218.1	5,709,865
400	5,709,866
401	5,709,867
	5,709,868
402	5,709,869
404	5,709,870
409	5,709,871
420	5,709,872
422	5,709,873
423	5,709,874
426	5,709,875
439	5,709,876
444	5,709,877
449	5,709,878
450	5,709,879
464	5,709,880
465	5,709,881
469	5,709,882
488	5,709,883
489	5,709,884
	5,709,885
495	5,709,886
520	5,709,887
522	5,709,888
617	5,709,889
620	5,709,890

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CLASS 425

4 R	5,709,892
389	5,709,893

CLASS 426

53	5,709,894
96	5,709,895
103	5,709,896
106	5,709,897
297	5,709,898
417	5,709,899
582	5,709,900
611	5,709,901
620	5,709,902
660	5,709,903

CLASS 427

8	5,709,904
	5,709,905
126.1	5,709,907
137	5,709,908
306	5,709,906
407.1	5,709,909
434.2	5,709,910

CLASS 428

1	5,709,911
31	5,709,912
34.5	5,709,913
35.1	5,709,914
35.2	5,709,915
35.7	5,709,916
36.3	5,709,917
40.1	5,709,918
67	5,709,919
68	5,709,920
152	5,709,921
156	5,709,922
182	B1 5,134,013
195	5,709,923
198	5,709,925
206	5,709,926
209	5,709,927
212	5,709,928
215	5,709,929
216	5,709,930
218	5,709,931
220	5,709,932
297.4	5,709,933
305.5	5,709,934
323	5,709,935
	5,709,936
332	5,709,937
336	5,709,938
364	5,709,940
	5,709,941
375	5,709,942
378	5,709,943
402	5,709,944
403	5,709,945
413	5,709,946
	5,709,947
	5,709,948
421	5,709,949
423.1	5,709,950
430	5,709,951
457	5,709,952
474.4	5,709,953
500	5,709,954
507	5,709,955
515	5,709,956
615	5,709,957
620	5,709,958
690	5,709,959
698	5,709,960

CLASS 429

32	5,709,961
93	5,709,962
99	5,709,963
153	5,709,964
158	5,709,965
160	5,709,966
175	5,709,967
198	5,709,968
218	5,709,969

CLASS 430

5	5,709,970
14	5,709,971
30	5,709,972
42	5,709,973
59	5,709,974
106.6	5,709,975
124	5,709,976
192	5,709,977
270.13	5,709,978
311	5,709,979
321	5,709,980
375	5,709,981
490	5,709,982
519	5,709,983
527	5,709,984
529	5,709,985
531	5,709,986
544	5,709,987
567	5,709,988
569	5,709,989
	5,709,990

CLASS 431

10	5,709,541
242	5,709,542

CLASS 432

241	5,709,543
242	5,709,544

CLASS 433

80	5,709,545
82	5,709,546
174	5,709,547
218	5,709,548

CLASS 434

118	5,709,549
227	5,709,550
322	5,709,551
404	5,709,552

CLASS 435

2	5,709,991
	5,709,992
	5,709,993
3	Re.35,716
4	5,709,994
5	5,709,995
	5,709,996
	5,709,997
6	5,709,998
	5,709,999
	5,710,000
	5,710,001
	5,710,002
	5,710,003
	5,710,004
	5,710,005
	5,710,006
7.1	5,710,007
7.23	5,710,010
7.4	5,710,008
7.9	5,710,009
25	5,710,011
28	5,710,012
29	5,710,013
68.1	5,710,014
69.1	5,710,015
	5,710,016
	5,710,017
	5,710,018
	5,710,019
	5,710,020
	5,710,021
	5,710,022
	5,710,023
	5,710,024
	5,710,025
69.2	5,710,026
69.51	5,710,027
91.1	5,710,028
134	5,710,030
172.3	5,710,031
183	5,710,032
189	5,710,033
218	5,710,035
240.2	5,710,037
	5,710,038
252.1	5,710,039
265	5,710,040
287.6	5,710,041
290.1	5,710,042
297.5	5,710,043
320.1	5,710,044
911	5,710,029

CLASS 436

56	5,710,046
94	5,710,047
119	5,710,048
525	5,710,049

CLASS 437

7	5,710,050
	5,710,051
8	5,710,052
40	5,710,053
44	5,710,054
45	5,710,055
60	5,710,056
62	5,710,057
107	5,710,058
151	5,710,059
190	5,710,060
195	5,710,061
207	5,710,062
208	5,710,063
220	5,710,064
226	5,710,065
228	5,710,066
238	5,710,067
415 M	5,710,068

CLASS 438

7	5,710,069
21	5,710,070
108	5,710,071
197	5,710,072
239	5,710,073
253	5,710,074
254	5,710,075
305	5,710,076
472	5,710,077
620	5,710,078
778	5,710,079

CLASS 439

6	5,709,553
56	5,709,554
79	5,709,555
	5,709,556
	5,709,557
95	5,709,558
130	5,709,559
157	5,709,560
	5,709,561
267	5,709,562
275	5,709,563
392	5,709,564
395	5,709,565
397	5,709,566
444	5,709,567
541.5	5,709,568
607	5,709,569
681	5,709,570
699.2	5,709,571
723	5,709,572
857	5,709,573
858	5,709,574

CLASS 441

64	5,709,575

CLASS 442

304	5,710,080

CLASS 445

3	5,709,576
24	5,709,577
26	5,709,578
52	5,709,579

CLASS 446

31	5,709,580
171	5,709,581
227	5,709,582
440	5,709,583
475	5,709,584

CLASS 451

5	5,709,585
28	5,709,586
38	5,709,587
41	5,709,588
54	5,709,589
87	5,709,590
180	5,709,591
287	5,709,593
344	5,709,594
356	5,709,595
357	5,709,596
456	5,709,597
530	5,709,598

CLASS 452

34	5,709,599
49	5,709,600

CLASS 454

121	5,709,601
155	5,709,602

CLASS 455

3.1	5,710,970
12.1	5,710,971
33.1	5,710,972
	5,710,973
33.2	5,710,974
38.3	5,710,975
56.1	5,710,976
65	5,710,977
67.1	5,710,978
	5,710,979
67.4	5,710,980
69	5,710,981
	5,710,982
76	5,710,983
80	5,710,984
89	5,710,985
	5,710,986
90	5,710,987
	5,710,988
100	5,710,989
103	5,710,990
126	5,710,991
161.2	5,710,992
188.1	5,710,993
260	5,710,994
277.2	5,710,995
309	5,710,996
316	5,710,997
324	5,710,998
349	5,710,999
423	5,711,000
432	5,711,001
433	5,711,002
436	5,711,003
	5,711,004
441	5,711,005
445	5,711,006
447	5,711,007
466	5,711,008
504	5,711,009
509	5,711,010
520	5,711,011
557	5,711,012
558	5,711,013
575	5,711,014

CLASS 463

17	5,709,603
23	5,709,604

CLASS 464

83	5,709,605

CLASS 472

29	5,709,606

CLASS 473

58	5,709,607
99	5,709,608
220	5,709,609
223	5,709,610
236	5,709,611
240	5,709,612
248	5,709,613
305	5,709,614
324	5,709,615
330	5,709,616
	5,709,617
382	5,709,618
424	5,709,619
459	5,709,620
502	5,709,621
599	5,709,622
604	5,709,623

CLASS 474

8	5,709,624
110	5,709,625

CLASS 475

14	5,709,626
75	5,709,628
86	5,709,627

CLASS 477

120	5,709,629

CLASS 482

46	5,709,630
51	5,709,631
54	5,709,632
62	5,709,633
105	5,709,634
108	5,709,635
129	5,709,636
	5,709,637
130	5,709,638

CLASS 492

48	5,709,639

CLASS 493

23	5,709,640
243	5,709,641
475	5,709,642

CLASS 494

56	5,709,643

CLASS 501

21	5,710,081
65	5,710,082

CLASS 502

25	5,710,083
66	5,710,084
68	5,710,085
171	5,710,086
340	5,710,087
348	5,710,088
407	5,710,089
412	5,710,090
414	5,710,091
416	5,710,092
439	5,710,093

CLASS 503

204	5,710,094
210	5,710,095
227	5,710,096
	5,710,097
	5,710,098

CLASS 504

103	5,710,100
115	5,710,101
193	5,710,102
206	5,710,103
	5,710,104
251	5,710,106
326	5,710,099

CLASS 505

210	5,710,105

CLASS 507

110	5,710,107
	5,710,108
114	5,710,109
131	5,710,110
137	5,710,111

CLASS 508

159	5,710,112

CLASS 510

122	5,710,113
123	5,710,114
224	5,710,115
276	5,710,116
299	5,710,117
360	5,710,118
	5,710,119
421	5,710,120
467	5,710,121

CLASS 512

7	5,710,122

CLASS 514

2	5,710,123
	5,710,124
8	B1 5,240,909
12	5,710,126
	5,710,127
	B1 5,260,274
13	5,710,128
18	5,710,129
19	5,710,130
21	5,710,131
	5,710,132
25	5,710,133
34	5,710,134
	5,710,135
44	5,710,136
	5,710,137
80	5,710,138
91	5,710,140
162	5,710,141
167	5,710,142
177	5,710,143
179	5,710,144
183	5,710,145
202	5,710,146
	5,710,147
210	5,710,148
212	5,710,149
213	5,710,150
214	5,710,151
225.2	5,710,152
236.2	5,710,153
252	5,710,154
255	5,710,155
	5,710,156
258	5,710,157
259	5,710,158
275	5,710,159
277	5,710,160
278	5,710,161
280	5,710,162
290	5,710,163
300	5,710,164
317	5,710,165
318	5,710,166
326	5,710,167
327	5,710,168
	5,710,169
332	5,710,170
342	B1 5,001,138
396	5,710,171
400	5,710,172
447	5,710,173
450	5,710,174
547	5,710,175
548	5,710,176
557	5,710,177
	5,710,178
568	5,710,179
630	5,710,180
634	5,710,181
772.3	5,710,182
892	5,710,183

CLASS 521

50	5,710,184
51	5,710,185
60	5,710,186
64	5,710,187
89	5,710,188
91	5,710,189
102	5,710,190
118	5,710,191
155	5,710,192

CLASS 522

35	5,710,193

CLASS 523

116	5,710,194

CLASS 524

31	5,710,195
68	5,710,196
82	5,710,197
110	5,710,198
141	5,710,199
191	5,710,200
269	5,710,201
405	5,710,202
435	5,710,203
494	5,710,204
502	5,710,205
	5,710,207
505	5,710,206
513	5,710,208
594	5,710,209

CLASS 525

50	5,710,210
62	5,710,211
63	5,710,212
107	5,710,213
124	5,710,214
	5,710,215
132	5,710,216
199	5,710,217
211	5,710,218
240	5,710,219
404	5,710,220
438	5,710,221
444	5,710,243

CLASS 526

127	5,710,222
	5,710,223
160	5,710,224
166	Re.35,717
172	5,710,225
200	5,710,226
208	5,710,227
262	5,710,228
348	5,710,229

CLASS 528

53	5,710,230
59	5,710,231
82	5,710,232
84	5,710,233
106	5,710,234
190	5,710,237
196	5,710,238
254	5,710,239
288	5,710,235
289	5,710,240
353	5,710,241
407	5,710,242

CLASS 530

307	5,710,244
324	5,710,245
327	5,710,246
	5,710,247
	5,710,248
333	5,710,249
350	5,710,250
351	5,710,251
356	5,710,252
364	5,710,253
383	5,710,254
388.8	5,710,255
388.9	5,710,256
396	5,710,257

CLASS 534

643	5,710,258

CLASS 536

18.5	5,710,259
	5,710,260
18.6	5,710,261
22	5,710,262
23.1	5,710,264
23.5	5,710,265
	5,710,266
24.1	5,710,267
103	5,710,268
107	5,710,269
124	5,710,270

CLASS 544

258	5,710,271
271	5,710,272
347	5,710,273
375	5,710,274

CLASS 546

78	5,710,275
185	5,710,277
268.4	5,710,278
329	5,710,279

CLASS 548

266.6	5,710,280
429	5,710,281
455	5,710,282
530	5,710,283
543	5,710,284

CLASS 549

4	5,710,285
352	5,710,286
435	5,710,288
504	5,710,289
510	5,710,287
513	5,710,290
539	5,710,291

CLASS 552

296	5,710,292
595	5,710,293
653	5,710,294

CLASS 554

69	5,710,295
167	5,710,296

CLASS 556

11	5,710,297
22	5,710,298
53	5,710,299
401	5,710,300
430	5,710,301
434	5,710,302

CLASS 558

8	5,710,303
52	5,710,304
77	5,710,305
93	5,710,306
96	5,710,307
97	5,710,308
102	5,710,309
274	5,710,310
414	5,710,311

CLASS 560

60	5,710,314
78	5,710,315
95	5,710,316
227	5,710,317
245	5,710,318
355	5,710,319

CLASS 561

328	5,710,334

CLASS 562

113	5,710,320
401	5,710,321
440	5,710,322
497	5,710,323
506	5,710,324
517	5,710,325
521	5,710,326
565	5,710,327
599	5,710,328
600	5,710,329
878	5,710,330

CLASS 564

215	5,710,331
297	5,710,332
298	5,710,333
403	5,710,335
428	5,710,336

CLASS 568

16	5,710,337
	5,710,338
	5,710,339
17	5,710,340
316	5,710,341
360	5,710,342
424	5,710,343
454	5,710,344
596	5,710,345
723	5,710,346
725	5,710,347
864	5,710,349
869	5,710,350

CLASS 570

123	5,710,351
166	5,710,352
168	5,710,353
206	5,710,354
208	5,710,355

CLASS 585

440	5,710,356
809	5,710,357

CLASS 588

1	5,711,015
10	5,711,016
200	5,710,358
	5,711,017
201	5,711,018
	5,711,019
203	5,711,020
208	5,710,359
213	5,710,360
256	5,710,361
259	5,710,362

CLASS 600

3	5,709,644
27	5,709,645
203	5,709,646

CLASS 601

134	5,709,647

CLASS 602

19	5,709,648
32	5,709,649
52	5,709,650
57	5,709,651

CLASS 604

15	5,709,652
20	5,709,653
24	5,709,654
96	5,709,657
102	5,709,658
110	5,709,659
116	5,709,660
117	5,709,661
135	5,709,662
154	5,709,663
167	5,709,664
174	5,709,665
191	5,709,666
198	5,709,667
232	5,709,668
	5,709,669
246	5,709,670
264	5,709,671
265	5,709,672
332	5,709,673
342	5,709,674

CLASS 606

1	5,709,675
7	5,709,676
17	5,709,677
46	5,709,679
50	5,709,680
54	5,709,681
60	5,709,682
61	5,709,683
	5,709,684
	5,709,685
69	5,709,686
73	5,709,687
81	5,709,688
86	5,709,689
106	5,709,691
141	5,709,692
145	5,709,693
148	5,709,694
	5,709,695
166	B1 5,222,967
180	5,709,697
	5,709,698
181	5,709,699
188	5,709,700
194	5,709,701
198	5,709,702
	5,709,703
200	5,709,704
204.35	5,709,705
205	5,709,706
213	5,709,707
232	5,709,708

CLASS 607

4	5,709,709
5	5,709,710
8	5,709,711
27	5,709,712

CLASS 623

1	5,709,713

CLASS 701

33	5,711,021
50	5,711,022
70	5,711,023
82	5,711,024
83	5,711,025

CLASS 800

200	5,710,364
	5,710,365
	5,710,366
	5,710,367
	5,710,368
	5,710,369

CLASS 814

82	5,710,139

CLASSIFICATION OF DESIGNS

D2—	608	389,285
	624	389,286
	627	389,287
	828	389,288
	853	389,289
	861	389,290
	870	389,291
	944	389,292
	953	389,293
	959	389,294
	960	389,295
	961	389,296
	962	389,297
		389,298
		389,299
	972	389,300
D3—	4	389,301
	208	389,302
	228	389,303
	251	389,304
	260	389,305
		389,306
	273	389,307
	279	389,308
	294	389,309
	312	389,310
	320	389,311
D4—	104	389,312
	106	389,313
	107	389,314
	108	389,315
	114	389,316
	118	389,317
	130	389,318
	132	389,319
D5—	63	389,320
	64	389,321
	66	389,322
D6—	314	389,323
	315	389,324
		389,325
	323	389,326
	353	389,327
	361	389,328
	370	389,329
	381	389,330
		389,331
	390	389,332
	397	389,333
	418	389,334
	422	389,335
	426	389,336
	455	389,337
	458	389,338
	459	389,339
	462	389,340
	466	389,341
	468	389,342
	474	389,343
	476	389,344
	478	389,345
	484	389,346
		389,347
	495	389,348
	509	389,349
	520	389,350
	525	389,351
		389,352
		389,353
	534	389,354
	545	389,355
	569	389,356
	583	389,357
	601	389,358
		389,359
		389,360
	603	389,361
	608	389,362
	610	389,363
D7—	300.2	389,364
		389,365
		389,366
		389,367
	308	389,368
	319	389,369
	321	389,370
	330	389,371
	352	389,372
	354	389,373
	408	389,374
	530	389,375
	564	389,376
	568	389,377
	571	389,378
	610	389,379
	673	389,380
	701	389,381
D8—	8	389,382
	40	389,383
	68	389,384
	70	389,385
		389,386
		389,387
	90	389,388
	99	389,389
	103	389,390
	303	389,391
	305	389,392
	310	389,393
	312	389,394
	331	389,395
	337	389,396
	346	389,397
	353	389,398
	367	389,399
	382	389,400
D9—	415	389,401
		389,402
	428	389,403
	434	389,404
	435	389,405
	448	389,406
		389,407
	451	389,408
	454	389,409
	517	389,410
	523	389,411
	524	389,412
	528	389,413
	542	389,414
	566	389,415
D10—	32	389,416
	40	389,417
	66	389,418
	78	389,419
	114	389,420
	116	389,421
		389,422
D11—	37	389,423
	88	389,424
	90	389,425
	216	389,426
D12—	6	389,427
	7	389,428
		389,429
		389,430
		389,431
		389,432
		389,433
		389,434
		389,435
	92	389,436
	96	389,437
	98	389,438
	102	389,439
	120	389,440
	133	389,444
	136	389,441
	162	389,442
	187	389,443
	208	389,446
	209	389,447
		389,448
	211	389,445
	220	389,449
	223	389,450
	401	389,451
	415	389,452
D13—	100	389,453
	102	389,454
	103	389,455
		389,456
	133	389,457
		389,458
	143	389,459
	155	389,460
	164	389,461
D14—	100	389,462
		389,463
		389,464
		389,465
	105	389,466
	107	389,467
		389,468
	114	389,469
		389,470
	114.2	389,471
	114.3	389,472
	114.4	389,473
		389,474
	115	389,475
	138	389,476
		389,477
		389,478
	151	389,479
	168	389,480
	191	389,481
	198	389,482
	214	389,483
		389,484
	221	389,485
		389,486
		389,487
	247	389,488
D15—	9	389,489
	15	389,490
	17	389,491
	31	389,492
	122	389,493
	133	389,494
	134	389,495
	139	389,496
		389,497
	150	389,498
D16—	132	389,499
	202	389,500
		389,501
	209	389,502
	230	389,503
	321	389,504
	326	389,505
	332	389,506
D17—	1	389,507
	20	389,508
D18—	17	389,509
	19	389,510
	56	389,511
		389,512
D19—	6	389,513
	32	389,514
	36	389,515
		389,516
		389,517
		389,518
	49	389,519
	85	389,520
D20—	9	389,521
	10	389,522
	18	389,523
	41	389,524
	42	389,525
	43	389,526
D21—	6	389,527
	37	389,528
	48	389,529
	59	389,530
		389,531
	71	389,532
	74	389,533
	129	389,534
		389,535
	134	389,536
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PATENTS

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5,709,416
5,709,596
5,710,360
5,710,687
5,710,722
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William Daley, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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January 27, 1998

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1205 O.G. 4, on December 2, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1997, and were announced in the *Official Gazette* at 1201 O.G. 63, on August 19, 1997.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1998, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	49.00	98.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	360.00	720.00
USPTO was ISA but not IPEA	395.00	790.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	535.00	1070.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	465.00	930.00
Other National fees		
— For each independent claim in excess of 3	41.00	82.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	135.00	270.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Nov. 10, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 24, 1995 for which maintenance fees due at 3 years

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and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,383,235 through 5,384,912
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 22, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,985,932 through 4,987,607
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 20, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,637,074 through 4,638,508
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $525.00
By other than a small entity $1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,050.00
By other than a small entity $2,100.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,580.00
By other than a small entity $3,160.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional $1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 19, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,993	07/612,438	07/14/92
4,880,621	(07/152,376)	(11/14/89)
4,553,273	06/555,362	11/19/85
4,553,280	06/602,574	11/19/85
4,553,290	06/577,966	11/19/85
4,553,309	06/654,567	11/19/85
4,553,316	06/588,630	11/19/85
4,553,322	06/610,946	11/19/85
4,553,323	06/563,260	11/19/85
4,553,336	06/494,855	11/19/85
4,553,337	06/568,837	11/19/85
4,553,351	06/473,253	11/19/85
4,553,354	06/614,100	11/19/85
4,553,356	06/587,705	11/19/85
4,553,357	06/587,451	11/19/85
4,553,360	06/514,527	11/19/85
4,553,361	06/627,825	11/19/85
4,553,362	06/458,392	11/19/85
4,553,376	06/521,779	11/19/85
4,553,377	06/615,082	11/19/85
4,553,384	06/683,229	11/19/85
4,553,387	06/406,510	11/19/85
4,553,397	06/506,708	11/19/85
4,553,399	06/597,120	11/19/85
4,553,405	06/559,677	11/19/85
4,553,407	06/560,612	11/19/85
4,553,413	06/574,103	11/19/85
4,553,422	06/678,588	11/19/85
4,553,431	06/605,500	11/19/85
4,553,434	06/524,514	11/19/85
4,553,436	06/440,462	11/19/85
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4,553,446	06/547,529	11/19/85
4,553,454	06/555,532	11/19/85
4,553,486	06/453,713	11/19/85
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4,553,491	06/646,890	11/19/85
4,553,507	06/404,298	11/19/85
4,553,508	06/456,036	11/19/85
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4,554,335	06/584,600	11/19/85
4,554,340	06/703,059	11/19/85
4,554,353	06/637,633	11/19/85

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4
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27
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Patent Number	Serial Number	Issue Date
4,554,360	06/594,678	11/19/85
4,554,372	06/642,860	11/19/85
4,554,376	06/659,861	11/19/85
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4,554,559	06/504,104	11/19/85
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4,554,567	06/477,278	11/19/85
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4,554,580	06/503,252	11/19/85
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4,554,597	06/548,415	11/19/85
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4,554,616	06/627,047	11/19/85
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4,554,623	06/578,514	11/19/85
4,554,625	06/504,206	11/19/85
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4,879,813	07/179,317	11/14/89
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4,879,816	07/261,095	11/14/89
4,879,817	07/116,142	11/14/89
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4,879,862	07/130,372	11/14/89
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4,880,064	07/117,156	11/14/89
4,880,069	07/238,249	11/14/89
4,880,072	07/153,431	11/14/89

Patent Number	Serial Number	Issue Date
4,880,077	07/264,457	11/14/89
4,880,082	07/200,124	11/14/89
4,880,097	07/173,719	11/14/89
4,880,099	07/259,036	11/14/89
4,880,100	07/192,000	11/14/89
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4,880,117	07/234,956	11/14/89
4,880,118	07/303,138	11/14/89
4,880,120	07/229,839	11/14/89
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Patent Number	Serial Number	Issue Date
4,880,696	07/211,942	11/14/89
4,880,699	07/339,903	11/14/89
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Patent Number	Serial Number	Issue Date
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5,261,747	07/903,012	11/16/93
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5,261,749	07/929,646	11/16/93
5,261,756	07/951,303	11/16/93
5,261,763	07/813,202	11/16/93
5,261,764	07/920,859	11/16/93
5,261,771	07/894,624	11/16/93
5,261,773	07/809,000	11/16/93
5,261,781	07/751,580	11/16/93
5,261,783	07/805,094	11/16/93
5,261,784	07/605,428	11/16/93
5,261,785	07/924,509	11/16/93
5,261,788	07/976,567	11/16/93
5,261,790	07/830,146	11/16/93
5,261,791	08/014,142	11/16/93
5,261,793	07/924,982	11/16/93

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			5,262,243	07/759,525	11/16/93
			5,262,246	07/633,236	11/16/93
5,261,799	07/862,923	11/16/93	5,262,254	08/040,057	11/16/93
5,261,812	07/634,209	11/16/93	5,262,273	07/846,300	11/16/93
5,261,813	07/911,431	11/16/93	5,262,294	07/908,518	11/16/93
5,261,818	07/912,167	11/16/93	5,262,298	07/558,899	11/16/93
5,261,819	08/018,844	11/16/93	5,262,301	07/817,025	11/16/93
5,261,821	07/988,414	11/16/93	5,262,304	07/629,454	11/16/93
5,261,825	07/961,665	11/16/93	5,262,307	07/834,590	11/16/93
5,261,835	07/952,659	11/16/93	5,262,314	07/755,925	11/16/93
5,261,852	07/931,148	11/16/93	5,262,320	07/921,920	11/16/93
5,261,853	07/992,589	11/16/93	5,262,331	07/720,513	11/16/93
5,261,855	07/802,322	11/16/93	5,262,333	07/898,238	11/16/93
5,261,864	07/856,629	11/16/93	5,262,351	07/734,671	11/16/93
5,261,865	07/896,075	11/16/93	5,262,381	08/046,360	11/16/93
5,261,866	07/746,905	11/16/93	5,262,386	07/811,382	11/16/93
5,261,868	07/868,633	11/16/93	5,262,396	07/882,525	11/16/93
5,261,872	07/877,904	11/16/93	5,262,402	07/768,852	11/16/93
5,261,875	07/818,045	11/16/93	5,262,405	07/658,330	11/16/93
5,261,888	07/596,158	11/16/93	5,262,410	07/740,420	11/16/93
5,261,897	07/621,882	11/16/93	5,262,412	08/028,845	11/16/93
5,261,898	07/611,764	11/16/93	5,262,413	08/011,208	11/16/93
5,261,902	07/889,257	11/16/93	5,262,417	07/679,069	11/16/93
5,261,906	07/804,052	11/16/93	5,262,422	08/019,736	11/16/93
5,261,911	07/911,105	11/16/93	5,262,434	07/929,849	11/16/93
5,261,917	07/838,359	11/16/93	5,262,435	07/833,282	11/16/93
5,261,919	07/942,119	11/16/93	5,262,438	07/906,406	11/16/93
5,261,923	07/872,442	11/16/93	5,262,441	07/951,842	11/16/93
5,261,930	07/873,145	11/16/93	5,262,442	07/812,937	11/16/93
5,261,933	07/743,113	11/16/93	5,262,444	07/985,376	11/16/93
5,261,936	07/842,123	11/16/93	5,262,463	08/004,219	11/16/93
5,261,943	07/807,016	11/16/93	5,262,473	07/800,411	11/16/93
5,261,945	07/916,727	11/16/93	5,262,478	07/965,522	11/16/93
5,261,958	07/743,990	11/16/93	5,262,483	07/964,097	11/16/93
5,261,962	07/893,010	11/16/93	5,262,493	07/546,138	11/16/93
5,261,963	07/803,340	11/16/93	5,262,497	07/894,646	11/16/93
5,261,969	07/869,294	11/16/93	5,262,520	07/620,823	11/16/93
5,261,970	07/865,072	11/16/93	5,262,521	07/714,540	11/16/93
5,261,977	07/976,534	11/16/93	5,262,524	07/793,051	11/16/93
5,261,981	07/933,193	11/16/93	5,262,525	07/853,954	11/16/93
5,261,984	07/823,504	11/16/93	5,262,526	07/811,533	11/16/93
5,261,985	07/882,069	11/16/93	5,262,537	08/033,522	11/16/93
5,261,993	07/894,949	11/16/93	5,262,540	08/059,519	11/16/93
5,261,997	07/842,996	11/16/93	5,262,541	07/990,694	11/16/93
5,261,999	07/697,139	11/16/93	5,262,550	07/876,772	11/16/93
5,262,003	07/762,547	11/16/93	5,262,562	07/835,876	11/16/93
5,262,009	07/875,934	11/16/93	5,262,566	07/988,569	11/16/93
5,262,013	07/731,068	11/16/93	5,262,574	07/793,879	11/16/93
5,262,024	07/683,973	11/16/93	5,262,575	07/925,342	11/16/93
5,262,025	07/745,308	11/16/93	5,262,586	07/838,571	11/16/93
5,262,038	07/745,292	11/16/93	5,262,587	07/748,108	11/16/93
5,262,039	07/961,346	11/16/93	5,262,591	07/901,291	11/16/93
5,262,049	07/951,975	11/16/93	5,262,592	07/901,633	11/16/93
5,262,058	07/768,271	11/16/93	5,262,596	07/776,633	11/16/93
5,262,062	07/232,429	11/16/93	5,262,598	07/846,034	11/16/93
5,262,063	07/882,774	11/16/93	5,262,599	07/900,652	11/16/93
5,262,074	07/886,370	11/16/93	5,262,600	07/785,687	11/16/93
5,262,078	07/683,954	11/16/93	5,262,604	07/681,030	11/16/93
5,262,080	07/737,651	11/16/93	5,262,610	07/677,048	11/16/93
5,262,081	07/657,022	11/16/93	5,262,611	07/707,526	11/16/93
5,262,122	07/804,529	11/16/93	5,262,613	07/764,530	11/16/93
5,262,124	07/751,935	11/16/93	5,262,618	07/822,192	11/16/93
5,262,143	07/896,380	11/16/93	5,262,619	07/927,464	11/16/93
5,262,152	07/890,615	11/16/93	5,262,620	07/834,236	11/16/93
5,262,154	07/569,653	11/16/93	5,262,624	08/013,150	11/16/93
5,262,165	07/828,859	11/16/93	5,262,631	07/736,498	11/16/93
5,262,171	07/796,999	11/16/93	5,262,638	07/761,198	11/16/93
5,262,181	07/987,548	11/16/93	5,262,645	07/754,475	11/16/93
5,262,185	07/845,735	11/16/93	5,262,646	07/736,055	11/16/93
5,262,196	07/881,742	11/16/93	5,262,650	07/792,109	11/16/93
5,262,198	07/682,181	11/16/93	5,262,665	07/868,732	11/16/93
5,262,202	07/370,412	11/16/93	5,262,676	07/766,581	11/16/93
5,262,205	07/886,229	11/16/93	5,262,677	07/782,291	11/16/93
5,262,208	07/864,435	11/16/93	5,262,693	07/896,769	11/16/93
5,262,210	07/890,860	11/16/93	5,262,694	07/642,166	11/16/93
5,262,215	07/901,192	11/16/93	5,262,696	07/726,441	11/16/93
5,262,220	07/716,957	11/16/93	5,262,714	08/033,447	11/16/93
5,262,230	07/531,574	11/16/93	5,262,719	07/762,886	11/16/93
5,262,241	07/839,800	11/16/93	5,262,722	07/862,699	11/16/93

Patent Number	Serial Number	Issue Date			
			5,262,938	07/614,424	11/16/93
			5,262,940	07/571,171	11/16/93
5,262,723	07/727,203	11/16/93	5,262,942	07/533,649	11/16/93
5,262,730	07/344,592	11/16/93	5,262,952	07/658,859	11/16/93
5,262,731	07/869,807	11/16/93	5,262,962	07/742,903	11/16/93
5,262,745	07/825,986	11/16/93	5,262,965	07/265,422	11/16/93
5,262,747	08/015,711	11/16/93	5,262,977	07/827,180	11/16/93
5,262,753	07/917,947	11/16/93	5,263,017	07/835,083	11/16/93
5,262,756	07/670,029	11/16/93	5,263,028	07/826,336	11/16/93
5,262,771	07/865,759	11/16/93	5,263,036	07/822,412	11/16/93
5,262,786	07/957,124	11/16/93	5,263,039	07/885,438	11/16/93
5,262,788	07/590,809	11/16/93	5,263,041	07/858,836	11/16/93
5,262,791	07/940,081	11/16/93	5,263,056	07/751,365	11/16/93
5,262,795	07/472,015	11/16/93	5,263,057	07/697,999	11/16/93
5,262,800	07/869,217	11/16/93	5,263,062	07/836,809	11/16/93
5,262,804	07/667,194	11/16/93	5,263,069	07/800,030	11/16/93
5,262,805	07/907,318	11/16/93	5,263,072	07/890,777	11/16/93
5,262,806	07/832,825	11/16/93	5,263,075	07/820,156	11/16/93
5,262,808	07/803,101	11/16/93	5,263,077	07/691,966	11/16/93
5,262,815	07/888,808	11/16/93	5,263,089	07/781,769	11/16/93
5,262,837	07/964,257	11/16/93	5,263,090	07/829,312	11/16/93
5,262,844	07/836,329	11/16/93	5,263,096	07/678,498	11/16/93
5,262,845	07/894,991	11/16/93	5,263,102	07/770,316	11/16/93
5,262,852	07/844,660	11/16/93	5,263,106	07/899,530	11/16/93
5,262,875	07/876,363	11/16/93	5,263,114	07/789,941	11/16/93
5,262,895	07/794,050	11/16/93	5,263,118	07/492,658	11/16/93
5,262,902	07/970,583	11/16/93	5,263,131	07/564,853	11/16/93
5,262,916	07/987,137	11/16/93	5,263,137	07/869,837	11/16/93
5,262,925	07/896,522	11/16/93	5,263,150	07/511,636	11/16/93
5,262,929	07/904.573	11/16/93	5,263,165	07/480,442	11/16/93
5,262,931	07/885,861	11/16/93	5,263,180	07/637,131	11/16/93
5,262,932	07/845,186	11/16/93	5,263,181	07/599,583	11/16/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 10/17/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,568,122	06/665,888	10/29/84	02/04/86	10/22/97
4,681,839	06/422,038	09/23/82	07/21/87	10/22/97
4,803,954	07/037,580	04/13/87	02/14/89	10/22/97
4,823,390	07/154,304	02/10/88	04/18/89	10/22/97
4,840,192	06/859,791	05/05/86	06/20/89	10/20/97
5,019,087	06/915,512	10/06/86	05/28/91	10/21/97
5,025,802	07/477,319	02/08/90	06/25/91	10/21/97
5,027,799	07/598,651	10/18/90	07/02/91	10/21/97
5,194,537	07/585,689	09/19/90	03/16/93	10/22/97

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 10/24/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,644,706	06/822,328	01/27/86	02/24/87	10/30/97
4,712,570	06/838,556	03/11/86	12/15/87	10/29/97
4,739,527	06/883,073	07/08/86	04/26/88	10/30/97
4,794,824	07/058,860	06/05/87	01/03/89	10/29/97
4,813,671	06/910,051	09/22/86	03/21/89	10/30/97
4,835,591	07/138,949	12/29/87	05/30/89	10/29/97
4,851,347	07/052,254	05/20/87	07/25/89	10/29/97
5,040,439	07/320,886	03/09/89	08/20/91	10/29/97
5,123,465	07/246,451	09/19/88	06/23/92	10/29/97
5,143,540	07/584,548	09/18/90	09/01/92	10/29/97
5,235,314	07/815,823	12/30/91	08/10/93	10/30/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,474,073, Re. S.N. 08/979,497, Nov. 26, 1997, Cl. 128/661.10, ULTRASONIC DIAGNOSTIC SCANNING FOR THREE DIMENSIONAL DISPLAY, Gary A. Schwartz, et. al., Owner of Record: *Advanced Technologies Laboratories, Inc., Bothell, Wash.*, Attorney or Agent: W. Brinton Yorks, Jr., Ex. Gp.: 3305

5,540,253, Re. S.N. 08/971,918, Nov. 18, 1997, Cl. 137/240, PLUG VALVE, Marius R. Junier, Owner of Record: *Triten*

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Corp., Houston, Tex., Attorney or Agent: James F. Weiler, Ex. Gp.: 3407

5,660,701, Re. S.N. 08/975,179, Nov. 20, 1997, Cl. 204/451, PROTEIN SEPARATIONS BY CAPILLARY ELECTROPHORESIS USING AMINO ACID-CONTAINING BUFFERS, Eli Gruschka, et. al., Owner of Record: *Bio-Rad Laboratories, Inc., Hercules, Calif.,* Attorney or Agent: M. Henry Heines, Ex. Gp.: 1102

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 336,885, Reexam. No. 90/004,851, Dec. 3, 1997, Cl. D12/203, COMBINED VEHICLE RUNNING BOARD AND FENDER FLARE UNIT, Marvin A. Hart, et. al., Owner of Record: *Prestigious Accessories, Inc., Winona, Tex.,* Attorney or Agent: Daniel V. Thompson, Thompson and Howison, Dallas, Tex., Ex. Gp.: 2904, Requester: Owner

4,584,569, Reexam. No. 90/004,842, Nov. 21, 1997, Cl. 340/566, MOTION SENSITIVE SECURITY SYSTEM, Michael J. Lopez, et. al., Owner of Record: *Directed Electronics Inc., Vista, Calif.,* Attorney or Agent: Robert E. Strauss, Santa Ana, Calif., Ex. Gp.: 2617, Requester: Code Alarm Inc.

4,694,664, Reexam. No. 90/004,844, Nov. 13, 1997, Cl. 063/012, EAR ORNAMENTATION, Carl Elsener, Owner of Record: *Friedrich Zettl, GMBH, Birkenfeld, Germany,* Attorney or Agent: J. Warren Whitesel, Laff Whitesel Conte & Saret Ltd., Chicago, Ill., Ex. Gp.: 3509, Requester: Owner

4,902,986, Reexam. No. 90/004,845, Nov. 13, 1997, Cl. 331/025, PHASED LOCKED LOOP TO PROVIDE PRECISE FREQUENCY AND PHASE TRACKING OF TWO SIGNALS, Gary J. Lesmeister, Owner of Record: *Credence Systems Corp., Fremont, Calif.,* Attorney or Agent: Smith-Hill and Bedell, Portland, Oreg., Ex. Gp.: 2502, Requester: Owner

5,061,277, Reexam. No. 90/004,850, Nov. 28, 1997, Cl. 623/002, FLEXIBLE CARDIAC VALVULAR SUPPORT PROSTHESIS, Alain Carpentier, et. al., Owner of Record: *Baxter International Inc., Deerfield, Ill.,* Attorney or Agent: H. Ross Workman, Workman Nydegger and Seeley, Salt Lake City, Utah, Ex. Gp.: 3308, Requester: Owner

5,092,813, Reexam. No. 90/004,838, Nov. 15, 1997, Cl. 452/016, APPARATUS FOR MANUFACTURING SAUSAGES OR THE LIKE, Minoru Kasai, et. al., Owner of Record: *A. Asahi Seiko A. A., Tokyo, Japan,* Attorney or Agent: Herbert I. Cantor, Evenson McKeown Edwards and Lenahan, Washington, D.C., Ex. Gp.: 3203, Requester: Donald H. Zarley, Zarley McKee Thomte Voorhees and Sease, Des Moines, Iowa

5,267,734, Reexam. No. 90/004,843, Nov. 21, 1997, Cl. 463/023, VIDEO GAME HAVING CALENDER DEPENDENT FUNCTIONALITY, Timothy D. J. Stamper, et. al., Owner of Record: *Rare Coin It, Inc., Miami, Fla.,* Attorney or Agent: Larry S. Nixon, Nixon and Vanderhye, Arlington, Va., Ex. Gp.: 3304, Requester: Owner

5,290,005, Reexam. No. 90/004,839, Nov. 14, 1997, Cl. 248/671, SUPPORTING DEVICE FOR MINIATURE MOTORS, Takeshi Akiyama, et. al., Owner of Record: *Mabuchi Motor Co., Matsuolo-Shi, Japan,* Attorney or Agent: John James McGlew, McGlew and Tuttle, Scarborough, N.Y., Ex. Gp.: 3505, Requester: Owner

5,294,497, Reexam. No. 90/004,840, Nov. 14, 1997, Cl. 429/097, BATTERY BOX USING A MINIATURE-MOTOR PACKAGE, Shinichi Muramatsu, et. al., Owner of Record: *Mabuchi Motor Co., Tokyo, Japan,* Attorney or Agent: John James McGlew, McGlew and Tuttle, Scarborough, N.Y., Ex. Gp.: 1111, Requester: Owner

5,348,061, Reexam. No. 90/004,847, Nov. 25, 1997, Cl. 141/104, TABLET ACCUMULATOR FOR AN AUTOMATED PRESCRIPTION, Archie Riley, et. al., Owner of Record: *Baxter International Inc., Deerfield, Ill.,* Attorney or Agent: Robert M. Barrett, Hill Steadman and Simpson, Chicago, Ill., Ex. Gp.: 3105, Requester: Jeffrey Nolton, Wenderoth Lind and Ponack, Washington, D.C.

5,378,844, Reexam. No. 90/004,841, Nov. 14, 1997, Cl. 544/272, 8-(1 AMINOCYCLOALKYL)-1,3-DIALKYLXANTHINE DERIVATIVES, PREPARATION PROCESS AND ANTIDEPRESSANT, NOOTROPIC AND PSYCHOSTIMULANT COMPOSITION THEREOF, Mario Bufani, et. al., Owner of Record: *Biomedica Foscama Industria, Rome, Italy,* Attorney or Agent: Charles T. Joyner, Alexandria, Va., Ex. Gp.: 1202, Requester: Owner

5,583,829, Reexam. No. 90/004,848, Nov. 25, 1997, Cl. 482/057, STATIONARY EXERCISE DEVICE, Larry Miller, Owner of Record: *Inventor,* Attorney or Agent: Ronald W. Citkowski, Gifford Krass Groh Sprinkle Patmore Anderson and Citkowski, Birmingham, Mich., Ex. Gp.: 3302, Requester: Owner

5,605,682, Reexam. No. 90/004,852, Dec. 3, 1997, Cl. 424/068, ANTIPERSPERANT AEROSOL COMPOSITION WITH HIGH SOLIDS CONTENT, Lloyd Ross, et. al., Owner of Record: *Colgate-Palmolive Co., Piscataway, N.J.,* Attorney or Agent: Richard J. Ancel, Colgate-Palmolive Co., Piscataway, N.J., Ex. Gp.: 1207, Requester: Charles P. Boukus, Jr., Arlington, Va.

5,614,209, Reexam. No. 90/004,846, Nov. 19, 1997, Cl. 424/443, MICRO ENCAPSULATED LACTOBACILLI FOR MEDICAL APPLICATIONS, Larry C. Ford, Owner of Record: *Lafor Laboratories Limited, Newport Beach, Calif.,* Attorney or Agent: Klein and Szekeres, Irvine, Calif., Ex. Gp.: 1502, Requester: Owner

5,664,697, Reexam. No. 90/004,849, Nov. 25, 1997, Cl. 221/005, AUTOMATICALLY ADVANCING PILL REGIMENT DEVICE, Lawrence E. Lamblet, Jr., Owner of Record: *Ortho Pharmaceutical Corp., Raritan, N.J.,* Attorney or Agent: Paul A. Coletti/Audley A. Ciamporcero, Jr., Johnson and Johnson, New Brunswick, N.J., Ex. Gp.: 3101, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 18, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
115,434	71/098,348	02/13/1917
115,450	71/099,024	02/13/1917
115,462	71/098,986	02/13/1917
343,004	71/374,855	02/09/1937
343,024	71/380,178	02/09/1937
343,027	71/380,514	02/09/1937
343,064	71/382,098	02/09/1937
343,106	71/382,998	02/09/1937
343,110	71/383,108	02/09/1937
343,133	71/383,395	02/09/1937
343,134	71/383,396	02/09/1937
343,135	71/383,409	02/09/1937
343,139	71/383,536	02/09/1937
343,142	71/383,609	02/09/1937
343,144	71/383,684	02/09/1937
343,151	71/383,776	02/09/1937
343,153	71/383,805	02/09/1937
343,178	71/384,118	02/09/1937
343,180	71/384,124	02/09/1937
343,187	71/384,031	02/09/1937
343,193	71/384,086	02/09/1937
343,198	71/384,403	02/09/1937
641,198	72/007,543	02/12/1957
641,201	72/008,929	02/12/1957
641,208	72/009,612	02/12/1957
641,209	72/009,704	02/12/1957
641,217	72/010,049	02/12/1957
641,223	72/006,630	02/12/1957
641,225	71/698,413	02/12/1957
641,226	71/699,053	02/12/1957
641,227	72/003,502	02/12/1957
641,229	72/005,168	02/12/1957
641,237	72/007,743	02/12/1957
641,240	72/008,662	02/12/1957
641,289	72/007,120	02/12/1957
641,290	72/007,184	02/12/1957
641,292	72/008,162	02/12/1957
641,298	72/010,178	02/12/1957
641,311	71/697,188	02/12/1957
641,315	72/004,588	02/12/1957
641,323	72/007,973	02/12/1957
641,356	72/009,797	02/12/1957
641,363	72/001,573	02/12/1957
641,364	72/001,865	02/12/1957
641,367	72/007,090	02/12/1957
641,369	72/008,563	02/12/1957
641,377	72/005,942	02/12/1957
641,379	72/009,594	02/12/1957
641,382	72/009,673	02/12/1957
641,384	72/009,815	02/12/1957
641,387	71/690,463	02/12/1957
641,393	72/003,858	02/12/1957
641,395	72/010,883	02/12/1957
641,398	72/011,077	02/12/1957
641,399	72/011,078	02/12/1957
641,401	72/011,080	02/12/1957
641,413	72/009,702	02/12/1957
641,415	72/010,143	02/12/1957
641,419	72/010,220	02/12/1957
641,423	71/692,545	02/12/1957
641,431	72/007,164	02/12/1957
641,434	72/008,488	02/12/1957
641,437	72/008,552	02/12/1957
641,439	72/008,930	02/12/1957
641,442	72/009,592	02/12/1957
641,445	72/010,051	02/12/1957
641,446	72/010,783	02/12/1957
641,447	72/010,879	02/12/1957
641,468	72/011,486	02/12/1957
641,484	71/699,219	02/12/1957
641,491	72/000,352	02/12/1957
641,495	72/003,671	02/12/1957
641,509	72/007,641	02/12/1957
641,513	72/009,907	02/12/1957
641,519	72/003,261	02/12/1957
641,522	72/013,783	02/12/1957
641,524	72/010,890	02/12/1957
641,527	71/695,434	02/12/1957
641,530	72/002,315	02/12/1957
641,533	72/004,418	02/12/1957
641,544	72/003,164	02/12/1957
641,545	71/695,192	02/12/1957
641,546	71/692,053	02/12/1957
641,555	72/006,127	02/12/1957
641,557	71/677,403	02/12/1957
641,558	72/013,032	02/12/1957
641,568	71/691,645	02/12/1957
641,572	72/013,771	02/12/1957
1,054,831	73/067,139	12/21/1976
1,059,059	73/065,538	02/15/1977
1,059,690	72/454,142	02/15/1977

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Jan Anderson) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.497. The international application number is PCT/SE95/00181 and was filed on 22 February 1995, in the names of Jan Anderson, Roland Ivarsson, and Rolf Soder for the invention entitled Method And Device For Imparting Anti-friction Properties To A Metallic Wire. The national stage application number is 08/669,425 and has a 35 U.S.C. 371(c) date of 25 November 1996.

Notice is hereby given of the filing of an national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Steven J. Kruy) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.497. The international application number is PCT/US97/09561 and was filed on 05 June 1997, in the names of Andrew T. Perlman, Mark S. Land, Steven J. Kruy, and Edward A. Walvick for the invention entitled System And Method For Establishing a Call Telecommunications Path.The national stage application number is 08/930,595 and has a 35 U.S.C. 371(c) date of 07 January 1998.

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37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 1.47 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
29/029,854	Oct. 18, 1995	Ellsworth S. Kershner	Games Apparatus
29/041,657	July 20, 1995	Richard D. Becker	Window Net

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Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
29/044,705	Sept. 29, 1995	Thomas Majer	Wall Mountable Compact Display Case
29/048,443	Dec. 29, 1995	Sze Lee Chua King Hoe Goh Jui Kun Kuo	Telephone Set
29/048,444	Dec. 29, 1995	Sze Lee Chua King Hoe Goh Jui Kun Kuo	Telephone Handset
29/048,446	Dec. 29, 1995	Sze Lee Chua King Hoe Goh	Telephone Handset
29/048,447	Dec. 29, 1995	Sze Lee Chua King Hoe Goh	Telephone Set
29/048,448	Dec. 29, 1995	Sze Lee Chua King Hoe Goh	Cordless Telephone Base
29/051,638	Mar. 14, 1996	Edmund F. Petruzzelli	Direct Broadcast Satellite Antenna Feedhorn with Mounting Arm
29/053,757	Apr. 30, 1996	Robert A. Chieda	Knob
29/053,758	Apr. 30, 1996	Robert A. Chieda	Knob
29/053,759	Apr. 30, 1996	Robert A. Chieda	Pull
29/053,760	Apr. 30, 1996	Robert A. Chieda	Pull
29/053,761	Apr. 30, 1996	Robert A. Chieda	Knob
29/053,762	Apr. 30, 1996	Robert A. Chieda	Pull
29/053,766	Apr. 30, 1996	Robert A. Chieda	Pull
29/053,767	Apr. 30, 1996	Robert A. Chieda	Pull
29/053,817	Apr. 30, 1996	Robert A. Chieda	Knob
29/057,217	July 19, 1996	Timothy S. Goins	Plastic Food Container
08/191,425	Feb. 3, 1994	Jose Carrion	Tool for Compression of Motor/Generator Windings
08/379,870	Jan. 27, 1995	Gerard Chollet	Method and A System for Recognizing Speech
08/415,436	Apr. 3, 1995	Albert Montseny Banajes	A System for Controlling Fusion Welding with Filter Material
08/446,145	May 22, 1995	Henry G. Grey	Electroforming Device and Process
08/503,956	July 19, 1995	Robert William Call Robert Vaughn Jones Dennis Carl	Method and Apparatus for Increasing the Speed of a Full Pulsipher Code Book Search in a Quantizer
08/552,095	Nov. 2, 1995	Arnold T. Nielsen David J. Vanderah	Process for Preparing Caged Explosive High Density Polymorph
08/559,517	Nov. 15, 1995	David M. Gresham Elizabeth Sanders Alessandro A. Subrizi	User Interface for a Telephone Terminal

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/561,934	Nov. 22, 1995	Ronald Lee Jones	Process for Preventing the Degradation of Water Soluble Packaging Films...Water System
08/584,215	Jan 4, 1996	Arthur C. Lamb	Pop-Up Keyboard System for Entering Handwritten Data Into Computer Generated Forms
08/594,660	Feb. 2, 1996	Joseph S. Christie Jean M. Christie	Boardband Telecommunications System
08/594,662	Feb. 2, 1996	Joseph S. Christie Jean M. Christie	ATM Direct Access Line System
08/617,667	Apr. 1, 1996	Dr. James G. Davidson Robert Scarbrough	Complex Magnetic Field Generating Device
08/620,438	Mar. 22, 1996	William K. Boyd	Hose Fatigue Indicator

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Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Pinnacle Cooperative Corp., Rochester, N.Y., Reg. No. 1,704,875, for the mark "Peak Quality and Design", Canc. No. 26,320.

Fortune Four, Inc., Los Angeles, Calif., Reg. No. 1,250,318, for the mark "Looking Good!", Canc. No. 26,779.

HSD, Inc., Houston, Tex., Registration No. 1,281,917 for the mark CONFETTI, Canc. No. 26,809.

Adam Beall, Inc., New York, N.Y., Registration No. 1,178,266, for the mark "AB AND DESIGN", Cancellation No. 26,847.

Edmar Technical Systems, Inc., Alexandria, Va., Reg. No. 1,741,298 for the mark "SOUNDTRAP", Cnc. No. 26,792.

R.J. Enterprises, Inc. dba Cupid's Pizza & Pasta, Little Rock, Ark., Reg. Nos. 1,480,106 and 1,480,108 for the marks "Cupid's (stylized)" and "Cupid's Pizza & Pasta and design", Canc. No. 26,678.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Certificates of Correction for the Week of January 27, 1998

B1-4,468,339
D. 380,142
D. 384,701
D. 384,808
D. 386,870
P. 10,116
4,821,723
4,929,700
5,234,404
5,270,327
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5,664,321
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5,665,071
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5,669,546
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5,670,365
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5,676,080
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5,676,971
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5,678,948
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5,683,959
5,684,029
5,685,176
5,686,077
5,686,541
5,686,554
5,688,724
5,691,530
5,691,734

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 8-12, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-8	EX	74/543,221	T/J Knit Enterprises, Inc.	whether the matter presented is capable of registration on the Supp. Reg. [genericness]	Refusal Reversed		"COTTON WEAR" [sweaters, knit tops and hosiery made of cotton in whole or substantial part]		No
12-8	OPP	97,601	Elvis Presley Enterprises, Inc. v. Paul M. Driscoll	2(d)	Opposition Sustained	"ELVIS" [prerecorded audio magnetic tapes and phonograph albums; posters and record album jackets; metal key rings with attached tags; plastic, stainless steel and/or sterling silver collector's spoons]; "ELVIS PRESLEY" [dolls, guitars, photo albums, post cards, note pads, etc.; beverageware, jewelry, posters, magnetic tapes and phonograph records, clocks and watches] and two other marks	"VELVIS" [entertainment in the nature of magic and comedy shows]		No
12-9	EX	74/543,923	SunDisk Corp.	2(e)(1)	Refusal Reversed		"COMPACTFLASH" [solid state memory cartridge sold blank or carrying data compression software]		No
12-10	EX	74/469,383	Louise A. Rollins	2(d)	Refusal Affirmed		"CASTMASTER" [threaded metal pins and plugs used in the repair of cracks in metal castings]	"CAST MASTERS" (in stylized lettering) [precision metal castings]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-10	OPP (SJ)	88,432	Trimedyne, Inc. v. Myriadlase, Inc.	2(d) [priority]	Opposition Dismissed [applicant's cross-motion for summary judgment granted]	"SIDEFIRE" [fiber optic surgical laser probes for use in medical procedures]	"SIDEFIRE" [surgical laser delivery system consisting essentially of optical fibers, connectors, operating tips, and parts and fittings therefor, sold as a unit for use with medical lasers]		Yes
12-10	OPP (SJ)	95,500	Univisa, Inc. v. Bonnie C. Bellin	2(d)	Opposition Sustained [opposer's motion for summary judgment granted]	"ECO" [television news broadcasting services]	"ECO CHANNEL" (and design) [entertainment services in the nature of ongoing television and computer programs in the field of centralized information on environment, health and cultural issues]		No
12-10	EX	74/636,465	Ecogroup, Inc.	2(d)	Refusal Affirmed		"BUSINESS EDGE"[publications, namely, customized reports which educate consumers regarding their energy usage fluctuations; business services, namely, the accumulation of relevant data and the preparation of a report based thereon to educate consumers regarding their energy usage fluctuations]	"BUSINESSEDGE, INC." [business consulting services]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-11	EX	74/528,803	Kohl's Department Stores, Inc.	2(d)	Refusal Affirmed		"M SPORT" [athletic footwear and casual socks for men, women, and children]	"M.M. SPORT" [clothing, namely, men's, women's, and children's tops, bottoms, jackets, dresses, shirts, sweatshirts, sweatpants, and vests]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Washington, D.C. 20231

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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

All information is available for use by the public free of charge. However, there may be charges associated with the use of on-line systems, photocopying and related services.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	Not Yet Operational
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239

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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	Not Yet Operational
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(864) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	(802) 656-2542
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
VACANT, Assistant Commissioner for Patents
NICHOLAS P. GODICI, (Acting) Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/31/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	04/30/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	04/08/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	04/03/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	08/03/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	09/27/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/05/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	01/05/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	11/07/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	04/08/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director	305-3900	06/02/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-3293	01/19/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	10/31/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	06/04/96
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	12/13/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	12/18/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	08/27/96

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:

(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).

(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).

(3) All design patents are granted for a term of 14 years from the date of the grant.

However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of December 1, 1997

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/17/97	10/01/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/05/97	09/29/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/14/97	11/06/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/97	10/15/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/05/97	10/01/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/06/97	07/10/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/16/97	10/07/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/97	09/04/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/97	10/17/97
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	11/06/97	—0—
Renewals (All Classes)	10/24/97	—0—
Section 12(c) Publications (All Classes)	10/02/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JANUARY 27, 1998

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,363,877 (3429th)

Patent Not Issued For This Number

B1 4,609,548 (3430th)
VACCINES FOR PSEUDORABIES DISEASE AND METHODS FOR USE OF SAME
Malon Kit, and Saul Kit, both of Houston, Tex., assignors to Novagene, Inc., Houston, Tex.
Reexamination Request No. 90/004,117, Jan. 24, 1996.
Reexamination Certificate for Patent 4,609,548, issued Sep. 2, 1986, Ser. No. 684,303, Dec. 20, 1984.
Division of Ser. No. 567,018, Dec. 30, 1983, Pat. No. 4,514,497.
Int. Cl.^{6} A61K *39/245;39/205*
U.S. Cl. 424—205.1
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **65–68**, **70–79**, **81–102**, **104–126** are confirmed.

Claims **1–64** are cancelled.

Claims **69**, **80**, **103** are determined to be patentable as amended.

New claims **127–153** are added and determined to be patentable.

65. A modified live virus vaccine for pseudorabies disease comprising:
(1) a pharmaceutically acceptable amount of a temperature-resistant pseudorabies virus which fails to produce any functional TK as a result of a deletion in the tk gene; and
(2) a pharmaceutically acceptable carrier or diluent.

B1 5,547,995 (3431st)
USE OF SELEGILINE IN VETERINARY MEDICINE
Marie-Sophie Filhol, Talence, and Thierny G. Pobel, Vayres, both of France, assignors to Sanofi Sante Nutrition Animale, Libourne, France
Reexamination Request No. 90/004,502, Dec. 26, 1996.
Reexamination Certificate for Patent 5,547,995, issued Aug. 20, 1996, Ser. No. 235,965, May 2, 1994.
Claims priority, application France, May 4, 1993, 93 05305; Dec. 22, 1993, 93 15495
Int. Cl.^{6} A61K *31/135*
U.S. Cl. 514—654
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

1. A method for the treatment of a behavioral disorder with change of mood comprising administering to a mammal in need thereof selected from dogs and cats, an active ingredient selected from selegiline, its racemate, the laevorotatory isomer, mixture thereof in any proportions and pharmaceutically acceptable salts thereof, in association with a pharmaceutically acceptable carrier.

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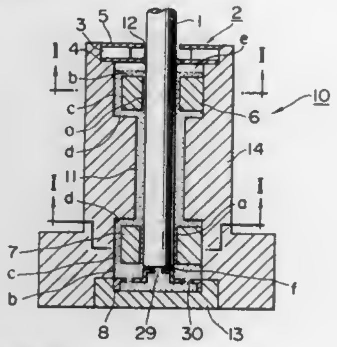
REISSUES

JANUARY 27, 1998

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,718
BEARING APPARATUS
Katsutoshi Nii, Hitachi; Kazuhiko Kawaike, Katsuta; Hiroo Hiroyama, and Satoshi Uno, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Original No. 4,938,611, dated Jul. 3, 1990, Ser. No. 368,836, Jun. 20, 1989. Continuation of Ser. No. 908,419, Jul. 6, 1992, abandoned. Application for reissue Sep. 14, 1995, Ser. No. 528,059
Claims priority, application Japan, Jun. 22, 1988, 63-152333
Int. Cl.^{6} F16C *33/82;32/06*
U.S. Cl. 384—133 **26 Claims**



21. A bearing apparatus comprising:
a housing formed of a non-magnetizable material and having a bottom portion;
a fluid lubricating type radial bearing means disposed with respect to said housing and having a magnetic fluid sealing section and a radial bearing section; and
a rotating shaft of a permeable material rotatably supported by said radial bearing means so as to extend through said radial bearing means,
wherein said magnetic fluid sealing section is disposed on an open side of said housing with a predetermined spacing away from said radial bearing section, whereby a space is provided between said magnetic fluid sealing section and a liquid surface of magnetic fluid lubricant filled in said radial bearing section.

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PLANT PATENTS

GRANTED JANUARY 27, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,211
CHRYSANTHEMUM PLANT NAMED 'ALCALA'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 21, 1996, Ser. No. 755,402
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Alcala', as illustrated and described.

10,212
CHRYSANTHEMUM PLANT NAMED 'BLUE JAY'
Peter Wain, VR Portsmouth, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom
Filed Oct. 18, 1996, Ser. No. 731,781
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Blue Jay', as illustrated and described.

10,213
CHRYSANTHEMUM PLANT NAMED 'JENNY WREN'
Peter Wain, Portsmouth, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom
Filed Oct. 18, 1996, Ser. No. 733,727
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Jenny Wren', as illustrated and described.

10,214
CHRYSANTHEMUM PLANT NAMED 'EGRET'
Peter Wain, Portsmouth, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom
Filed Nov. 20, 1996, Ser. No. 754,069
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Egret', as illustrated and described.

10,215
CHRYSANTHEMUM PLANT NAMED 'DARK VERIA'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 25, 1996, Ser. No. 755,652
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Dark Veria', as illustrated and described.

10,216
CHRYSANTHEMUM PLANT NAMED 'ALDO'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 25, 1996, Ser. No. 754,942
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Aldo', as illustrated and described.

10,217
CHRYSANTHEMUM PLANT NAMED 'RED START'
Peter Wain, Portsmouth, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom
Filed Oct. 18, 1996, Ser. No. 733,726
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Red Start', as illustrated and described.

10,218
CHRYSANTHEMUM PLANT NAMED 'PIDOUL'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 25, 1996, Ser. No. 755,653
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—82.1 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Pidoul', as illustrated and described.

10,219
CHRYSANTHEMUM PLANT NAMED 'COBRA'
Dirk Pieters, Schierveldestraat 3A, Oosnieuwkerke, 8840 Staden, Belgium
Filed Nov. 25, 1996, Ser. No. 755,663
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Cobra', as illustrated and described.

10,220
LILY PLANT 'ALMA ATA'
Johan A. Mak, 5595 Halls Ferry Rd., Independence, Oreg. 97351
Filed Jul. 18, 1996, Ser. No. 687,004
Int. Cl.^{6} A01H *5/00*
U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its unique upright to semi-upright flowers with ascending pedicels, its lightly ruffled tepal margins, and its pure white coloration, a combination unique among Oriental hybrid lilies suited to forcing and to mass commercial cultivation.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
007–138	5,711,042
007–165	5,711,043
249–112	5,711,172
070–208	5,711,506
477–121	5,711,712
510–151	5,712,265
036–024	5,712,384
568–031	5,712,416

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GENERAL AND MECHANICAL

5,711,026

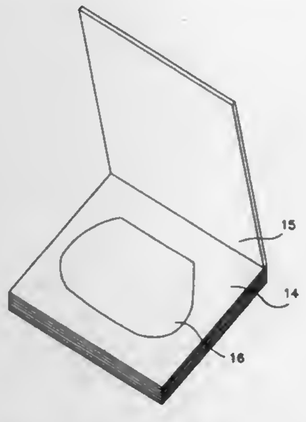
DISPOSABLE NOSE PROTECTOR ASSEMBLY

Martin Kaltman, Old Westbury; Joel A. Weingold, South Bellmore, and William Plumb, New York, all of N.Y., assignors to Queens Group, Inc., Long Island City, N.Y.

Filed Dec. 6, 1995, Ser. No. 568,415

Int. Cl.^{6} A41D *13/00*

U.S. Cl. 2—9 **3 Claims**



1. A pad comprising a plurality of backing sheets, each backing sheet being free of adhesive and having a disposable flexible sheet capable of blocking solar ultraviolet radiation releasably adhered thereto by pressure sensitive adhesive disposed on one surface of said flexible sheet, each said flexible sheet having symmetrically positioned opposing edges and a configuration conformable to the surface of a person's nose, and having a longitudinal dimension with respect to said symmetrically positioned opposed edges, sufficient to cover the entire nose, said adhesive being non-toxic and capable of releasably adhering to the human skin.

5,711,027

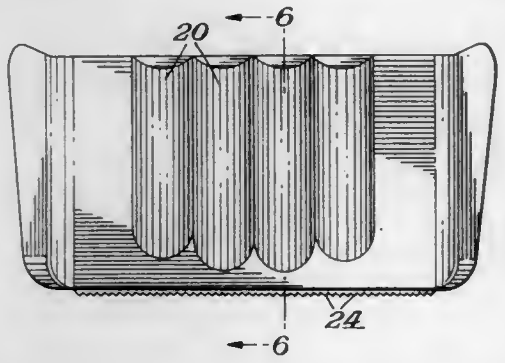
HAND AND FINGER SHIELD

Robert C. Katz, 27 Stacy Dr., Westhampton Beach, N.Y. 11978, and William T. Wilkinson, Sunset Farm, 69 Sunset Dr., Salem, N.J. 08079

Filed May 1, 1996, Ser. No. 664,933

Int. Cl.^{6} A41D *19/00*

U.S. Cl. 2—21 **17 Claims**



1. A hand and finger shield comprising a front protective wall, a bottom protective wall mounted to said front protective wall, a rear wall mounted to said bottom wall and spaced from said front protective wall, at least one interconnecting wall mounted to said bottom wall and to each of said front protective wall and said rear wall for stabilizing the connection of said walls to each other and for functioning as a finger guide to aid in the placement of the fingers of a user's hand between said front protective wall and said rear wall whereby the user's fingers are shielded when placed between said walls, and a pair of side walls extending inwardly from said front wall and upwardly from said bottom wall to create a scoop structure for said shield whereby aid shield may be selectively used as a scoop and as a scraper in addition to functioning as a shield.

5,711,028

SHIN PAD CONSTRUCTION

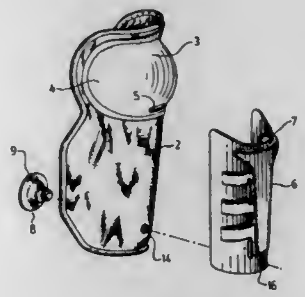
René Bourque; Rodrigue McDuff, both of Laval, and Daniel Chartrand, Deux-Montagnes, all of Canada, assignors to Canstar Sports, Inc., Canada

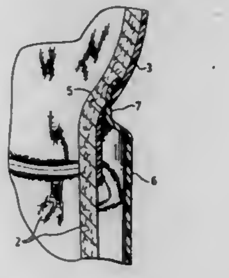
Continuation of Ser. No. 159,323, Nov. 30, 1993, abandoned.

This application Sep. 6, 1995, Ser. No. 523,909

Int. Cl.^{6} A41D *13/00*

U.S. Cl. 2—22 **13 Claims**





1. A shin pad, comprising:

an elongated flexible lining having an upper end and a lower end, adapted to lie against and wrap at least partially around a player's leg with the lower end at the player's ankle and the upper end above the player's knee;

a knee shield secured to a forward side of said lining near the upper end thereof, adapted to overlie the player's knee, a lower aspect of said knee shield having at least one lateral slot defined therein;

a shin shield adapted to overlie the player's lower leg from the ankle up to the knee shield, comprising at least one hook-shaped tab projecting from the upper end thereof, each said tab being appropriately sized to engage a corresponding slot, thereby locating the upper end of said shin shield against said lining; and

means for securing a lower portion of said shin shield against said lining.

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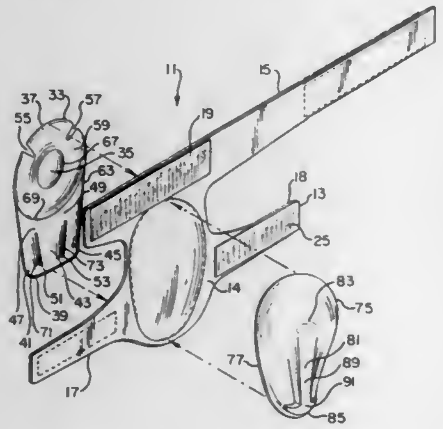
5,711,029
PROTECTIVE APPARATUS FOR DISPERSING PRESSURE APPLIED AT A JOINT

Raymond D. Visco, P.O. Box 1755-303, Nederland, Colo. 80466; Stephen R. Koschmann, 345 Sunrise La., Boulder, Colo. 80302, and Alden B. Hanson, 7046 Indian Peaks Trail, Boulder, Colo. 80301

Filed Jun. 21, 1996, Ser. No. 667,433

Int. Cl.^{6} A41D *13/00;* A61F *5/00*

U.S. Cl. 2—24 **18 Claims**



14. A knee support and cushioning apparatus for dispersing patellar pressure normally exhibited when kneeling by redistributing support so that at least some weight is borne at a user's upper shin, said apparatus comprising:

a flexible wrap including means adapted for securement of said wrap around a user's knee, said wrap having a main body shaped and positioned on said wrap so that, when said wrap is secured around the knee, said main body is proximate to the user's knee and upper shin; and

a relatively rigid yet deformable support fastened to said flexible wrap over said main body thereof, said support including a first portion adapted to conform to the user's knee and a second portion extending away from said first portion to a terminus and adapted to bear the user's upper shin, said second portion having increasingly greater material thickness in the direction of extension with greatest material thickness at said terminus and having a tee-shaped configuration at said terminus to provide greater user stability when the user is in the kneeling position.

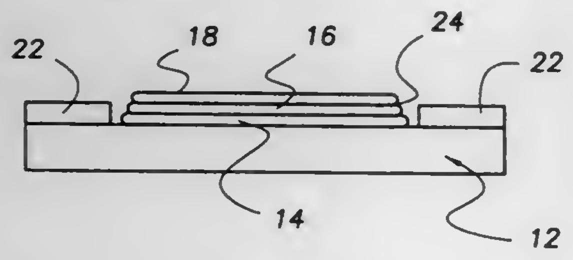
5,711,030
COLLAR SHIELD

Carol Anderson, and Norman Brisco, both of 10301 Deerfield Dr., New Orleans, La. 70127

Filed Dec. 3, 1996, Ser. No. 758,708

Int. Cl.^{6} A41D *27/16*

U.S. Cl. 2—60 **17 Claims**



1. A collar shield comprising:

an outer section having a perimeter area of an inwardly facing side thereof coated with a heat activated adhesive layer;

an inner section coated on a collar facing side with a layer of whitening agent; and

a central barrier strip formed from a flexible, moisture impermeable material positioned between said outer section and said inner section in a manner such that said layer of whitening agent is oriented away from said central barrier strip;

said outer section, said inner section, and said central barrier strip being secured together with an adhesive to form said collar shield;

said inner section and said central barrier strip being sized such that said heat activated adhesive layer extends past perimeter edges of said inner section and said central barrier strip.

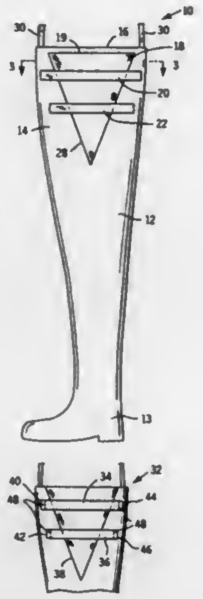
5,711,031
GUSSETED WADER

Norma Clement, Louisville, Ky., assignor to LaCrosse Footwear, Inc., LaCrosse, Wis.

Continuation-in-part of Ser. No. 635,625, Apr. 22, 1996, abandoned. This application Dec. 2, 1996, Ser. No. 757,641

Int. Cl.^{6} A41D *13/00*

U.S. Cl. 2—82 **18 Claims**



1. A wader comprising:

a lower portion comprising a waist-high wader of a water proof material;

an upper portion of a first elastic waterproof material having a first flexibility co-extensive with said lower portion and extending upwards covering a chest area of a user, said upper portion having first and second side panels of a second waterproof material having a second greater flexibility disposed on opposite sides of said wader and extending above an abdomen of the user; and

first and second adjustable fastening means on opposite sides of said wader, said fastening means being in cooperating relation with said side panels whereby adjusting said fastening means defines the width of said side panels.

5,711,032
LOCKING APPARATUS FOR A DRAW CORD

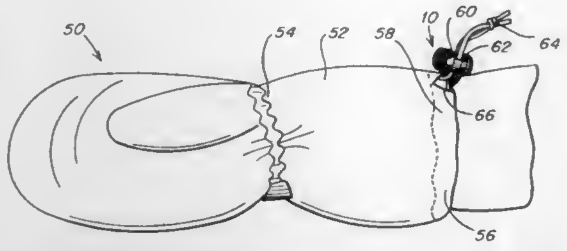
Jake Carpenter, Rte. 7 North, Manchester Center, Vt. 05255

Continuation of Ser. No. 288,145, Aug. 9, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 540,508

Int. Cl.^{6} A41D *19/01;* F16G *11/00*

U.S. Cl. 2—158 **37 Claims**

1. An article of clothing, comprising:



a first sleeve having a first axial end and a second axial end, said first sleeve having an inner surface and an outer surface;

at least one loop-shaped strap connected to the inner surface of said first sleeve;

a draw cord disposed about the second axial end of said first sleeve and extending outwardly therefrom; and

a locking apparatus that releasably locks the draw cord, the locking apparatus comprising:

a second sleeve having a first axial end and a second axial end, said first axial end being closed and having a first diameter, said second sleeve including a body with an outer surface having a second diameter, said outer surface of said body being adapted to receive the at least one loop-shaped strap, said second axial end of said second sleeve having a flange-shaped rim portion having a third diameter, said first diameter and said third diameter being greater than said second diameter; and

a plug slidably received in said second sleeve, said plug having a first axial end disposed within said second sleeve and a second axial end disposed outside of said second sleeve.

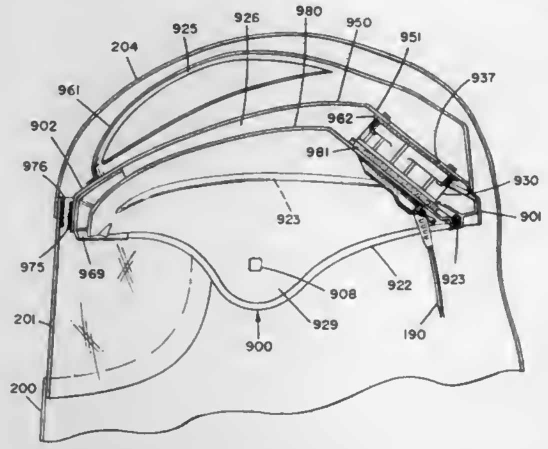
5,711,033
AIR FILTRATION AND CONTROL SYSTEM INCLUDING HEAD GEAR

Lawrence J. Green, Hungtinton Beach, and Harry Nicholas Herbert, San Juan Capistrano, both of Calif., assignors to Bio-Medical Devices, Inc., Irvine, Calif.

Filed Oct. 5, 1995, Ser. No. 539,708

Int. Cl.^{6} A42B *3/00*

U.S. Cl. 2—171.3 **23 Claims**



1. An air flow filtration system comprising,

a headgear structure adapted to be mounted on the head of a wearer,

liner means adapted to be mounted within said headgear structure to form a channel between said liner means and said headgear structure,

a shroud which is selectively mounted on said headgear structure,

a transparent shield mounted to said shroud,

fan means mounted at said headgear structure adjacent to said liner means to create fluid flow through said channel,

said fan means comprises a volute body,

impeller means rotatably mounted within said volute body, and

motor means mounted within said impeller means in order to cause said impeller means to rotate relative to said volute body,

housing means for supporting said fan means,

at least one of said liner means and said fan means is removably attachable to said headgear structure, and

filter means in said shroud whereby fluid flow created by said fan means is filtered through said filter means.

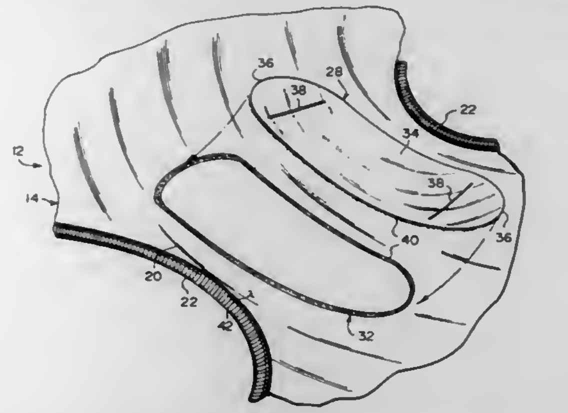
5,711,034
MENSTRUAL UNDERPANTS

Timea Cillik, 337 88th St., Brooklyn, N.Y. 11209

Filed Jan. 6, 1997, Ser. No. 778,752

Int. Cl.^{6} A41B *9/04*

U.S. Cl. 2—406 **3 Claims**



1. A menstrual underpants comprising:

a) a garment configured with a front portion, a rear portion, an inside crotch area having two leg openings and a waist opening, so as to be worn about a lower torso of a woman;

b) an elongated opening in said crotch area having a perimeter on the inside of said garment lined with hook or loop pile fastening material; and

c) an elongated pocket having a perimeter and corresponding to the size and shape of said elongated opening said protector having mating loop pile or hook material lining one side thereof for engaging the fastening material along said elongated opening to close said opening along the inside of said garment when worn;

d) said pocket having a pair of spaced transverse slot openings; and

e) an elongated absorbent pad having ends inserted into said pocket through said slots for holding said pad in place in the crotch area while said garment is being worn, said pad not moving up and down so that ends of said absorbent pad do not curl up.

5,711,035
MULTI-SPORT EYE PROTECTOR

Joseph Haslbeck, West Vancouver, Canada, assignor to Sharp Plastics Manufacturing Ltd., Canada

Filed Mar. 4, 1996, Ser. No. 610,244

Int. Cl.^{6} A61F *9/02*

U.S. Cl. 2—436 **20 Claims**

1. Eye goggles comprising:

(a) a goggles frame having a pair of eyepiece frames interconnected together by a nosepiece extending essentially continuously between the eyepiece frames to locate the eyepiece frames sturdily relative to each other, each eyepiece frame having upper and lower edge portions comprising elongated and spaced apart relatively stiff inner and outer support ele-

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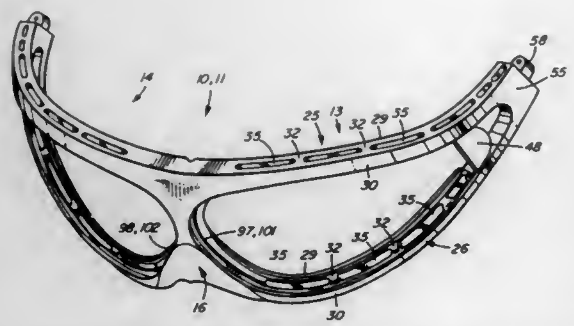


ments, the inner support elements being locatable between a wearer's face and an adjacent outer support element, the support elements being spaced apart by a plurality of relatively stiff and short spacer elements and being curved in generally similar directions to conform approximately to the wearer's face so as to obtain some support therefrom, the spacer elements being spaced relatively closely together along the support elements to provide a relatively stiff space frame with essentially uniform support of the outer support elements to resist deflection thereof, and to provide a row of ventilation openings located between the support elements and the spacer elements,

(b) a pair of eyepiece lenses, each lens being connected to a respective outer support element of each eyepiece frame to retain the lens within the frame, so that the ventilation openings are exposed between the lens and the wearer's face, and

(c) a goggles retainer cooperating with the eyepiece frames to retain the goggles against the wearer's face.

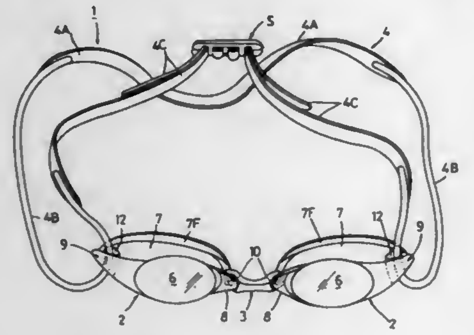
5,711,036
GOGGLES HAVING VERTICAL BAND INSERTION HOLES

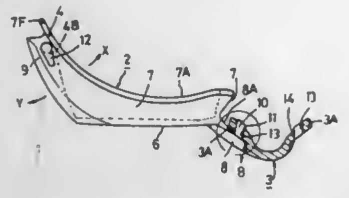
Tadashi Kita, and Tomoyuki Yashiro, both of Higashi-Osaka, Japan, assignors to Yamamoto Kogaku Co., Ltd., Higashi-Osaka, Japan

Filed Dec. 10, 1996, Ser. No. 762,959

Int. Cl.^{6} A61F *9/02*

U.S. Cl. 2—452 **6 Claims**





1. Goggles comprising right and left eyecups, each eyecup having an inner end portion and an outer end portion and a lens portion, each of said eyecups supporting said lens portion in a generally predetermined direction, a nasal belt interconnecting respective opposing inner end portions of the eyecups, and an elastic band connecting to respective outer end portions of the eyecups, each of the outer end portions of the eyecups defining a band insertion hole extending therethrough, each of said band insertion holes having a longitudinal axis perpendicular to a line extending through said outer end and inner end portions, wherein said band insertion hole of each eyecup is oriented such that a longitudinal axis of a portion of said elastic band extending therethrough is oriented substantially in the predetermined direction.

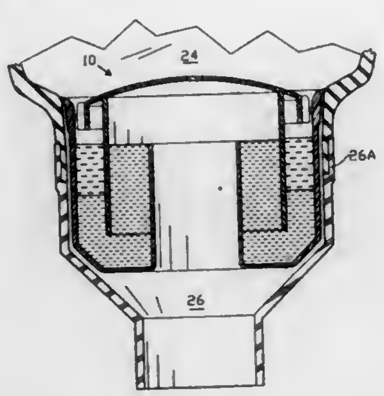
5,711,037
WATERLESS URINAL

Klaus H. Reichardt, Encinatas, and Ditmar L. Gorges, Los Angeles, both of Calif., assignors to Waterless Company, Del Mar, Calif.

Continuation-in-part of Ser. No. 52,668, Apr. 27, 1993, abandoned. This application Aug. 8, 1995, Ser. No. 512,453

Int. Cl.^{6} A47K *11/12*

U.S. Cl. 4—301 **3 Claims**



1. An odor trap kit for a waterless urinal having a trap receptacle in a lower portion thereof, comprising:

an odor trap unit, constructed and arranged to be installed into the trap receptacle and to be retained there frictionally, comprising:

(a) a cylindrical main body part having an outer wall integrally joined via a common floor to a central stand tube extending upwardly to an overflow level, the outer wall extending upwardly beyond the overflow level to a rim region, thus forming a main liquid chamber, and

(b) a cap/partition part having a cap portion with a partition, extending downwardly therefrom to a horizontal lower edge, constructed and arranged to divide the main liquid chamber into an inner chamber region surrounded by an outer chamber region, and to define a bottom chamber region, communicating with the inner and outer chamber regions, extending in height from the floor to the lower edge of the partition, the cap portion extending outwardly beyond the partition to a circumference configured with a plurality of spacers disposed in a uniform polar array extending radially so as to engage the rim region in a manner to attach said main body part to said cap/partition part, thus forming said odor trap unit as a cartridge to be installed in the trap receptacle, the spacers, cap and rim forming a polar array of arched gaps for directing urine from above downwardly into the outer chamber region of said main body part; and

a generally U-shaped metal tool, having a pair of ends each shaped to have a hooked tab constructed and arranged to engage said odor trap unit by inserting the tabs through two diagonally opposite arched gaps and rotating the tool so as to engage a corresponding pair of the cylindrical spacers with corresponding hooked tabs, such that, subsequent to installation in the trap receptacle, the odor trap unit can then be extracted therefrom by pulling on said tool;

whereby, when the main liquid chamber contains watery effluent liquid up to the overflow level so as to form a drain trap, a layer of liquid sealant, formulated to repel the effluent liquid and to have a specific gravity lower than that of the effluent liquid, is enabled to float on the effluent liquid in the outer chamber region and to thus function as a sealed barrier that prevents release of odor from the effluent liquid.

5,711,038
TOILET SYSTEM

Michael Niethammer, and Karl Schäfer, both of Gernsheim, Germany, assignors to Niethammer GmbH, Gernsheim, Germany

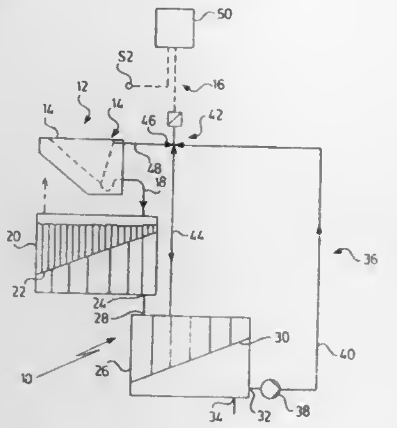
PCT No. PCT/EP94/00678, § 371 Date Oct. 24, 1995, § 102(e) Date Oct. 24, 1995, PCT Pub. No. WO94/20347, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 7, 1994, Ser. No. 507,322

Claims priority, application Germany, Mar. 6, 1993, 43 07 102.3

Int. Cl.^{6} E03D *5/016*

U.S. Cl. 4—317 **11 Claims**



1. A toilet system comprising: a toilet including a flushing device and a toilet bowl; a faecal tank for receiving sewage from the toilet bowl, the faecal tank including (1) a sewage receiving side for receiving sewage from the toilet bowl, (2) a separating device for separating liquid and solid components of the sewage and transferring the liquid component of the sewage to a grey water side of the faecal tank, and (3) a first outlet for transferring grey water to a hygienization tank; the hygienization tank including (1) a grey water side with a grey water inlet for receiving the grey water from the faecal tank, (2) a device for hygienizing the grey water and transferring the hygienized grey water to a hygienized grey water side, and (3) a second outlet for withdrawing hygienized grey water from the hygienization tank; a grey water side of the toilet system including (1) the grey water side of the faecal tank, (2) the first outlet, (3) the grey water inlet, and (4) the grey water side of the hygienization tank; a recirculating device with a recirculating pump and a return pipe, the recirculating device connecting the second outlet with the grey water side of the system and with the flushing device and, as required, supplying the flushing device with amounts of the hygienized grey water as flushing liquid and wherein the recirculating device comprises a valve arrangement which is arranged downstream from the recirculating pump and through which the hygienized grey water required for flushing is withdrawable from the recirculating device.

5,711,039
DUAL POWER-FLUSH TOILET

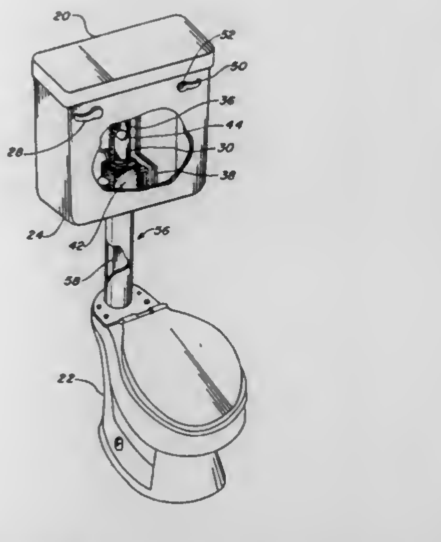
Israel Mizrahi, 6614 Noble Ave., Van Nuys, Calif. 91405

Filed Mar. 11, 1996, Ser. No. 613,482

Int. Cl.^{6} E03D *5/00*

U.S. Cl. 4—344 **11 Claims**

1. A water pressure increasing riser for positioning between a toilet water closet and a water tank to increase water pressure for flushing water into said closet from said tank, said riser comprising:



a) a hollow pipe having female threads on a joint end and male threads on a second end,

b) an attaching plate having an opening to receive the second end of the hollow pipe and a plurality of holes for connecting to commercially available water closets,

c) a closet spud to threadably engage the second end of the hollow pipe and retain the plate therebetween,

d) a resilient tapered gasket disposed upon the second end of the hollow pipe to hermetically seal the pipe to a water closet,

e) a plurality of closet fasteners to affix the plate to a water closet and compress the gasket into a water closet, and

f) said first end of the pipe threadably engaged into a closet tank flush valve.

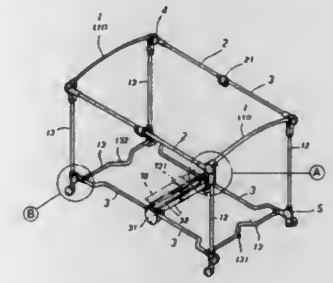
5,711,040
FOLDING COLLAPSIBLE FRAME STRUCTURE FOR A BABY'S CRIB

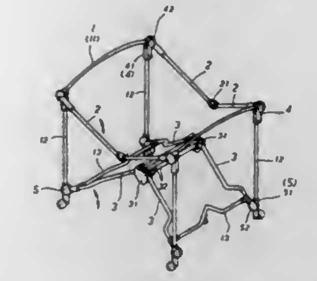
Mien Chen Huang, 123-2, Pi Tou, Kuan Miao, Tainan, Taiwan

Filed Mar. 13, 1997, Ser. No. 816,244

Int. Cl.^{6} A47D *13/06;7/00*

U.S. Cl. 5—99.1 **7 Claims**





1. A folding collapsible frame structure for a baby's crib, comprising:

two symmetrical side frame units vertically disposed at two opposite sides, each of said side frame units comprised of a top transverse rod, a bottom transverse rod, and two posts

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bilaterally connected between said top transverse rod and said bottom transverse rod;

a pair of top frame rods horizontally and bilaterally connected between said side frame units at the top;

two pairs of top joints respectively and bilaterally connected between said side frame units and said top frame rods, said top joints permitting the two sections of each of said top frame rods to be folded up to pull said side frame units toward each other;

a pair of bottom frame rods horizontally and bilaterally connected between said side frame units at the bottom, each of said bottom frame rods comprised of two sections bilaterally pivoted together by a coupling plate, each of said bottom frame rods comprised of two sections pivoted together;

two pairs of bottom joints respectively and bilaterally connected between said side frame units and said bottom frame rods, said bottom joints permitting the two sections of each of said bottom frame rods to be folded up to pull said side frame units toward each other;

two stretchers connected between the coupling plates of said bottom frame rods;

a folding bed plate supported on said stretchers; and

two pairs of wheels respectively and bilaterally mounted on said side frame units at the bottom which make the baby's crib easy to move;

wherein each of said top joints is comprised of a hollow base frame fixedly connected between one top transverse rod and one post, and a hollow swivel frame fixedly connected to one top frame rod and coupled to the base frame of the respective top joint and turned about an axis within 90 angle relative to the base frame of the respective top joint between a horizontal position perpendicular to the corresponding side frame unit, and a vertical position closely attached to the corresponding side frame unit; each of said bottom joints is comprised of a hollow base frame fixedly connected to one post, and a bollow swivel frame fixedly connected to between one bottom frame rod and the bottom transverse rod of the respective side frame unit and coupled to the base frame of the respective bottom joint and turned about an axis within 90° angle relative to the base frame of the corresponding bottom joint between a horizontal position perpendicular to the corresponding side frame unit, and a vertical position closely attached to the corresponding side frame unit.

5,711,041
INFLATABLE AIR MATTRESS WITH INTERNAL PUMP

John Chen, Sharon, Mass., assignor to CSA, Inc., South Easton, Mass.

Filed Mar. 27, 1996, Ser. No. 622,755
Int. Cl.^{6} A47C *27/08*

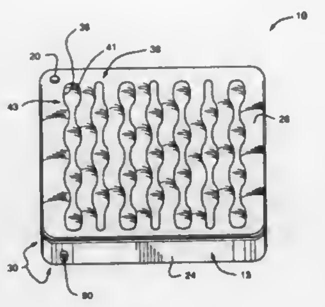
U.S. Cl. 5—708 **20 Claims**

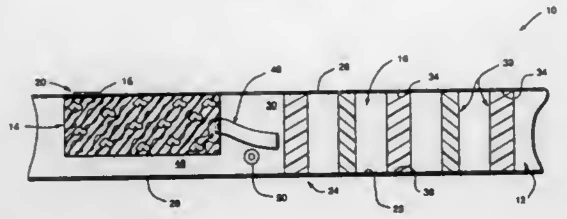
1. An inflatable apparatus comprising:

(a) at least one inflatable chamber defined by a first set of wall means, said first set of wall means formed from a substantially non-porous, flexible material, said first set of wall means having an inner surface and an outer surface, an inflatable chamber being formed by said inner surface, said outer surface exposed to an ambient environment;

(b) a plurality of internally disposed ribs, a portion of each said ribs attached to said inner surface of said first set of walls means, said ribs being disposed in rows in a sine-wave-like pattern, at least a portion of said ribs being disposed 180 degrees out of phase with one another;

(c) a pump means disposed within said inflatable chamber, said pump means including a pump housing defined by a second set of wall means, said second set of wall means formed from a substantially non-porous, flexible material, a portion of said first set of wall means and said second set of wall means being common walls, an interior pump chamber formed by said pump housing;





(d) compressible pumping material, said pumping material being disposed within said pump chamber of said pump means;

(e) an intake port means providing fluid communication between said outer surface of said first set of wall means and said pump chamber, said intake port means defining a channel between said outer surface of said first set of wall means and said pump chamber; and,

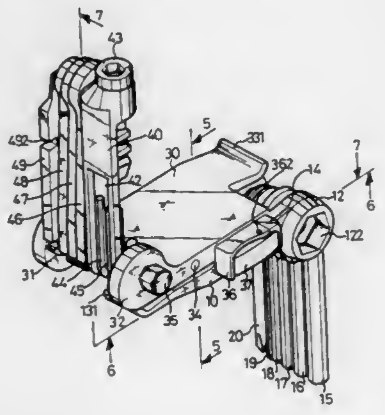
(f) a one-way exhaust port means providing fluid communication from said pump chamber to said inflatable chamber.

5,711,042
TOOL COMBINATION FOR BICYCLE

Louis Chuang, 7th-8, No. 20, Da Long Road, Taichung, Taiwan

Filed Jul. 30, 1996, Ser. No. 689,027
Int. Cl.^{6} B25F *1/02*

U.S. Cl. 7—138 **7 Claims**



1. A tool combination comprising:

first tool assembly including a body having a dovetail slot formed therein and having a first bolt secured therein,

at least one first tool rotatably engaged on said first bolt,

a second tool assembly including a block having a dovetail formed thereon for engaging with said dovetail slot of said first tool assembly so as to secure said first tool assembly and said second tool assembly together, said block including a second bolt secured therein,

at least one second tool rotatably engaged on said second bolt, and

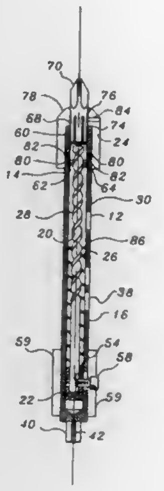
means for securing said first tool assembly and said second tool assembly together.

5,711,043
SET TOOL AND CAP

Trevor J. Crawford, and Dennis P. Rolph, both of Charles City, Iowa, assignors to Diversified Fastening Systems, Inc., Charles City, Iowa

Filed Oct. 8, 1996, Ser. No. 728,248
Int. Cl.^{6} B25B *15/00;* B26B *11/00*

U.S. Cl. 7—165 **18 Claims**



1. An improved tool adapted for use with a hand drill for installing screw anchors in concrete or masonry walls or the like, comprising:

(a) a sleeve type body having:
  (1) an axial bore with a closed rear section and an open front section;
  (2) a longitudinally aligned open slot in said body; and
  (3) at least one depth notch associated with said front portion of said slot; ·

(b) a handle extending outwardly from said rear section of said body and receivable in a chuck of the drill;

(c) a drill bit with a smooth end, with a flat stepped portion;

(d) a bit holder slidably located in said bore and having an axial cavity and a bit retention means that extends from one side of said holder through the slot in said body and secures said bit in said cavity where a sidewall of said bit holder cavity closely encircles said smooth end;

(e) a coil spring through which said bit extends, said coil spring having a rear end that abuts against said bit holder, said spring serving as a bias means to urge said bit in a rearward direction; and

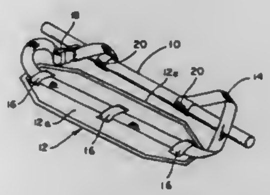
(f) a driver seat releasably secured over said front section of said body, said driver seat having:
  (1) a cap having a first bore sized to accommodate said front section of said body and a second bore sized to accommodate a driver; wherein said first bore of said cap is open to said second bore of said cap
  (2) a driver extending from said cap;
  (3) means for releasably securing said cap over said front section;
  (4) means for preventing said driver seat from twisting relative to said body; and
  (5) means for retaining the driver within said second bore of said cap.

5,711,044
PATIENT TRANSFER ASSIST DEVICE

William Chris Newman, Missoula, Mont., and George D. Tipp, National City, Calif., assignors to Nu-Way Products, Inc., Missoula, Mont.

Continuation-in-part of Ser. No. 546,455, Oct. 20, 1995, abandoned. This application Jul. 15, 1996, Ser. No. 680,386
Int. Cl.^{6} A61G *7/10*

U.S. Cl. 5—81.1 T **20 Claims**



I. A person transfer assist device for use to help a person transfer from a sitting position to a standing position and from a standing position to a sitting position which comprises:

a) a pad for fitting around the lower back and waist of a person to be assisted;

b) a grip bar having length to enable both an attendant and the person to be assisted to grip the bar during use of the device; and

c) a strap secured to said pad and to said grip bar, said strap having a length so as to enable an attendant to stand before a person to be assisted and to pull such a person from a sitting position to a standing position, or to lower such a person from a standing position to a sitting position, while maintaining an upright posture, when said pad is fitted around the person's lower back and waist.

5,711,045
APPARATUS FOR INDUCING RELAXATION OR SLEEP IN INFANTS

Andrew I. Caster, 3861 Hughes Ave. #705, Culver City, Calif. 90232; David L. Harbaugh, La Mirada, and Willard E. O'Diear, Hacienda Hts., both of Calif., assignors to Andrew I. Caster, Culver City, Calif.

Continuation-in-part of Ser. No. 131,415, Oct. 4, 1993, abandoned. This application Feb. 28, 1996, Ser. No. 608,572
Int. Cl.^{6} A47D *9/02;9/04*

U.S. Cl. 5—109 **7 Claims**

I. An apparatus for inducing relaxation or sleep in infants comprising:

a base;

a platform mounted on said base such that said platform is movable with at least three degrees of freedom of motion relative to said base, said at least three degrees of freedom of motion comprising roll, pitch and yaw;

a moving means for simultaneously moving said platform in said at least three degrees of freedom of motion; and

a driving means for driving said moving means; and wherein:

said moving means comprises three eccentric rotating cams engaging with a bottom surface of said platform, said three eccentric cams being provided such that a maximum amount the platform is raised by each of the first, second

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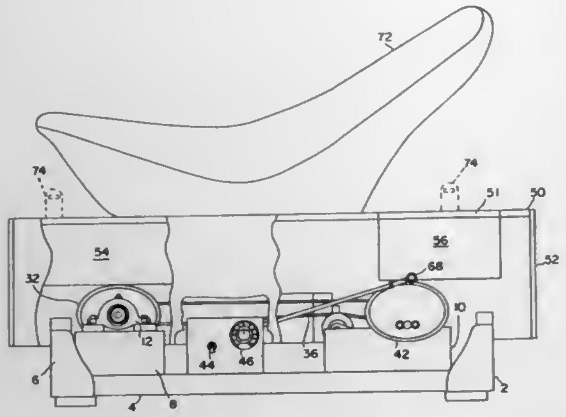


and third elliptical cams as said first, second and third elliptical cams rotate occurs at a different instant of time; and

two of said three eccentric rotating cams are provided adjacent one end of said platform and an other one of said three eccentric rotating cams is provided adjacent an other end of said platform.

5,711,046
WELL CLEANING APPARATUS

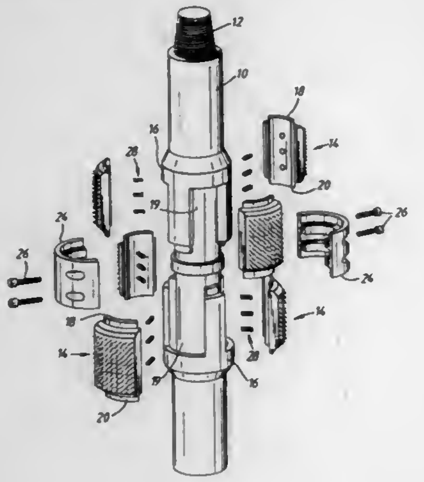
Ronald Potter, Arberdeen, United Kingdom, assignor to Rotary Drilling Supplies of Europe Limited, Aberdeen, Scotiand

Filed Oct. 5, 1995, Ser. No. 538,824

Claims priority, application United Kingdom, Apr. 1, 1995, 9506797

Int. Cl.^{6} F21B *37/02;37/06*

U.S. Cl. 15—104.2 **12 Claims**



1. An apparatus for cleaning an interior bore of a tubular member, said apparatus comprising a body member defining an outer circumference for insertion into the tubular member, a plurality of cleaning pads arranged in an upper row and a lower row, said lower row circumferentially offset with respect to said upper row, each said cleaning pad comprising a body having an inner face engaged with the body member and an outer opposing face provided with protruding bristles and said upper row of pads each being provided with a first edge in engagement with a first recess in the body member, said lower row of pads each being provided with a first edge in engagement with a second recess in the body member, and a second edge of each said pad in engagement with a removable retaining device retaining the cleaning pads on the body member, such that removal of the retaining device permits removal of the cleaning pads from the body member.

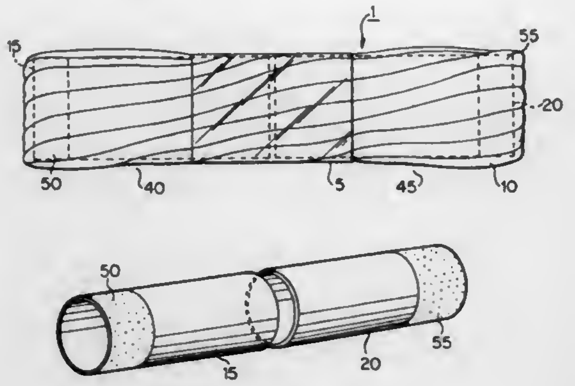
5,711,047
SPECIALTY PAINT ROLLER COVER

John W. Armaly, Jr., Walled Lake, Mich., assignor to Armaly Brands, Walled Lake, Mich.

Filed Jun. 12, 1996, Ser. No. 662,205

Int. Cl.^{6} B05C *17/02*

U.S. Cl. 15—230.11 **15 Claims**



1. A paint roller cover comprising:
an inner core including first and second separate core elements;
a cover element formed to cover the inner core; and
an adhesive formed on edges of the first and second separate core elements for securing portions of the cover element against the first and second separate core elements.

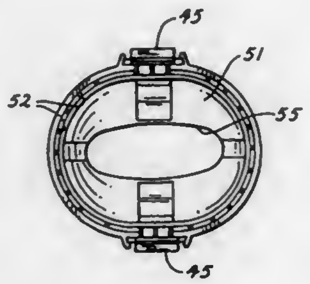
5,711,048
PORTABLE BLOWER/VAC

Anthony N. Pink, Shorewood, and Dean R. Toensing, Minnetonka, both of Minn., assignors to The Toro Company, Bloomington, Minn.

Division of Ser. No. 434,728, May 4, 1995, Pat. No. 5,560,078. This application Aug. 7, 1996, Ser. No. 693,772

Int. Cl.^{6} A47L *5/24*

U.S. Cl. 15—347 **7 Claims**



1. A blower/vacuum, comprising:
(a) a housing, the housing including an air inlet opening residing in a first plane and a housing outlet with an outlet orifice residing in a second plane, the first plane being substantially perpendicular to the second plane;
(b) a motor having an output shaft, the output shaft being substantially perpendicular to the first plane; and
(c) an impeller for drawing air through the air inlet opening and into the housing and for expelling air through the housing outlet, the impeller being formed to include a plurality of blades, the blades being driven by the motor output shaft; wherein the outlet orifice is formed so as to have a cross-section having a first area, the cross-section being shaped as two substantially parallel lines joined by two semicircles.

5,711,049
WIPER BLADE ASSEMBLY

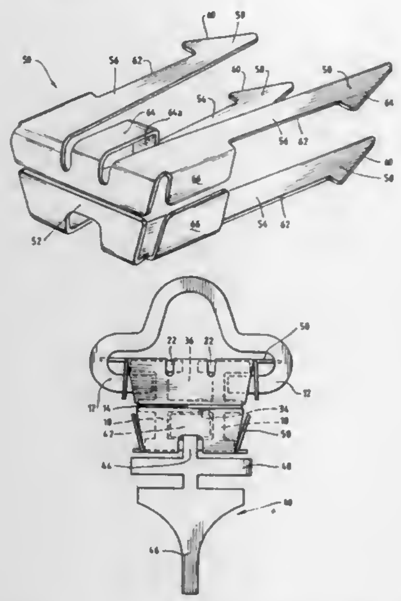
Barry James Abbott; Valerie Margaret Abbott, both of Belgrave; Stephen James Clarke, and Dino Donchi, both of Ringwood, all of Australia, assignors to Clean Screen Wipers Pty Ltd, Boronia, Australia

Continuation of Ser. No. 163,437, Dec. 8, 1993, Pat. No. 5,513,414. This application Jan. 22, 1996, Ser. No. 589,639

Claims priority, application Australia, Sep. 24, 1993, PM1412

Int. Cl.^{6} B60S *1/04;1/38*

U.S. Cl. 15—250.454 **21 Claims**



1. A windscreen wiper blade clip assembly and backing strip combination for a windscreen wiper blade assembly having a blade frame including plural pairs of opposed claws, the backing strip being an elongate backing strip having first and second channels for alternatively receiving a wiper blade element, the backing strip having a first pair of rails which include longitudinal edges spaced apart by a first predetermined distance and a second pair of rails coupled to the first pair of rails and having longitudinal edges spaced apart by a second predetermined distance which is greater than the first predetermined distance, the backing strip being coupleable to the blade frame by selectively engaging one of the first and second pair of rails with the opposed claws depending on the size of the opposed claws, and by the blade element being selectively located in one of the first and second channels dependent upon which one of the first and second pair of rails are engaged with the opposed claws, said windscreen wiper blade clip assembly including:
a base section for location at an end of the backing strip;
a first pair of legs coupled to and extending transverse to the base section and overlying the first pair of rails of the backing strip;
a second pair of legs coupled to and extending transverse to the base section and being opposed to the first pair of legs, the second pair of legs overlying the second pair of rails;
abutment members on each of the first and second pair of legs;
wherein dependent on which one of the first and second rails are engaged with the opposed claws, one of the first and second pair of legs which overlie that pair of rails are, in use, engaged with one pair of the opposed claws by location of the abutment members behind said one pair of opposed claws to secure the backing strip to the one pair of opposed claws to limit longitudinal movement of the backing strip relative to the opposed claws;
wherein said windscreen wiper blade clip assembly comprises a first clip and a second clip which is separate from the first clip, each of the first and second clips comprising a portion of said base section, the first clip having said first pair of legs and the second clip having said second pair of legs; and
means for attaching each of said clips to the backing strip.

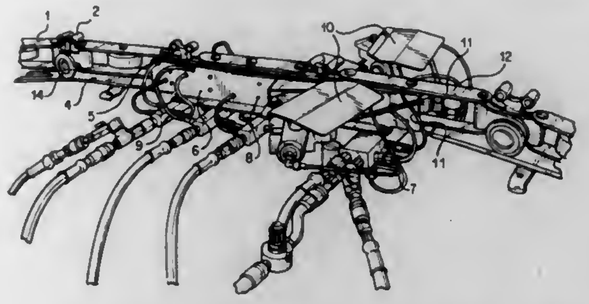
5,711,050
CHAIN CLEANER FOR BREAD-BUN OVENS AND PROOF BOXES

Robert E. Pimentel, 15 Lakeview Dr., Bellingham, Mass. 02019

Filed Nov. 17, 1995, Ser. No. 560,292

Int. Cl.^{6} B65G *45/00;* **B61K** *3/00*

U.S. Cl. 15—302 **7 Claims**



1. In a bread-bun oven or proof box which includes a movable continuous chain, said chain having vertical wheels riding on a continuous track, the improvement comprising: a chain cleaning device adaptable for cleaning the continuous chain of a bread-bun oven or proof box including the vertical wheels of said continuous chain wherein said chain cleaning device comprises multiple nozzles adaptable for directing solvents and air at said continuous chain and wherein stationary tubes are attached to a vertical plate with holes for placement of said stationary tubes and wherein brushes are activated by a U-shaped lever as the vertical wheels of said continuous chain ride over the U-shaped lever as said continuous chain is moved through said cleaning device thereby cleaning said continuous chain through use of jet streams produced by air pressure and brushes, without requiring dismantling of said chain piece by piece from the track of said chain.

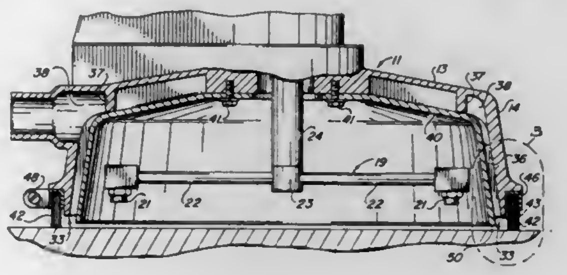
5,711,051
HARD SURFACE CLEANING APPLIANCE

Michael J. Roden, Prescott, Ariz., assignor to Professional Chemicals Corporation, Chandler, Ariz.

Filed Apr. 1, 1996, Ser. No. 626,717

Int. Cl.^{6} A47L *11/03;11/20*

U.S. Cl. 15—321 **10 Claims**



1. A hard surface cleaning appliance comprising a hood having a depending sidewall terminating with a lower edge, vacuum passage means formed in the inner surface of the hood, an inner shroud positioned internally of said hood and having a lower edge spaced inwardly of the lower edge of said hood sidewall, a foraminous skirt depending from the lower edge of the hood sidewall, said skirt being adapted to contact the surface to be cleaned, the lower edge of said shroud being elevated above the surface to be cleaned and the lower edge of the sidewall of said hood also being elevated above the surface to be cleaned and means for creating a vacuum in the vacuum passage means in the hood.

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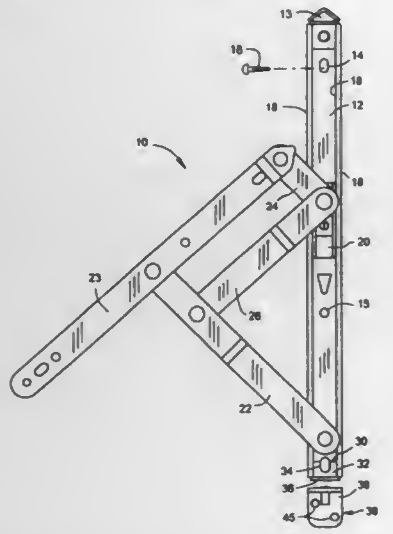
5,711,052
ADJUSTABLE WINDOW HINGE

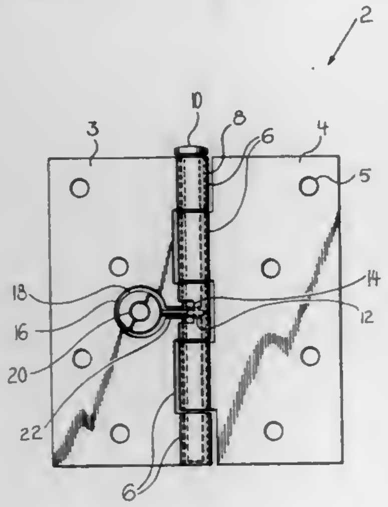
Robbin J. Delaske, Waterville, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.
Filed Nov. 4, 1996, Ser. No. 744,005
Int. Cl.^{6} E05D *15/06*
U.S. Cl. 16—364 **16 Claims**



1. In a hinge having a track securable to a window frame, a shoe slidable on said track, at least one support arm pivotable on said track, and at least one sash arm pivotable relative to said shoe, the improvement comprising:
- (a) a stop bracket securable to a track;
- (b) a set bracket securable to a window frame adjacent said track and spaced from said stop bracket; and
- (c) a means for adjustably controlling the spacing between said stop bracket and said set bracket to control the position of said track relative to said frame.

5,711,053
UN-LOCKABLE HINGE PINTLE LOCK AND METHOD OF USE

Bernhard T. W. Hafner, 830 Bayridge La., Port Orange, Fla. 32127
Filed Mar. 26, 1996, Ser. No. 622,676
Int. Cl.^{6} E05D *5/12*
U.S. Cl. 16—380 **11 Claims**



1. An un-lockable hinge pintle lock comprising:

a lock blade comprising a lock blade aperture extending through said lack blade, and lock blade knuckles, each said knuckle comprising a knuckle bore;

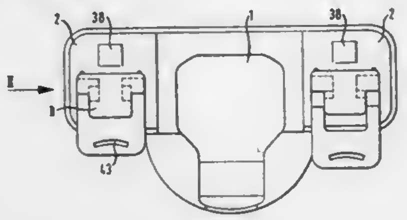
a blade comprising blade knuckles, each said knuckle comprising a knuckle bore;

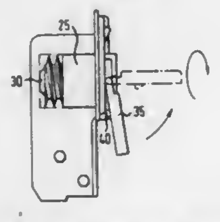
a pintle comprising a pintle bore, said pintle being removably disposed within said knuckle bores; and

a lock having a thickness substantially the same as a thickness of said lock blade comprising a lock tongue, said lock being removably disposed within said lock blade aperture and said lock tongue being removably disposed within said pintle bore.

5,711,054
FITTING PART OR THE LIKE, MORE PARTICULARLY A HINGE PART WITH AN ATTACHMENT DEVICE

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy
Filed Oct. 19, 1995, Ser. No. 545,495
Claims priority, application Germany, Oct. 19, 1994, P 44 37 470.4
Int. Cl.^{6} E05D *5/00*
U.S. Cl. 16—382 **20 Claims**





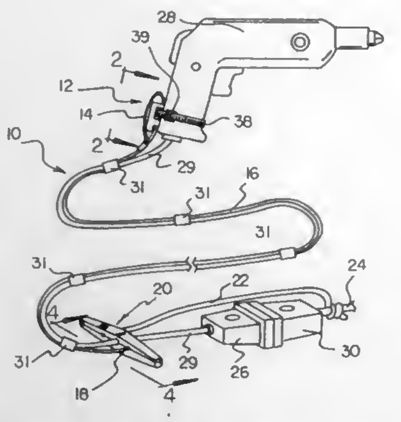
1. A fitting part having an attachment device for attaching the fitting part to a supporting wall, the attachment device comprising
- a bushing adapted to be inserted into a predrilled hole in the supporting wall and secured thereto,
- a holding pin mounted in a rotatable manner in the bushing, and which after rotation thereof, the holding pin engages the wall of the hole,
- the holding pin defining a longitudinal axis extending in a direction perpendicular to a direction of rotation of the holding pin,
- a head of the holding pin engaged with a top side of an attachment flange section of the fitting part, and
- a flat actuating part connected with the head in a pivotal fashion, the actuating part being foldable over the attachment flange into an actuating position extending essentially parallel to the longitudinal axis of the holding pin.

5,711,055
ELECTRICAL CORD STRAIN RELIEF APPARATUS

Todd N. Quick, 241 Avellana Dr., Sequim, Wash. 98382
Filed Oct. 3, 1996, Ser. No. 724,768
Int. Cl.^{6} B23B *45/00;* **B65D** *63/00*
U.S. Cl. 24—16 R **12 Claims**

1. A cord strain relief apparatus for attachment to an electrical device, wherein the cord strain relief apparatus includes an adjustable electrical-device-attachment assembly and a tether assembly connected to said electrical-device-attachment assembly, comprising:

a handle assembly connected to the tether assembly, and



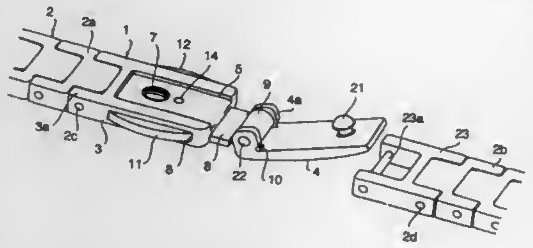
a pig tail element connected to said handle assembly,

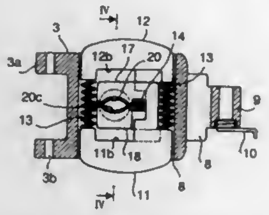
said handle assembly being elongated along a first axis and including first fastening means for attaching said tether assembly to said handle such that said tether assembly extends from said handle assembly along a second axis orthogonal to said first axis,

said handle assembly further including second fastening means for attaching said pig tail element to said handle assembly such that said pig tail element extends along a third axis orthogonal to said first axis, and wherein said second axis and said third axis are laterally offset from each other along said first axis.

5,711,056
BUCKLE FOR A PERSONAL ADORNMENT BAND

Hideo Taguchi, and Junsuke Tashikie, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
PCT No. PCT/JP95/00963, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/31912, PCT Pub. Date Nov. 30, 1995
PCT Filed May 19, 1995, Ser. No. 578,538
Claims priority, application Japan, May 20, 1994, 6-106903; May 18, 1995, 7-118837
Int. Cl.^{6} A44C *5/00*
U.S. Cl. 24—69 J **6 Claims**





1. A buckle for a personal adornment band comprising:

a housing having an opening at an upper portion, said housing connected to an end of the personal adornment band, a pair of push plates arranged in the housing so as to be moved in a lateral direction with respect to a longitudinal direction of said personal adornment band, a cover pivotally connected to a first end of said housing, an engaging rod provided on a connecting link of a second end of the personal adornment band and held by the housing and the cover so as to connect the first and second ends of the personal adornment band,

each of the push plates including a manipulating projection, an arm inwardly projected from said manipulating projection, and an engaging portion formed on an end of the arm;

each of the engaging portions of said push plates having an engaging hook to be engaged with the lock pin of the cover;

each engaging portion having the same thickness as the manipulating projection of the push plate, the engaging hook being defined by an escapement groove formed on the underside thereof;

one of said push plates having an upper arm with a thickness of an upper half thickness of the push plate;

the other push plate having a lower arm with a thickness of a lower half thickness of the push plate;

the upper and lower arms being overlapped with each other and positioned with respect to the longitudinal direction of said band in a plane including an upper surface of the upper arm;

spring means provided between said push plates for urging each of said push plates in an outward direction;

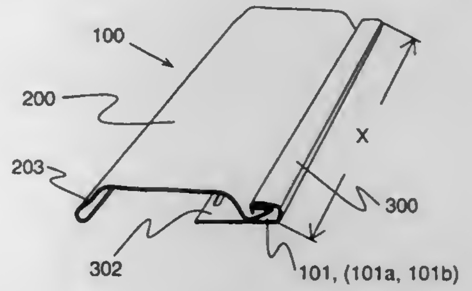
stopping means provided for stopping each of said push plates urged by said spring means at a position where the manipulating projection of each push plate is projected from the housing;

a lock pin secured to an underside of the cover to be engaged with said engaging portions of the push plates; and

said stopping means comprises a stopper pin secured to the housing and disposed to be abutted on side walls of notches formed on side portions of the upper and lower arms of the push plates.

5,711,057
CLAMPING APPARATUS HAVING SNAP-FITTING PIVOT STRUCTURE AND METHOD

Joseph Thomas Dameron, 5587 S. Country Club, Tucson, Ariz. 85706
Filed Oct. 15, 1996, Ser. No. 730,379
Int. Cl.^{6} A44B *21/00;* **A47G** *1/06;* **G09F** *3/20*
U.S. Cl. 24—499 **8 Claims**



2. A longitudinal hinge apparatus, said apparatus comprising:

a longitudinal support member having a first mating member of said hinge apparatus; and

a longitudinal clamping arm member having a second mating member of said hinge apparatus,

said first mating member comprising a resilient socket structure that includes an expandable opening for receiving said second mating member, and

said second mating member comprising a V-shaped end portion having a tip end for entering said expandable opening, and also having V-segments for expanding said expandable opening and detachably fitting said V-shaped end portion within said resilient socket structure in a compressed state,

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said hinge apparatus being formed by longitudinal snap-fit engagement of said second mating member to said first mating member by inserting tip end of said V-shaped end portion into said resilient socket structure.

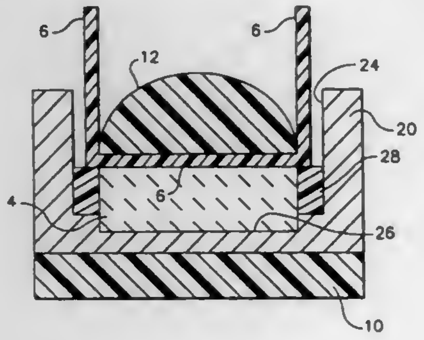
5,711,058
METHOD FOR MANUFACTURING TRANSDUCER ASSEMBLY WITH CURVED TRANSDUCER ARRAY

Gregg W. Frey, East Wenatchee, Wash., assignor to General Electric Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 343,054, Nov. 21, 1994, Pat. No. 5,541,468. This application Dec. 29, 1995, Ser. No. 581,139

Int. Cl.^{6} H01L *41/22*

U.S. Cl. 29—25.35 **9 Claims**



1. A method of manufacturing a transducer assembly having a curved transducer array, comprising the steps of:

fabricating an array case having a planar bottom wall and a pair of side walls extending from the bottom wall to form a channel, said array case being made of electrically conductive, acoustic matching material and said side walls having a predetermined height;

fabricating a laminated assembly having a depth greater than said predetermined height of said side walls by bonding a stack of layers to said bottom wall of electrically conductive, acoustic matching material, said stack being arranged in said channel of said array case and comprising a layer of piezoelectric ceramic, a flexible printed circuit board and a layer of acoustic damping material arranged in that order, said piezoelectric ceramic layer being bonded to said bottom wall of electrically conductive, acoustic matching material, and said acoustic damping material having a property whereby said acoustic damping material changes from an inflexible state to a flexible state when heated;

dicing said flat laminated array to a depth so that said bottom wall and said side walls of electrically conductive, acoustic matching material, said layer of piezoelectric ceramic, and said flexible printed circuit board are completely cut in a depthwise direction into respective segments and said layer of acoustic damping material is only partially cut in said depthwise direction so that an undiced portion of said layer of acoustic damping material supports said respective segments;

fabricating a core body having a curved front face in the shape of a cylindrical section;

heating at least said undiced portion of said layer of acoustic damping material until said acoustic damping material is flexible;

flexing said heated undiced portion of said layer of acoustic damping material to conform to said curved front face of said core body; and

bonding said flexed undiced portion of said layer of acoustic damping material to said curved front face of said core body.

5,711,059
INTERNAL HIGH-PRESSURE FORMING PROCESS AND APPARATUS

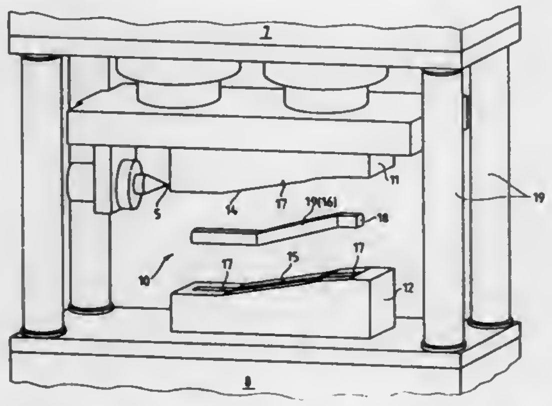
August Wilhelm Schaefer, Drolshagen, Germany, assignor to Wilhelm Schaefer Maschinenbau GmbH & Company, Wilnsdorf, Germany

Filed May 8, 1995, Ser. No. 436,944

Claims priority, application Germany, May 9, 1994, 44 16 147.6

Int. Cl.^{6} B23P *17/00;* **B21P** *28/18;* **B23K** *31/02*

U.S. Cl. 29—423 **17 Claims**



1. A process for producing a hollow, elongated metal body comprising:

inserting a flat blank comprising two opposing pieces of sheet metal between first and second dies each having a cavity;

closing the dies to deform the blank into a nonplanar shape along an outer periphery of the blank surrounding the cavities while exposing an interior of the blank between the pieces of sheet metal to ambient pressure; then

injecting a fluid under pressure into the blank between the pieces of sheet metal to expand the blank against the cavities and form a hollow body.

5,711,060

Patent Not Issued For This Number

5,711,061
LIGHTWEIGHT, COMPOSITE CONTAINER

Alan David Blake, Overijse; Andre Marie Gustav Jacobs, Zemst, and Annick Antoine Sonia Van Put, Brasschaat, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 500,916, Aug. 2, 1995, Pat. No. 5,524,787. This application Feb. 20, 1996, Ser. No. 604,000

Claims priority, application European Pat. Off., Feb. 2, 1993, 93870020

Int. Cl.^{6} B23P *11/00*

U.S. Cl. 29—516 **2 Claims**

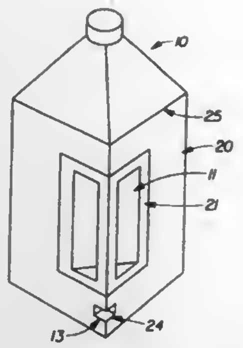
1. A method of making a composite package comprising the steps of:

a) making an inner thermoplastic container (**10**) by extruding a parison into a two piece mold, said mold pinching said parison over an area, said area being fused together forming an interconnecting web;

b) removing said interconnecting web to define a handle (**11**);

c) providing a carton blank and cutting an aperture (**31**) into said carton blank (**30**);

d) erecting said carton blank to form an outer sleeve (**20**), wherein said sleeve has at least two flat sides which intersect at an edge, said aperture being located such that it divides said edge into an upper edge section (**22**) and a lower edge section (**23**);



e) positioning said outer sleeve over said inner thermoplastic container such that said aperture is positioned over said handle (**11**) of said inner thermoplastic container (**10**).

5,711,062
PROCESS FOR MANUFACTURE OF A FLUID CONTAINMENT ELEMENT

Jean-Paul Bagard, Chatenoy Le Royal, France, assignor to SEVA, Chalon Sur Saone, France

Filed Feb. 21, 1995, Ser. No. 391,446

Claims priority, application France, Feb. 22, 1994, 94 02149

Int. Cl.^{6} B23P *17/04;25/00;* **B21B** *45/00*

U.S. Cl. 29—527.2 **16 Claims**

1. A process for manufacturing a containment element designed to hold and allow the flow of a fluid heated to a temperature greater than 850° C., comprising the steps of:

a) providing a blank made of a heat-resistant metal alloy;

b) coating the blank with an adhesive containing a mineral material,

c) depositing on the blank at least one film made of a mineral material suitable for the material and the plastic temperature of the blank,

d) heating the blank to the plastic temperature of the heat resistant metal alloy, which plastic temperature is above 850° C.,

e) performing a first stamping operation on the heated blank to form a chamber of the element,

f) performing a second stamping on an end of the chamber to produce flaps,

g) cooling the element, and

h) heat treating the element, the element being suitable for holding and allowing the flow of a fluid heated to a temperature greater than 850° C.

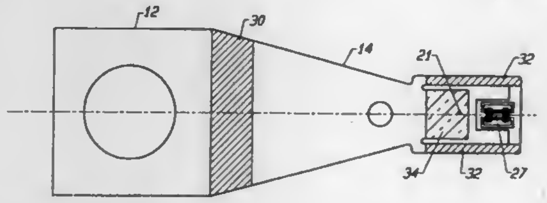
5,711,063
METHOD OF FORMING A SUSPENSION FABRICATED FROM SILICON

Richard August Budde, Plymouth; Kevin Jon Schultz, Apple Valley; Daniel E. Glumac, Little Canada; Patrick J. Ryan, St. Paul, and Cal E. Hardie, Edina, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 11, 1996, Ser. No. 661,816

Int. Cl.^{6} G11B *5/42*

U.S. Cl. 29—603.06 **6 Claims**



1. The method of forming a magnetic head suspension assembly from an etched silicon structure comprising:

a) a cutting step comprising cutting said silicon structure into a shape of a magnetic head suspension assembly, having a rectangular portion, a load beam and a flexure, said flexure being cut in a shape such that two finger members, one slider bond tongue and one dimple tongue appear thereon, and

b) subsequent to said cutting step, a step of photo-etching regions of said magnetic head suspension assembly to reduce thickness of said silicon structure in certain regions, said photo-etching leaving a remaining non-etched small plateau area which is adapted to act as a point or dimple for a slider.

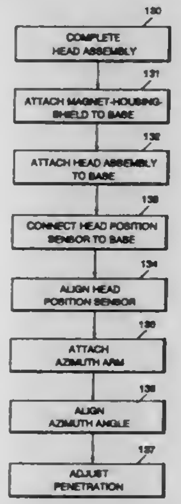
5,711,064
HEAD TO TAPE ALIGNMENT WITHOUT TAPE GUIDE

Daniel Stewart Husky; John Alexander Koski, and Jay Eunsuk Lee, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 451,816, May 26, 1995, abandoned. This application Jul. 17, 1996, Ser. No. 682,213

Int. Cl.^{6} G11B *5/42*

U.S. Cl. 29—603.06 **9 Claims**


130
COMPLETE HEAD ASSEMBLY
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ATTACH MAGNET-HOUSING-SHIELD TO BASE
132
ATTACH HEAD ASSEMBLY TO BASE
133
CONNECT HEAD POSITION SENSOR TO BASE
134
ALIGN HEAD POSITION SENSOR
135
ATTACH AZIMUTH ARM
136
ALIGN AZIMUTH ANGLE
137
ADJUST PENETRATION

1. A method for assembling a field replaceable unit (FRU) including a tape head, the FRU being adjusted for tape head alignments to a tape path in a tape device, such adjustment being made during assembly and independent of said tape path, said adjustment made relative to a mount plate of a data cartridge, said mount plate having a plurality of tape data points, the tape head alignments including azimuth angle and penetration, said method comprising steps of:

(a) attaching securely, a magnet-housing-shield to a back side of a base;

(b) flexibly attaching a head assembly to the back of said base, the head assembly including a tape head attached to a rigid beam, a voice coil attached to said rigid beam, and a sensor flag, said head assembly mounted such that said voice coil is moveable between crash stops within said magnet-housing-shield;

(c) connecting securely, an optical sensor to the back of said base such that said flag is within a predetermined position of said optical sensor;

(d) attaching loosely, an azimuth arm to a front of said base, said azimuth arm having a fixed azimuth datum and an adjustable penetration datum attached thereto, said azimuth arm movable in a horizontal direction and fixed in a vertical direction;

(e) adjusting an azimuth angle of the tape head relative to the tape path by moving horizontally said azimuth arm such that said azimuth datum is in predetermined position relative to said tape head and securing said azimuth arm; and

(f) adjusting said penetration datum by moving said penetration datum substantially perpendicular to said azimuth arm such that said mount plate and said penetration datum are in a predetermined relationship.

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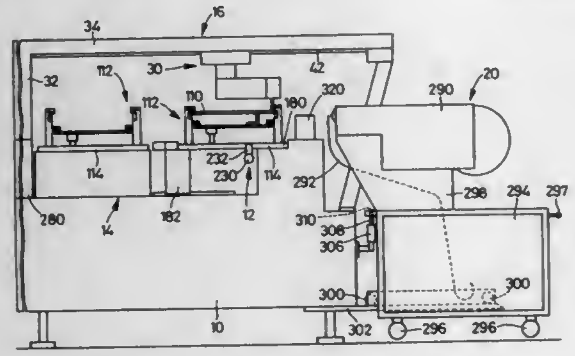
5,711,065
ELECTRONIC-COMPONENT MOUNTING SYSTEM

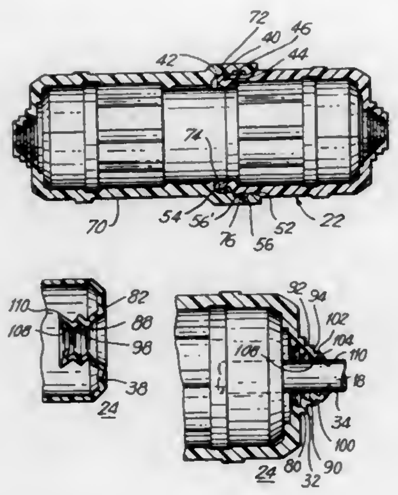
Koichi Asai, Nagoya; Koso Matsumoto, Aichi-ken; Kunio Ooe, Chiryu, and Masayuki Shimmura, Anjo, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., Chiryu, Japan
Filed Nov. 1, 1995, Ser. No. 551,737
Int. Cl.^{6} H05K *3/30;13/04*
U.S. Cl. 29—740 **28 Claims**



1. An electronic-component mounting system comprising:
- a plurality of mounting units which are arranged along a reference line contained in a reference plane,
- each of said mounting units including (a) a mounting device which mounts at least one electronic component on an object and (b) a moving device which moves said mounting device along said reference plane and in a direction perpendicular to said reference plane,
- said moving device of said each mounting unit moving said mounting device thereof within a first component-mounting range thereof including a first overlapping portion which overlaps, along said reference line, a second overlapping portion of a second component-mounting range within which the mounting device of at least one adjacent mounting unit of said plurality of mounting units which is adjacent to said each mounting unit is moved by the moving device of said adjacent mounting unit, such that said moving device of said each mounting unit does not move said mounting device thereof within the other portion of said second component-mounting range than said second overlapping portion and such that said moving device of said adjacent mounting unit does not move said mounting device thereof within the other portion of said first component-mounting range than said first overlapping portion, the mounting device of said each mounting unit mounting said electronic component on said object within said first component-mounting range thereof, the mounting device of said adjacent mounting unit mounting at least one electronic component on said object within said second component-mounting range thereof.

5,711,066
METHOD OF ASSEMBLING AN ELECTRICAL CABLE JOINT SEAL

Cosmo Castaldo, Westbury, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Continuation of Ser. No. 442,857, May 17, 1995, abandoned, which is a continuation of Ser. No. 184,800, Jan. 21, 1994, abandoned. This application Feb. 12, 1997, Ser. No. 799,179
Int. Cl.^{6} H01R *43/20;43/26;13/52*
U.S. Cl. 29—855 **1 Claim**



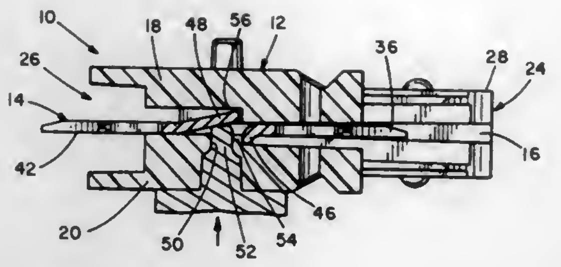
1. A method of providing a protective seal between an insulated cable having an outer diameter within a predetermined range of cable diameters and a flexible and resilient reusable boot having an open first end and a substantially closed second end and a cavity therebetween and having a bore through said second end, said bore extending through a stepped sealing means having decreasing diameter round steps starting adjacent said second end and decreasing in a direction away from said first end, said bore comprised of a plurality of apertures one in each step and decreasing in diameter from the largest diameter cable in said predetermined range of cable diameters to be accommodated in said boot to the smallest diameter cable in said predetermined range of cable diameters to be accommodated in said boot, said boot houses an electrical device in said cavity to which said cable is to be wired, the method comprising the steps of:

a) first urging said stepped sealing means formed as an integral part of said second end from an outwardly extending relaxed position to an inverse inner position wherein portions of said stepped sealing means inversely extends into said cavity defined by said boot, thereby forming an inverse bore;
b) thereafter inserting a wiring end of said insulated cable having a diameter within the predetermined range of cable diameters into and through said inverse bore in said stepped sealing means so that the walls of said sealing means, defining at least one aperture, engaging said insulated cable without compressing and distorting the insulation of said insulated cable and extending said cable into said cavity until said wiring end emerging from said cavity at said boot open first end;
c) thereafter inserting said wiring end through the husk of said electrical device housed by said boot;
d) stripping the insulation from portions of said insulated cable;
e) wiring the stripped portions of said insulated cable to said electrical device;
f) thereafter urging said cable in a direction opposite that of said inserting, thereby returning said stepped sealing means to said outwardly extending relaxed position with the walls about at least one of said at least one apertures engaging said insulated cable without compressing and distorting the insulation of said insulated cable and thereby moving said electrical device into said cavity of said boot to form a boot-cable assembly; and
g) assembling a second mating boot to the boot of said boot-cable assembly and thereafter sweeping dirt, moisture or other debris scraped from mating surfaces when said two boots are engaged one within the other adjacent said open front ends of the boots into at least one annular recess adjacent said open first end formed in the wall of said boot.

5,711,067
METHOD OF FORMING ELECTRICAL CONNECTOR

Royal Jenner, 7531 W. 175th St., Tinley Park, Ill. 60477, and Antonio C. DiPaolo, 20 W. 481 Camder Dr., Downers Grove, Ill. 60516
Filed Sep. 26, 1996, Ser. No. 721,394
Int. Cl.^{6} H01R *43/16*
U.S. Cl. 29—874 **5 Claims**

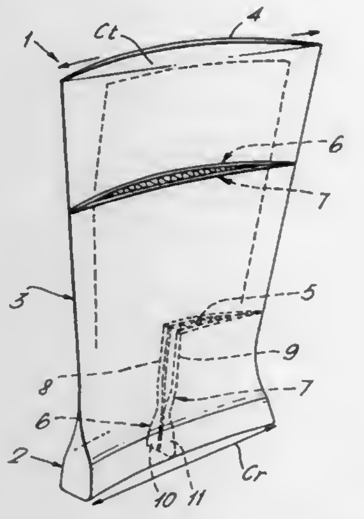
1. A method of forming an electrical connector comprising the steps of:



- providing a connector housing having a plurality of contact receiving slots including a first ledge and a second oppositely directed ledge both formed adjacent the contact receiving slots;
- shearing a pair of oppositely directed tabs on to a central portion of a planar contact;
- forming one of the sheared tabs into plane with the contact;
- inserting said contact into said contact receiving slot of the housing until the remaining tab abuts against the first ledge; and
- punching through an opening formed in the housing to form the second sheared tab in abutting relationship to the second ledge.

5,711,068
METHOD OF MANUFACTURING A BLADE

Frank Trevor Salt, Burton on Trent, England, assignor to Rolls-Royce plc, London, England
Filed Oct. 22, 1996, Ser. No. 735,106
Claims priority, application United Kingdom, Oct. 28, 1995, 9522112
Int. Cl.^{6} B23P *15/00*
U.S. Cl. 29—889.1 **12 Claims**

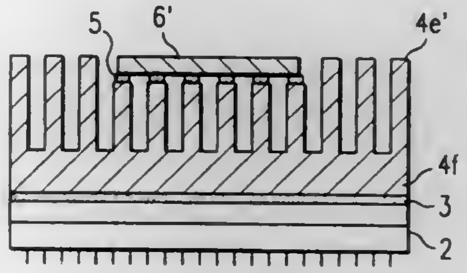


1. A manufacturing process for the production of a preform of a hollow aerofoil shaped blade, the preform being a diffusion bonded stack of metallic blade components including first and second blade flank components, each flank component comprising a root portion which in the finished blade serves for fixing the blade in a rotor disc and an aerofoil portion extending from the root portion to a radially outer tip, the process for producing the preforms comprising the steps of

(a) producing pieces of metallic material in generally parallelepiped form, the parallelepipeds each having a length of at least the length of the preform from root to tip,
(b) cutting each parallelepiped lengthwise along an inclined plane to form two separate panels of longitudinally tapering thickness, each panel having a cut surface and an uncut surface,
(c) producing blade flank components from the panels by shaping the panels on their cut surfaces, or their uncut surfaces, to form a three dimensional profile thereon which in the finished blade will produce a hollow interior of the blade,
(d) assembling the stack of blade components with the surfaces of the blade flank components which were uncut in step (b) facing each other, and
(e) diffusion bonding the components in the stack together in a predefined bonding pattern thereby to create the blade preform with an internal structure defined by the bonding pattern.

5,711,069
METHOD OF MAKING AN INTEGRATED CIRCUIT PACKAGE WITH FLAT-TOPPED HEAT SINK

Michael J. Hundt, Double Oak, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Continuation of Ser. No. 410,330, Mar. 23, 1995, abandoned, which is a division of Ser. No. 220,783, Mar. 31, 1994, Pat. No. 5,461,257. This application Jan. 22, 1997, Ser. No. 787,447
Int. Cl.^{6} B23P *15/26*
U.S. Cl. 29—890.03 **12 Claims**



1. A method of packaging an integrated circuit, comprising the steps of:
- mounting an integrated circuit chip within an integrated circuit package, the integrated circuit package having a flat surface;
- attaching a heat sink to the flat surface of the integrated circuit package, the heat sink having a plurality of extensions extending away from the integrated circuit package after the attaching step; and
- attaching a plate to the ends of a selected group of the extensions of the heat sink said selected group being fewer in number than all the extensions of the heat sink such that some of the extensions of the heat sink have the plate attached thereto and some do not have the plate attached thereto.

5,711,070

Patent Not Issued For This Number

5,711,071
CATALYTIC STRUCTURES AND METHOD OF MANUFACTURE

Howard A. Fromson, 49 Main St., Stonington, Conn. 06378, and William J. Rozell, Vernon, Conn., assignors to Howard A. Fromson, Stonington, Conn.
Filed Nov. 8, 1995, Ser. Nn. 555,216
Int. Cl.^{6} B23P *15/26*
U.S. Cl. 29—890.046 **19 Claims**

1. A process of forming a heat exchanger comprising heat exchange tubes and metal fins attached to said heat exchange tubes wherein said metal fins incorporate a catalyst metal comprising the steps of:

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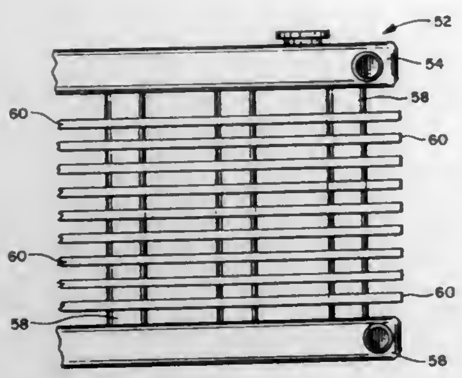
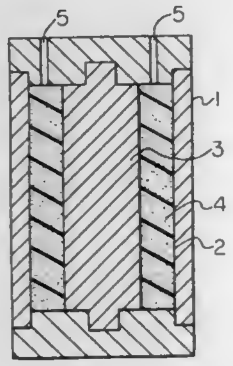


a. forming a porous anodic oxide layer on a substrate metal surface;
b. electrolytically depositing a first metal into the pores of said porous anodic oxide layer and continuing said electrolytic deposition to form nodules formed of said first metal anchored in said pores and extending above the surface of said anodic oxide layer;
c. depositing a second catalytic metal onto said nodules of said first metal to form catalytic nodules anchored to said substrate;
d. forming heat exchanger fins from said substrate having said catalytic nodules thereon;
e. attaching said fins to said heat exchange tubes to form said beat exchanger.

5,711,072
METHOD FOR FABRICATING ELASTOMER COATED FIXING ROLLS

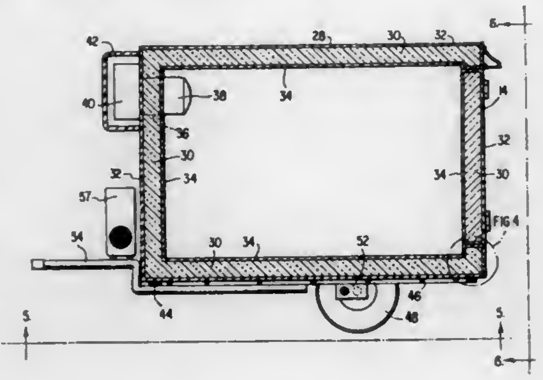
Akito Nakamura, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1995, Ser. No. 495,013
Claims priority, application Japan, Jun. 30, 1994, 6-173615
Int. Cl.^{6} B23P *15/00*
U.S. Cl. 29—895.32 **3 Claims**



1. A method for fabricating fixing rolls comprising a silicone rubber layer covering a metal core and a layer of a fluororesin film covering said silicone rubber layer, said method comprising
1) covering the interior wall of a hollow cylindrical mold with a cylindrical fluororesin film having an inner and an outer surface, wherein the inner surface of said cylindrical film is coated with a liquid organohydrogenpolysiloxane;
2) placing a metal roll core in the center of said mold;
3) injecting an organosiloxane composition curable to an elastomer between said film and said roll core; and
4) heating said composition sufficiently to cure it.

5,711,073
METHOD OF CONSTRUCTING REFRIGERATED BEVERAGE TRAILER

Joseph R. Tippmann, HRC-33, Box 8419, Rapid City, S. Dak. 57701, and Vincent P. Tippmann, 8605 N. River Rd., New Haven, Ind. 46774
Division of Ser. No. 450,030, May 25, 1995, Pat. No. 5,584,188. This application Sep. 11, 1996, Ser. No. 712,353
Int. Cl.^{6} B60H *1/32*
U.S. Cl. 29—897.2 **3 Claims**

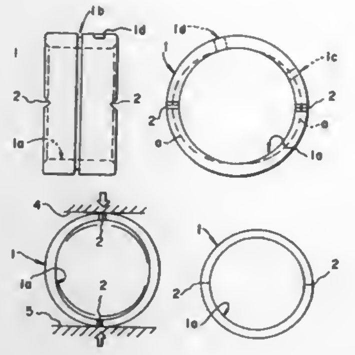


1. The method of constructing an insulated, seamless, monolithic refrigerated beverage trailer enclosure comprising the steps of:
a) providing a horizontally extending floor panel of polyurethane material having a flat upper and lower surface with a peripheral edge to form a floor member for said trailer,
b) providing a frame means and positioning said frame means on said lower surface,
c) applying a layer of fiberglass reinforced resinous material to said lower surface and said frame means to secure said frame means to said polyurethane material,
d) providing panels of polyurethane material having an inner and outer surface to form a wall member for said trailer, said wall member having openings therethrough to provide access to said trailer, and positioning said wall panels on said upper surface of said floor panel adjacent said peripheral edge thereof,
e) providing a panel of polyurethane material having an inner and outer surface to form a roof member for said trailer and positioning said roof panel on said wall member, and
f) applying a continuous layer of fiberglass reinforced resinous material to said inner and outer surfaces of said wall and roof panels and said upper surface of said floor panel to form said trailer enclosure.

5,711,074
METHOD OF PRODUCING SPLIT BEARINGS

Kazuyoshi Harimoto, and Ikuo Fujiniwa, both of Iwata, Japan, assignors to NTN Corporation, Osaka-Fu, Japan
Filed May 26, 1995, Ser. No. 451,362
Claims priority, application Japan, May 31, 1994, 6-117849
Int. Cl.^{6} F16C *33/64*
U.S. Cl. 29—898.066 **6 Claims**

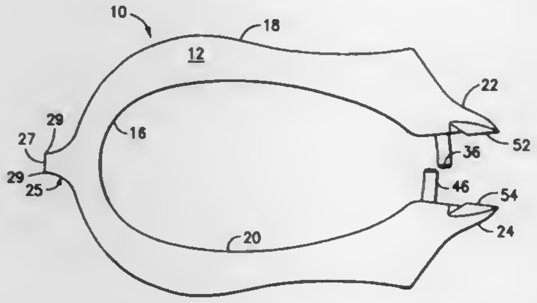
1. A method of producing a split bearing, comprising:
(a) providing a bearing ring, said bearing ring having a raceway surface;
(b) forming a first notch and a second notch on said bearing ring, said first notch being opposite said second notch;
(c) grinding said raceway surface of said bearing ring in a shape of an ellipsoid to form two thin-ring portions each having a first ring thickness and two thick-ring portions each having a second ring thickness, wherein said first ring thickness is less than said second ring thickness, one of said two thin-ring portions being adjacent said first notch and the other of said two thin-ring portions being adjacent said second notch; and



(d) thereafter splitting the bearing ring by pressing the bearing ring between upper and lower molds to split the bearing ring at said first notch and said second notch.

5,711,075
UNITARILY FORMED PLASTIC SOFT TISSUE NIPPER

Jeffrey A. Wolf, 43 Parkwood Dr., Wayne, N.J. 07470
Filed Apr. 25, 1996, Ser. No. 637,849
Int. Cl.^{6} B26B *13/18;* **A61B** *17/32*
U.S. Cl. 30—28 **8 Claims**

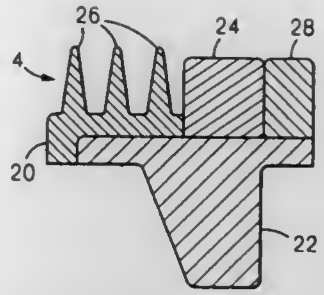


1. A tissue nipper unitarily molded from a plastic material and comprising a base, first and second arms projecting from said base and cutting blades at ends of said arms remote from said base, each said cutting blade having a cutting edge, said arms each having a support wall with opposed top and bottom surfaces, guides projecting from each said arm at locations spaced from the base, the guide of each said arm being slidably engaged against the bottom surface of the support wall of the other of said arms, finger flanges projecting downwardly from said support wall for receiving digital pressure thereon, said digital pressure on said finger flanges urging said guides against the bottom surface of the support wall of the opposed arm and resiliently deflecting said arms toward one another into a position where said cutting edges are in abutting edge-to-edge contact with one another.

5,711,076
SHAVING SYSTEM WITH IMPROVED GUARD STRUCTURE

Yuling Yin, Quincy; Alfred Porcaro, Everett; Mingchih Michael Tseng, Hingham, and Philip John Sweeney, Taunton, all of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Mar. 27, 1996, Ser. No. 624,819
Int. Cl.^{6} B26B *21/44*
U.S. Cl. 30—41 **26 Claims**

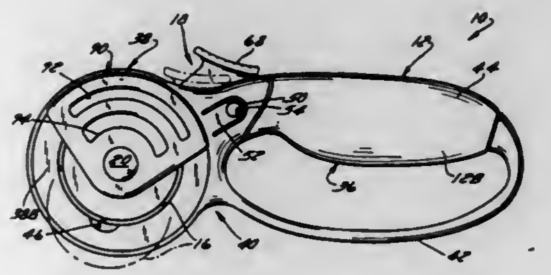
1. A shaving system comprising
a housing,



one or more blades mounted on said housing,
a cap behind said blades on said housing, and
a guard structure in front of said blades on said housing,
said guard structure including a plurality of flexible skin-engaging protrusions to engage a user's skin in front of said blades and a water leachable shaving aid composite positioned to deliver a shaving aid to said skin behind said flexible skin-engaging protrusions and in front of said one or more blades.

5,711,077
DOUBLE BLADE ACTUATOR FOR A HAND HELD CUTTER BLADE ASSEMBLY

William J. Schulz, Mosinee, and Brian L. Adkinson, Wausau, both of Wis., assignors to Fiskars Inc., Madison, Wis.
Filed Jun. 10, 1996, Ser. No. 660,918
Int. Cl.^{6} B26B *29/02;29/06*
U.S. Cl. 30—160 **5 Claims**



1. A rotary cutter comprising:
a handle,
a cylindrical head formed on one end thereof,
said handle and head having an internal cavity,
an actuating member mounted in said cavity,
a blade support formed on the actuating member for movement between a storage position and one of two operating positions with respect to the head,
a spring mounted on the actuating member for biasing the actuating member to a storage position in the internal cavity, and
a latch assembly formed in the actuating member for selectively locking the actuating member in one of the two operating positions.

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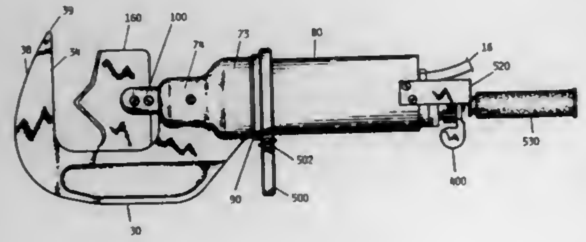
5,711,078
PORTABLE EMERGENCY RESCUE CUTTING AND CRIMPING TOOL

Tommy L. Patton, 2480 Calle Narciso, Thousand Oaks; Peter J. Schneider, deceased, late of Thousand Oaks, and by Marlene R. Schneider, executor, 2480 Calle Narciso, Thousand Oaks, all of Calif. 91360

Continuation of Ser. No. 277,044, Jul. 19, 1994, abandoned, which is a continuation of Ser. No. 855,566, Mar. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 314,614, Feb. 23, 1989, Pat. No. 5,125,158. This application Mar. 4, 1996, Ser. No. 610,703

Int. Cl.^{6} B26B *13/00*

U.S. Cl. 30—228 **7 Claims**



1. A portable emergency rescue cutting and crimping tool comprising:
a one-piece rigid mainframe having a front portion, a mid-section, and a rear portion;
said front portion, said mid-section, and said rear portion forming a generally U-shaped opening for receiving a workpiece;
wedge-shaped upright rigid head means at said front portion of said mainframe;
a transverse brace having indentations located at said mid-section of said mainframe for allowing the operator of the tool to firmly grasp the tool with one hand;
bell-shaped mounting means at said rear portion of said mainframe and integral with said mainframe for securing a hydraulic means;
extensible and retractable hydraulic means secured to said bell-shaped mounting means on said mainframe at the end opposite that of said upright rigid head means for providing power to said tool;
cutting blade means attached to said hydraulic means for cutting or crimping a workpiece placed in said U-shaped opening of said mainframe;
said mainframe having a blade guide means longitudinally positioned for providing a guideway for said cutting blade means;
said cutting blade means having a cutting edge;
slot means in said upright rigid head means for allowing said cutting blade means to enter; and
said cutting blade means being moveable along said blade guide means while under power from said hydraulic means.

5,711,079
CORROSION RESISTANT KNIFE

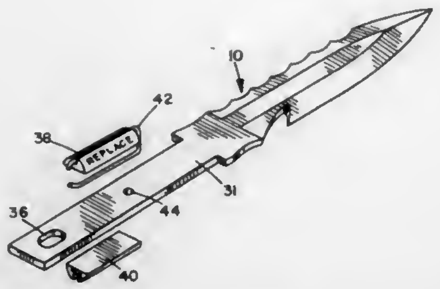
E. Fred Fischer, San Diego, and William J. Monteleone, Fallbrook, both of Calif., assignors to Underwater Kinetics, San Marcos, Calif.

Continuation of Ser. No. 445,760, May 22, 1995, abandoned. This application Oct. 15, 1996, Ser. No. 730,741

Int. Cl.^{6} B26B *5/00*

U.S. Cl. 30—342 **9 Claims**

1. A knife, comprising:
an elongated handle made of a non-conductive material and having a longitudinal opening therethrough;
a metallic pommel;
an elongated metallic blade having a tang extending freely into said longitudinal opening in said handle; and



a connecting member made of a non-conductive material and having a distal end coupled to said tang of said metal blade and a proximal end coupled to said pommel.

5,711,080
ENCODER DISC ROTATING DEVICE FOR A SURVEYING INSTRUMENT

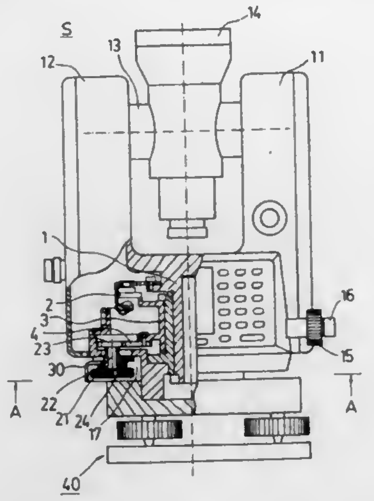
Hideo Yamada, Tokyo, Japan, assignor to Sokkia Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,710

Claims priority, application Japan, Feb. 3, 1995, 7-037805

Int. Cl.^{6} G01C *1/00;15/00;* **G01B** *11/26*

U.S. Cl. 33—292 **2 Claims**



1. A graduated circle rotating device for a surveying instrument having a fine motion knob for finely rotating a sight telescope around a vertical axis as a center, and an encoder disc rotating knob having a rotating axis in the direction of a vertical axis line and which rotates a horizontal encoder disc around a vertical axis as a center, and, wherein the device is provided with a vessel-shaped cover member which rotates coaxially with the rotating shaft of said encoder disc rotating knob and has an opening formed on the lateral side for exposing said encoder disc rotating knob, and wherein said encoder disc rotating knob is exposed or concealed by rotating said cover member.

5,711,081
DEVICE AND METHOD FOR CONSTRUCTION

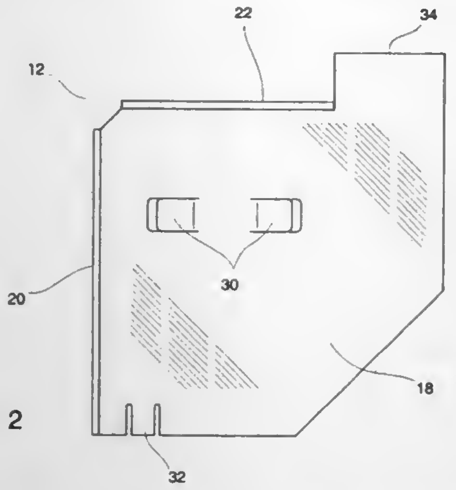
Antoine Tony Zaccaria, 8537 Autumn Woods, Miamisburg, Ohio 45342

Filed Oct. 30, 1996, Ser. No. 739,945

Int. Cl.^{6} E04G *21/18*

U.S. Cl. 33—409 **8 Claims**

1. A device for use in aligning construction elements, which includes:



a base plate portion having a first edge and a second edge joining at a predetermined angle and a third edge joining said second edge joining at a predetermined angle;
a first flange extending from a part of said first edge at a predetermined angle from said base plate portion;
a second flange adjacent said first flange extending from said second edge at a predetermined angle from said base plate portion;
wherein said base plate portion, said first flange and said second flange form an inner retention surface portion configured to fit an outer surface portion of the construction element;
a protruding portion adjacent said first flange and extending from another pan of said first edge; and
a notched surface portion formed in said third edge of a predetermined size.

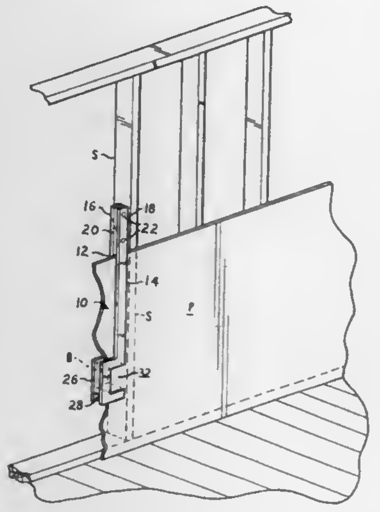
5,711,082
FIXTURE LOCATOR

James M. Olivo, R.R. 1, Box 1533, Hop Bottom, Pa. 18824

Filed Jun. 11, 1996, Ser. No. 661,743

Int. Cl.^{6} G01B *5/00*

U.S. Cl. 33—528 **10 Claims**



1. A fixture locator, comprising:
a bifurcated tool having a first arm and a second arm, with said first arm and said second arm being substantially identical to one another and being in exact overlying and underlying registry and parallel with one another;
said first arm and said second arm each having a first end and an opposite second end, with said first end of each said arm being immovably affixed together and said second end of each said arm being separated from one another and respectively having a first and a second laterally offset relief formed therein;
said first relief being configured to fit closely about the majority of the periphery of a fixture installed behind an installed wall panel in a partially paneled structure, and said second relief being configured to provide a precise outline of the fixture on the front of the wall panel in exact registry with the fixture when said fixture locator is positioned to straddle the installed wall panel of the partially paneled structure with said first relief fitting closely about the periphery of the fixture.

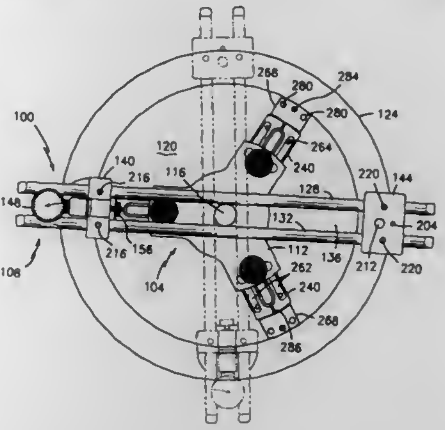
5,711,083
GAGE SET FOR MEASURING INSIDE AND OUTSIDE DIAMETERS OF RING-SHAPED PARTS

Steven T. Bidwell, Ellington, Conn., assignor to Bidwell Corporation, Enfield, Conn.

Continuation-in-part of Ser. No. 507,152, Sep. 11, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 620,129

Int. Cl.^{6} G01B *5/08;5/12*

U.S. Cl. 33—543 **20 Claims**



1. A gaging device for measuring various predetermined dimensional characteristics of a part, the gaging device comprising:
(a) a hub body operable to be spatially disposed within an opening of the part, the hub body including a centerline post; and
(b) a free style swing gage having a rotatable member with an opening into which the centerline post is positioned, the free style swing gage having a first block that is adjustably positioned along a first portion of the rotatable member, the first block having mounted thereto an indicator with an associated probe for contacting the part, the first block having associated therewith corresponding means for adjusting a selected movement of the first block, the free style swing gage having a second block that is adjustably positioned along a second portion of the rotatable member, the second block having an associated probe for contacting the part, wherein the free style swing gage is positioned with respect to the part such that the first block probe and second block probe are both in contact with the part and the free style swing gage is rotated about the centerline post while the indicator provides an indication of the predetermined dimensional characteristics of the part.

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5,711,084

LINEAR ENCODER

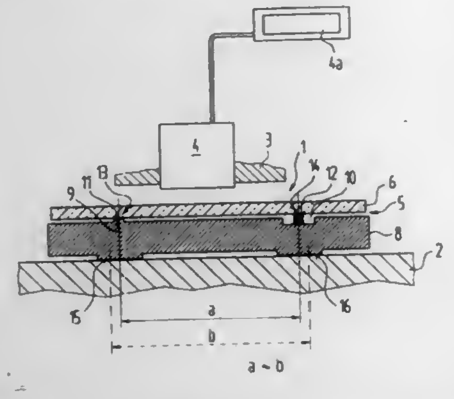
Erwin Spanner, Traunstein, and Peter Pechak, Stein/Traun, both of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Apr. 1, 1996, Ser. No. 627,238

Claims priority, application Germany, Apr. 6, 1995, 195 12 892.3

Int. Cl.⁶ G01B *11/04*

U.S. Cl. 33—706 **24 Claims**



1. A linear encoder for measuring a relative position of two objects displaceable relative to each other, the encoder comprising:

a scale for being secured on one of the objects and formed of a graduation carrying measuring standard and a measuring standard support; and

means for scanning the scale and securable on another of the objects,

wherein the measuring standard support has two regions, which are spaced from each other in a direction of a longitudinal extent of the measuring standard for supporting the measuring standard,

wherein one of the supporting regions forms a stationary support area and another of the supporting regions forms an elastic support area, the stationary and elastic support areas being formed as substantially linear support areas extending transverse to the longitudinal extent of the measuring standard,

wherein the linear support areas comprise one of continuous support areas and interrupted support areas, and

wherein the measuring standard is secured to the support at the stationary support area with a setting glue, and is secured at the elastic support area with an elastic glue.

5,711,085

WRITING INSTRUMENT HOLDING CLIP FOR RETRACTABLE TAPE

Thomas F. Adams, 3961 E. River Dr., Fort Myers, Fla. 33916

Filed May 21, 1996, Ser. No. 650,989

Int. Cl.⁶ G01B *3/10;* B43L *9/04;* B25H *7/04*

U.S. Cl. 33—768 **22 Claims**

1. A clip for releasably clipping one article to another article, comprising:

a clip body comprising:

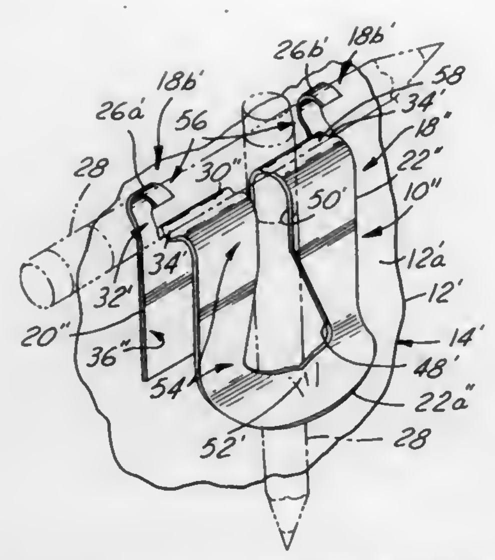
a base member for being attached to an article; and

a spring member integrally connected with said base member, wherein said spring member is resiliently biased toward said base member;

wherein said base member and said spring member .collectively form said clip body; and

writing instrument holder means for holding a writing instrument in a removably fixed location with respect to said clip body;

wherein said spring member has a bend formed in said clip body whereat said spring member is connected with said base member at said bend; further wherein said writing instrument holder means comprises:



said spring member having a slot formed therein at said bend; and

a medial aperture formed in said spring member, said slot interconnecting with said medial aperture;

wherein a writing instrument is removably held by said writing instrument holder means by the writing instrument being received in said slot and said medial aperture and biasably squeezed between said spring and base members.

5,711,086

METHOD AND APPARATUS FOR CONTINUOUS DRYING IN SUPERHEATED STEAM

Thomas John Stubbing, Ludlow, Great Britain, assignor to Heat-Win Limited, Shropshire, United Kingdom

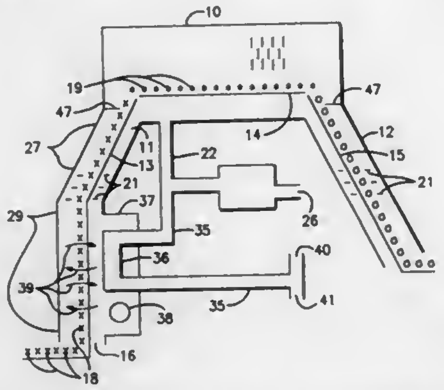
PCT No. PCT/GB94/01843, § 371 Date Feb. 21, 1996, § 102(e) Date Feb. 21, 1996, PCT Pub. No. WO95/06229, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 23, 1994, Ser. No. 602,718

Claims priority, application United Kingdom, Aug. 26, 1993, 9317727

Int. Cl.⁶ F26B *21/06*

U.S. Cl. 34—77 **14 Claims**



1. Apparatus for continuous drying of moist materials in superheated steam comprising a drying enclosure, means for generating superheated steam at least partly to dry moist materials in said enclosure, an inlet duct and an outlet duct, communicating with the enclosure, means for conveying material along said ducts to and from the enclosure respectively, and through said enclosure, at least said outlet duct extending downwardly from its communication with the enclosure and having an open end through which, in use, said material is conveyed out of the outlet duct, characterized in that the apparatus has a vent duct communicating with the enclosure and having an outlet at a level below the enclosure and above the open end of the outlet duct permitting the discharge from the enclosure of a portion of the superheated steam, whereby, in use, steam tending to pass downwardly along said outlet duct and external air or other gas tending to pass upwardly along the outlet duct can meet to form within the outlet duct a temperature and density differential stratification layer between said steam and air or other gas, which layer is located substantially at the level of the outlet of said vent duct and inhibits the escape of steam from the enclosure and the entry of said external air or other gas into the enclosure, by flow along the outlet duct, while permitting the conveyance of material along the outlet duct and through said stratification layer.

5,711,087

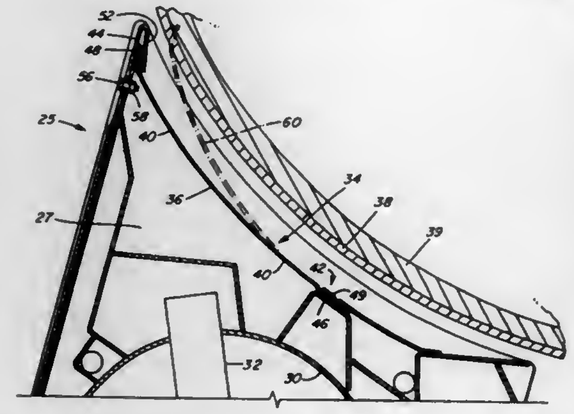
APPARATUS FOR PROFILE CONTROL OF A SHEET HAVING A REMOVABLE SCREEN

Milo Pazdera, Garibaldi Highland, Canada, assignor to Measurex Devron Inc., North Vancouver, Canada

Filed Mar. 22, 1996, Ser. No. 621,824

Int. Cl.⁶ F26B *11/02*

U.S. Cl. 34—114 **15 Claims**



1. Apparatus for distributing a heating medium to a curved surface to be heated in sheet making machinery comprising:

an elongated chamber to receive a heating medium under pressure from a source in communication with the elongated chamber;

the elongated chamber having a front wall adapted to removably secure a flexible screen member that defines at least a portion of the front wall conforming generally to the shape of the adjacent surface to be heated, the screen member having a plurality of apertures through which the heating medium is forced to heat the surface; and

screen retaining members for removably mounting the screen member to the chamber front wall and for deforming the screen member into a curved configuration to accommodate the surface to be heated.

5,711,088

DEVICE FOR RECUDING THE EFFECTS OF THE TENDENCY OF A PAPER WEB TO ADHERE TO A DRYING CYLINDER IN A PAPERMAKING MACHINE

Niclas Lindqvist, Växjö, and Claes Halldin, Gemla, both of Sweden, assignors to ABB Fläkt AB, Stockholm, Sweden

PCT No. PCT/SE95/00752, § 371 Date Jan. 28, 1997, § 102(e) Date Jan. 28, 1997, PCT Pub. No. WO96/01341, PCT Pub. Date Jan. 18, 1996

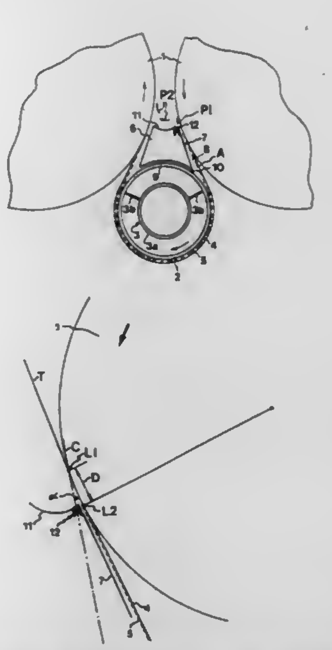
PCT Filed Jun. 20, 1995, Ser. No. 765,195

Claims priority, application Sweden, Jul. 4, 1994, 9402346

Int. Cl.⁶ D21G *5/00*

U.S. Cl. 34—114 **4 Claims**

1. A device in the drying section of a papermaking machine, which comprises a plurality of drying cylinders (1) and guide rolls (2) and through which a paper web (4), supported by a drying



fabric (5), is conducted alternatingly over the drying cylinders (1) and the guide rolls (2) in such a manner that said drying fabric (5) presses the paper web against the drying cylinders and is positioned between the paper web and the guide rolls, said device being adapted to reduce the effects of the tendency of the paper web (4) to adhere to a drying cylinder (1) as it passes from the drying cylinder to a subsequent guide roll (2) and comprising a blow box (6) having a wall (7) arranged in the portion (A) where the paper web (4) and the drying fabric (5) pass from drying cylinder (1) to the guide roll (2), said wall facing the drying fabric (5) and extending substantially in parallel therewith so as to form a narrow air gap (8) between the wall and the drying fabric, and a nozzle (12) arranged at the end of the wall (7), which is positioned upstream with respect to the direction of travel of the paper web (4) and the drying fabric (5), said nozzle being adapted to eject air at high velocity towards the drying fabric (5) away from the air gap (8), characterised in that said nozzle (12) has a slot-shaped opening (13) and is designed to produce a well-defined air jet (P1) directed along the centre plane (C) of said opening, that said nozzle (12) is directed such that its centre plane (C) intersects the circumferential surface of said drying cylinder (2) along a first straight line (L1) which is positioned upstream of a second straight line (L2), along which said paper web (4) leaves the drying cylinder (1), and that the centre plane of said nozzle opening (13) and the tangent plane (T) of the drying cylinder (1), said tangent plane extending through said first straight line (L1), make an angle (α) between themselves, which is 10°–20°.

5,711,089

RADIANT HEATER FOR PROCESSING OF POLYMERS

Ilya Pikus, Plymouth, Minn., assignor to Hosokawa Bepex Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 568,746, Dec. 7, 1995, Pat. No. 5,634,282, which is a division of Ser. No. 398,065, Mar. 3, 1995, Pat. No. 5,497,562. This application Oct. 4, 1996, Ser. No. 725,248

Int. Cl.⁶ F26B *3/34*

U.S. Cl. 34—267 **7 Claims**

1. An apparatus for the solid phase polymerization of polymers comprising a crystallizer, inlet means for receiving cold amorphous polymer into the crystallizer and outlet means for discharging processed polymer from the crystallizer, infrared radiant heating means associated with the crystallizer whereby polymer being processed is heated in the crystallizer, said heating means including a housing, a heat transmitting window mounted in said housing and defining a surface exposed to said crystallizer whereby heat is transmitted to the crystallizer through said window, means for

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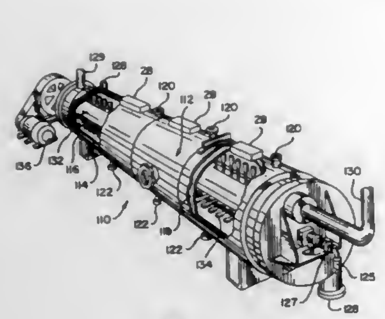
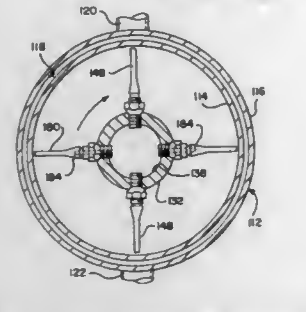




introducing cooling gas to said housing, and nozzle means incorporated in the housing serving as exit passages for the cooling gas, said nozzle being positioned for directing said cooling gas onto said surface to deter accumulation of particles on said surface.

5,711,090

Patent Not Issued For This Number

5,711,091

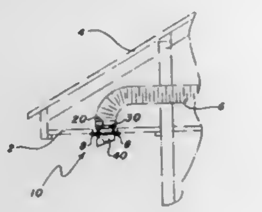
SOFFIT MOUNTED DRYER VENT

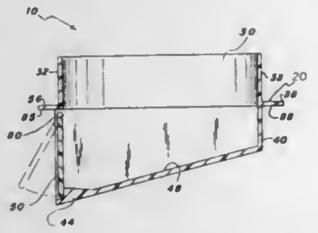
Jim Bos, 16641 18th Avenue, White Rock, British Columbia, Canada, V4P 2N9

Filed Oct. 17, 1996, Ser. No. 732,048

Int. Cl.⁶ F26B *11/02*

U.S. Cl. 34—606 **2 Claims**





1. A Soffit Mounted Dryer Vent for venting exhaust air from a clothes dryer vent hose that terminates in a soffit of a roof overhang comprising:

a flange having an air passage, an upper surface, and a lower surface;

a dryer hose adapter ring symmetrically mated to said upper surface of said flange, said clothes dryer vent hose matingly fitting over said dryer hose adapter ring;

an outlet fitting adjoiningly mated to said lower surface of said flange, said outlet fitting having an outlet openings, said outlet fitting communicating with said air passage of said flange whereby exhaust air flows through said dryer hose adapter ring, through said air passage, through said outlet fitting, and out said outlet opening,

said flange mountable in abutting engagement with said soffit of said roof overhang whereby said dryer hose adapter ring is generally above said soffit and said outlet fitting is generally below said soffit;

a vent flapper baving an upper edge and a lower edge, said vent flapper pivotally attached along said upper edge thereof to said outlet fitting at said outlet opening, said vent flapper pivotable between a closed, at rest position and an open, in use position, said vent flapper being generally vertically oriented when in said closed, at rest position, and said vent flapper pivoting outward when in said open, in use position to allow exhaust air to flow out said outlet opening of said outlet fitting,

said lower end of said vent flapper pivoting beyond said outlet fitting and said vent flapper being oriented at an angle to said outlet opening when in said open, in use position whereby said vent flapper directs exhaust air generally downward away from said soffit; and

a flapper stop protruding from an internal surface of said outlet fitting within said outlet opening, said flapper stop preventing said vent flapper from pivotally rotating into said outlet fitting beyond a substantially vertical plane.

5,711,092

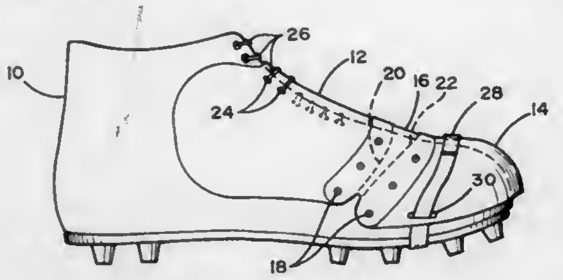
JOINTED BENDABLE FOOT PROTECTOR FOR USE WITH A SHOE

Richard L. Despres, 279 Luce, Grand Rapids, Mich. 49504, and Joseph G. Dell, R.R. 1, Box 228, Stormville, N.Y. 12582

Continuation-in-part of Ser. No. 294,567, Aug. 23, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 482,802

Int. Cl.⁶ A43B *13/22;23/26;5/00*

U.S. Cl. 36—72 R **42 Claims**



1. A foot protector for use with a shoe, comprising:

an upper shield having a stiff outer layer and an impact absorbent underlayer bonded to an underside of said upper shield, said upper shield being shaped to conform to, cover and protect that portion of the shoe housing the metatarsal region of a foot;

an anterior shield having a stiff outer layer and an impact absorbent underlayer bonded to an underside of said anterior shield, said anterior shield being shaped to conform to, removedly cover and protect the toe portion of the shoe within which the phalanges region of said foot is located;

a flexible joint connecting said upper shield to said anterior shield to enable said upper shield to independently flex radially forward and said anterior shield to independently flex radially upward, said flexible joint being constructed of a flexible material and configured to create a neutral zone at two separate locations along said joint, said neutral zones defining a pivot area about which said upper shield and said anterior shield are able to pivot, thereby allowing said foot the freedom to move in a substantially natural manner.

5,711,093

PROTECTIVE WATERPROOF SHOE

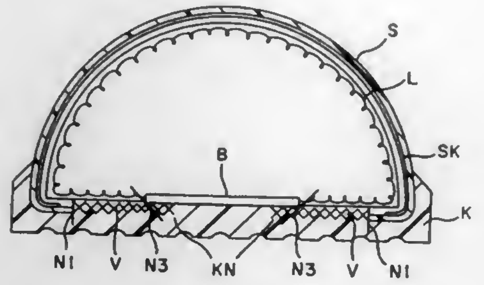
Johann Aumann, Bergham 2, D-83052 Bruckmuhl, Germany

Filed Oct. 18, 1995, Ser. No. 544,754

Claims priority, application Germany, Nov. 15, 1994, 9418347 U

Int. Cl.⁶ A43C *13/14;13/28;23/26*

U.S. Cl. 36—77 R **7 Claims**



1. Footwear with:

(a) a leg;

(b) a lining with a waterproof and water vapor permeable microporous functional layer which lines the leg,

(c) an insole which is connected with the lower end area of the lining;

(d) a waterproof outsole which consists of plastic and which is injection molded to the lower area of the leg;

(e) wherein the actual leg material ends at a distance from the lower end of the lining;

(f) wherein the end of the actual leg material is connected to the insole and the lower end of the lining through a porous material which can be penetrated by the outsole material which is still liquid during the injection molding process and which forms a connection material;

characterized by

(g) a rigid protective cap which is arranged in a toe area of the footwear between the leg and the porous connection material on the one hand and the lining on the other hand and the lining whose underside goes under the insole over a predetermined width; and

(h) wherein the porous connection material is connected to the circumference of the insole by an adhesive connection at its end facing away from the actual leg material, at least in the toe area.

5,711,094

PAIR OF SHOES FOR USE BY GOLFERS AND A METHOD OF SWINGING A GOLF CLUB USING THE SAME

Gerald Grossman, 6100 Westchester Park Dr. No. 1019, College Park, Md. 20740

Continuation of Ser. No. 561,707, Nov. 22, 1995, abandoned. This application Mar. 6, 1997, Ser. No. 812,162

Int. Cl.⁶ A43B *5/00*

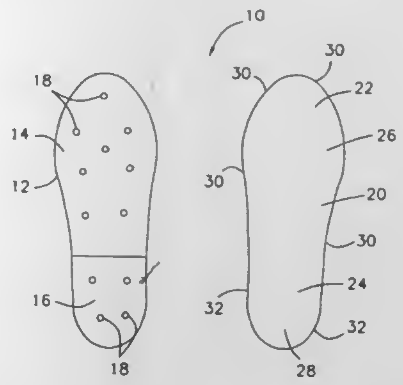
U.S. Cl. 36—127 **7 Claims**

1. A method of swinging a golf club comprising the steps of:

wearing a first shoe on a rear foot as a golfer addresses a golf ball, the first shoe having a first sole and a first heel and a plurality of spikes extending downwardly from at least one of the first sole and the first heel, and a second shoe on a front foot as the golfer addresses a golf ball, the second shoe having a second sole and a second heel, the second sole and the second heel being smooth and spikeless;

executing a backswing as the first shoe holds the rear foot in position by engagement between the spikes and ground;

executing a downswing having translational and rotational components; and



rotating and sliding the front foot as the second shoe slides and rotates along the ground.

5,711,095

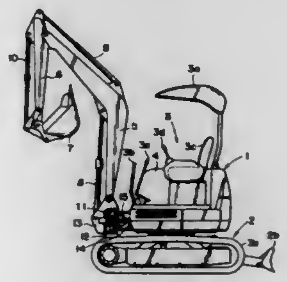
HYDRAULIC WORKING MACHINE HAVING A PROJECTING PORTION

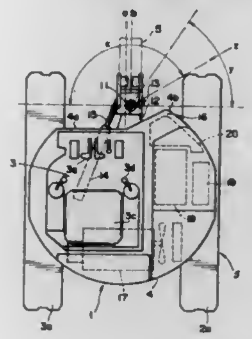
Kazuo Oda; Yoshiaki Murakami, both of Hiroshima, and Masaaki Terada, Ogaki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 14, 1996, Ser. No. 645,713

Int. Cl.⁶ E02F *3/96*

U.S. Cl. 37—410 **9 Claims**





1. A hydraulic working machine comprising:

an undercarriage;

a revolving upper structure rotatably mounted on said undercarriage and including a cab, said upper structure having a rear half movable within the width of said undercarriage while said upper structure is rotating;

a boom pivotally supported on a front end of said upper structure and being swingable within a swing area defined by a predetermined swing angle, said swing angle including a first end located near said cab and a second end located remote from said cab; and

a projecting portion provided on said upper structure at a position remote from said cab and provided on an outside of said swing area, said projecting portion having a side surface facing said boom and extending substantially parallel to said boom when said boom is disposed at said second end of said swing angle.

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5,711,096
WORKING MACHINE OF A HYDRAULIC BACKHOE HAVING INCREASED BLADE TIP FORCE

Takeshi Kobayashi, Hirakata; Haruo Tomozaki, Kurume; Yuji Shiomoto, Osaka; Tadashi Ekawa, Hirakata, and Kiyoshi Sugiyama, Kanazawa, all of Japan, assignors to Komatsu Ltd., Tokyo, Japan

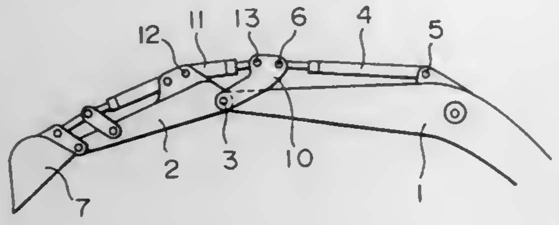
PCT No. PCT/JP94/01808, § 371 Date Aug. 6, 1996, § 102(e) Date Aug. 6, 1996, PCT Pub. No. WO95/12039, PCT Pub. Date May 4, 1995

PCT Filed Oct. 27, 1994, Ser. No. 628,631

Claims priority, application Japan, Oct. 27, 1993, 5-062547; Oct. 27, 1993, 5-291236

Int. Cl.⁶ E02F *3/32*

U.S. Cl. 37—443 **7 Claims**



1. A working machine of a hydraulic backhoe, comprising:
boom attached to a bracket on a vehicle body;
an arm coupled to a first fulcrum at a leading end of said boom;
a first link having one end coupled to said boom and another end coupled to an arm cylinder, said one end of said first link and said another end of said first link being opposing of said first link;
a second link having one end coupled to a second fulcrum provided on one side of said arm and the other end coupled to the another end of said first link; and
a working member coupled to another end of said arm, wherein one end of said first link is coupled to either the leading end of said boom or a portion of said boom on a rear side of a leading end, and said second link is a hydraulic correction cylinder.
wherein a first coupling position which is between said first link and said second link is proximate a second coupling which is between said first link and said arm cylinder, a third coupling position being between said first link and said boom, and
wherein a first distance between said first coupling position and said third coupling position is less than or equal to a second distance between said second coupling position and said third coupling position.

5,711,097
PRESS FOR THE AUTOMATIC IRONING AND FINISHING OF THE TROUSERS

Antonio Minó , Via Ravalli 21, San Nicandro Garganico, Italy

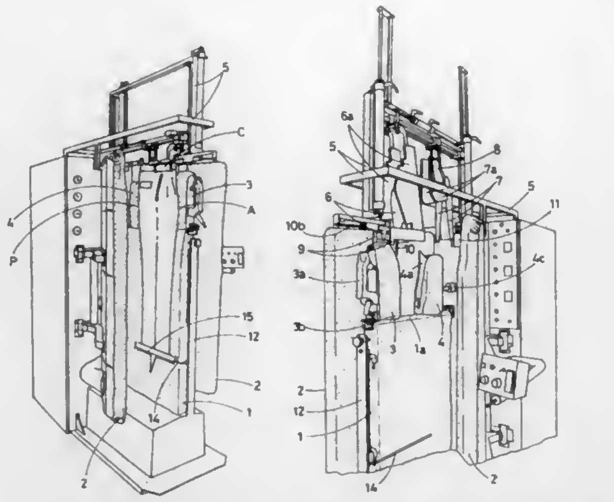
Filed Jul. 26, 1996, Ser. No. 686,769

Claims priority, application Italy, Aug. 1, 1995, FE695A003

Int. Cl.⁶ D06F *71/29*

U.S. Cl. 38—21 **14 Claims**

1. A press for a pair of trousers, comprising:
a fixed panel having a top edge and a front edge;
a pair of mobile panels, said fixed panel being interposed between said mobile panels, said mobile panels being pivotally movable relative to said fixed panel;
a front slab slidably supported by said fixed panel and positioned at said top edge thereof;
a rear slab slidably supported by said fixed panel and positioned at said top edge thereof;
a scaffolding member positioned above said fixed panel;
a plurality of shaped members slidably supported by said scaffolding member;



a pair of fixed hooking members positioned above said front slab, said fixed hooking members being spatially separated;
a biased hooking member disposed intermediate to said two fixed hooking members, said biased hooking member being supported by a movable shaft biased in a rest position;
a retractable hooking member positioned above said rear slab and in substantial alignment with said biased hooking member and said retractable hooking member being movable, said fixed hooking members, said hooking member and said retractable hooking member being provided for cooperatively supporting an upper waist portion of said trousers;
a fork member movably disposed along said front edge of said fixed panel, said fork member having connecting mechanisms extending on two opposed faces of said fixed panel for engaging leg portions of said trousers;
means for producing steam and for feeding said steam to said fixed panel, said mobile panels, said front slab and said rear slab; and
means for inhaling from said fixed panel and said mobile panels.

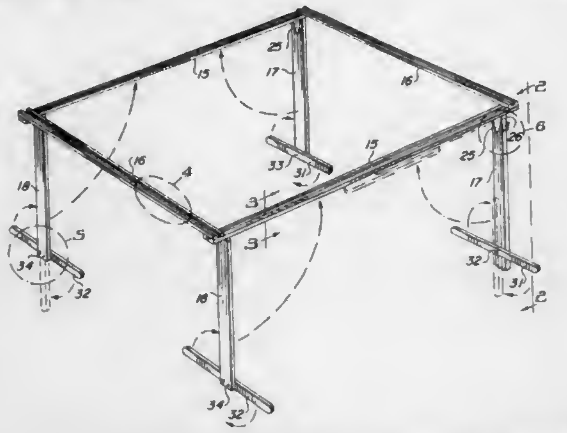
5,711,098
FOLDING QUILTING FRAME WITH SUPPORT LEGS

Gregg L. Warne, 2228 W. Plata Clr., Mesa, Ariz. 85202

Filed Aug. 22, 1995, Ser. No. 517,203

Int. Cl.⁶ D06C *3/08*

U.S. Cl. 38—102.9 **5 Claims**



1. In a quilting frame, an elongated rail, a first leg having one end hingedly attached to said rail near one end of the rail, said leg being movable between one position at a substantially right angle to the rail and a second position lying flush against the rail, and a first foot pivotally mounted to the other end of said leg, said foot being movable between one position in which the foot is normal to said leg and a second position in which the foot is substantially parallel to the leg, the pivotal mount for said foot being positioned

such that when each of the leg and the foot are in their respective second positions said foot is positioned alongside and parallel to the rail, said rail having a longitudinal recess in the upper face thereof and a plurality of pins in said recess and spaced along the length of the recess, said pins extending transversely of the recess and having an exposed length less than the width of the recess.

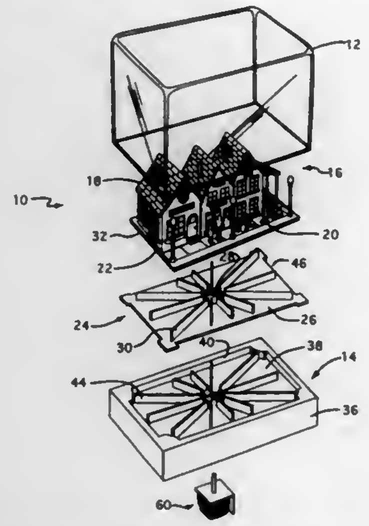
5,711,099
SNOW GLOBE

Mark S. Nesbit, West Des Moines, and Duane H. Swensen, Des Moines, both of Iowa, assignors to International Product Concepts, Inc., Pleasant Hill, Iowa

Filed Apr. 18, 1996, Ser. No. 634,563

Int. Cl.⁶ G09F *19/00*

U.S. Cl. 40—406 **18 Claims**



1. A decorative visual display device comprising:
(a) a shell having sides of a fluid-tight material, said shell being at least partially transparent to light;
(b) a fluid provided within said shell, said fluid being at least partially transparent to light;
(c) a plurality of particles provided in said fluid, wherein particles of said plurality of particles are constructed of a material which is visible when said particles are placed within said fluid;
(d) means positioned substantially equidistant from said sides of said shell and in operable communication with said fluid for moving said fluid for within said shell, wherein said moving means is a fluid propeller; and
(e) means positioned in said fluid for creating a plurality of intake ports, wherein said plurality of intake ports are in fluid communication with an intake hole.

5,711,100
VEHICLE ADVERTISING SIGN, SYSTEM AND METHOD

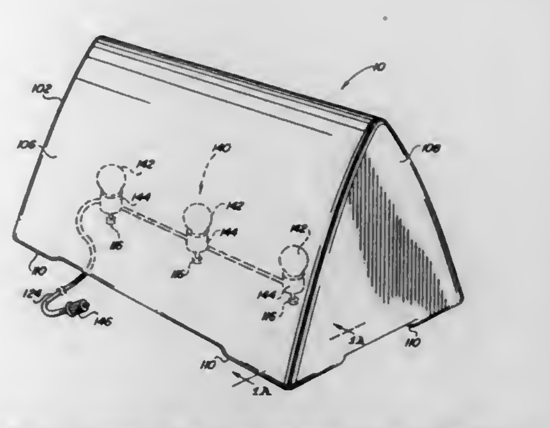
William A. Elmer, 1010 Temple Grove Ct., Winter Park, Fla. 32789

Filed Jun. 14, 1993, Ser. No. 74,598

Int. Cl.⁶ G09F *21/04*

U.S. Cl. 40—592 **6 Claims**

2. An advertising sign for removably mounting onto a metal panel of a motor vehicle, comprising:
an advertising member having a base, ends and sides formed together into a completely enclosed hollow body;
plural magnets; and
means for pivotally attaching each magnet to the base so that each magnet can pivot and adjust to differences in slope along a vehicle metal panel to which the advertising sign may be



attached, wherein the pivotal attaching means comprises a flexible sleeve between each magnet and the base.

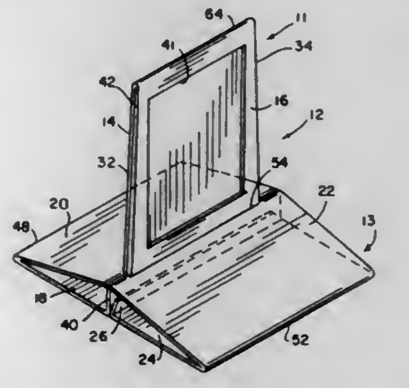
5,711,101
POP-UP FRAMING DEVICE

David C. Mueller, 1727 E. Midway Rd. #6, and Daniel R. Coots, 2503 S. Greenview St., both of Appleton, Wis. 54915

Filed Nov. 15, 1996, Ser. No. 749,977

Int. Cl.⁶ G09F *1/12*

U.S. Cl. 40—750 **14 Claims**



1. A frame made from a foldable blank, comprising:
a display portion including a frame panel and a frame backing panel integrally attached to each other along a foldline;
a support portion integrally attached to the display portion at a foldline and including first and second serially arranged pairs of support panels separated by foldlines, the support panels forming a support opening along a foldline separating the first and second pairs of support panels;
wherein the display and support portions are moveable between a covering configuration wherein the pairs of support panels lie flat on opposite sides of the display portion so that a majority of the display portion is covered by the support portion, and a display configuration wherein each pair of support panels forms an angle with the other pair to form a support base and the display portion extends through the support opening so as to be supported by the base; and
wherein a portion of the support opening defines an end of a bendable tab, the tab being part of a specified support panel that is on an opposite side of the support opening from the foldline between the display portion and the support portion, lateral sides of the tab being defined by slits extending from the support opening in a direction away from the foldline between the display portion and the support portion, the tab being configured to bend outward relative to a remainder of the specified support panel to enlarge the support opening as the display portion is first inserted through the support opening; and
wherein the display portion is longer than a collective length of two support panels that are positioned between the support opening and the display portion.

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5,711,102

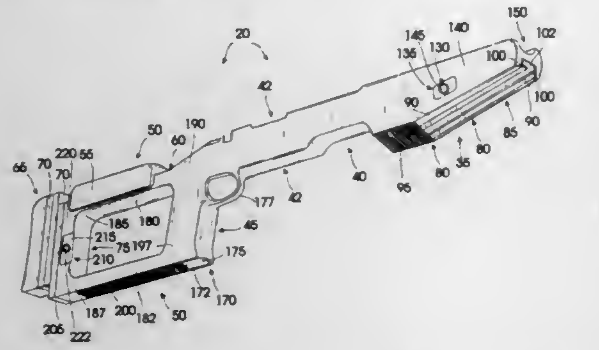
USER CONFIGURABLE SNIPER RIFLE STOCK

John L. Plaster, Iron River, Wis., and Garth L. Choate, Bald Knob, Ark., assignors to Choate Machine & Tool Co., Inc., Bald Knob, Ark.

Filed Oct. 29, 1996, Ser. No. 740,424

Int. Cl.^{6} F41C *23/00*

U.S. Cl. 42—71.01 **21 Claims**



1. An integral user configurable sniper rifle stock, said stock comprising:

a relatively wide forearm portion, said forearm portion comprising:

a forend having an angled base;

a rail disposes within said base said rail defining a generally "T" shaped channel to receive and mount accessories;

a first relatively flat base portion extending rearwardly from said forend, said flat portion disposed generally parallel to a bore of a rifle mounted to said stock;

a relatively narrow carry portion extending rearwardly of said forearm, said carry portion having a width and thickness less than said forearm portion;

a bed defined along a top of said forearm portion and said carry portion for receiving the barrel of said rifle;

an action mounting portion extending rearwardly from said carry portion, said action mounting portion defining a hollow to accept the receiver and action of said rifle mounted to said stock and said action mounting portion having a thickness greater than said carry portion;

an angled relatively vertical grip portion extending rearwardly and downwardly from said receiver portion and disposed generally adjacent a trigger of said rifle mounted in said stock: and,

an open rear stock portion defined by an upper brace portion extending rearwardly from an upper portion of said grip portion, a lower brace portion extending rearwardly from a lower portion of said grip portion and a butt portion extending generally vertically between reward extents of said brace portions, said lower brace portion defining a second, lower relatively flat base portion generally parallel with said bore of said rifle.

5,711,103

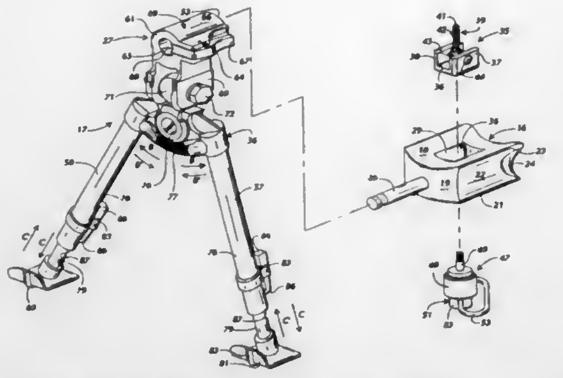
BIPOD MOUNTING DEVICE

Da Keng, 875 Wharton Dr., SW., Atlanta, Ga. 30336

Filed Oct. 13, 1995, Ser. No. 542,822

Int. Cl.^{6} F41A *23/10*

U.S. Cl. 42—94 **9 Claims**



6. A mounting block assembly for being secured to a swivel stud depending from the stock of a firearm, the swivel stud having an exposed eye extending therethrough, said mounting block assembly comprising:

a mounting block having an aperture formed in an upper surface thereof;

a substantially rigid mounting member having a pair of parallel side walls that define a central channel sized to receive the swivel stud, a removable fastener adapted to be extended between said parallel side walls of said mounting member and through the eye of the swivel stud to fasten said mounting member to the swivel stud, said mounting member adapted to be received within said aperture formed within said upper surface of said mounting block and to receive a securing means extending through said mounting block for securing said mounting member within said aperture of said mounting block, said securing means selectively drawing said mounting member downwardly into said aperture for securing said mounting block firmly against the stock of the firearm.

5,711,104

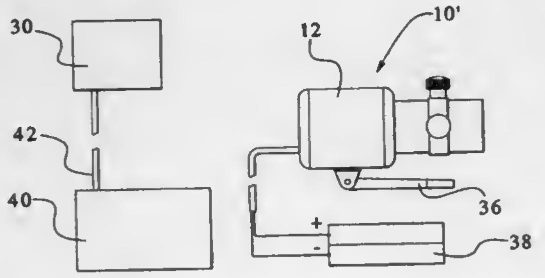
SMALL ARMS VISUAL AIMING SYSTEM, A METHOD FOR AIMING A FIREARM, AND HEADGEAR FOR USE THEREWITH

Geoffrey W. Schmitz, 413 LaSalle St., Wausau, Wis. 54403

Filed Dec. 19, 1996, Ser. No. 769,123

Int. Cl.^{6} F41G *1/46*

U.S. Cl. 42—100 **16 Claims**



1. An aiming system comprising:

a firearm having a barrel;

a camera mounted to the firearm along an axis parallel to the barrel;

transmission means associated with the camera for transmitting an image from the camera;

display means remote from the transmission means for viewing the transmitted image; and

memory means for storing the image transmitted from the camera.

5,711,105

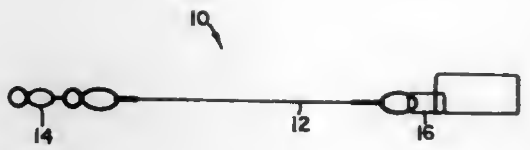
KINK-FREE FISHING LEADER

Scott W. Schreifels, 5520 Richmond Curve, Minneapolis, Minn. 55410, and Curtis Amplatz, 546 North Lexington Pkwy., St. Paul, Minn. 55104

Filed Jul. 26, 1995, Ser. No. 507,553

Int. Cl.^{6} A01K *91/00*

U.S. Cl. 43—44.98 **3 Claims**



1. A fishing leader comprising a core wire secured to a swivel at a first end and a clasp at a second end, said core wire comprising a sufficient amount of a nickel-titanium alloy such that said leader is kink-resistant, wherein the core wire has a nickel content in the range of about 54% to 57% and a respective titanium content of about 46% to 43%.

5,711,106

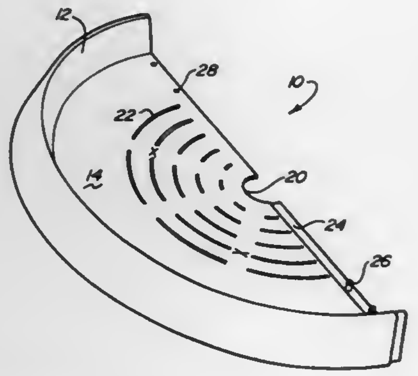
LANDSCAPE EDGING PRODUCT

Craig A. Ellis, 11402 Nora Dr., Fenton, Mich. 48430

Filed May 1, 1996, Ser. No. 640,532

Int. Cl.^{6} A01G *13/10*

U.S. Cl. 47—25 **15 Claims**



1. A landscape edging system comprising at least two generally semi-circular shaped frames, each of said semi-circular frames adapted to rest on a ground surface and comprising:

a generally semi-circular inverted V-shaped frame edge, said V-shaped frame edge including an outer leg and an inner leg, said outer leg of said frame edge being longer than said inner leg of said frame edge; and

a base extending radially inward from said inner leg of said frame edge over substantially an entire circumferential length of said inner leg of said frame edge, said base in conjunction with said outer leg of said frame edge adapted to position said base in spaced relation above said ground surface and defining a first compression space disposed below said base and said inner leg of said frame edge.

5,711,107

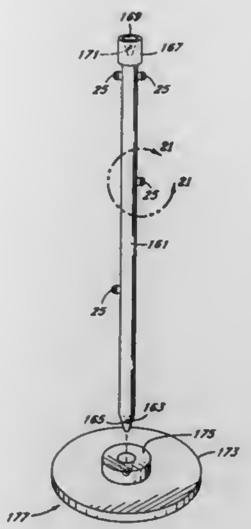
STRUCTURAL SUPPORT SYSTEM FOR PLANTS

Gary L. Louisiana, 15871 Plumwood St., Westminster, Calif. 92683

Filed May 31, 1995, Ser. No. 456,070

Int. Cl.^{6} A01G *17/06;17/14*

U.S. Cl. 47—45 **10 Claims**



1. A plant support comprising:

an elongate member having a pointed first end and having a small projection extending from said first end, a second end having a substantiated connector portion and having a space having a small void complementary in size to said small projection such that a first elongate member can be attached to a second elongate member by connecting a first end of said first elongate member to a second end of said second elongate member; said elongate member carrying a plurality of strap supports extending therefrom generally away from an axis of said elongate member extending between said first end and said second end.

5,711,108

HYBRID BREEDING METHODS FOR CROP PLANTS IN THE FAMILY BRASSICACEAE

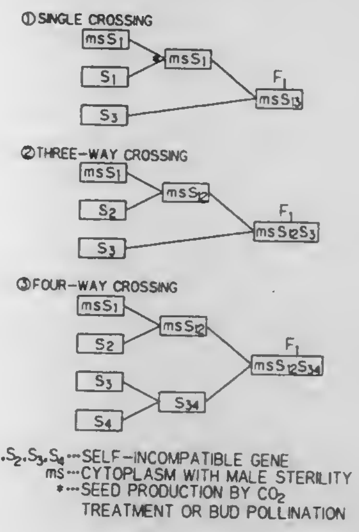
Toshimasa Yamashita, and Mitsunori Higuchi, both of Shiga, Japan, assignors to Takii Shubyo Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 27, 1995, Ser. No. 395,021

Claims priority, application Japan, Mar. 10, 1994, 6-039621

Int. Cl.^{6} A01H *1/00*

U.S. Cl. 47—58 **2 Claims**



1. A method of inhibiting selfing in breeding crop plants in the family Brassicaceae to produce F_1 hybrid seed which comprises the steps of crossing a male-sterile self-incompatible line as a female parent with a self-incompatible plant as the male parent to produce seed in said female parent, and harvesting the seed produced.

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5,711,109
METHOD AND APPARATUS FOR RAISING PLANTS

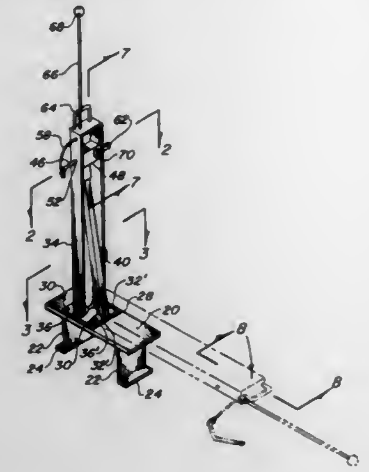
Gary R. Pitts, 5025 E. Adams Ave., Fowler, Calif. 93625
Filed Oct. 10, 1995, Ser. No. 541,794
Int. Cl.^{6} A01G *17/02;17/06*
U.S. Cl. 47—58 **11 Claims**

1. A method for raising grapevines which can be trained to grow at least one trunk, at least one cordon, a plurality of canes and a crop borne by said canes during a growing season, the method comprising the steps of:

A. growing a plurality of said grapevines in the earth arranged in substantially parallel rows of said grapevines with the trunks thereof extending generally upwardly from the surface of the earth within their respective rows;
B. segregating portions of each of said grapevines to form four cordons;
C. training said four cordons of each of said grapevines to grow along a pair of substantially parallel courses individually laterally disposed relative to said row with said four cordons arranged in two pairs so that the cordons of each pair of cordons are trained to grow in substantially opposite directions along one of said pair of courses;
D. extending said canes produced by each cordon of each grapevine laterally of said course and the row thereof and in spaced relation to the earth surface over a trellis structure extending substantially the full distance between adjacent rows of said grapevines so that the canes produced by the four cordons of the grapevines of the rows extend in substantially side-by-side relation from their respective cordons over said trellis structure between said adjacent rows of said grapevines and generally toward the canes of the grapevines of the adjacent row in spaced relation to the earth surface; and
E. growing said crop in pendant relation from the canes extending generally in the direction of the earth surface from said trellis structure.

5,711,110
VEHICLE PARKING BARRIER

J. Marlis Williams, 7480 Poppy St., Corona, Calif. 91719
Filed Aug. 23, 1996, Ser. No. 702,007
Int. Cl.^{6} E01F *13/00;13/04*
U.S. Cl. 49—35 **17 Claims**

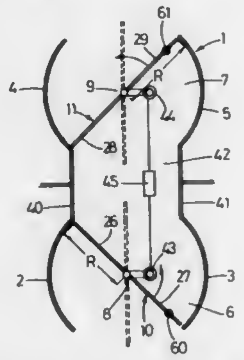


1. A vehicle parking barrier permanently installed within a parking surface for withholding access and maintaining security of a motor vehicle comprising:

a base having downwardly extending angular legs permanently embedded within a parking surface,
hinge means attached to the base for allowing the barrier to be rotated downwardly from an obstructive vertical position,
a pivotal barricade post swivelly attached to the hinge means,
a structurally sound strut having a first end and a second end, with the first end slideably retained within the post, and the second end attached to the hinge means, also the post, base and strut arranged in a form of a right angled triangle with the strut constituting a hypotenuse, and
locking means disposed between the post and the strut for removably capturing the strut within the post for inflexible vertical securement while permitting authorized access to pivot the post into a horizontal position by sliding the strut therewithin.

5,711,111
REVOLVING DOOR LOCK

Jürg Nyffenegger, Schwarzenburg, Switzerland; Erik Jan Huber, AR Purmer, and Jacob Robert Alfred Huber, ES Edam, both of Netherlands, assignors to Boon Edam E.V., Edam, Switzerland
PCT No. PCT/NL93/00196, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/08121, PCT Pub. Date Apr. 14, 1994
PCT Filed Oct. 6, 1993, Ser. No. 406,874
Int. Cl.^{6} E05D *15/02*
U.S. Cl. 49—42 **15 Claims**

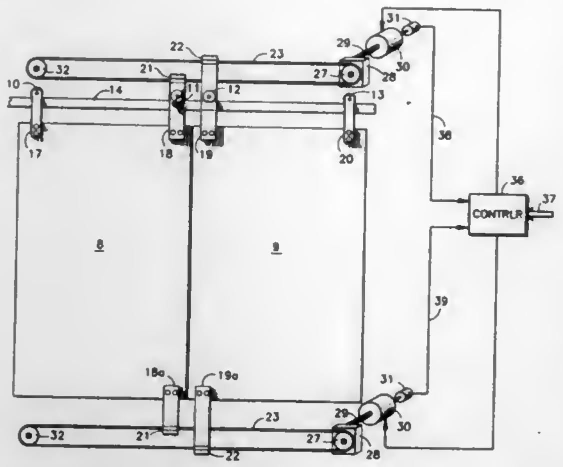


1. A revolving door lock having outer walls laterally defining a passage space, comprising at least two revolving doors coupled for relatively synchronous movement and each having two wings rotatable about respective vertical rotating axes of the revolving doors, with an angle of said wings of the revolving doors with respect to a line of symmetry in a longitudinal direction being an angular off-set of 90° so that the passage space with respect to the line of symmetry also has an angular off-set of 90° and the passage space is always closed at least on one side, wherein the rotating axes of the revolving doors are positioned at a distance which is at least about 2.25 times greater than the radius of one of the revolving doors to create an intermediate space between the revolving doors which is sufficiently large enough for a person to stand therein without interference from the revolving doors.

5,711,112
DOUBLE-DRIVE AUTOMATIC SLIDING DOOR OPERATOR

Michael T. Barten, Berlin; Rüdiger Löb, Hennigsdorf; Helmut L. Schröder-Brumloop, and Mustapha Toutaoui, both of Berlin, all of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Sep. 3, 1996, Ser. No. 711,366
Int. Cl.^{6} E05C *7/06*
U.S. Cl. 49—118 **5 Claims**

1. A sliding door operator, comprising:
a slidable door panel having a top and a bottom;
a first endless flexible member connected to the top of said door panel;
first rotary means including a bidirectional electric motor for causing said flexible member to translate longitudinally in either one of two horizontal directions, one direction causing said door panel to move one way thereby opening said door, and the other direction causing said door panel to move another way thereby closing said door;
characterized by the improvement comprising:

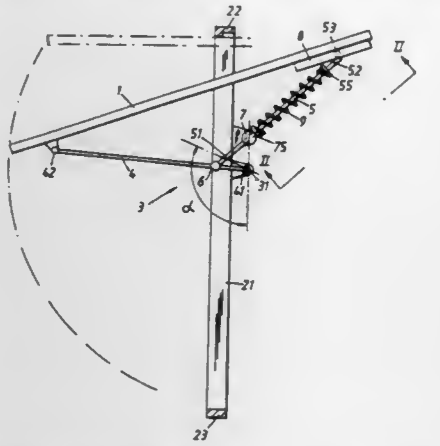


a second endless flexible member connected to the bottom of said door panel;
second rotary means including a bidirectional electric motor for causing said second flexible member to translate longitudinally in either one of said two directions;
a first encoder interconnected with said first flexible member for providing first signals indicative of the translation thereof;
a second encoder interconnected with said second flexible member for providing second signals indicative of the translation of said second rotary means; and
control means for providing speed signals indicative of desired speed as a function of position in a preestablished motion profile and responsive to said first and second signals for providing separate command signals to each of said motors in accordance with said motion profile.

5,711,113
SUSPENSION MECHANISM FOR A DOOR CONSTRUCTION

Jonny Nygård, Heby, Sweden, assignor to JKG Snickerikonsult AB, Heby, Sweden
PCT No. PCT/SE95/00568, § 371 Date Nov. 14, 1996, § 102(e) Date Nov. 14, 1996, PCT Pub. No. WO95/32351, PCT Pub. Date Nov. 30, 1995
PCT Filed May 19, 1995, Ser. No. 737,244
Claims priority, application Sweden, May 25, 1994, 9401797
Int. Cl.^{6} E05D *15/46*
U.S. Cl. 49—206 **12 Claims**

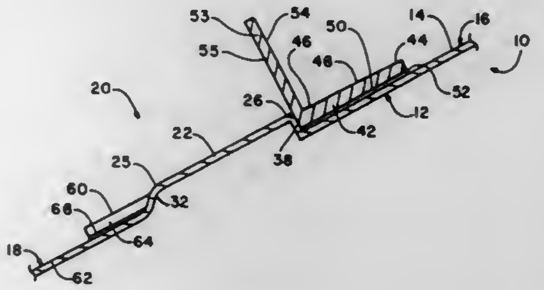
1. A suspension mechanism for a door construction of the kind



which includes a door panel that can be swung vertically up and down, wherein the suspension mechanism includes a stationary pivot means (31) located in the region between a upper and lower parts of the door opening, a first brace means (4) extending from the pivot means (31) to the lower part of the door, a spring means (9) which stores energy when closing the door (1) and which when opening the door exerts a torque-generating force which causes the first brace means (4) to pivot and therewith raise the door panel, and further includes a second brace means (5) whose one end (51) is pivotally connected to the first brace means (4) by a second pivot means (6) at a point between the stationary first pivot means (31) and the point of connection of the first brace means (4) to the lower part of the door, wherein the other end (52) of the second brace means (5) is intended to support against the upper part of the door panel (1), characterized in that the second brace means (5) extends in and is axially moveable through a stationary axial guide (7) located above the first pivot means (31).

5,711,114
SNOW RETENTION ASSEMBLY AND METHOD OF USING THE SAME

George B. Mueller, 3540 Chalet, Crete, Ill. 60417
Filed May 15, 1995, Ser. No. 441,094
Int. Cl.^{6} E04D *13/10*
U.S. Cl. 52—24 **16 Claims**



1. A two-piece snow retention assembly for holding accumulated snow or ice in equilibrium on a top surface of a sloped roof, comprising:

a first piece comprising an upstanding projection having an elongated upper upstanding wall portion, said upstanding projection adapted to extend upwardly from the roof and integrally connect to the top surface;
said wall portion having a front outer face;
means for integrally connecting said wall portion to the roof top surface;
a second piece comprising a separate snow guard means adapted to be positioned on said top surface for engaging the snow or ice to help hold back the accumulated ice or snow;
means for mounting said snow guard means in abutting relationship with the projection upper wall portion for supporting said separate snow guard means from a downroof position to facilitate resisting said snow guard means from moving downroof along the top surface; and
wherein said separate snow guard means includes a base member adapted to be affixed to the roof top surface, said separate snow guard means including an upstanding wall member connected to said base member for engaging the accumulated snow or ice on the roof top surface, and said snow guard base member having a rear end portion abutting said upper wall portion at its front outer face to enable said projection to help resist said snow guard means from moving downroof along the roof top surface under the weight of the accumulated snow or ice.

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5,711,115

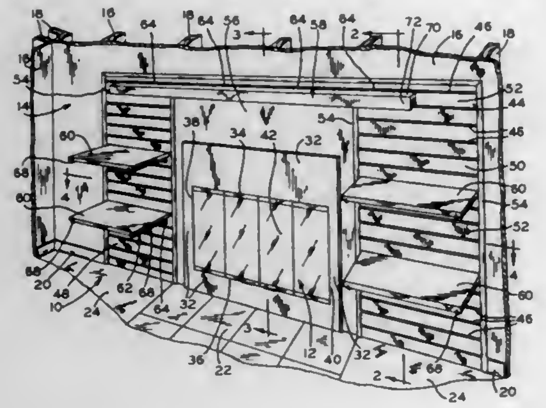
FIREPLACE SHELF AND MANTEL SUPPORT SYSTEM

Nancl Marie Wirt, Elkhart, Ind., assignor to Design Components, Inc., Elkhart, Ind.

Filed Oct. 30, 1996, Ser. No. 739,260

Int. Cl.^{6} F24B *1/198*

U.S. Cl. 52—36.3 **20 Claims**



1. A fireplace shelf and mantel support system comprising:

a fireplace opening extending through a wall;

a slotwall panel having a plurality of bracket support slots, said slotwall panel attached to said wall adjacent said fireplace opening; and,

a mantel supported on said slotwall panel with a support bracket partially extending into one of said bracket support slots and away from said slotwall panel.

5,711,116

POLYMER BATTEN WITH ADHESIVE BACKING

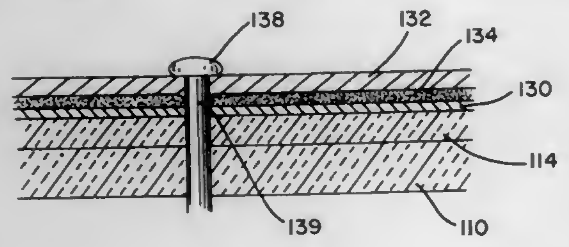
Riaz-Ul S. Hasan, Palatine, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 208,247, Mar. 9, 1994, Pat. No. 5,469,671, which is a continuation of Ser. No. 831,412, Feb. 5, 1992, Pat. No. 5,309,685. This application Aug. 14, 1995, Ser. No. 515,033

Int. Cl.^{6} E04D *1/36*

U.S. Cl. 52—58 **20 Claims**

1. In combination, a system for readily facilitating the securing



of a roofing component to underlying roofing decking, comprising:

a roofing membrane to be secured to underlying roofing decking; and

a self-contained composite roofing batten strip comprising a roofing batten strip having upper and lower longitudinally extending surface portions having a predetermined length; a strip of adhesive, which is inherently tacky at room temperature, having a predetermined length which is substantially the same as said predetermined length of said roofing batten strip, and having upper and lower longitudinally extending surface portions with said upper longitudinally extending surface portion adhesively secured to said lower longitudinally extending surface portion of said roofing batten strip; and a releasable backing strip, having a predetermined length which is substantially the same as said predetermined length of said strip of adhesive as well as said predetermined length of said roofing batten strip, releasably bonded to said lower longitudinally extending surface portion of said strip of adhesive whereupon removal of said releasable backing strip from said lower surface portion of said strip of adhesive and contact of said lower surface portion of said strip of adhesive with said roofing membrane, said roofing batten strip is adhesively bonded to said roofing membrane whereby said roofing membrane is able to be secured to underlying roofing decking by said self-contained composite roofing batten strip.

5,711,117

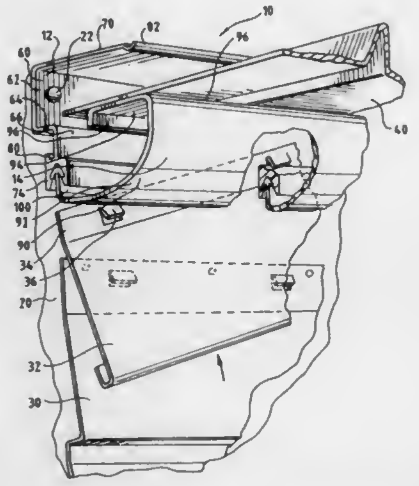
COMBINATION OF SOFFIT PANEL, SIDING PANEL, AND SOFFIT-PANEL MOUNTING AND SIDING PANEL-TRIMMING ASSEMBLY

Richard J. Zaccagni, Downers Grove, and Gregory R. Zaccagni, Aurora, both of Ill., assignors to ZMC, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 568,627, Dec. 7, 1995. This application Aug. 20, 1996, Ser. No. 704,423

Int. Cl.^{6} E04B *7/00*

U.S. Cl. 52—94 **10 Claims**



1. A combination comprising a generally horizontal soffit panel having a back edge portion, a generally vertical siding panel having an upper edge portion formed with at least two laterally spaced trim-engaging tabs, and a siding panel-trimming and soffit-panel mounting assembly comprising a supporting member and a retaining member, the supporting member having a generally vertical back panel and an upper front flange, the upper front flange projecting frontwardly from the back panel and overlying the back edge portion of the soffit panel, the retaining member being a separate member attached to the supporting member and having a lower front flange, the lower front flange projecting from the back panel and underlying the back edge portion of the soffit panel, one of the supporting and retaining members defining a hook behind the back panel, the hook interengaging with the trim-engaging tabs on the upper edge portion of the siding panel, for trimming and mounting the upper edge portion of the siding panel so as to conceal the upper edge portion of the siding panel and said tabs behind the back panel.

5,711,118

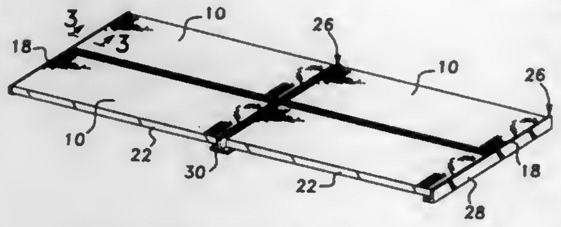
METHOD OF MANUFACTURING AN ANTI-SLIP FLOORING PRODUCT AND ANTI-SLIP FLOORING ARTICLE

William S. Molnar, Detroit, Mich., assignor to W.S. Molnar Company, Detroit, Mich.

Filed May 15, 1996, Ser. No. 648,433

Int. Cl.^{6} E04F *11/16*

U.S. Cl. 52—177 **4 Claims**



1. A method of manufacturing an antislip flooring product comprising the steps of:

providing a metallic plate with a plurality of perforations;

cutting the metallic plate to a desired shape;

securing a plurality of reinforcements to the metallic plate; and metalizing a top surface of the metallic plate to provide an antislip surface.

5,711,119

DETACHABLE ADHESIVE MOUNTING OF A WINDOW PANE TO A FRAME

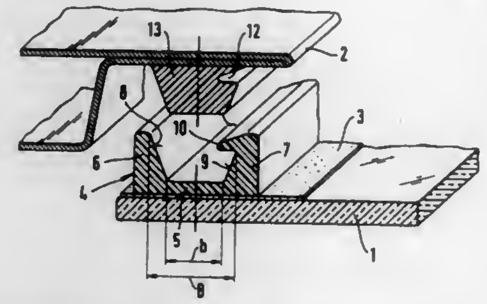
Gerd Cornils; Rolf Kötte, and Petra Friede, all of Allemagne, Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Feb. 2, 1996, Ser. No. 595,703

Claims priority, application Germany, Feb. 2, 1995, 195 03 314-0

Int. Cl.^{6} E06B *3/56*

U.S. Cl. 52—208 **16 Claims**



1. A mounting for attaching a window pane to a window frame, comprising:

a) an adhesive bead having a recess thereon; and

b) a profiled frame segment comprising a base and two flanges, wherein:

i) the flanges are connected to the base and define a groove;

ii) at least one of the flanges has an inward projection engaging the recess on the adhesive bead, said inward projection having a thickness;

iii) the groove receives the adhesive bead and has a depth below the inward projection which is greater than the thickness of the inward projection; and

iv) the adhesive bead is capable of being adhered to a window pane and the profiled frame segment is capable of being adhered to a window frame or, alternatively, the adhesive bead is capable of being adhered to a window frame and the profiled frame segment is capable of being adhered to a window pane, so that the window pane can be attached to or detached from the window frame by applying a mechanical force to the adhesive bead or profiled frame segment;

wherein said profiled frame segment is made of a thermoplastic elastomer and said adhesive bead is made of a reactive polymer which does not bond to the thermoplastic elastomer.

5,711,120

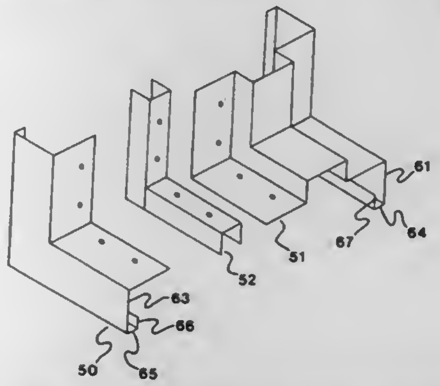
SELF ANCHORING FIRE RESISTANT TWO PIECE NON-OPERABLE WINDOW FRAME ASSEMBLY

Joseph Karpen, Weaverville, N.C., assignor to Karpen Steel Products, Inc., Weaverville, N.C.

Filed Jul. 8, 1996, Ser. No. 677,563

Int. Cl.^{6} E06B *1/20*

U.S. Cl. 52—212 **24 Claims**



1. A self anchoring fire resistant two piece non-operable window frame assembly, wherein said window frame assembly is adapted to resist a fire extinguishing hose stream directed for a minimum of 45 minutes against a minimum ¼ inch thick glazing material in said window frame assembly, comprising two frame sections, including a first frame section and a second frame section, each said frame section adapted to slip in from opposite sides of a rectangular hole in a wall, glazing material, a square molding, said square molding having a square configuration in cross section, said square molding adapted to hold said glazing material in place in said window frame assembly, at least one fastener adapted to attach said square molding to said first and said second frame sections;

a means for resisting the fire extinguishing hose stream directed for a minimum of 45 minutes against a minimum ¼ inch thick glazing material in said window frame assembly, said means comprising said square molding being of steel and said square molding having respective side faces of at least one inch in height and a top connecting side faces, said top being at least one inch in width, and,

said self anchoring fire resistant two piece frame assembly being rectangular in shape with four sides.

5,711,121

PARTITION SYSTEM

James A. Garver, 40 W. Mountain Dr., Montecito, Calif. 93108

Continuation of Ser. No. 441,535, May 15, 1995, abandoned. This application Oct. 22, 1996, Ser. No. 755,095

Int. Cl.^{6} E04H *1/00*

U.S. Cl. 52—239 **19 Claims**

1. A partition system for defining one or more adjacent cubicles along a wall of a room, said system comprising a plurality of spaced partition forming structures, each including in combination:

a solid surface wall panel arranged to extend forwardly from and in substantially normal relation with the room wall, said wall panel having two opposed continuous wall forming surfaces extending between forward and rear edge portions of the wall panel;

a substantially vertical wall portion member supported on the floor of the room transversely of the wall panel and designed to hold the forward edge of said wall panel in spaced relation to the room floor;

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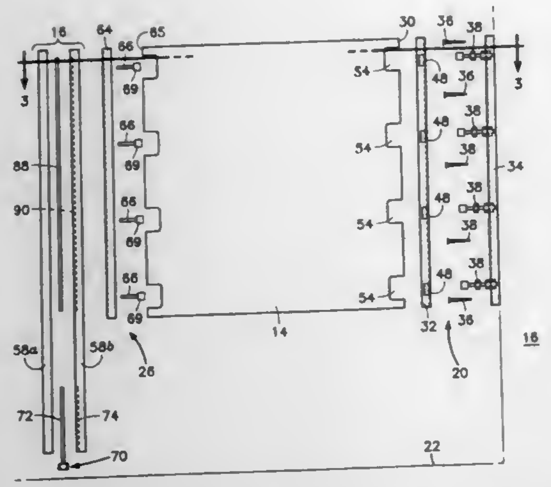
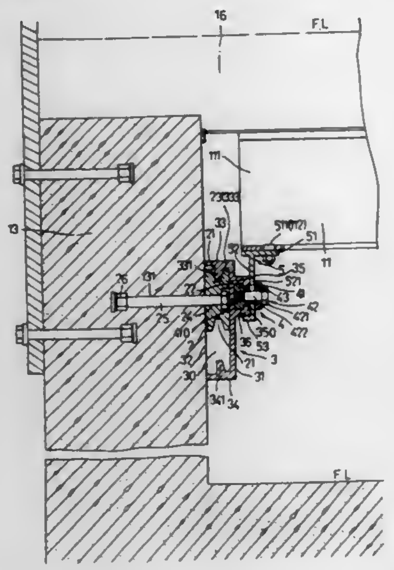


- a mounting assembly positively engaging the rear edge portion of said wall panel and rigidly securing said wall panel to the room wall, and including a pair of generally U-channel strips each having spaced legs interconnected by a web, the legs of one strip being engaged with the rear edge of the panel;
- securing structure connecting the other strip to the wall at a location desired to place said panel with the legs of said other strip in supported contact along said wall; and
- an adjustable fastening structure rigidly interconnecting the webs of said strips so that the rear edge of said panel may be manipulated so as to assume a vertical orientation.

5,711,122
SUPPORTING DEVICE FOR SUPPORTING A FLOOR FORM ASSEMBLY ON SURROUNDING WALLS OF A STRUCTURE

Wen-Yuan Lee, 7F-3, No. 8, Lane 390, Sec. 1, Chien-Kang Rd., Tainan City, Taiwan
Filed Mar. 29, 1996, Ser. No. 623,881
Int. Cl.^{6} E04B *1/00*
U.S. Cl. 52—283 **10 Claims**

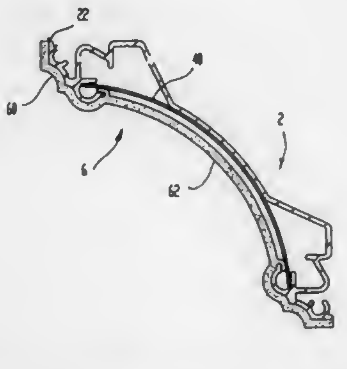


1. A supporting device for supporting a floor form assembly on surrounding walls of a structure, said supporting device comprising:

- a plurality of hangers capable of being fixed spacedly to a top portion of the surrounding walls in a horizontal plane, each of said hangers having a top face that is formed with a first engaging portion;
- an elongated mounting seat having a generally U-shaped cross section which has a first arm side, a second arm side, a base side that interconnects said first and second arm sides, a receiving space confined between said base side and said first and second arm sides, and an open side opposed to said base side, said hangers passing through said open side of said mounting seat and being received in said receiving space, said first arm side having an internal face which is formed with a second engaging portion, said first engaging portions of said hangers engaging said second engaging portion when said hangers are received in said receiving space and said first arm side is located over said second arm side of said mounting seat in order to retain said mounting seat to said hangers;
- a fastening apparatus mounted to an external face of said base side of said mounting seat; and
- a support member which is secured to said mounting seat by said fastening apparatus, said support member having a top portion which is formed with a supporting plate.

5,711,123
DECORATIVE MOULDING WITH REMOVABLE DECORATIVE PANEL

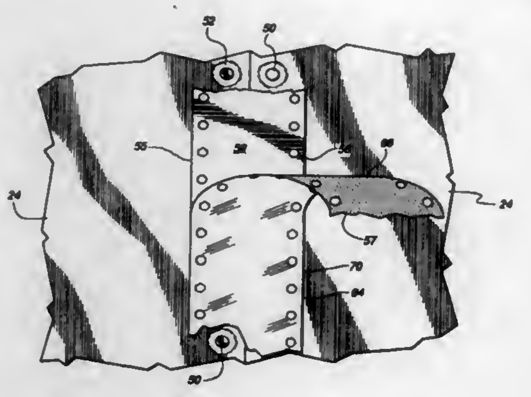
Bernard Lamont, Gatineau, and David Rozon, Russell, both of Canada, assignors to 2844788 Canada Ltée, Hull, Canada
Filed Jul. 22, 1996, Ser. No. 685,021
Int. Cl.^{6} E04B *2/00*
U.S. Cl. 52—287.1 **18 Claims**



9. A decorative moulding comprising an elongate generally flexible decorative panel, said decorative panel comprising a generally striplike sheet having upper and lower side edges, said panel being releasably retained within an elongate retainer member having an elongate channel defined by upper and lower sidewalls, an open mouth and a recessed floor, said upper and lower sidewalls each incorporating retention means for the releasable retention of said panel, said retention means partly occluding the mouth of the channel and each comprising a pair of extensions each extending backwardly and having a free end canted generally facing the floor of the channel, said retention means retaining said panel in alternately a generally concave position wherein the upper and lower side edges of said panel are each retained between a corresponding pair of said extensions, or in a generally planar or convex position wherein said panel is retained between the free ends of said extensions and the floor of said channel.

5,711,124
DRYWALL TAPE WITH REMOVABLE ABSORBENT LAYER COVERING

Ronald A. Stough, Hinsdale, Mont.; Edward A. Thompson, De Pere, and Karl A. Schmidt, Green Bay, both of Wis., assignors to E-Z Taping System, Inc., Green Bay, Wis.
Continuation-in-part of Ser. No. 513,386, Aug. 10, 1995, which is a continuation-in-part of Ser. No. 297,320, Aug. 26, 1994, Pat. No. 5,486,394. This application Jul. 5, 1996, Ser. No. 677,382
Int. Cl.^{6} E04B *2/00*
U.S. Cl. 52—417 **11 Claims**



1. A tape assembly for bridging the joint between two adjacent wall board panels, the assembly comprising:

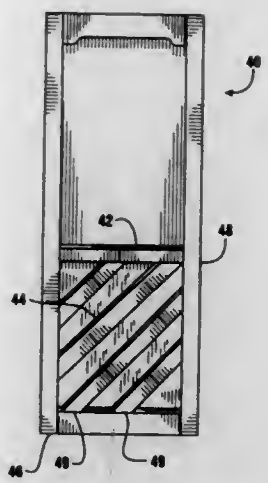
- a) a paper base layer having an outer surface;
- b) a high tack adhesive disposed on an inner surface of the paper base layer;
- c) a transfer liner having a release surface which is engaged with the high tack adhesive on the base layer;
- d) a low tack adhesive disposed on a surface of the transfer liner opposite the release surface, wherein the base layer and the transfer liner are wound into a roll such that the low tack adhesive on the transfer liner engages the outer surface of an underlying portion of the paper base layer, and wherein the force required to separate the high tack adhesive on the inner surface of the base layer from the transfer liner is less than the force required to separate the low tack adhesive on the release liner from the outer surface of the base layer, the low tack adhesive being such that when the release liner is removed from the base layer, little residue is left on the base layer, and the receptiveness of the paper base layer to drywall mud or plaster is not substantially impaired.

5,711,125
STORAGE BUILDING DOOR

John Schooling, 278 Main St., Wadsworth, Ohio 44281
Division of Ser. No. 4,235, Jan. 29, 1993, Pat. No. Des. 372,103. This application May 13, 1996, Ser. No. 645,342
Int. Cl.^{6} E06B *3/74*
U.S. Cl. 52—457 **15 Claims**

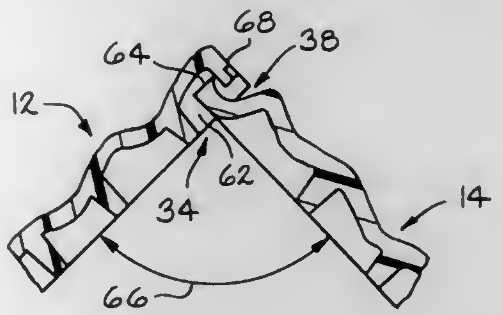
1. A wood door system for outdoor storage buildings comprising:

- a door, including:
  - an exterior wood door surface, whereby said door surface is exposed to weather in a closed position of said door; and
  - a first wood brace member extending outwardly and in supported connection with said door surface, wherein said brace member includes a top surface bounding said brace member and wherein said top surface extends in a direction that is both downwardly and outwardly relative to said door surface.



5,711,126
RESINOUS ANGLED SHINGLES FOR ROOF RIDGE LINES

James Randolph Wells, Heath, Ohio, assignor to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.
Filed May 13, 1996, Ser. No. 648,521
Int. Cl.^{6} E04D *1/20; 1/30*
U.S. Cl. 52—519 **20 Claims**



1. An angled roofing shingle for covering a ridge line of a roof, the shingle having a composition made from ingredients comprising an organic, resinous material and a filler material, wherein the shingle comprises:

- a first elongated portion including a longitudinal edge with a mating edge surface, and a second elongated portion having a longitudinal edge with a mating edge surface,
- the mating edge surfaces of the first and second elongated portions adapted to be joined together in a hinge-like configuration capable of being articulated to an angle from about 90 degrees to 180 degrees to form an angled shingle for covering a ridge line of a roof, the first and second elongated portions including means for moving the portions relative to each other to change the angle of the shingle to conform to the angle of the ridge line.

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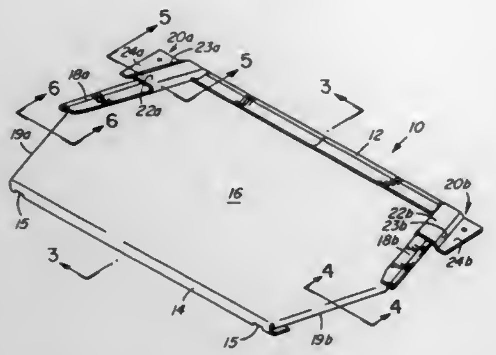
5,711,127

ROOF SHINGLE

Brunelle P. Sabourin, 21203-95th Avenue, Langley, British Columbia, Canada, V1M 1M1
Filed Mar. 5, 1997, Ser. No. 811,224
Int. Cl.^{6} E04D *1/26*
U.S. Cl. 52—530 **6 Claims**



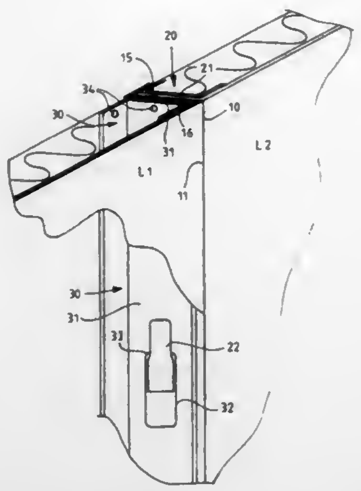
1. A roof shingle, comprising:
a major central area;
parallel top and bottom marginal edge portions which are turned inwardly of said central area so that said top marginal edge portion overlies said central area and said bottom marginal edge portion underlies said central area, and so that said top and bottom marginal edge portions are interengageable with like bottom and top marginal edge portions, respectively, of like roof shingles;
said roof shingle further comprising, at each side thereof, an upper side marginal edge portion and a lower side marginal edge portion, which are inclined relative to said parallel top and bottom marginal edge portions, respectively, so as to converge with one another; and
said upper and lower side edge marginal portions being turned inwardly of said central area so that said upper side edge marginal portions overlie said central area and said lower side edge marginal portions underlie said central area and so that said upper and lower side edge marginal portions are interengageable with like lower and upper side edge marginal portions, respectively, of like roof shingles.

5,711,128

METHOD FOR JOINING WALLBOARDS TOGETHER AND A NOVEL WALL ELEMENT

Tapio Kordelin, Turku, Finland, assignor to Oy Shippax Ltd., Turku, Finland
PCT No. PCT/FI95/00165, § 371 Date Nov. 14, 1996, § 102(e) Date Nov. 14, 1996, PCT Pub. No. WO95/33898, PCT Pub. Date Dec. 14, 1995
PCT Filed Mar. 28, 1995, Ser. No. 737,245
Claims priority, application Finland, Jun. 6, 1994, 942654
Int. Cl.^{6} B65B *47/00*
U.S. Cl. 52—579 **16 Claims**

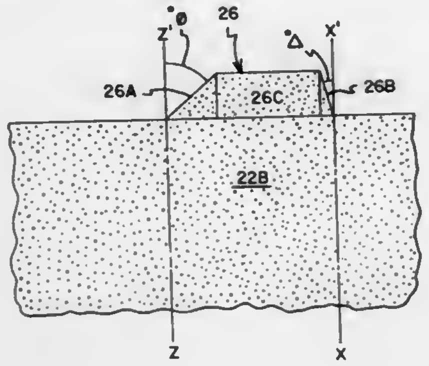
1. Method for attaching wall panels to each other with the wall panels positioned in side by side relation, the wall panels including a first wall panel having a side edge bent into a Z-section and a second side panel having a side edge bent into an L-section, the bent L-section and the bent Z-section being provided with holes at spaced intervals over a height of the wall panels, the method comprising:
placing the panels side by side by fitting the Z-section of the first panel against the L-section of the second panel so that the holes in the first and second panels are positioned opposite one another;
fitting a U-shaped tongue strip against the L-section of the second panel, the tongue strip having a middle part provided with upwardly oriented tongues extending over a height of the tongue strip, the tongue strip being fitted against the L-section of the second panel so that the tongues pass through the holes of both wall panels;
fitting a U-shaped wedge strip against the Z-section of the first panel, the wedge strip having a middle part provided with holes extending over a height of the wedge strip, the wedge strip being fitted against the Z-section of the first panel so that the tongues pass through the holes in the wedge strip; and
urging the wedge strip downwardly so that upper edges of the holes in the wedge strip are positioned in pockets formed by the tongues to thereby attach the panels to each other.



5,711,129

MASONRY BLOCK

Michael E. Woolford, Lake Elmo, Minn., assignor to Anchor Wall Systems, Inc., Minnetonka, Minn.
Division of Ser. No. 130,298, Oct. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 56,986, May 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 957,598, Oct. 6, 1992, abandoned. This application May 4, 1995, Ser. No. 434,779
Int. Cl.^{6} E04B *2/02;* **E04C** *1/00*
U.S. Cl. 52—604 **33 Claims**

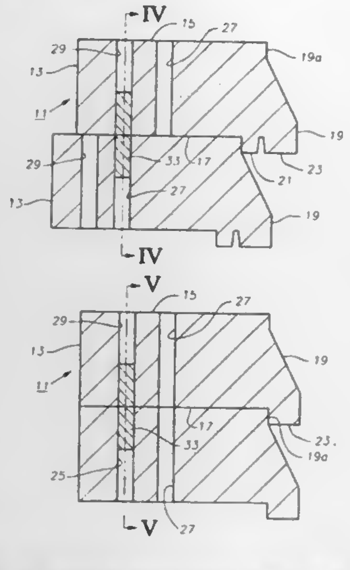


1. A masonry block comprising a front surface, a back surface, a top surface and bottom surface, and first and second sides, said first side having a first inset wherein said first inset extends from said block top surface to said block bottom surface, said second side having a second inset wherein said inset extends from said block top surface to said block bottom surface, said block comprising, a protrusion on one of said top or bottom surfaces, said protrusion configured to mate with the inset of one or more adjacently positioned blocks, said protrusion comprising first and second side surfaces wherein said first side surface is angled to interlock with one or more blocks positioned adjacent said composite masonry block, and said second protrusion side surface is angled to facilitate manufacture.

5,711,130

BUILDING BLOCK

Josh L. Shatley, 8900 Davis Blvd., Fort Worth, Tex. 76180
Filed Nov. 15, 1996, Ser. No. 746,764
Int. Cl.^{6} E04C *1/00*
U.S. Cl. 52—604 **9 Claims**



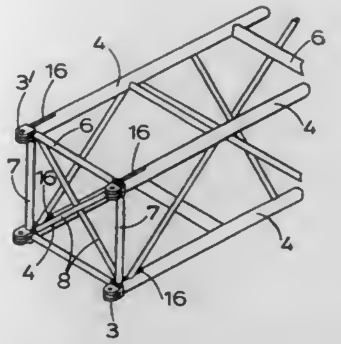
1. A plurality of building blocks for a wall, each of the blocks comprising:
a top, bottom, two sides facing in opposite directions, a forward end and a rearward end;
the bottom having a length greater than the top, defining an extension portion which extends rearward;
at least one rearward lug protruding from the extension portion of the bottom;
at least one forward lug protruding from the bottom adjacent to and forward of the rearward lug; wherein
an upper row of the blocks is stackable on a lower row of the blocks in an offset mode with the forward ends of the blocks of the upper row recessed from the forward ends of the blocks of the lower row and the forward lugs of the blocks of the upper row engaging the rearward ends of the blocks of the lower row; and
the forward lugs are removable so as to allow the upper row of the blocks to be stackable on the lower row of the blocks in a flush mode with the forward ends of the blocks of the upper and lower rows being substantially flush with each other, and with the rearward lugs of the of the blocks of the upper row capable of engaging the rearward ends of the blocks of the lower row.

5,711,131

STRUCTURAL TRUSS

Mervyn Harvey Thomas, Worcester, England, assignor to James Thomas Engineering Limited, Worcestershire, England
Filed Aug. 16, 1994, Ser. No. 291,070
Claims priority, application United Kingdom, Aug. 19, 1993, 9317280
Int. Cl.^{6} E04C *2/38*
U.S. Cl. 52—656.9 **20 Claims**

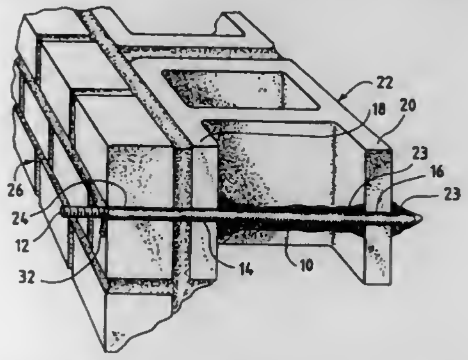
1. A structural truss comprising an elongate framework having opposite ends, connectors fixed at said opposite ends each of a forked form having two spaced parallel limbs fixedly positioned relative to said framework and extending longitudinally thereof away from said opposite ends, which said limbs are disposed to be vertically spaced apart in a normal orientation of the truss for use and have registering holes, and retaining means which insert into said holes, wherein each said connector has an anchorage by which it is retained to a respective one of said opposite ends of said framework and has a central plane, and spaced limbs which provide said forked form of said connector and are asymmetrically positioned relative to said central plane.



5,711,132

SCREEN FOR ANCHORING A FASTENER TO A HOLLOW BLOCK WITH AN ADHESIVE

Frederick A. Kish, Wheeling; Michael A. Rancich, Mundelein; Richard J. Ernst, Palatine, and Mark S. Timmerman, Elgin, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Continuation of Ser. No. 280,088, Sep. 16, 1994, Pat. No. 5,553,436. This application Sep. 9, 1996, Ser. No. 711,704
Int. Cl.^{6} E04C *5/00*
U.S. Cl. 52—704 **22 Claims**



1. A screen assembly for anchoring a fastener within a wall structure having a bore defined therein, comprising:
a screen member, comprising a plastic material for resisting corrosion, an elongated tubular portion defined about a longitudinal axis, having first forward and second rearward opposite ends, as considered in a direction of insertion of said screen member within said wall structure, and a substantially uniform diameter along its length, said second rearward end of said screen member being open so as to permit adhesive to be deposited into said screen member, and said first forward end of said screen member being pre-formed so as to have a substantially pointed tip portion disposed along said longitudinal axis for facilitating insertion of said screen member into and through said bore of said wall structure and which is closed such that when a fastener is inserted into said screen member, said adhesive, disposed within said screen member, will be prevented from being axially discharged from said substantially pointed tip portion of said first forward end of said screen member and will be forcedly discharged radially through mesh portions of said elongated tubular portion of

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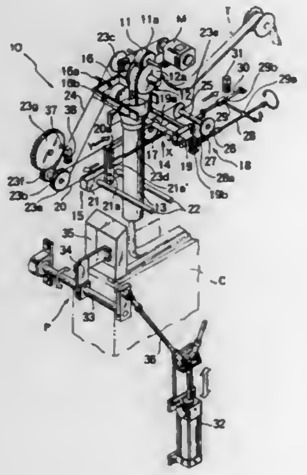
said screen member so as to fixedly bond said screen member and said fastener to said wall structure.

5,711,133

Patent Not Issued For This Number

5,711,134
APPARATUS FOR FOLDING AND RECEIVING TAPE
Satoshi Tanaka, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Sep. 17, 1996, Ser. No. 715,168
Claims priority, application Japan, Sep. 18, 1995, 7-238538
Int. Cl.^{6} B65B *63/04*
U.S. Cl. 53—117 **5 Claims**



1. An apparatus for folding and receiving a continuous tape, which is being continuously fed, in a tape container, comprising:

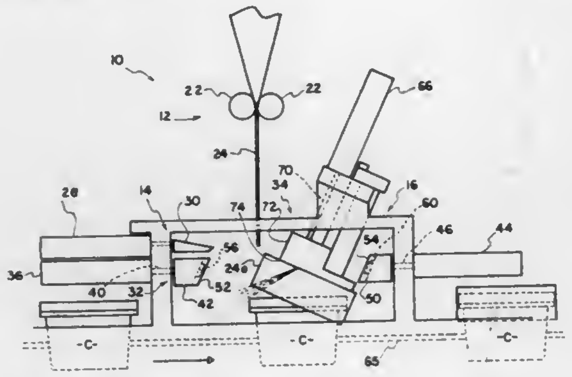
(a) tape feed rollers disposed at a fixed position in a path of travel of the tape and driven for rotation to continuously feed the tape;

(b) a shooter disposed in a predetermined position downstream in a tape traveling direction of said tape feed rollers and having an upper end and a lower end, said shooter pivotally movable about said upper end;

(c) first and second shooter-swinging means for pivotally moving said lower end of said shooter in a first direction and a second direction generally perpendicular to said first direction; and

(d) wherein said first and second shooter-swinging means are disposed in parallel planes with each other and include first and second fork-shape members extending perpendicularly to each other and sandwiching said shooter on a side surface thereof, and first and second drive mechanisms for moving said first and second fork-shape members, respectively, back and forth in said first and second directions coordinated with said tape feed rollers to evenly fill said container.

5,711,135
HEAT-SHRINKABLE BAND APPLICATION MACHINE
Victor V. Menayan, 103 Rothschild Pl., Cary, N.C. 27511
Division of Ser. No. 232,774, Apr. 25, 1994, Pat. No. 5,495,704, which is a division of Ser. No. 31,314, Mar. 15, 1993, Pat. No. 5,305,578. This application Feb. 21, 1996, Ser. No. 604,459
The portion of the term of this patent subsequent to Mar. 15, 2013, has been disclaimed.
Int. Cl.^{6} B65B *9/10*
U.S. Cl. 53—399 **21 Claims**



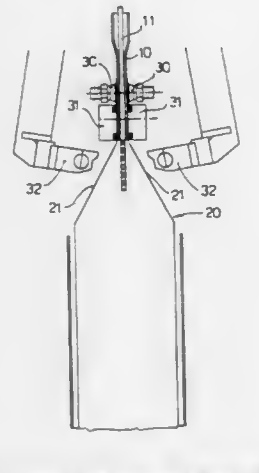
10. A method of applying a band to a target container being conveyed on a conveyor past a band application machine, comprising the steps of:

a) cutting a band from a band supply strip;

b) engaging at least one side of the band and holding the band in an open configuration above the target container being conveyed on the conveyor, and wherein at least one side of the band is held by a suction cup while the band is held above the target container; and

c) moving a plunger, having a transfer surface angled with respect to the conveyor, from a retracted position and engaging the band with the transfer surface of the plunger and moving the band downwardly, at an angle relative to the conveyor, onto the target container.

5,711,136
DEVICE AND METHOD FOR CREATING A VACUUM IN BAGS
Maurizio Carcano, Pavia, Italy, assignor to Goglio Luigi Milano SpA, Milano, Italy
Filed Jul. 5, 1996, Ser. No. 676,054
Claims priority, application Italy, Sep. 5, 1995, MI95A1863
Int. Cl.^{6} B65B *31/06*
U.S. Cl. 53—434 **5 Claims**



4. A method of creating a vacuum in a bag, comprising the steps of:

placing a bag having an open top under a first suction tube,

extending said first suction tube into the bag through the open top,

clamping the top of the bag around the first suction tube to form a temporary seal,

extending a second tube axially from an end of the first tube further into the bag,

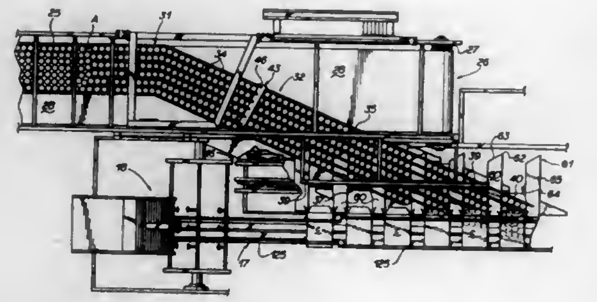
activating suction means to remove air from the bag through the first and second tubes to create a vacuum in the bag,

retracting the second tube into the first tube after a vacuum has been created in the bag,

sealing said bag at a location beneath a maximum entry position of said first tube and below the clamped portion of the bag, and,

after sealing the bag, releasing the clamped portion of the bag.

5,711,137
PACKAGING MACHINE AND METHOD OF PACKAGING ARTICLES
Frank Moncrief, Acworth, Ga.; Kelly W. Ziegler, Crosby, Minn.; Michael Hiney, Atlanta, and Dennis Grimm, Marietta, both of Ga., assignors to Riverwood International Corporation, Atlanta, Ga.
Continuation of Ser. No. 118,111, Sep. 2, 1993, Pat. No. 5,546,734. This application Jul. 23, 1996, Ser. No. 685,074
Int. Cl.^{6} B65B *35/30*
U.S. Cl. 53—534 **28 Claims**



1. A packaging machine for inserting articles into containers, the packaging machine having a framework, said packaging machine comprising

an infeed conveyor disposed along a longitudinal axis;

a first guide rail section supported on the framework and extending over said infeed conveyor, said first guide rail section having a plurality of guide rails spaced apart from one another to define a plurality of first infeed lanes therebetween, said first guide rail section having an inlet end and a spaced outlet end, the width of said first infeed lanes being adjusted by sliding said guide rails with respect to one another on the framework of the packaging machine to a first desired width;

a removable second guide rail section supported on the framework and extending at least partially over said infeed conveyor, said second guide rail section having an inlet end in alignment with the outlet end of said first rail section, said second guide rail section having a plurality of angled guide rails that angle away from said first infeed lanes to define a plurality of second infeed lanes therebetween of said first desired width;

a second conveyor parallel to said longitudinal axis and positioned adjacent said infeed conveyor;

a plurality of transversely extending selector flights releasably mounted to said second conveyor in successive relationship, said selector flights being spaced apart from one another, respectively, to define a spaced series of pockets between successive flights, said second guide rail section overlapping at least a portion of said second conveyor;

a first phase adjustment means for simultaneously and selectively positioning a first spaced series of said selector flights relative to a second spaced series of said selector flights for varying the width of said pockets;

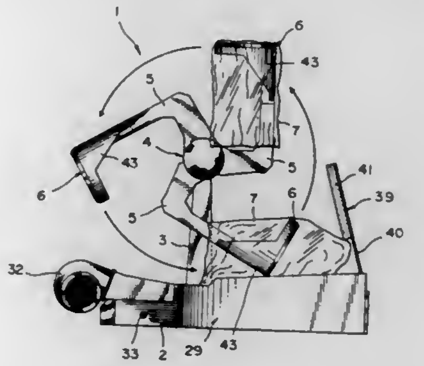
a third conveyor positioned adjacent said second conveyor and moved in timed relationship with said second conveyor;

a plurality of lugs attached to said third conveyor and spaced from one another along the length of said third conveyor;

a second phase adjustment means for simultaneously and selectively positioning a first spaced series of said lugs on said third conveyor relative to a second spaced series of said lugs; and

a container placer disposed adjacent said third conveyor for placing empty article containers thereon.

5,711,138
PACKING ASSIST APPARATUS
Kohei Yamamoto, Fukuoka, Japan, assignor to Fukuoka Marumoto Co., Ltd., Fukuoka, Japan
Filed Jun. 19, 1996, Ser. No. 666,821
Claims priority, application Japan, Jun. 20, 1995, 7-178060; Dec. 28, 1995, 7-353707
Int. Cl.^{6} B65B *43/36;67/04;43/12*
U.S. Cl. 53—571 **28 Claims**



1. A packing assist apparatus comprising:

a support column supported in an upright position and projecting from a base;

a rotary member operatively connected to said support column for rotation relative thereto in a substantially vertical plane;

a plurality of arms, each arm including a based end side fitted to said rotary member; and

a plurality of packing bag holding frames each having a through hole for allowing articles to be packed and a packing bag to pass therethrough, each of said packing bag holding frames being contoured such that the packing bag can be placed thereon with the bottom of said packing bag being oriented to one open end of said through hole, and said packing bag holding frames being fitted to the foremost ends of said arms.

5,711,139
SELF-LEVELING HILLSIDE MOWER WITH REMOTE CONTROL
Floyd R. Swanson, 4704 W. Mt. Vernon Rd., Cedar Falls, Iowa 50613
Filed Apr. 4, 1996, Ser. No. 626,153
Int. Cl.^{6} A01H *75/28*
U.S. Cl. 56—10.2 R **3 Claims**

1. A self-leveling vehicle for operation on uneven terrain having sidehill slopes, said vehicle comprising: a main frame having a front, a rear and sides extending between the front and rear with a center line extending from the front and rear between the sides that defines a pivotal axis, an engine supported on the main frame, an operator's station supported on the main frame, a front axle support rigidly attached to and extending downwardly from the front of the main frame, a rear axle support attached to and extending downwardly from the rear of the main frame, a front axle mounted on the front axle support for pivotal movement from side-to-side

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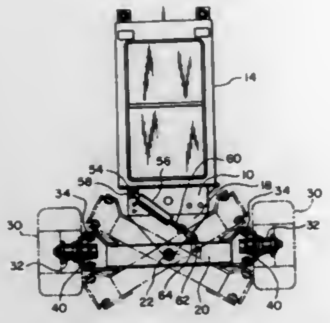


about said pivotal axis, a rear axle mounted on the rear axle support for pivotal movement independently of the first axle from side-to-side relative to the main frame about said pivotal axis, each of the front and rear axles having ground engaging wheels mounted at their outer ends, at least two of the wheels being steerable, controllable power means combined with the front axle to control the amount of pivotal movement of the front axle from side-to-side relative to the main frame, a sensor combined with the front axle to sense the side-to-side angle of incline of the front axle relative to the horizontal, first actuating means operatively connecting the sensor and the power means to actuate the power means so as to maintain the main frame in a substantially horizontal position from side-to-side at any time the side-to-side angle of incline of the front axle relative to the horizontal is less than a first predetermined amount of approximately 37°, a visual and audible signal positioned in the operator's station, second actuating means to actuate the visual and audible signal in the operator's compartment when a second predetermined amount of the angle of incline less than the first predetermined amount of the angle of incline is attained, and disabling means combined with the sensor and the engine to shut off the engine whenever the first predetermined amount of the side-to-side angle of incline of the axle to the horizontal of approximately 37° is attained.

5,711,140
SELF-PROPELLING HARVESTER THRESHER WITH COMPOSITE CUTTING TABLE

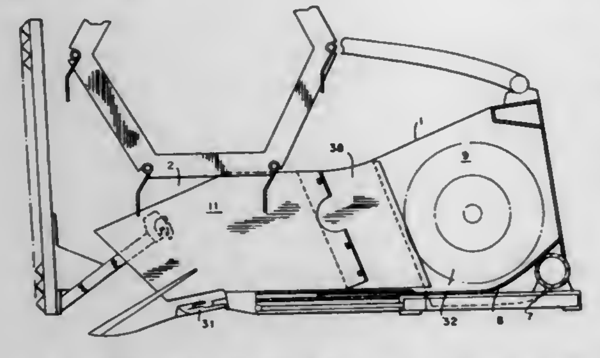
Dominik Bürmann, Verl, Germany, assignor to Claas Kommanditgesellschaft Auf Aktien, Harsewinkel, Germany

Filed Feb. 5, 1996, Ser. No. 596,733

Claims priority, application Germany, Feb. 9, 1995, 195 04 244.1

Int. Cl.⁶ A01D *69/00*

U.S. Cl. 56—208 **11 Claims**



1. A self-propelling harvester thresher, comprising a cutting table, said cutting table including a cutter bar, a drawing roller, a first cutting table part having two side walls, a first bottom plate and a rear wall provided with a throughgoing opening, and a second trough-shaped cutting table part including two walls and a second bottom plate; a plurality of cylinder-piston units arranged under said bottom plates parallel and spaced from one another and moving said second cutting table part relative to said first cutting table part steplessly for shortening or lengthening a distance of said cutter bar relative to said drawing roller; a releasable locking element limiting a displacement path within a maximum displacement of said cutting table parts relative to one another in which said bottom plates and said side walls overlap one another so that a maximum stroke of said cylinder-piston units is greater than said displacement path of said cutting plate parts limited by aid locking element, said cylinder-piston units bieng arranged so that when said locking element is in a released position and piston rods of said cylinder-piston units are completely extended, a space is provided between said cutting table parts; and means for overlapping said space, said means including an intermediate bottom and two intermediate side walls.

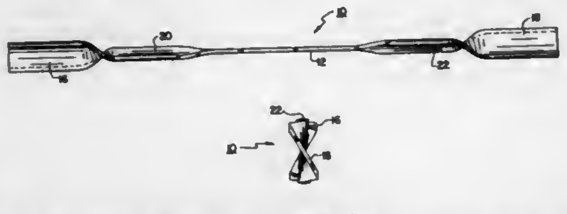
5,711,141
REVERSIBLE MOWER BLADE

Richard J. Pitman, Nashville, and Paul L. Scott, Brentwood, both of Tenn., assignors to Murray, Inc., Brentwood, Tenn.

Filed Sep. 13, 1996, Ser. No. 713,502

Int. Cl.⁶ A01D *34/73*

U.S. Cl. 56—255 **8 Claims**



1. A reversible mower blade, comprising:

an elongated central portion integrally joined at its opposite ends to respective end portions, said central and end portions being disposed along a common longitudinal axis and each end portion including an outer segment and a contiguous inner segment;

said outer segments being twisted equally in opposite senses relative to the central portion about said longitudinal axis;

said inner segments being twisted equally in opposite senses relative to the central portion about said longitudinal axis, the inner segment of each end portion being twisted about the longitudinal axis in opposite sense to the twist of its respective outer segment; and

said end portions including edge surfaces on opposite sides thereof extending towards the central portion, said edge surfaces being sharpened so as to form cutting edges on said opposite sides of each of the end portions.

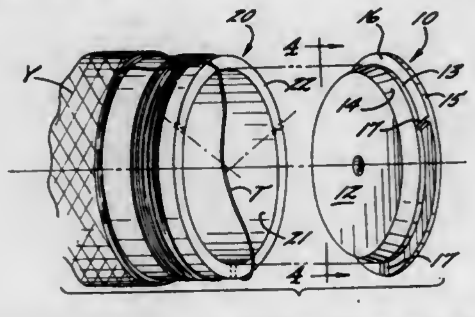
5,711,142
ADAPTER FOR ROTATABLY SUPPORTING A YARN CARRIER IN A WINDING ASSEMBLY OF A YARN PROCESSING MACHINE

Fred A. Cromartie, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Sep. 27, 1996, Ser. No. 721,476

Int. Cl.⁶ D01H *9/00*

U.S. Cl. 57—1 R **6 Claims**



1. A yarn carrier having at least one tubular end including an inside surface of predetermined diameter and an end surface of predetermined thickness, and an adapter for rotatably supporting said end of said yarn carrier in a take-up winding assembly of a

yarn processing machine, said carrier and said adapter being characterized by constructions which accommodate the placement of a yarn transfer tail across said end surface of said yarn carrier and between said yarn carrier and said adapter without breaking or cutting of the yarn transfer tail; said adapter comprising:

a hub portion having a forward end and a rear end and extending axially from said forward end into said tubular end of said yarn carrier to center said yarn carrier on said adapter and having an outside surface with a cross-sectional diameter less than the predetermined diameter of said inside surface of said yarn carrier for defining a first space therebetween to accommodate the placement of the yarn tail in said first space without breaking or cutting of the yarn tail;

an annular flange portion extending radially outwardly from said rear end of said hub portion and having an inside surface for being positioned adjacent said end surface of said yarn carrier; and

means formed on said annular flange portion (1) for abutting said end surface of said yarn carrier to define a second space between said end surface of said yarn carrier and said inside surface of said annular flange to accommodate the placement of the yarn tail in said second space without breaking or cutting of the yarn tail and (2) for engaging said end surface of said yarn carrier to retard relative rotation between said yarn carrier and said adapter.

5,711,143
OVERHEAD CABLE AND LOW SAG, LOW WIND LOAD CABLE

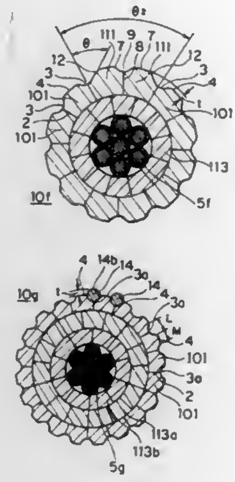
Takeo Munakata; Jun Katoh; Naoshi Kikuchi, all of Tokyo; Naoyoshi Shimokura, and Yuji Ishikubo, both of Osaka, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka, and The Furukawa Electric Co, Ltd., Tokyo, both of Japan

Filed Dec. 1, 1995, Ser. No. 566,409

Claims priority, application Japan, Apr. 15, 1995, 7-113687

Int. Cl.⁶ D07B *1/06*

U.S. Cl. 57—215 **20 Claims**



1. An overhead cable comprising:

a core as a first layer;

a second layer of strands twisted around the core; and

a plurality of segment strands each having a sector-shape in cross-section, said plurality of segment strands twisted around said second layer to form an outermost layer and grooves having a substantially arc-shaped in cross-section formed at surfaces of each adjoining portion of the segment strands, said segment strands each having a non-groove portion between said adjoining portions.

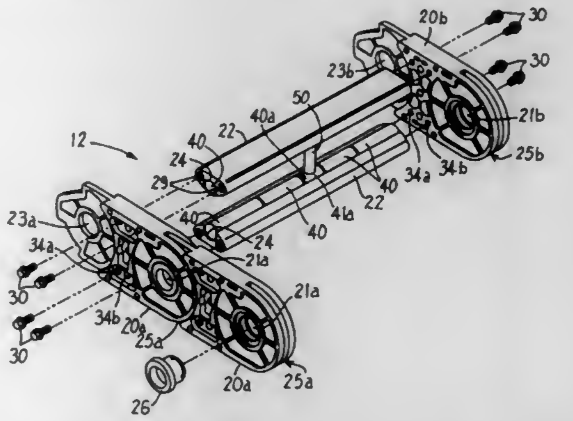
5,711,144
POWER SUPPLY CHAIN WITH ROLLER BAR CARRIER AND ROLLER SEPARATOR

Kevin I. Pea, Mayville, Wis., assignor to Hubbell Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 434,740, May 4, 1995. This application May 28, 1996, Ser. No. 657,062

Int. Cl.⁶ F16G *13/16*

U.S. Cl. 59—78.1 **11 Claims**



1. In a power supply chain comprising a plurality of power supply conduit carriers, a carrier including first and second side links and first and second cross-piece members connected between the side links, said cross-piece members each having a channel extending along the length thereof and facing the channel in the other cross-piece member, a pluarlity of cylindrical rollers disposed end-to-end along the length of and residing in each channel for rotation therein relative to the cross-piece member, and a roller separator disposed transversely between facing rollers residing in said channels of said cross-pieces, said roller separator having opposite ends rotatably received in said facing rollers for rotation about an axis transverse to said cross-piece members, said facing rollers on which said roller separator is disposed being non-rotatable in said channels by virtue of said roller separator disposed therebetween.

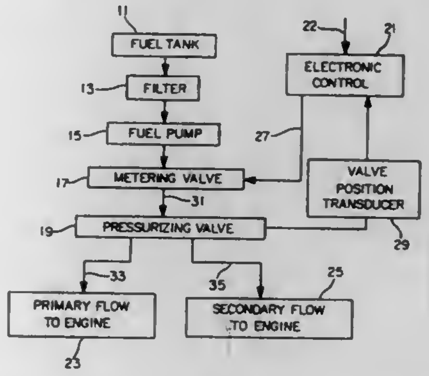
5,711,145
COMBINED PRESSURIZING, FLOW MEASURING AND FLOW SPLITTING VALVE

Russell C. Perkey, Granger, Ind., assignor to AlliedSignal, Inc., Morristown, N.J.

Filed Oct. 10, 1995, Ser. No. 540,509

Int. Cl.⁶ F02C *7/232;9/26*

U.S. Cl. 60—39.281 **9 Claims**



1. A fuel system having a fuel pump for supplying fuel from a source through a variable orifice flow metering valve and then through a variable orifice pressurizing valve to an engine, the pressurizing valve comprising means for measuring pressurizing

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valve orifice area to provide the combined functions of valve orifice area measurement and fuel pressurization in one unit, and the system further including means utilizing the measured area to ascertain the fuel flow through the pressurizing valve.

5,711,146

HYDROGEN PEROXIDE DECOMPOSITION

Warren E. Armstrong, Lafayette, and Alfred J. L. Toombs, Berkeley, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1964, Ser. No. 416,685

Int. Cl.^{6} C06D *5/04;* **C21C** *5/02;* **C01F** *7/34*

U.S. Cl. 60—218 **8 Claims**

1. In a method for the catalytic decomposition of hydrogen peroxide to steam and oxygen and the production of thrust in a thrust chamber, the improvement which comprises contacting the hydrogen peroxide with a supported or unsupported catalyst having a catalytic surface consisting of a catalyst mixture of ruthenium with at least one metal of the group consisting of iridium and platinum in which the ruthenium is about 20 to about 70 atom percent of said metals.

5,711,147

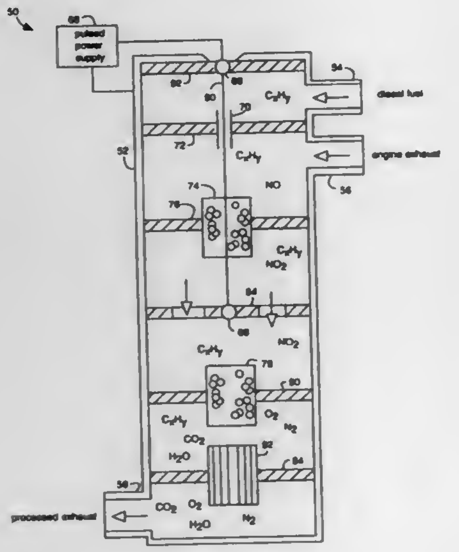
PLASMA-ASSISTED CATALYTIC REDUCTION SYSTEM

George E. Vogtlin, Fremont; Bernard T. Merritt; Mark C. Hsiao, both of Livermore; P. Henrik Wallman, Berkeley, and Bernardino M. Penetrante, San Ramon, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 19, 1996, Ser. No. 699,381

Int. Cl.^{6} F01N *2/20*

U.S. Cl. 60—274 **7 Claims**



1. A system for NO_x reduction in oxygen-rich vehicle engine exhausts, comprising:

a first reactor means for non-thermal plasma gas treatment connected to receive a supply of hydrocarbons and an engine exhaust rich in oxygen and having NO, and connected to output a product of NO_2 that has been electric-plasma converted from said NO; and

a second reactor means for selective catalytic reduction connected to receive-both said output of the first reactor means with said NO_2 and connected to receive said supply of hydrocarbons, and connected to output an exhaust with reduced NO_x emissions.

5,711,148

SENSOR ARRANGEMENT FOR ENGINE CONTROL SYSTEM

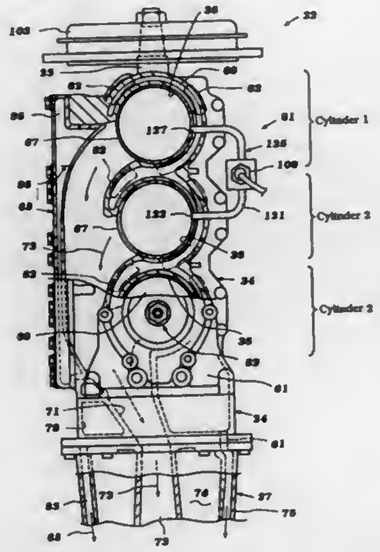
Masahiki Katoh, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 5, 1995, Ser. No. 435,715

Claims priority, application Japan, Jun. 5, 1994, 6-117645; Jun. 30, 1994, 6-173625; Jul. 13, 1994, 6-185418; Jul. 13, 1994, 6-185419

Int. Cl.^{6} F01N *3/18*

U.S. Cl. 60—276 **88 Claims**



1. A control system for an internal combustion engine having a combustion chamber that varies in volume cyclically during engine operation, an exhaust system for receiving exhaust gases from said combustion chamber during a cycle of engine operation, a fuel supply system for supplying fuel to said engine for combustion in said combustion chamber, an accumulator chamber for providing a volume in which exhaust gases from said combustion chamber may accumulate and communicating with said combustion chamber for at least a portion of the engine operating cycle, a sensor in said accumulator chamber and displacing less than one-half of the volume of said accumulator chamber for providing a control signal for control of said fuel supply system, and protecting means for preventing oil in the exhaust gases from contaminating said sensor.

5,711,149

DEVICE FOR PURIFYING THE EXHAUST GAS OF A DIESEL ENGINE

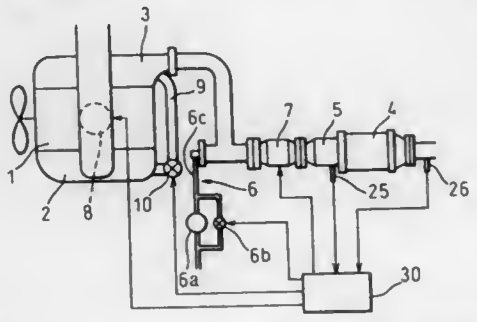
Yasushi Araki, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1996, Ser. No. 647,740

Claims priority, application Japan, May 18, 1995, 7-119852

Int. Cl.^{6} F02M *25/07;* **F01N** *3/36*

U.S. Cl. 60—278 **14 Claims**



1. A device for purifying the exhaust gas of a diesel engine comprising:

a filter for collecting particulates, which is arranged in the exhaust system of the engine;

an oxidation catalyst arranged in said exhaust system upstream of said filter;

diesel fuel supply means for supplying diesel fuel to said oxidation catalyst when said filter must be regenerated; and

heating means for heating the diesel fuel supplied from said diesel fuel supply means to said oxidation catalyst only in the initial step of supplying the diesel fuel when a temperature of said oxidation catalyst is lower than a predetermined temperature and said filter must be regenerated.

5,711,150

VEHICLE HEIGHT CONTROL SYSTEM FOR CONTROLLING VEHICLE

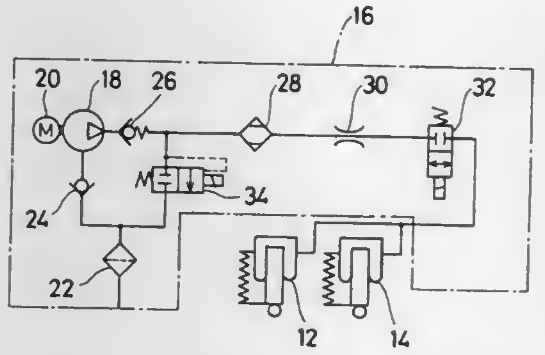
Morito Oshita, Shinbayashi, and Masakazu Ozawa, Maebayashi-cho, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 24, 1996, Ser. No. 685,675

Claims priority, application Japan, Jul. 31, 1995, 7-194793; Feb. 26, 1996, 8-38438; Mar. 15, 1996, 8-59177

Int. Cl.^{6} F16D *31/02*

U.S. Cl. 60—407 **20 Claims**



1. A vehicle height control system for controlling vehicle suspension comprising:

a pneumatic actuator for being connected to a vehicle suspension;

a compressor for producing compressed air to be supplied to the pneumatic actuator, said compressor including a cylinder having an open end and a piston positioned within the cylinder for defining an air compressing chamber, and including a plate which extends over the open end of the cylinder to close the open end of the cylinder;

an air drying chamber for drying the compressed air produced by the compressor, said air drying chamber being defined in part by the plate, said air drying chamber being connected to the compressor for receiving compressed air from the compressor and being connected to the pneumatic actuator to deliver the compressed air which has passed through the air drying chamber to the pneumatic actuator; and

an air drying filter positioned in the air drying chamber for removing water and moisture from the compressed air produced by the compressor and to be supplied to the pneumatic actuator.

5,711,151

BRAKE-PRESSURE MODULATION DEVICE

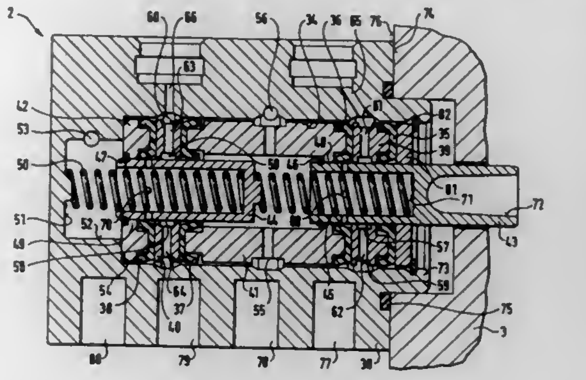
Ortwin Engfer, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 6, 1995, Ser. No. 524,404

Claims priority, application Germany, Oct. 5, 1994, 44 35 623.4

Int. Cl.^{6} F15B *7/00*

U.S. Cl. 60—545 **19 Claims**



1. A brake-pressure modulation device for a brake system of a motor vehicle having primary and secondary brake circuits, comprising,

a hydraulic unit fitted with solenoid valves for brake-pressure modulations, a housing (**30**), said housing including a cylindrical location bore (**34**), a tandem brake master cylinder that includes a primary piston (**43**) and a secondary piston (**44**) within said housing with said secondary piston in axial alignment with said primary piston, first and second distance rings (**39**, **40**) in said location bore, said first and second distance rings surround said first and second piston respectively, a first pair of lip seals (**35** and **36**) on opposite sides of said first distance ring, a second pair of lip seals (**37** and **38**) on opposite sides of said second distance ring, a distance bush **41** surrounds at least a portion of each of said first and second pistons and is installed as a spacer between lip seals (**36** and **37**), said distance bush (**41**) includes therein annular groove (**55**) which joins an axial passage in said distance bush, to which a connection (**56**) for wheel-brake cylinders (**5**, **6**) of the primary circuit is provided approximately half way along said distance bush (**41**), said first and second pair of lip seals have the same outside diameter and make contact with an inner surface of said bore, and the lip seals rest leak-tight on said first and second pistons of the brake master cylinder, said first pair of lip seals (**35**, **36**) are for said primary piston, and said second pair of lip seals (**37**, **38**) are for said secondary piston.

5,711,152

BOOSTED BRAKING DEVICE WITH SIMPLIFIED AUTOMATIC CONTROL

Jean Pierre Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois, and Miguel Perez Revilla, Argenteuil, all of France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

PCT No. PCT/FR94/00193, § 371 Date Mar. 7, 1994, § 102(e) Date Mar. 7, 1994, PCT Pub. No. WO94/20343, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 22, 1994, Ser. No. 204,247

Claims priority, application France, Mar. 10, 1993, 93 02743

Int. Cl.^{6} B60T *13/00;* **F15B** *9/10*

U.S. Cl. 60—547.1 **3 Claims**

1. A brake booster device for a motor vehicle comprising:

a master cylinder filled with a brake fluid and equipped with a main hydraulic piston for receiving an actuating force composed of an input force and of a boost force both acting in an

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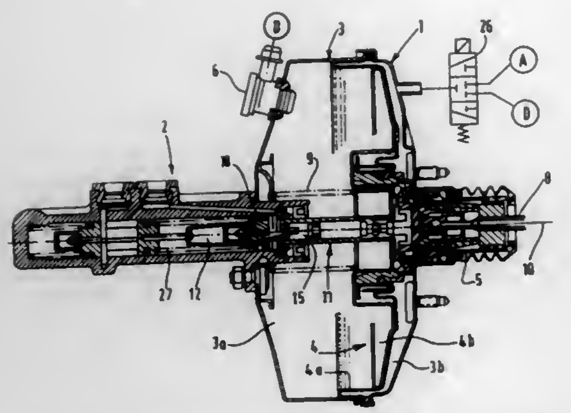
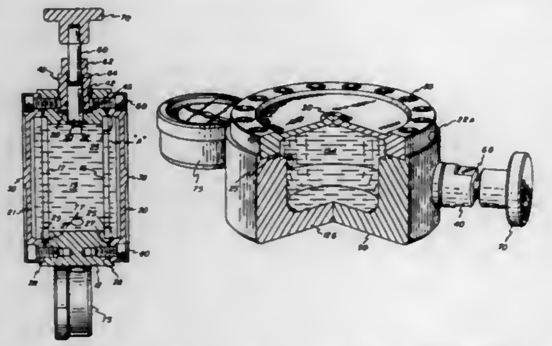


axial direction and a pneumatic booster for exerting said actuating force on the main hydraulic piston, said pneumatic booster having a rigid casing separated by at least one sealed movable partition into at least first and second chambers, said second chamber being connected selectively by virtue of at least one of two selective communication members comprising a solenoid valve and a valve controlled by the application of said input force on a control rod to first and second pressure sources delivering first and second respective pressures, said first chamber being connected to receive said second pressure source to receive said second pressure, said movable partition being moved by a pressure difference between said first and second chambers in order to entrain a pneumatic piston which is moved with respect to said rigid casing and carries said valve, characterised in that said main hydraulic piston of the master cylinder includes a hollow movable cylinder which communicates with the master cylinder and which interacts with said movable partition to receive at least a first part of said boost force communicated received by said movable partition, a secondary hydraulic piston located in said hollow movable cylinder and movable in an axial direction in response to said input force coming from the control rod, said movable partition being mounted slidingly on the pneumatic piston and slidable with respect to said movable partition in response to a predetermined force applied to said control rod towards said master cylinder from an initial relative position in abutment against said pneumatic piston and a final position as said movable partition moves towards the master cylinder.

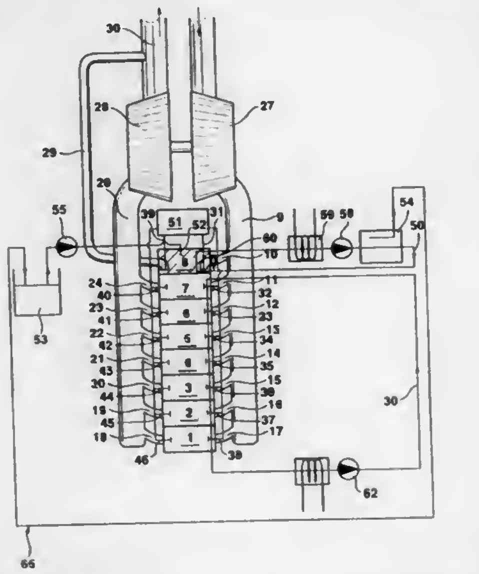
5,711,153
PRECISION HYDRAULIC ADJUSTABLE STOP
Richard S. Tetro, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio
Filed Jul. 29, 1996, Ser. No. 681,673
Int. Cl.^{6} B60T *7/00*
U.S. Cl. 60—583 **11 Claims**



1. A repeatable no backlash adjustable stop, comprising a rigid enclosed body defining a cavity having an open face, an elastically deformable liquid impervious semi-flexible metal plate mounted on said body in closing relation to said cavity open face, a precision locating pad located on an outer surface of said plate, a liquid displacement member on said body and moveable into fluid-displacing relation to said cavity, a seal between said member and said body for sealing said member with respect to said body, a relatively incompressible liquid filling said cavity under a positive pre-load static pressure head, said member being movable on said body relative to said cavity for displacing variable portions of said liquid, said plate being bendable by elastic deformation by said displacement of said liquid by said member in said cavity whereby said locating pad may be accurately positioned through such elastic deflection in relation to said body.

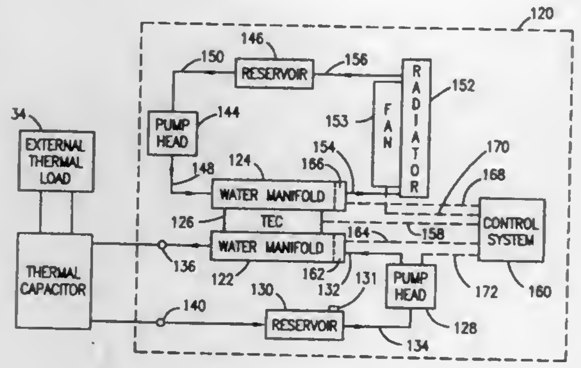
11. A repeatable no backlash adjustable stop comprising an annular rigid body defining therein a cavity, a pair of elastically deformable metal end plates mounted in opposed relation on said body and in closing relation to said cavity, said end plates having a uniform thickness over a substantial portion thereof, a plunger in said body thereof selectively extendable for displacing a portion of the volume of said cavity, each of said end plates having a force locating pad on an exterior surface thereof, a substantially incompressible high bulk modulus liquid filling said cavity, said plunger being moveable on said body to displace a portion of said liquid accompanied by limited elastic deformations of each of said end plates for adjusting the spaced apart distance between said locating pads.

5,711,154
SUPERCHARGED MULTICYLINDER INTERNAL COMBUSTION ENGINE WITH EXHAUST RECYCLING
Bernhard Baechle, Friedrichshafen; Dieter Schoenfeld, Markdorf, and Martin Freitag, Friedrichshafen, all of Germany, assignors to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany
Filed Jan. 29, 1996, Ser. No. 593,676
Claims priority, application Germany, Jan. 28, 1995, 195 02 717.5
Int. Cl.^{6} F02M *25/07*
U.S. Cl. 60—605.2 **10 Claims**



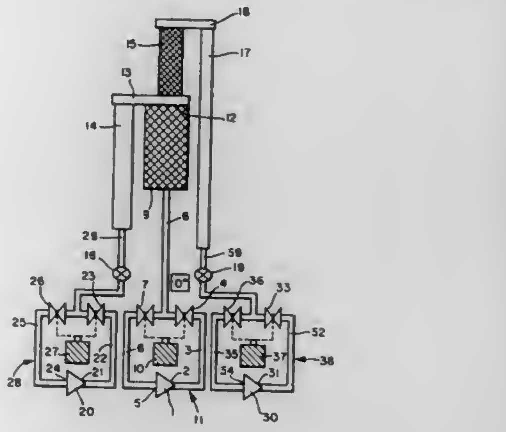
1. A supercharged multi-cylinder internal combustion engine, comprising:
- air supply and exhaust outlet devices for the internal combustion engine;
- a first lubricating oil circuit for the internal combustion engine;
- variably controllable air intake and exhaust outlet valves for cylinders of the internal combustion engine;
- an exhaust processing cylinder having a driven piston and an air intake and exhaust outlet valve;
- a valve control unit coupled to said air intake and exhaust outlet valves, said valve control unit partially opening the air intake and exhaust outlet valve on the exhaust processing cylinder during a downward stroke of said driven piston; and
- a second lubricating oil circuit provided for said exhaust processing cylinder.

5,711,155
TEMPERATURE CONTROL SYSTEM WITH THERMAL CAPACITOR
Roger S. DeVilbiss, Dallas; Tony M. Quisenberry, Highland Village; Sathya Rajasubramanian, Arlington, and Thomas C. Dedmon, Lewisville, all of Tex., assignors to Thermotek, Inc., Carrollton, Tex.
Filed Dec. 19, 1995, Ser. No. 574,949
Int. Cl.^{6} F25B *21/02*
U.S. Cl. 62—3.7 **39 Claims**



1. An improved thermoelectric temperature control system for selectively heating or cooling a temperature control fluid to be provided through an exit conduit to an external thermal load and returned to the system through an inlet conduit, said system having at least a first liquid heat exchanger, a thermoelectric module in thermal conductivity with the liquid heat exchanger, a heat sink in thermal conductivity with the thermoelectric module, a pump and connecting conduits to move the temperature control fluid from the inlet conduit through the pump and liquid heat exchanger to the exit conduit, and power and control electronics to activate the pump and thermoelectric module, said improvement comprising:
- a thermal capacitor connected for fluid communication with said external thermal load and said thermoelectric temperature control system to provide thermal wattage to said external thermal load via the temperature control fluid in addition to the thermal wattage provided to said external thermal load by said thermoelectric temperature control system via the temperature control fluid during the real-time use of said thermoelectric temperature control system; and
- wherein said thermal capacitor includes
  - a thermal storage tank for storing temperature control fluid; and
  - valve means connected in fluid communication to the thermal storage tank, the external thermal load and the thermoelectric temperature control system and structured to be positioned in either a first position or a second position to allow fluid flow of said temperature control fluid through said thermal storage tank, said valve means and said thermoelectric temperature control system when positioned in the first position and to allow fluid flow of said temperature control fluid through said thermal storage tank, said valve means, said external thermal load and said thermoelectric temperature control system when positioned in the second position.

5,711,156
MULTISTAGE TYPE PULSE TUBE REFRIGERATOR
Takayuki Matsui, and Tatsuo Inoue, both of Anjyo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed May 13, 1996, Ser. No. 645,151
Claims priority, application Japan, May 12, 1995, 7-114886; Mar. 27, 1996, 8-070796
Int. Cl.^{6} F25B *9/00*
U.S. Cl. 62—6 **7 Claims**



1. A multistage type pulse tube refrigerator comprising:
- a regenerator-side pressure oscillation generator,
- a first regenerator connected to the regenerator-side pressure oscillation generator,
- a first cold head connected to a low temperature end of the first regenerator,
- a second regenerator connected to the first cold head;
- a second cold head connected to the second regenerator;
- a first pulse tube-side phase shifter;
- a second pulse tube-side phase shifter;
- a first pulse tube having one end connected to the first cold head and another end connected to the first pulse tube-side phase shifter by way of a first flow regulating mechanism;
- a second pulse tube having one end connected to the second cold head and another end connected to the second pulse tube-side phase shifter by way of a second flow regulating mechanism; and
- an operation timing for each of the first pulse tube-side phase shifter and the second pulse tube-side phase shifter being controlled independently, and the phase angle with respect to the operation timing of the first pulse tube-side phase shifter relative to the regenerator-side pressure oscillation generator being from −50° to −120°, the phase angle with respect to the operation timing of the second pulse tube-side phase shifter relative to the regenerator-side pressure oscillation generator being from −15° to −90°, the operation timing of the first pulse tube-side phase shifter being earlier than the operation timing of the second pulse tube-side phase shifter, and the phase angle difference between the operation timing of the first pulse tube-side phase shifter and the operation timing of the second pulse tube-side phase shifter being from 20° to 60°.

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5,711,157
COOLING SYSTEM HAVING A PLURALITY OF COOLING STAGES IN WHICH REFRIGERANT-FILLED CHAMBER TYPE REFRIGERATORS ARE USED

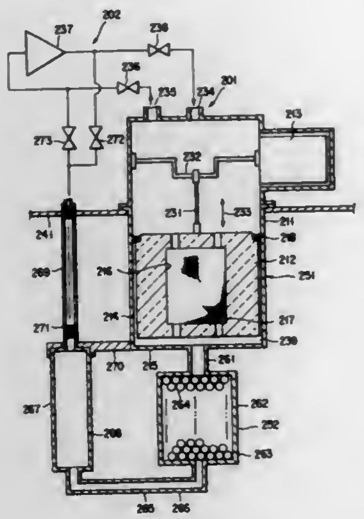
Yasumi Ohtani; Masahiko Takahashi; Hideo Hatakeyama; Robana Chandratilleke, all of Yokohama, Japan; Toru Kuriyama, Boulder, Colo.; Hideki Nakagome, Tokyo, Japan; Takayuki Kobayashi; Tomomi Hattori, both of Yokohama, Japan, and Tatsuya Yoshino, Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1996, Ser. No. 647,741

Claims priority, application Japan, May 16, 1995, 7-117497; May 16, 1995, 7-117500; May 16, 1995, 7-117540; Mar. 15, 1996, 8-059193

Int. Cl.⁶ F25B *9/00*

U.S. Cl. 62—6 **26 Claims**



1. A superconducting magnet apparatus comprising:
- a superconducting coil unit; and
- a refrigerant-filled chamber type refrigerator having a plurality of cooling stages, at least a final cooling stage of said cooling stages including a static-type refrigerant-filled chamber and being associated with said superconducting coil unit, and at least a first cooling stage of said cooling stages including a movable-type refrigerant-filled chamber.

5,711,158
APPARATUS AND METHOD FOR CHARGING THREE-COMPONENT MIXED REFRIGERANT

Yuji Yoshida, Itami; Masami Funakura, Neyagawa; Mitsuharu Matsuo, and Minoru Tagashira, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

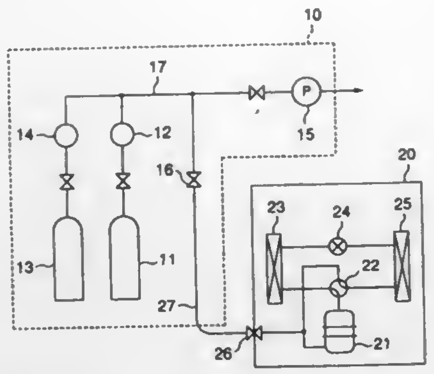
Filed Apr. 29, 1996, Ser. No. 638,784

Claims priority, application Japan, May 15, 1995, 7-115504

Int. Cl.⁶ F25B *45/00*

U.S. Cl. 62—77 **8 Claims**

5. A method for charging a three-component mixed refrigerant which comprises charging a given amount of a high-boiling-point refrigerant in a heat pump apparatus through a pipeline and then charging a given amount of an azeotrope-like mixed refrigerant lower in boiling point than the high-boiling-point refrigerant in the heat pump apparatus through the pipeline.



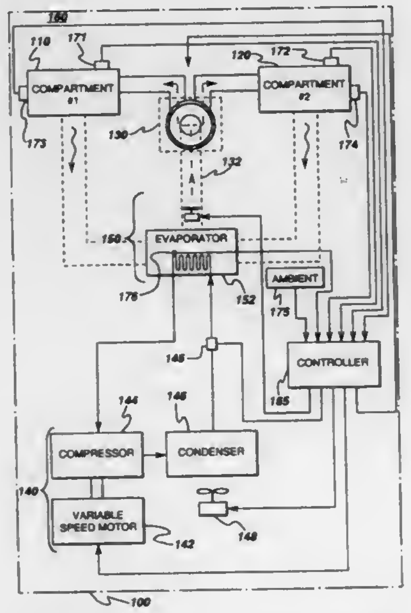
5,711,159
ENERGY-EFFICIENT REFRIGERATOR CONTROL SYSTEM

Walter Whipple, III, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 301,764, Sep. 7, 1994, abandoned. This application May 9, 1996, Ser. No. 647,345

Int. Cl.⁶ F25D *17/04;11/02*

U.S. Cl. 62—82 **24 Claims**



1. An energy-efficient refrigerator having a plurality of compartments cooled to respective temperatures, the refrigerator control system comprising:
- a refrigerator control system for generating refrigerator control signals responsive to cooling demands of the respective compartments;
- a plurality of refrigeration apparatus components, said components comprising an evaporator apparatus and a variable speed compressor, said components being respectively coupled to said control system and independently controlled thereby so as to collectively cool said plurality of compartments to said respective temperatures;
- a multiplex damper system disposed so as to direct the cooling-air flow from said refrigeration apparatus to selected refrigerator compartments, said multiplex damper system being coupled to said refrigerator control system;
- said multiplex damper system comprising a single movable control damper mounted in a refrigeration apparatus cooling-air passage such that said control damper is adapted to be selectively disposed in a plurality of respective air flow positions responsive to said refrigerator control signals for controlling cooling-air flow, said respective air flow positions further including an "off" position in which no air flow communication is provided for cooling air passing from said refrigeration apparatus to any of said compartments.

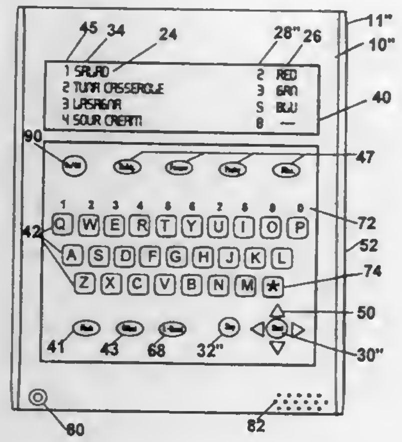
5,711,160
FOOD STORAGE TRACKING SYSTEM

Dianna Namisniak, and Lee Namisniak, both of 22592 Le Dana, Mission Viejo, Calif. 92691

Continuation-in-part of Ser. No. 239,981, May 5, 1994, Pat. No. 5,487,276, which is a continuation-in-part of Ser. No. 98,521, Jul. 28, 1993, Pat. No. 5,335,509. This application Jan. 26, 1996, Ser. No. 592,544

Int. Cl.⁶ G09F *9/00*

U.S. Cl. 62—125 **10 Claims**



1. A food storage tracking system, comprising:
- a base unit;
- a time measuring device for providing time information in the base unit;
- storage means in the base unit for storing the identity and storage lifetimes of a plurality of food items;
- input means in the base unit for selecting one of the food items in said storage means;
- electronic means in the base unit for starting said time measuring device for the selected food item comparing the time information generated for said selected food item with the storage lifetime of the selected food item and generating a signal responsive to the comparison; and
- a display on the base unit communicating with said electronic means for displaying the storage lifetime remaining for a selected food item in storage in response to the signal from said electronic means.

5,711,161
BYPASS REFRIGERANT TEMPERATURE CONTROL SYSTEM AND METHOD

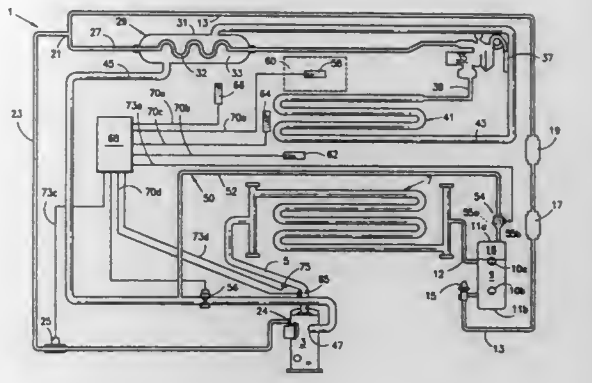
Alan D. Gustafson, Eden Prairie, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Jun. 14, 1996, Ser. No. 665,117

Int. Cl.⁶ F25B *41/00;39/04*

U.S. Cl. 62—197 **12 Claims**

1. A temperature control system for a refrigeration circuit that includes a compressor for compressing a refrigerant, a condenser coil for receiving compressed gaseous refrigerant from the compressor and converting it into a liquid, an expansion valve downstream of said condenser coil for expanding liquid refrigerant from the condenser coil into a gas, an evaporator coil downstream of said expansion valve for receiving the expanded, gaseous refrigerant from the expansion valve, and a suction modulating valve downstream of the evaporator coil comprising:
- means for selectively conducting a flow of saturated, gaseous refrigerant from a point in said circuit downstream of said condenser coil to a point between said evaporator coil and said suction modulation valve to partially counteract the cooling of the evaporator coil from said expanding refrigerant, and means for monitoring the temperature of a space conditioned by said evaporator coil, and said conducting means includes a means for modulating said flow of saturated, gaseous refrigerant to achieve a selected setpoint temperature in said conditioned space.



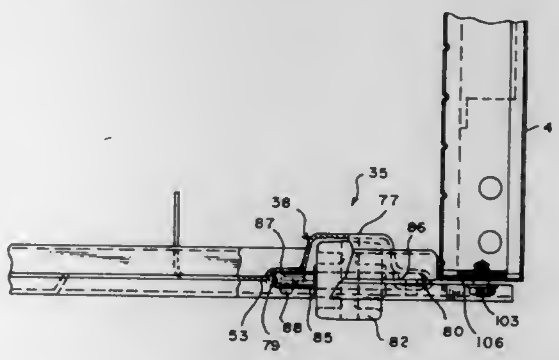
5,711,162
REFRIGERATOR COMPRESSOR MOUNTING PAN ARRANGEMENT

Gerald L. Wolanin, Galesburg, and Douglas A. Heims, Knoxville, both of Ill., assignors to Maytag Corporation, Newton, Iowa

Filed Apr. 9, 1996, Ser. No. 629,738

Int. Cl.⁶ F25D *23/00;19/00;* **B23P** *11/00;* **A47B** *88/00*

U.S. Cl. 62—302 **16 Claims**



1. A refrigerator compressor mounting pan arrangement comprising:
- an elongated plate having first and second longitudinally spaced ends and upper and lower sides;
- a plurality of longitudinally spaced bracket elements provided on the upper side of said plate for attaching at least a refrigerator compressor atop said plate;
- at least one wheel well formed in said plate;
- a pair of longitudinally spaced bearing surfaces formed in the lower side of said plate on opposing longitudinal sides of said wheel well;
- a wheel positioned in said wheel well, said wheel having a central bore;
- an axle extending through said bore, said axle having first and second end portions respectively positioned against said pair of longitudinally spaced bearing surfaces; and

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a pair of tabs projecting from said plate adjacent said pair of bearing surfaces, said tabs respectively extending about the first and second end portions of said axle to retain said wheel within said well.

5,711,163
HEAT PUMP APPARATUS

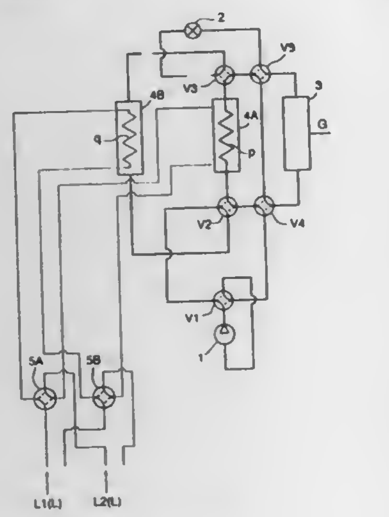
Yasuo Uchikawa, and Kaoru Hamada, both of Amagasaki, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Jul. 12, 1996, Ser. No. 680,720

Claims priority, application Japan, Jul. 14, 1995, 7-178840

Int. Cl.^{6} F25B *1/00*

U.S. Cl. 62—324.6 **10 Claims**



1. A heat pump apparatus comprising:
a compressor;
expander means;
at least three heat exchangers; and
cooling-medium route switchover means for switching over cooling-medium route to the heat exchangers so as to selectively provide a two-evaporator operation mode in which two of the heat exchangers are used as evaporators and the other heat exchanger is used as a condenser and a two-condenser operation mode in which two of the heat exchangers are used as condensers and the other heat exchanger is used as an evaporator;
wherein said two heat exchangers used as evaporators in said two-evaporator operation mode or as condensers in said two-condenser operation mode are serially connected with each other; and
said cooling-medium route switchover means reversely switches over the order of circulation of the cooling-medium through said two evaporators in said two-evaporator operation mode or through said two condensers in said two-condenser operation mode, so as to enhance the coefficient of performance.

5,711,164
PORTABLE COOLER USING CO_2 FOR TEMPORARY COOLING

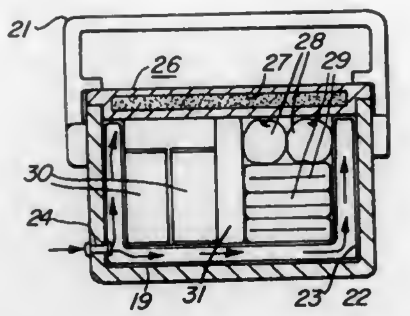
Patricia M. Slack, 15325 Regatta Way, Corona, Calif. 92530

Filed Oct. 25, 1996, Ser. No. 738,394

Int. Cl.^{6} F25D *13/08;9/00*

U.S. Cl. 62—457.9 **6 Claims**

1. An insulated food container comprising, rigid sidewalls and bottom, an insulated cover element for mounting onto the container, a hollow, flexible plastic film being configured for positioning within the container and adjacent the sidewalls and bottom of the container, and a valve element mounted within and extending through a sidewall and into the plastic film for receiving an expanding and cooling gas, the sidewalls and bottom being arranged and constructed to contain the expanding gas in the plastic film, and to transmit cooling effects from the expanding gas through a sidewall and into the plastic film to cool food contained within the container.



5,711,165
REFRIGERATING APPARATUS AND REFRIGERANT COMPRESSOR

Tadashi Iizuka, Ashikaga; Reishi Naka; Katsumi Fukuda, both of Tochigi-ken; Makoto Tanaka, Kanuma; Yoshiharu Homma, Hitachi; Hiroaki Hata, Tochigi-ken; Hirokatsu Kousokabe, Ibaraki-ken; Koji Nariyoshi, Tochigi-ken, and Hiroshi Iwata, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 793,119, Nov. 18, 1991, abandoned.

This application Sep. 20, 1994, Ser. No. 309,601

Claims priority, application Japan, Nov. 16, 1990, 2-308736

Int. Cl.^{6} F25B *43/00;* **C09K** *5/04*

U.S. Cl. 62—474 **49 Claims**

1. A refrigerating apparatus which comprises a refrigeration cycle comprising of at least a closed vessel compressor, a condenser, a dryer having a packing comprising a synthetic zeolite drying agent comprising alkali metal silicate and alkali metal aluminate, an expansion mechanism, and an evaporator, wherein a mixture of a refrigerant comprising a chlorine-free fluorocarbon and/or hydrofluorocarbon and having a critical temperature of 40° C. or higher and a refrigerating machine oil is circulated in said refrigeration cycle, said refrigerating machine oil consisting essentially of an ester oil obtained from a single alcohol and an acid component comprising one or more fatty acids having 6 to 13 carbon atoms, wherein said ester oil has a viscosity at 40° C. of 2 to 70 cSt and a viscosity at 100° C. of 1 to 9 Cst, wherein said ester oil comprises at least one member selected from the group consisting of the ester oils represented by the following general formulae (1) to (5):

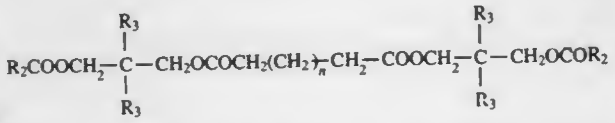
$$(R_1CH_2)_2C(CH_2OCOR_2)_2 \tag{1}$$

$$R_1CH_2C(CH_2OCOR_2)_3 \tag{2}$$

$$C(CH_2OCOR_2)_4 \tag{3}$$

$$(R_2COOCH_2)_3CCH_2OCH_2C(CH_2OCOR_2)_3 \tag{4}$$

(5)



$$R_2COOCH_2-\underset{R_3}{\overset{R_3}{\underset{|}{\overset{|}{C}}}}-CH_2OCOCH_2(CH_2)_n-CH_2-COOCH_2-\underset{R_3}{\overset{R_3}{\underset{|}{\overset{|}{C}}}}-CH_2OCOR_2$$

wherein R_1 is an alkyl group having 1 to 3 carbon atoms, R_2 is a straight or branched chain alkyl group having 5 to 12 carbon atoms, provided that in the formula (5) R_2 is a straight or branched chain alkyl group having 9 to 12 carbon atoms, R_3 is an alkyl group having 1 to 3 carbon atoms, and n is an integer of 0 to 5.

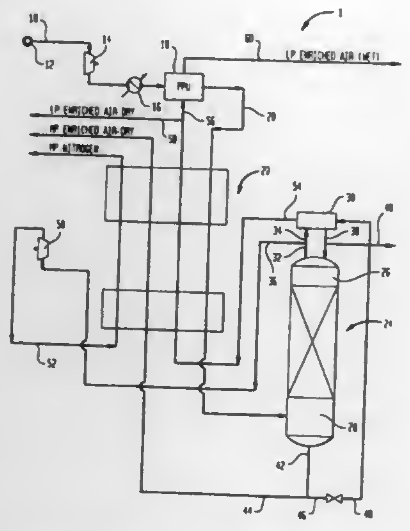
5,711,166
AIR SEPARATION METHOD AND APPARATUS

Anish Mehta, Somerset, and Sidney Simon Stern, Highland Park, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Jan. 22, 1997, Ser. No. 787,490

Int. Cl.^{6} F25J *3/00*

U.S. Cl. 62—650 **6 Claims**



1. A method of separating air, said method comprising:
filtering, compressing, and purifying the air to produce a compressed and purified air stream;
cooling the compressed and purified air stream to a temperature suitable for its rectification;
rectifying the air contained within said compressed and pad fled air stream within a single column nitrogen generator to produce gaseous nitrogen as a tower overhead and oxygen enriched liquid as a column bottoms;
valve expanding a coolant stream composed of said oxygen enriched liquid;
producing reflux for said nitrogen generator by condensing part of a stream of said gaseous nitrogen against vaporizing said coolant stream;
partially warming a remaining part of said stream of gaseous nitrogen;
expanding said remaining part of said stream of gaseous nitrogen with the performance of work to produce a refrigerant stream;
indirectly exchanging heat between said refrigerant stream and said coolant stream, directly after vaporization thereof, with said with the compressed and purified air stream so that said compressed and purified air stream is cooled to said temperature suitable for its rectification and said refrigerant stream and said coolant stream fully warm; and
taking as products said coolant and said refrigerant streams.

5,711,167
HIGH EFFICIENCY NITROGEN GENERATOR

Bao Ha, Vacaville, Calif., and Michael A. Turney, Houston, Tex., assignors to Air Liquide Process & Construction, Houston, Tex.

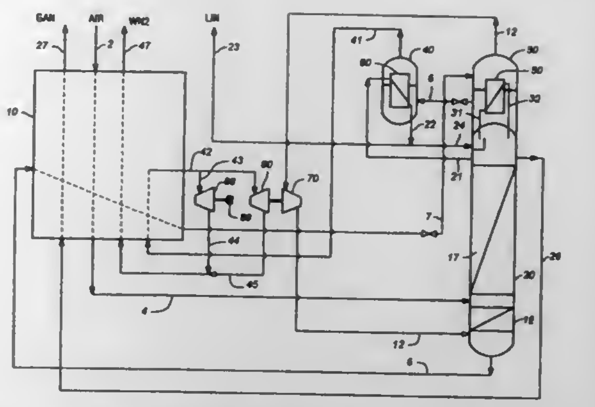
Continuation of Ser. No. 397,340, Mar. 2, 1995, abandoned.

This application Jan. 29, 1996, Ser. No. 583,792

Int. Cl.^{6} F25J *3/00*

U.S. Cl. 62—652 **13 Claims**

1. A process for the production of highly pure nitrogen product from air by cryogenic separation, comprising the steps of:
(a) feeding a compressed, dry, cleaned, and cooled feed air stream to a distillation column at a feed stage;



(b) separating said feed air in said distillation column to form a nitrogen-enriched vapor at the top of the column, and an oxygen-enriched liquid at the bottom of the column;
(c) condensing in a first condenser a portion of said nitrogen-enriched vapor by indirect heat exchange with at least a portion of said oxygen-enriched liquid which at least partially vaporizes to form an oxygen-rich liquid and a second nitrogen-enriched vapor;
(d) vaporizing at least a portion of said oxygen-rich liquid in a second condenser by indirect heat exchange with at least a portion of said nitrogen-enriched vapor to produce a waste stream and a nitrogen-enriched condensate;
(e) recycling a least a portion of said second nitrogen-enriched vapor to a recycle compressor to form a compressed recycle stream;
(f) feeding at least a portion of said compressed recycle stream to said distillation column at least one theoretical stage below said feed stage of said feed air; and
(g) warming and expanding at least a portion of said waste stream in an expansion device to provide refrigeration for said process.

5,711,168
KNITTING METHOD

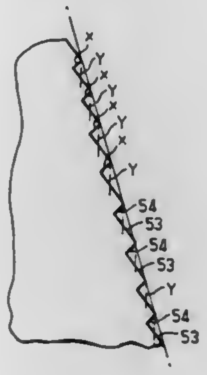
Malcolm Frederick Proctor; Giles Timothy Gregory, both of Nottingham, United Kingdom; Stuart Thomas Smith, Port Huron, and Gary John Leeke, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1996, Ser. No. 591,813

Claims priority, application United Kingdom, Feb. 1, 1995, 95019956

Int. Cl.^{6} D04B *1/22*

U.S. Cl. 66—189 **11 Claims**



1. A continuously weft-knitted three-dimensional fabric cover, said fabric cover having, as knitted, a horizontal course-wise direction and wale-wise needle loops extending in needle lines that are vertical with respect to said course-wise direction, said cover having sutures to accommodate the three-dimensional cover

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wherein the sutures connect flat portions of knit fabric to present a three-dimensional format in which each suture defines a straight line or a series of straight lines joined end-to-end, each straight line lying at a bias angle of between 0° and 50° to the course-wise direction of the fabric.

5,711,169

KNITTED COVERS

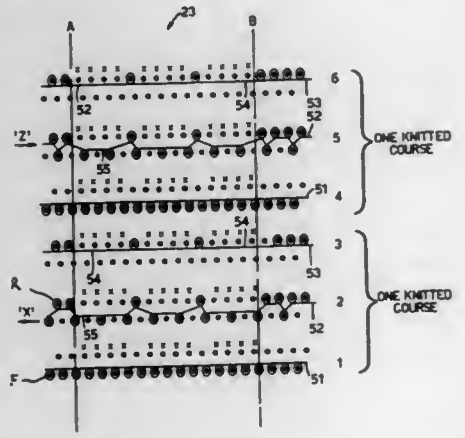
Gary John Leeke, Southfield, Mich.; Giles Timothy Gregory, Nottinghamshire, and Malcolm Frederick Proctor, Nottingham, both of United Kingdom, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1996, Ser. No. 619,052

Claims priority, application United Kingdom, Apr. 1, 1995, 95068078

Int. Cl.^{6} D04B *1/22;* **A47C** *20/02;27/00*

U.S. Cl. 66—196 **10 Claims**



1. A fabric upholstered structure comprising a core with an external surface covered by a knitted fabric cover of a generally double jersey construction having a front layer and a back layer that are interconnected by knitted stitches, said cover comprising an attachment region in which the back layer is not connected to the front layer and in which region the back layer has a different stitch structure than in the double jersey construction, the external surface of the core having at least one strip of hook fasteners attached thereto, hooks of the hook fasteners engaging with knitted loops on the back layer in said attachment region of the fabric cover.

5,711,170

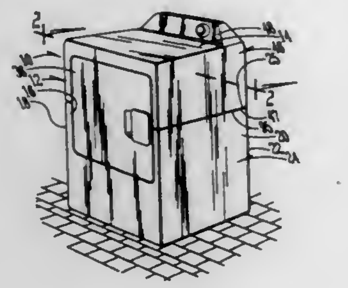
INTEGRATED TUB AND CABINET STRUCTURE

Troy Johnson, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Continuation-in-part of Ser. No. 293,399, Aug. 19, 1994, Pat. No. 5,526,657. This application Mar. 12, 1996, Ser. No. 614,397

Int. Cl.^{6} D06F *37/26*

U.S. Cl. 68—3 R **20 Claims**



14. A laundry appliance for washing articles in a wash fluid within a fluid tight chamber comprising:

a first cabinet panel member of one-piece construction;

a second cabinet member of one-piece construction mateable to the first cabinet panel member to form a plurality of vertical exterior cabinet walls and a chamber within said exterior cabinet walls;

said chamber being fluid tight and capable of receiving a rotatable fabric basket therein and wherein in normal operation the chamber fills with fluid to a predetermined level to wash articles;

said first and second panel members defining a split line along the point of connection; and

said split line being above a normal operating fluid level of the chamber.

5,711,171

WASHING MACHINE

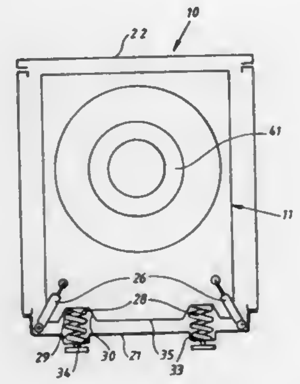
Göran Uhlin, Lagan, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 11, 1996, Ser. No. 585,022

Claims priority, application Sweden, Jan. 31, 1995, 9500339

Int. Cl.^{6} D06F *37/22*

U.S. Cl. 68—4 **15 Claims**



1. Washing machine comprising a frame (**11**), a base plate (**21**) supporting the frame (**11**) and an outer machine housing (**22**) fixed to the base plate (**21**), said base plate (**21**) having recessed portions (**33**) and said frame supporting main functional components of the washing machine, said functional components comprising a tub (**12**) including a rotatable drum (**13**) for laundry and motor drive means (**14**) for rotating the drum (**13**), said washing machine further comprising supports between the base plate (**21**) and the frame (**11**) supporting the functional components and selected from the group of free-swinging supports having spring means (**28**) extending into said recessed portions (**33**) and motion damping means (**26**) and fixed-mount supports having elongated fitting means (**37, 38**) extending over said recessed portions (**33**).

5,711,172

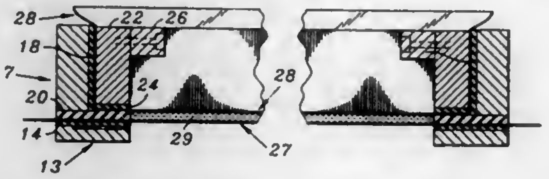
APPARATUS FOR PREPARING COMPOSITE SKIN REPLACEMENT

Steven T. Boyce, Cincinnati, Ohio, assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 376,293, Jan. 23, 1995, which is a continuation of Ser. No. 52,167, Apr. 23, 1993, abandoned, which is a division of Ser. No. 759,641, Sep. 12, 1991, Pat. No. 5,273,900, which is a continuation of Ser. No. 398,297, Aug. 24, 1989, abandoned, which is a continuation of Ser. No. 186,603, Apr. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 43,321, Apr. 28, 1987, abandoned. This application Jun. 2, 1995, Ser. No. 459,024

Int. Cl.^{6} B29C *39/26*

U.S. Cl. 249—112 **1 Claim**



1. An apparatus for forming a porous, resorbable biosynthetic dermal membrane having a predetermined structure comprising:

a) a bottom frame having an upper surface;

b) a resilient gasket coupled to said upper surface of the bottom frame;

c) an outer frame having raised vertical wall members, for coupling to said bottom frame;

d) a resilient lining on the inside of the raised vertical wall members of said outer frame;

e) a resilient spacer gasket for insertion between the bottom frame and the outer frame, said gasket protruding beyond the inner edge of said outer frame into the central region of the outer frame, and said gasket of preselected thickness;

f) an inner frame having outer dimensions slightly smaller than the outer frame such that the inner frame fits tightly within the outer frame, and having raised vertical wall members;

g) a resilient gasket coupled to the lower surface of the inner frame; and

h) a freezing chamber for holding a membrane forming solution, said freezing chamber comprising lower and upper flexible, non-stick planar sheets constructed of a non-stick material having a thermal conductivity of at least 6×10^{-4} cal.-cm/sec-cm_2-° C. sufficient to allow a freezing rate which regulates ice crystal formation in the membrane forming solution during freezing, said lower sheet for insertion between the bottom frame and said spacer gasket, and said upper sheet for insertion between said inner frame and said outer frame, such that when said apparatus is assembled, a freezing chamber is formed between said lower and upper sheets and when said freezing chamber contains a membrane forming solution, said lower and upper sheets are placed in contact with the solution.

5,711,173

Patent Not Issued For This Number

5,711,174

ROLL FORMING METHOD AND DEVICE

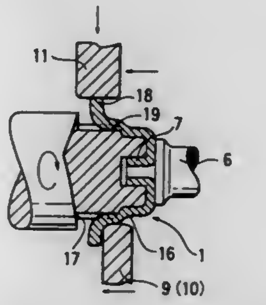
Masahiro Dohi, Hiroshima, and Yoshiyuki Yamashina, Sakai, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, and Samtech Corporation, Osaka, both of Japan

Filed Jul. 16, 1996, Ser. No. 682,978

Claims priority, application Japan, Jul. 20, 1995, 7-184007

Int. Cl.^{6} B21D *22/16*

U.S. Cl. 72—83 **9 Claims**



1. A roll forming method for forming an annular product with a radially outwardly extending flange portion at an end by using a mandrel formed with a stepped portion for forming said flange portion comprising the steps of:

holding a center portion of a work for forming said annular product with the mandrel,

rotating the work,

engaging the work with a forming roller,

contacting a portion of the work with the stepped portion of the mandrel,

pressing the portion of the work against the stepped portion with the forming roller to form said flange portion, and

restricting an outer end of the flange portion from expanding radially outwardly while rolling the work.

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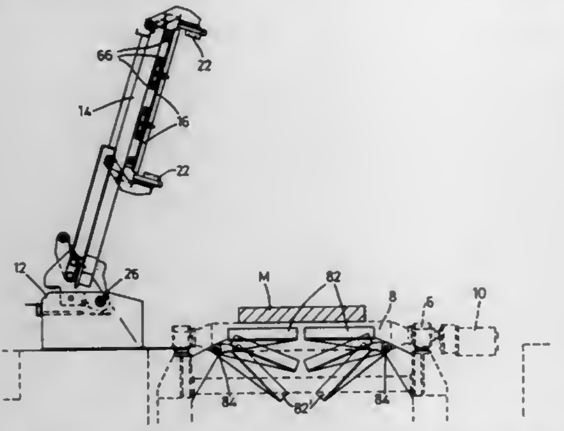
5,711,175
HEAT SHIELDS FOR ROLLER TABLES

William Robert Laws, Dorking, and Geoffrey Ronald Reed, Kingswood, both of United Kingdom, assignors to Encomech Engineering Services Ltd., Epsom, United Kingdom
Continuation of Ser. No. 419,926, Apr. 11, 1995, abandoned.
This application Mar. 3, 1997, Ser. No. 804,293
Claims priority, application United Kingdom, Apr. 12, 1994, 9407566
Int. Cl.^{6} B21B *27/06;37/00;* **B21D** *37/16*
U.S. Cl. 72—202 **8 Claims**

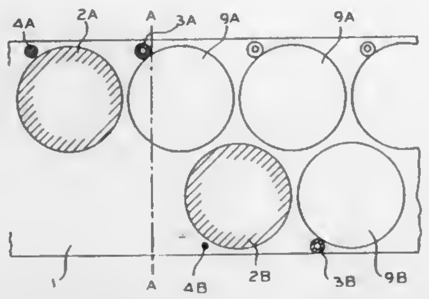


1. In a roller table having a base frame, bearing supports in said base frame and rollers mounted rotatably in said bearing supports for providing a travel path for hot material along the roller table, the improvement which comprises:
   (i) a plurality of displaceable heat insulating panels s across the width of the roller table and disposed below said material travel between sucessive said rollers,
   (ii) pivot mounting means on the base frame locating said panels thereon and defining pivot axes extending transversely to said travel path,
   (iii) displacements means connected to said panels for displacement of the panels on said pivot mounting means between operative and non-operative positions,
   (iv) said panels having upper heat re-radiating faces directed towards said travel path when the panels are in the operative position,
   (v) said panel upper faces being tilted downwardly away from said travel path when the panels are in the inoperative position for adjusting the temperature of material, as a whole, as it moves along said travel path,
   (vi) said pivot axes defined by the pivot mounting means being located below the panels when the panels are in said operative position.

5,711,176
BLANKING METHOD

Isamu Komatsu, Sagamiharashi, Japan, assignor to Aida Engineering Ltd., Kanagawa-ken, Japan
Filed Jun. 11, 1996, Ser. No. 661,469
Claims priority, application Japan, Jul. 25, 1995, 7-209017
Int. Cl.^{6} B21D *28/08*
U.S. Cl. 72—336 **7 Claims**

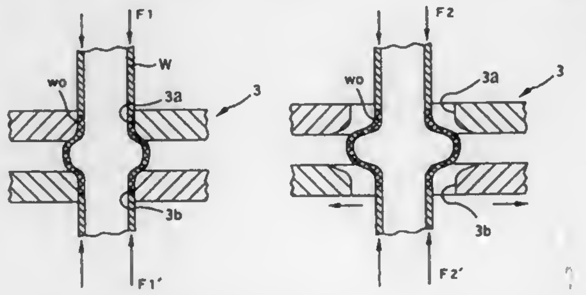
1. A blanking method for producing parts by blanking from a plate material with a die by using a press, the method comprising the steps of:
   performing blanking on the plate material to produce parts, the die being forced into the plate material such that the part is about to be separated from the plate material, defining a blanking complete state, and thereafter until the die reaches a bottom dead center position, an area of the plate material proximate a blanked area defining scrap;
   feeding the plate material subsequent to each blanking step so that the scrap is spaced from the die;



   subjecting upper and lower surfaces of the area of the plate material defined as scrap to a forming process with at least one set of upper and lower punches, beginning approximately with the blanking complete state of the blanking step until the die reaches the bottom dead center position, to thereby absorb strain energy accumulated in the press as a result of blanking to prevent breakthrough of the press.

5,711,177
METHOD FOR CORRUGATING A METALLIC PIPE

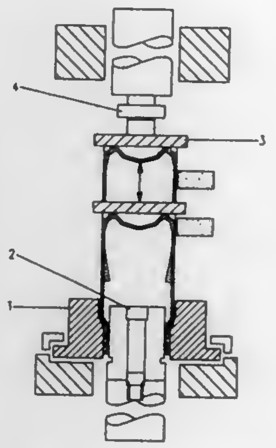
Masahiko Mitsubayashi, Nagoya; Masazumi Ohnishi, Toyota; Noritaka Miyamoto, Toyota; Shinobu Ishida, Toyota; Shinji Kawasaki, Toyota, and Shoichiro Nitta, Aichi-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jun. 27, 1996, Ser. No. 671,180
Int. Cl.^{6} B21D *31/04*
U.S. Cl. 72—342.1 **2 Claims**



1. A method for corrugating a metallic pipe, comprising:
   a heating step of heating in a circumferential direction a local part of an outer periphery of a metallic pipe extending in an axial direction so as to form a heated part;
   a first expansion step of placing on the side of said outer periphery of said pipe a contact jig which has a pair of inner end surfaces which are aligned with each other in said axial direction and serve as contact surfaces, and contacting each of said contact surfaces with said heated part so as to cross a particular portion of said heated part, while applying a first compressive stress to said pipe in said axial direction, so that said heated part is first expanded; and
   immediately after said first expansion step, a second expansion step of releasing said heated part from said contact with each of said contact surfaces and applying a second compressive stress to said pipe in said axial directions, so that said heated part is further expanded.

5,711,178
DIE FOR USE IN DIE-NECKING OF A METAL CAN BODY AND METHOD USING SUCH A DIE

Auke Hogendoorn, Heerhugowaard; Gerard M. Louwerse, Velserbroek, and Hans N. Schaaper, Heemskerk, all of Netherlands, assignors to Hoogovens Staal BV, Ijmuiden, Netherlands
Filed Jun. 25, 1996, Ser. No. 668,475
Claims priority, application Netherlands, Jun. 26, 1995, 1000657
Int. Cl.^{6} B21D *22/00;22/21*
U.S. Cl. 72—352 **19 Claims**

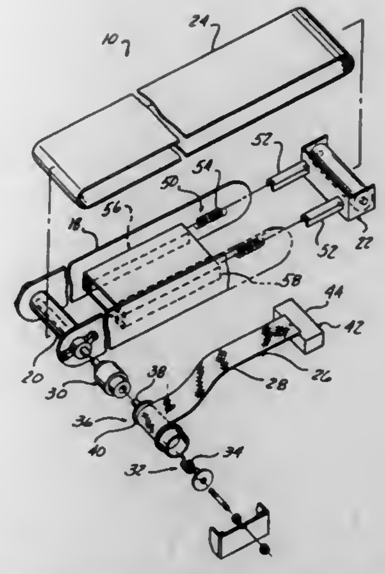


1. Die for use in a stage, other than a first stage, of a multi-stage process of die-necking of a metal can body, which die has a centre-line and an internal die surface extending around said centre-line for contacting a part of said can body which is being necked by relative movement of said can body and said die surface in a direction parallel to said centre-line, said die surface having, as seen in a longitudinal section including said centre-line, a profile comprising in direct succession
   a feed-in zone,
   an intermediate zone, and
   a neck zone,
   said feed-in zone having a spacing from said centre-line corresponding to the dimension of said can body at a non-necked part thereof adjacent the part being necked,
   said neck zone having a spacing from the centre-line corresponding to a desired neck size of a necked part of said can body after its die-necking in the die, and
   said intermediate zone having, as seen in said longitudinal section including said centre-line, a contact surface part which has tangents at non-zero angles to said centre-line and which in use contacts said can body to shape the can body, and at a location between said contact surface part and said feed-in zone, a relatively steep surface part which has tangents that extend at an angle α to said centre-line greater than a maximum angle α_n between said tangents of said contact surface part and said center-line of tangents to said contact surface part relative to said centre-line.

5,711,179
APPARATUS FOR DRIVING INDEXING CONVEYOR

Robert L. Kimball, 1559 Capac Dr., Allenton, Mich. 48002
Filed Jan. 16, 1996, Ser. No. 585,882
Int. Cl.^{6} B21D *43/02*
U.S. Cl. 72—361 **15 Claims**

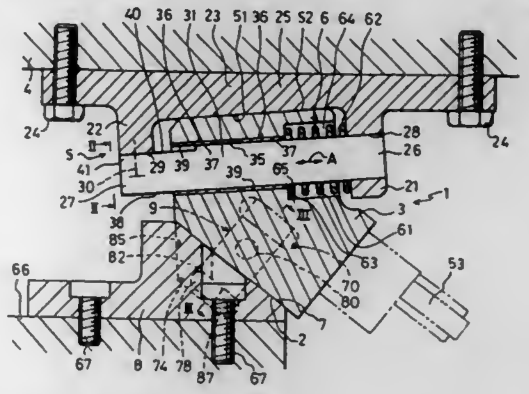
1. An apparatus for driving material with respect to a press having a reciprocal ram and bolster plate, said apparatus comprising:
   elongated conveyor means connectible to said press for moving material with respect from said press, said conveyor means including an endless conveyor belt disposed about a drive pulley at one end and an idler roller at an opposite end;



   flexible means, connectible between said conveyor means and said reciprocal ram, for converting reciprocating movement of said ram into indexing movement of said endless conveyor belt through said drive pulley; and
   magnetic means for operably connecting said flexible means to said reciprocable ram and for connecting said conveyor means to said press.

5,711,180
PRESSING CAM DIE

Tadashi Sasahara, and Hideyuki Morioka, both of Fujisawa, Japan, assignors to Olles Corporation, Tokyo, Japan
Filed Apr. 8, 1996, Ser. No. 629,046
Int. Cl.^{6} B21D *5/04*
U.S. Cl. 72—381 **5 Claims**



1. A pressing cam die comprising:
   a cam slide having an inclined cam surface, a through hole, and a recess communicating at a bottom surface thereof with said through hole, said recess being larger in diameter thereof than that of said through hole;
   supporting means for movably supporting said cam slide, said supporting means including a base having a guide plane surface for guiding movement of said cam slide, a front wall portion, a rear wall portion, and a connecting wall portion for connecting said front wall portion and said rear wall portion, said cam slide having at one end thereof a plane surface which is slidably brought into direct contact with said guide plane surface of the base;
   a guide bar passing through the through hole and said recess of said cam slide and supported by said base, said guide bar having one end attached to said front wall portion, and said coil spring being disposed between said bottom surface of said recess and said front wall portion;

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spring means for urging said cam slide toward an initial position, said spring mean having a coil spring disposed by being wound around said guide bar of said supporting means so as to urge said cam slide toward the initial position, said coil spring having one end portion disposed within said recess of the cam slide;

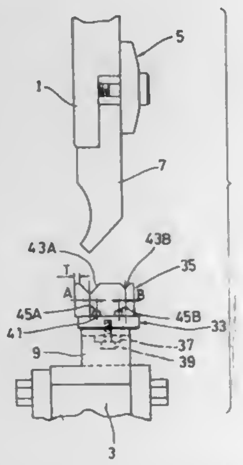
a cam driver having a cam surface which is slidably brought into surface contact with the cam surface of said earn slide; and

a bush whose outer peripheral surface is secured to said cam slide and whose inner peripheral surface slidably abuts against an outer peripheral surface of said guide bar, said bush being disposed in the through hole of said cam slide through which said guide bar passes.

5,711,181

DIE AND DIE ASSEMBLY FOR PRESS BRAKE

Nobuya Mitsuyoshi, Onomichi, Japan, assignor to Amada Metrecs Company, Limited, Kanagawa, Japan
Filed Sep. 23, 1994, Ser. No. 311,255
Claims priority, application Japan, Sep. 27, 1993, 5-059162
Int. Cl.⁶ B21D *5/02*
U.S. Cl. 72—389.4 **7 Claims**



1. A die for a press brake, comprising:

a die body having an upper surface and a lower surface separated by a distance defining a depth of said die body;

a first groove formed in the upper surface of said die body so as to extend in a longitudinal direction thereof, said first groove having a V-shaped cross section, a bottom and a centerline which extends in a longitudinal direction of said die at the bottom of said first groove;

a second groove formed in the upper surface of said die body so as to extend in parallel to the first groove, said second groove having a V-shaped cross section, a bottom and a centerline which extends in the longitudinal direction of said die at the bottom of said second groove;

a plurality of first slots formed in the lower surface of said die body and extending to only a predetermined portion of said depth of said die body, said plurality of first slots extending in parallel to the first groove, said plurality of first slots being displaced from a first vertical plane including the centerline of the first groove by a predetermined distance; and

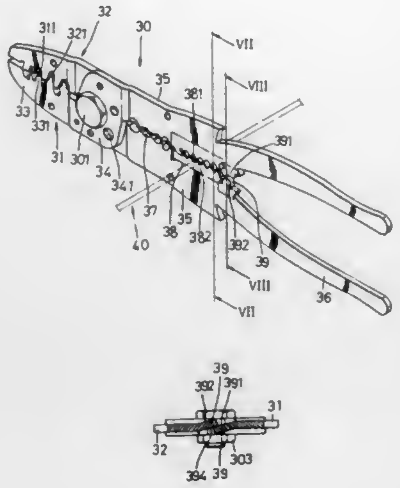
a plurality of second slots formed in the lower surface of said die body and extending to only a predetermined portion of said depth of said die body, said plurality of second slots extending in parallel to the second groove, said plurality of second slots being displaced from a second vertical plane including the centerline of the second groove by a distance equal to said predetermined distance;

wherein said first slots are offset from said second slots, respectively, in the longitudinal direction of said die.

5,711,182

CRIMPING TOOL WITH WIRE STRIPPING CAPABILITY

Shyi-Dong Yang, No.356, Peng-I Rd., Tai-Ping Hsiang, Tai-Chung Hsien, Taiwan
Filed Sep. 9, 1996, Ser. No. 709,601
Int. Cl.⁶ H01R *43/05*
U.S. Cl. 72—409.14 **1 Claim**



1. A crimping tool comprising a first elongated member and a second elongated member, each of said first and second elongated members having a front jaw portion, a middle pivot portion and a rear handle portion, said crimping tools further comprising a fastener which extends through said middle pivot portions to pivotally mount said first and second elongated members to each other in such a manner that said first and second elongated members are pivotally movable towards each other from an open position in which said first and second elongated members form a generally X-shaped structure, and in which said front jaw portions and said rear handle portions of said first and second elongated members are spaced apart from each other, to a closed position in which said front jaw portions and said rear handle portions of said first and second elongated members are adjacent to each other, wherein:

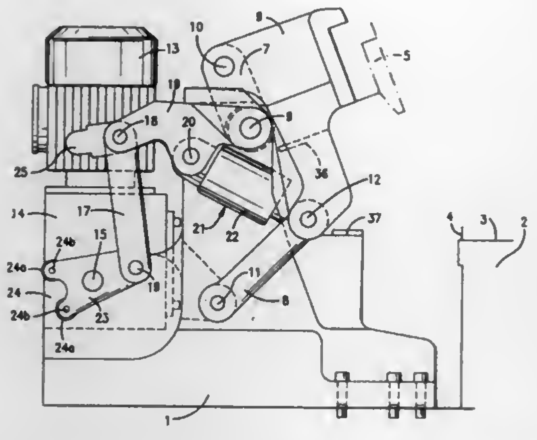
said rear handle portion of each of said first and second elongated members has an inner longitudinal edge formed with a wire stripping section, said wire stripping section of said first elongated member having a bottom face and a top face formed with a wire stripping teethed edge, said wire stripping section of said second elongated member having a top face and a bottom face formed with a wire stripping teethed edge, said bottom face of said stripping section of said first elongated member being in sliding contact with said top face of said stripping section of said second elongated member when said first and second elongated members are moved to said closed position so as to strip an insulation layer of an electrical wire placed between said wire stripping sections of said first and second elongated members; and

said inner longitudinal edge of each of said first and second elongated member is further provided with a lobe member, said lobe member of said first elongated member having a top face, said lobe member of said second elongated member having a bottom face, and said top face of said lobe member of said first elongated member being in sliding contact with said bottom face of said lobe member of said second elongated member to prevent movement of said first and second elongated members away from each other in a direction parallel to an axis of said fastener when said first and second elongated members are moved to said closed position.

5,711,183

DEVICE IN A BENDING UNIT

Michael Mattsson, Mörrum, Sweden, assignor to AB Volvo, Gothenburg, Sweden
PCT No. PCT/SE95/00309, § 371 Date Sep. 16, 1996, § 102(e) Date Sep. 16, 1996, PCT Pub. No. WO95/25608, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 23, 1995, Ser. No. 714,138
Claims priority, application Sweden, Mar. 23, 1994, 9400974
Int. Cl.⁶ B21J *9/18;* **B21D** *39/02*
U.S. Cl. 72—451 **5 Claims**



1. In an arrangement for a bending unit for bending in a projecting edge flange against a surface of a workpiece, said bending unit comprising a stand supporting a drive unit and a supporting surface for the workpiece, a link system which supports a tool holder for a bending tool in such a manner that the tool is displaceable along a predetermined path of movement between a starting position remote from the supporting surface and the workpiece, and a final position in which the edge flange has been bent in against the surface of the workpiece, the improvement wherein:

the drive unit comprises a motor fixed to the stand and coupled to a crankshaft rotatably mounted in the stand;

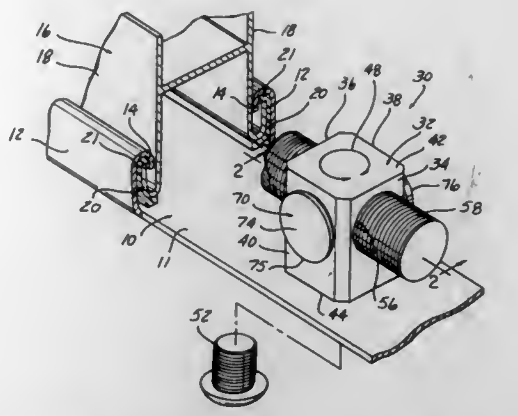
a toggle joint in the form of two articulated links joined, firstly, to a crank pin mounted on the crankshaft, and secondly, to a fixed pivot point in the stand;

a drive link having two ends, a first end being articulated to one of said links in the toggle joint and a second end being articulated to one of the tool holder and a link in the link system supporting the tool holder; and said toggle joint being provided with means for buckling the toggle joint, from a straight alignment, in one direction or the other, depending on the rotational direction of the crankshaft.

5,711,184

GIMBALLED DRIVE BLOCK FOR VEHICLE SEAT ADJUSTER

Thomas E. Pryor, Chelsea, and Joseph C. Montano, Troy, both of Mich., assignors to Lear Corporation, Southfield, Mich.
Filed Nov. 3, 1995, Ser. No. 552,878
Int. Cl.⁶ F16H *27/02*
U.S. Cl. 74—89.15 **22 Claims**



1. A drive apparatus comprising:

first and second members, the first member movable relative to the second member;

a threaded shaft carried with the first member;

means, coupled to the threaded shaft, for imparting rotation to the shaft;

a drive block carried with the second member; and

means, co-acting with the second member, the drive block and the threaded shaft, for allowing pivotal movement of the threaded shaft relative to the second member about two perpendicular axes, each of the two axes disposed mutually exclusively perpendicular to an axis of rotation of the threaded shaft, the co-acting means including:

a first bore extending through the drive block and receiving the threaded shaft therethrough, the first bore having an inner diameter greater than a maximum outer diameter of the threaded shaft;

a body carried by the drive block transversely to and intersecting the first bore in the drive block, the body being rotatable with respect to the drive block about a first axis perpendicular to an axis through the first bore;

a threaded second bore formed in the body perpendicular to the first bore and threadingly engaging the threaded shaft for causing linear movement of the threaded shaft and the first member relative to the drive block and the second member as the threaded shaft rotates;

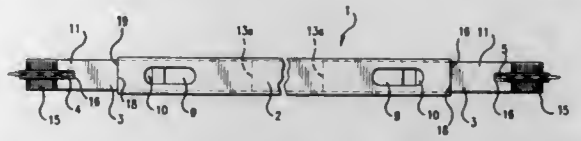
the first bore having a diameter larger than a diameter of the second bore to permit lateral adjustment of the body with respect to the first bore in the drive block while retaining the first and second bores in communication; and

means, carried with the drive block and formed in the second member, for substantially axially fixedly mounting the drive block to the second member and for allowing rotation of the drive block about a second longitudinal axis extending through the drive block substantially perpendicular to the second member.

5,711,185

DOOR DRIVE WITH A CHAIN

Michael Hörmann, Marienfeld, Germany, assignor to Marantec Antriebs - und Steuerungstechnik GmbH & Co. Produktions KG, Marienfield, Germany
PCT No. PCT/DE94/00034, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/17273, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 18, 1994, Ser. No. 500,871
Claims priority, application Germany, Jan. 19, 1993, 43 01 255.8; Jul. 13, 1993, 43 23 424.0
Int. Cl.⁶ F16H *19/06;55/17;* **E05F** *11/42*
U.S. Cl. 74—89.21 **5 Claims**



1. Apparatus for driving a door or door panel, said apparatus comprising: a drive unit positioned in a channel in the form of a guide track (2), said unit including a drive sprocket (4), at least one turn-around sprocket (5) positioned in a retaining fork, a chain extending over the drive sprocket (4) and the turn-around sprocket (5) and at least one carrier element attached to the chain for a door or door panel, the drive sprocket (4), the turn-around sprocket (5) and the chain together with the guide track (2) being formed as a completely preassembled unit (1),

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the drive sprocket (4) being also positioned in a retaining fork (3) which is held in detachable manner within the guide track (2),

the drive and turn-around sprockets having hubs (17),

the retaining forks (3) having bearing mounts (13) for said hubs (17) of the sprockets (4, 5) which are open on one side and which are slightly undercut, and

the bearing mounts (13) of the retaining forks (3) resiliently clasping the hubs (17) of the sprockets (4, 5).

5,711,186

REVERSE SYNCHRONIZER MECHANISM OF MANUAL TRANSMISSION FOR A VEHICLE

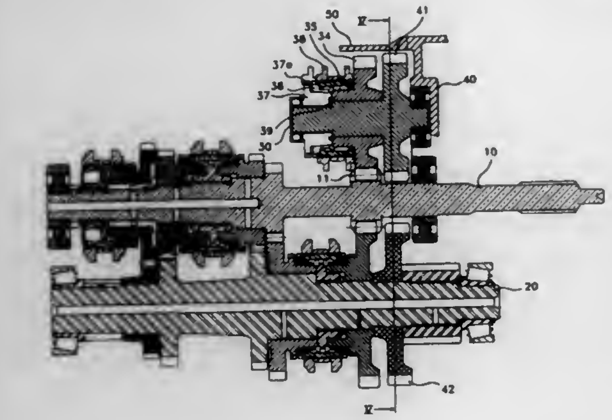
Byong-Hyun Lee, Kunp'o, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

Filed Aug. 21, 1996, Ser. No. 697,237

Claims priority, application Rep. of Korea, Jul. 26, 1996, 96-30568

Int. Cl.^{6} F16H *3/087*

U.S. Cl. 74—331 **3 Claims**



1. A reverse synchronizer mechanism for a manual transmission of a vehicle, comprising:

a reverse idle drive gear rotatably mounted on a reverse idle shaft and engaging with an input first speed gear, which is integrally formed around an input shaft, to rotate therewith;

a reverse idle driven gear integrally mounted on the reverse idle shaft;

a reverse output gear mounted on an output shaft and engaging with the reverse idle driven gear so as to rotate therewith; and

synchronizing means, which is provided between the reverse idle drive gear and the reverse idle driven gear, for synchronizing and transferring power of the reverse idle drive gear to the reverse idle driven gear.

5,711,187

GEAR WHEELS ROLLED FROM POWDER METAL BLANKS AND METHOD OF MANUFACTURE

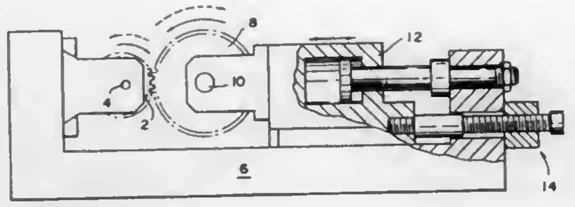
Christopher John Cole, Gloucester, Great Britain; Rohith Shivanath, and Peter Jones, both of Toronto, Canada, assignors to Formflo Ltd., England

Continuation of Ser. No. 853,708, Jun. 5, 1992, abandoned. This application Jan. 3, 1995, Ser. No. 368,080

Claims priority, application United Kingdom, Oct. 8, 1990, 9021833

Int. Cl.^{6} F16H *55/17;* **B21D** *53/28*

U.S. Cl. 74—434 **22 Claims**



1. A gear wheel formed from a pressed and sintered toothed metal powder blank, wherein the metal powder comprises an admixture of iron powder and at least one alloying addition, and the toothed blank is surface hardened by applying densifying pressure to the surfaces of at least the tooth root and flank regions to establish densification in the range of 90 to 100 percent of full theoretical density to a depth of at least 380 microns and up to 1,000 microns.

17. A method of making a gear wheel comprising:

forming a pressed and sintered toothed metal powder blank wherein the metal powder comprises an admixture of iron powder and at least one alloying addition; and surface hardening the toothed blank by applying densifying pressure to the surfaces of at least the tooth root and flank regions to establish densification in the range of 90 to 100 percent of full theoretical density to a depth of at least 380 microns and up to 1,000 microns.

5,711,188

INTERNAL-CIRCULATION-TYPE BALL SCREW DEVICE

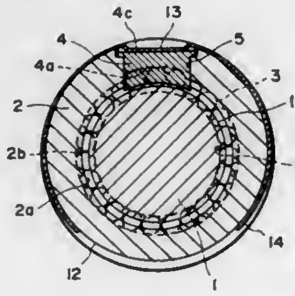
Kazuo Miyaguchi, Takasaki, and Akio Sakai, Maebashi, both of Japan, assignors to NSK, Ltd., Tokyo, Japan

Continuation of Ser. No. 331,908, Oct. 31, 1994, abandoned. This application May 9, 1996, Ser. No. 638,723

Claims priority, application Japan, Dec. 27, 1993, 5-348347

Int. Cl.^{6} F16H *25/24*

U.S. Cl. 74—459 **8 Claims**



1. An internal-circulation-type ball screw device, comprising:

a threaded shaft having a peripheral surface formed with ball thread grooves;

a ball nut having an inner peripheral surface formed with ball thread grooves facing said ball thread grooves of the threaded shaft, the ball nut having a substantially radially extending through hole with sidewall portions spaced circumferentially of the ball nut;

a plurality of balls engaged in a clearance between said ball thread grooves of the ball nut and said ball thread grooves of the threaded shaft;

a deflector set in said through hole to guide and circulate said plurality of balls; and

a deflector-locking spring including a thin plate spring having a substantially C-shaped cross section, said thin plate spring having a radially inwardly extending portion disposed substantially midway between ends of the C-shaped cross section and received in said through hole between said sidewall portions, said radially inwardly extending portion contacting the deflector and pressing the deflector toward the threaded shaft to fix the deflector to the ball nut.

5,711,189

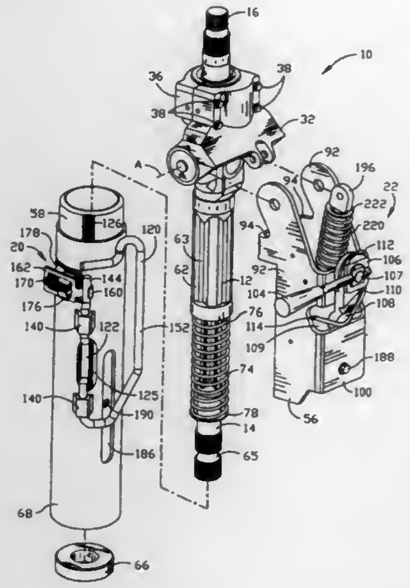
STEERING COLUMN

Mark A. Cartwright, and James M. Hobaugh, II, both of Lafayette, Ind., assignors to TRW Inc., Lyndhurst, Ohio

Filed May 20, 1996, Ser. No. 661,663

Int. Cl.^{6} B62D *1/18;* **G05G** *5/16;5/18*

U.S. Cl. 74—493 **40 Claims**



1. A steering column for use in a vehicle having a frame, said steering column comprising:

first and second steering column members, said first steering column member being axially movable relative to said second steering column member;

a member connected to said first steering column member and movable with said first steering column member relative to said second steering column member, said member including a plurality of teeth;

support means for connecting said steering column to the frame of the vehicle;

clamping means for clamping said member connected to said first steering column member to said support means, said clamping means having a first position in which said clamping means clamps said member connected to said first steering column member to said support means to prevent said first steering column member from moving relative to said second steering column member and a second position in which said clamping means permits said first steering column member to move relative to said second steering column member; and

a telescope locking member engageable with said plurality of teeth on said member connected to said first steering column member, said telescope locking member having a first position in which said telescope locking member engages at least one of said plurality of teeth on said member connected to said first steering column member to prevent movement of said first steering column member relative to said second steering column member and a second position in which said telescope locking member is spaced from said plurality of teeth on said member connected to said first steering column member to permit axial movement of said first steering column member relative to said second steering column member.

5,711,190

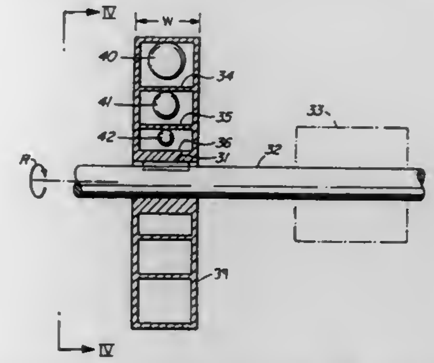
WEIGHT COMPENSATING METHOD AND APPARATUS

Gary R. Taylor; Shaughan Holden, both of Calgary, Canada, and Anton Gasafi, deceased, late of Calgary, Canada, by Jane Karabonik, legal representative, assignors to ETI Technologies Inc., Guernsey, Channel Islands

Continuation of Ser. No. 175,320, Dec. 29, 1993, abandoned, which is a continuation of Ser. No. 887,340, May 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,203

Int. Cl.^{6} F16F *15/22*

U.S. Cl. 74—573 R **20 Claims**



1. The combination of a rotatably driven shaft that is adapted to be rotatably driven about a rotational axis and an imbalance removing device provided on the shaft for rotating with the shaft and removing imbalance, the imbalance removing device comprising an enclosing structure provided with a first annular and continuous race, and a second annular and continuous race, the first annular race being separate from the second annular race and having an axis that is coaxial with the rotational axis of the shaft, the second annular race having an axis that is coaxial with the rotational axis of the shaft, a plurality of first weights positioned in the first annular race for movement within the first annular race, the plurality of first weights being arranged in a single annular row within the first race, each of the plurality of first weights possessing a weight that is substantially the same as the weight of each of the other plurality of first weights, a plurality of second weights positioned in the second annular race for movement within the second annular race, the plurality of second weights being arranged in a single annular row within the second race, each of the plurality of second weights possessing a weight that is substantially the same as the weight of each of the other plurality of second weights, the weight of each of the plurality of first weights being different from the weight of each of the plurality of second weights.

5,711,191

DAMPING FLYWHEEL NOTABLY FOR A MOTOR VEHICLE

Ayman Mokdad, Saint-Ouen, and Jacques Feigler, St. Brice S/Foret, both of France, assignors to Valeo, Paris, France

PCT No. PCT/FR95/00481, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO95/28579, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 13, 1995, Ser. No. 564,050

Claims priority, application France, Apr. 14, 1991, 94 04436

Int. Cl.^{6} F16F *15/10*

U.S. Cl. 74—574 **9 Claims**

1. Damping flywheel having two axial masses (**1**, **2**) mounted so as to move with respect to each other, counter to an elastic damping device (**10**) having at least one elastic member (**8**) acting radially overall between said masses and pivotally mounted on each one thereof, wherein said elastic member (**8**) is mounted in a pivoted cartridge (**10**) having a web (**3**) provided with a first housing (**82**) for mounting said elastic member (**8**) and two guide components (**4**, **5**) disposed axially on each side of the web (**3**) and each having, opposite the first housing (**82**), a second housing (**81**) for mounting said elastic member (**8**), wherein the guide components (**4**, **5**) are fixed to each other, wherein the web (**3**) and the

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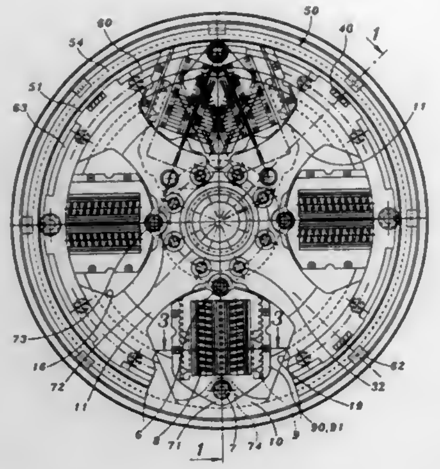
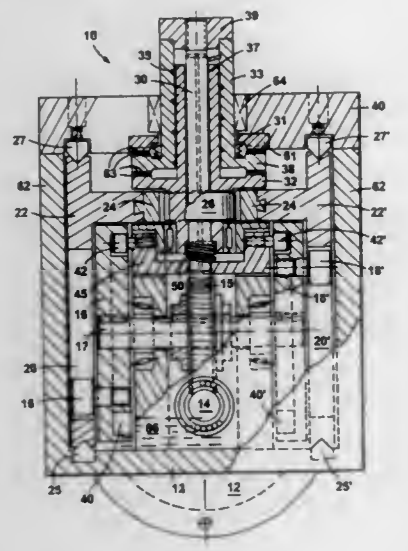


guide components (**4**, **5**) are mounted in reverse orientations, said web (**3**) having at one of its internal and external peripheries a first protuberance (**72**) for mounting first pivoting means on a first (**2**) of said masses, while the guide components (**4**, **5**) each have at one of their external and internal peripheries a second protuberance (**71**), opposite each other, for mounting second pivoting means (**7**) on a second (**1**) of said masses, said second protuberances (**71**) and first protuberances (**70**) being radially offset with respect to each other, and wherein friction means (**9–181**, **183**, **184**, **185**) are mounted within the cartridge (**10**) for action between the web (**3**) and the guide components (**4**, **5**).

5,711,192
INDEXER WITH IMPROVED CLUTCH

Michael Vasilantoe, Humboldt Industrial Park, Hazleton, Pa. 18201

Filed Jun. 7, 1995, Ser. No. 474,012
Int. Cl.⁶ B23Q *16/10;* **F16D** *67/02*
U.S. Cl. 74—827 5 Claims

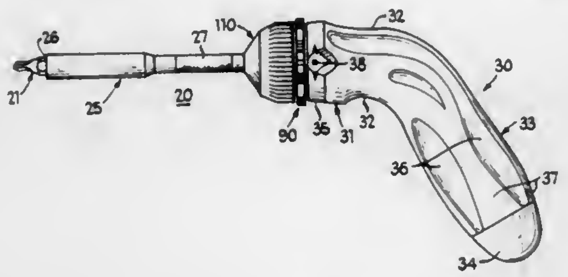


1. An indexing device for generating smooth, controlled rotary motion comprising:
a motor having a rotational output;
a first cam channel disk coupled to said motor output and rotatably driven thereby in a first plane of rotary motion;
first means for inducing linear motion of a first linear gear rack responsive to rotation of said first channel disk in said first plane, wherein said motion of said first linear gear rack is smooth and includes distinctive periods of acceleration, generally constant driving speed, and deceleration;
a second channel disk coupled to said rotational output and rotatably driven thereby in a second plane of rotary motion offset from said first plane of rotary motion;
second means for inducing linear motion of a second linear gear rack responsive to rotation of a second crank in said second plane, wherein said motion of said second linear gear rack is smooth and includes distinctive periods of acceleration, generally constant driving speed, and deceleration;
a rotary gear member in cooperative engagement with both of said first linear gear rack and said second linear rack such that it is rotatively driven by linear motion of said first and second linear gear racks with one of said first or second linear gear racks disposed on one side of said rotary gear member, and the other of said first or second linear gear racks disposed on the opposite side of said rotary gear member;
clutch means coupled to said rotary gear member for transmitting an output of an indexer to an output sleeve, wherein said output sleeve is coupled to said rotary gear member for transmitting the output of said indexer to a work piece; and
rotating motion of said output sleeve also manifests said distinctive periods of acceleration, generally constant driving speed, and deceleration.

5,711,193
REVERSIBLE RATCHETING SCREWDRIVER WITH IMPROVED REVERSING RING

Daniel M. Eggert, Kenosha, and Christopher D. Thompson, Milwaukee, both of Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

Continuation-in-part of Ser. No. 395,063, Feb. 27, 1995, Pat. No. 5,520,073. This application Nov. 22, 1995, Ser. No. 562,077
Int. Cl.⁶ B25B *13/46*
U.S. Cl. 81—63.1 25 Claims

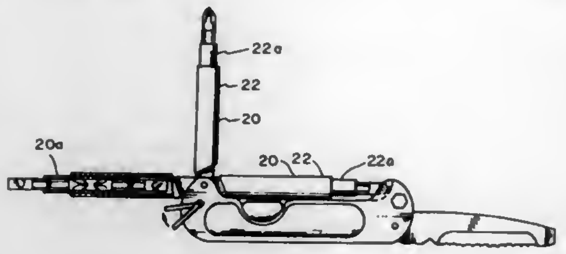


1. In a ratcheting driver including a handle having a generally cylindrical working end with a predetermined radius, a reversible ratchet mechanism carried by the working end of the handle and operable in forward and reverse ratcheting modes, the ratchet mechanism defining a bore having an axis, and an elongated shank receivable coaxially in the bore and engageable with the ratchet mechanism and responsive to rotation of the handle for rotation with the handle in a first direction and for ratcheting rotation relative to the handle in a second direction opposite to the first direction, wherein the first direction is either a forward direction or a reverse direction depending on the ratcheting mode, the improvement comprising: a cylindrical reversing member disposed adjacent to the working end of the handle coaxially with the bore for rotation relative to the shank and coupled to the ratchet mechanism for shifting between the forward and reverse ratcheting modes, said reversing member having an exposed outer peripheral surface including a raised lobe portion projecting radially outwardly beyond the working end of the handle a predetermined distance sufficient to permit easy rotation of said reversing member by engagement of the lobe portion with the finger and/or thumb of a user's hand gripping the handle.

5,711,194
FOLDING KNIFE AND INTERCHANGEABLE BIT SCREWDRIVER

Wayne Anderson, and Paolo Cassutti, both of 171 Brook Ave., Deer Park, N.Y. 11729

Filed May 26, 1995, Ser. No. 451,398
Int. Cl.⁶ B25B *23/00*
U.S. Cl. 81—440 7 Claims

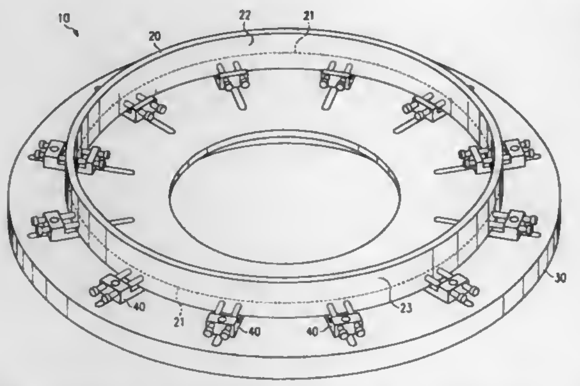


1. A combination folding tool and screwdriver, comprising:
handle means;
folding tool means, said folding tool means comprising at least one tool hingedly secured to said handle means;
interchangeable bit screwdriver means, said interchangeable bit screwdriver means being secured to said handles means;
said interchangeable bit screwdriver means comprises interchangeable bits and sleeve means;
said sleeve means being hinged to said handle means and comprising receiving means adapted to receive said interchangeable bits and to prevent relative rotation therebetween;
said sleeve means comprises retaining means to removably retain said interchangeable bits in said sleeve means, and
said sleeve means additionally comprises inner sleeve means and outer tube means, said inner sleeve means being removably secured in said outer tube meansagainst rotational movement therebetween, said interchangeable bits being removably secured in said inner sleeve means against rotational movement therebetween,
whereby said sleeve means removably retains said interchangeable bits in hinged relationship to said handle means.

5,711,195
APPARATUS AND METHOD FOR PRECISION MACHINING OF METAL RINGS

Robert Koelling, 8342 San Fernando Way, Dallas, Tex. 75218

Filed Oct. 27, 1995, Ser. No. 549,479
Int. Cl.⁶ B23B *1/00;31/00*
U.S. Cl. 82—1.11 17 Claims

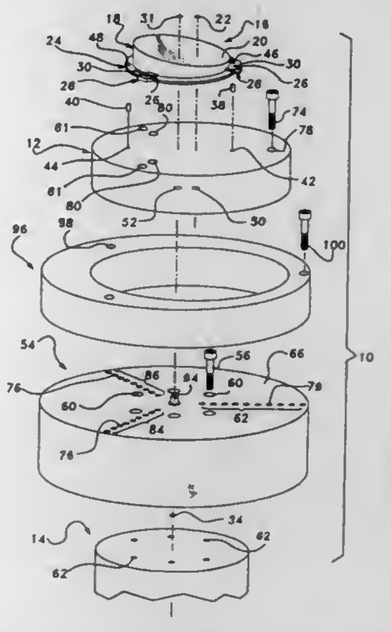


10. A method of mounting a circular ring of metal stock for lathing, the method comprising the steps of:
positioning said circular ring of metal stock in a first position on a plurality of independently positionable clamps disposed on a rotatable mounting plate such that a center of said circular ring of metal stock is positioned approximately at said axis of rotation of said mounting plate;
tightening an inside screw of a selected one of said plurality of clamps against an inside surface of said circular ring of metal stock such that said inside screw minimally contacts said inside surface, wherein said circular ring remains in said first position;
tightening an outside screw of said selected clamp against an outside surface of said circular ring of metal stock such that said outside screw minimally contacts said outside surface, wherein said circular ring remains in said first position; and
further tightening said inside screw and said outside screw of said selected clamp.

5,711,196
TOOLING APPARATUS AND METHODOLOGY FOR MACHINING A BLANK HAVING MULTIPLE SPIN CENTERS

John Reid, Wasaga Beach, and Conrad Stenton, Midland, both of Canada, assignors to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 25, 1996, Ser. No. 638,004
Int. Cl.⁶ B23B *1/00;31/36;* **B24B** *41/06*
U.S. Cl. 82—1.11 18 Claims



1. A tooling apparatus for machining a blank having a first surface portion with a first spin center and a second surface portion with a second spin center offset from said first spin center, said tooling apparatus comprising:
a spindle having a rotational axis;
a turning fixture;
coupling means for connecting the blank for rotation with said turning fixture;
locating means for selectively positioning said turning fixture in one of a first position and a second position relative to said spindle, the first spin center of the blank aligning with said rotational axis of said spindle when said turning fixture is in said first position, the second spin center of the blank aligning with said rotational axis of said spindle when said turning fixture is in said second position;
connecting means for securing said turning fixture for rotation with said spindle; and
a counterbalance coupled for rotation with said turning fixture when said turning fixture is in said second position, said counterbalance aligning a center of rotation of the combined turning fixture and counterbalance with the rotational axis of said spindle.

17. A method for machining a blank having a first surface portion with a first spin center and a second surface portion with a

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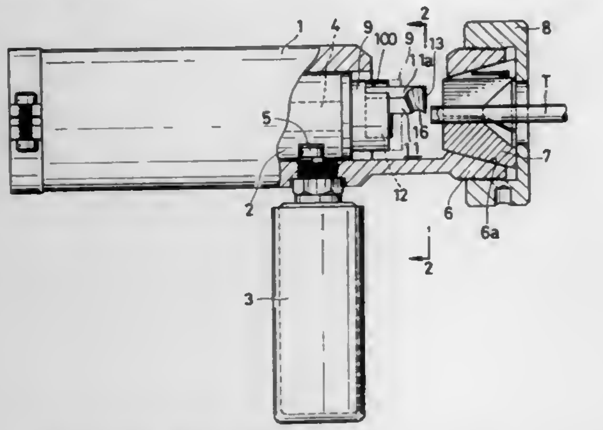
second spin center offset from the first spin center, said method comprising the steps of:
a) connecting the blank to a turning fixture;
b) connecting said turning fixture for rotation with a spindle in a first position where the first spin center of the blank aligns with a rotational axis of said spindle;
c) rotating said spindle;
d) removing material from the blank to form the first surface portion;
e) connecting said turning fixture for rotation with said spindle in a second position where the second spin center of the blank aligns with said rotational axis of said spindle;
f) connecting a counterbalance for rotation with said turning fixture when said turning fixture is in said second position whereby a center of rotation of the combined turning fixture and counterbalance aligns with the rotational axis of the spindle;
(g) rotating said spindle; and
(h) removing material from the blank to form the second surface portion.

5,711,197
TUBE FACING MACHINE

Tadahiro Ohmi, Sendai; Eiji Ideta, and Akihiro Morimoto, both of Osaka, all of Japan, assignors to Fujikin Inc, Osaka, Japan

Filed Apr. 4, 1996, Ser. No. 627,549
Claims priority, application Japan, Apr. 21, 1995, 7-096423
Int. Cl.^{6} B23B ***5/16***
U.S. Cl. 82—113 **4 Claims**

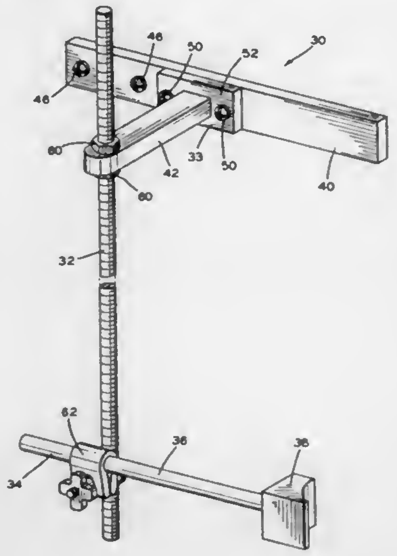


1. A tube facing machine comprising:
a hollow cylindrical body extending longitudinally of said machine;
a cutter rotating drive shaft disposed inside of said body;
a cutter means for facing an end of a tube, wherein said cutter means is attached to a front end portion of said drive shaft;
wherein said front end portion of said drive shaft is formed with a cutter mount groove defined by a reference side face, and said cutter hearts being formed on a base end portion thereof with a reference side face bearing on said reference side face which defines said cutter mount groove, a cutting edge being formed at a front end of said cutter means;
wherein said cutting edge extends from a plane containing said reference side face of said base end portion of said cutter means, and said reference side face which defines said cutter mount groove is positioned a specified distance away from said axis of said drive shaft;
means for holding said tube in front of said cutter means so as to align an axis of said tube with an axis of said drive shaft;
means for moving said drive shaft longitudinally of said machine, wherein said cutter means is fixed so that a cutting direction thereof is a predetermined angle outward with respect to a tangential direction of said tube at a position of cutting; and
wherein said predetermined angle between said cutting direction and said tangential direction at said position of cutting is adjustable within a range determined by adjusting said specified distance of said reference side face, defining said cutter mount groove, from said axis of said drive shaft and said predetermined angle is finely adjusted by moving said cutter means longitudinally of said cutter mount groove with said base end portion in bearing contact with said reference side face, defining said cutter mount groove, so that said cutting direction of said cutter means can be readily made to face outwardly by said predetermined angle, even when said tube to be cut for facing is of a small diameter.

5,711,198
VERTICAL LATHE WORKPIECE SUPPORT STRUCTURE

Rhonda M. Rice, Bristol, Tenn.; Charles S. Harless, Bristol, Va.; Sharon A. Brent, Bristol, Tenn.; Deborah C. Sproles, Abingdon, Va., and Richard G. Cunningham, Blountville, Tenn., assignors to Dana Corporation, Toledo, Ohio

Filed Apr. 30, 1996, Ser. No. 641,313
Int. Cl.^{6} B23B ***25/00***
U.S. Cl. 82—122 **11 Claims**

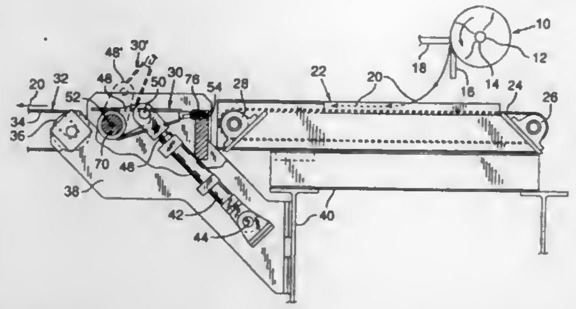


1. A support structure for laterally supporting a workpiece in a vertical lathe, comprising:
a mounting plate adapted to be fixed to the vertical lathe;
a locator arm extending from said mounting plate and having a threaded bore formed therethrough;
a threaded rod extending through and cooperating with said threaded bore formed in said locator arm such that rotation of said threaded rod causes movement of said threaded rod relative to said locator arm; and
a clamp including a first clamp releasable engaged with said threaded rod, a second clamp connected to said first clamp and releasably engaged with a locator rod, and a part rest fixed to said locator rod and adapted to engage a workpiece mounted in the vertical lathe, said part rest having a bifurcated support face.

5,711,199
CLIPPING TRASH GATE FOR TRIMMING STRIP OF SHEET MATERIAL

John A. Hesketh, Nanaimo, and Edsel G. Beharrell, Nanoose Bay, both of Canada, assignors to The Coe Manufacturing Company, Portland, Oreg.

Filed Jan. 6, 1997, Ser. No. 779,092
Int. Cl.^{6} B26D ***7/06;*** **B27B** ***1/00***
U.S. Cl. 83—23 **20 Claims**

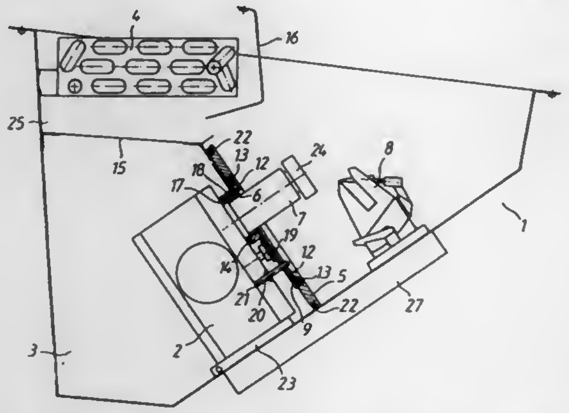


10. Strip cutter apparatus for cutting a strip of sheet material, comprising;
a movable cutter device including a knife;
a stationary cutter member made of a plastic material softer than the material of said knife;
an operating device for moving the movable cutter device between a cutting position and a rest position;
a support device for supporting said stationary cutter member in a position so that the stationary cutter member is cut by the knife in said cutting position to form a cutting edge on said stationary cutter member;
a feeder device for feeding a strip of sheet material through the strip cutter; and
a control device for actuating the operating device to move the knife from the rest position to the cutting position to cut the strip between said knife and said cutting edge of said stationary cutter member.

5,711,200
CRYOSTATIC MICROTOME

Stefan Thiem, Heidelberg, Germany, assignor to Leica Instruments GmbH, Wetzlar, Germany

Filed Sep. 29, 1995, Ser. No. 536,284
Claims priority, application Germany, Sep. 30, 1994, 44 34 937.8
Int. Cl.^{6} G01N ***1/28***
U.S. Cl. 83—170 **7 Claims**

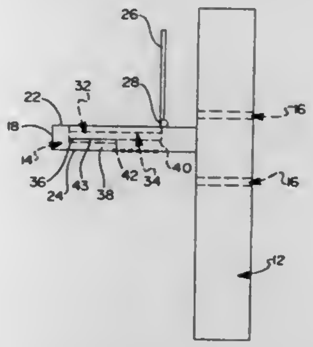


1. A housing for a microtome which is capable of being employed in a cryostat, said housing comprising:
an object holding device which is axially movable; and
a waterproof microtome chamber including a chamber wall, said wall having an elongated slot through which said object holding device extends, said elongated slot having a periphery, and said elongated slot including a seal which is diposed about the periphery of said elongated slot, said slot further being covered by a coverplate which is provided adjacent said seal of said slot,
said coverplate having an orifice through which a pin having an axis, which is fixedly arranged on the chamber wall, extends such that said coverplate is rotatable about the axis of said pin,
said chamber further including magnets which are arranged on said wall of said chamber adjacent said elongated slot such that said magnets retain said coverplate over said elongated slot, wherein a sleeve is arranged on the coverplate, and a guide band is arranged between the sleeve and the object holding device, said guide band being capable of transmitting movement of the object holding device to the coverplate.

5,711,201
BOTTLE TOP CUTTING DEVICE

Pamela J. Thompson, 8516 Huron River Dr., White Lakes, Mich. 48386

Filed Jan. 2, 1996, Ser. No. 582,209
Int. Cl.^{6} B26D ***1/01***
U.S. Cl. 83—856 **6 Claims**



1. A bottle top cutting device, the device comprising:
a base configured to be mounted to a surface;
a housing mounted to the base and projecting therefrom, the housing having an interior, the housing comprising:
(a) a top wall, the top wall having a first aperture formed therein, the aperture providing access to the interior of the housing;
(b) a bottom wall opposite the top wall, the bottom wall having a second aperture formed therein, the aperture providing access to the interior of the housing, the aperture being sufficiently large to emplace a top of a bottle in the aperture and being slidable therein;
(c) a plurality of sidewalls extending between the top wall and the bottom wall;
(d) a first recess formed in the interior and disposed intermediate the top wall and the bottom wall, such that the aperture in the top wall of the housing provides access to the first recess;
(e) a second recess formed in the interior and disposed intermediate the first recess and the bottom wall, the second recess comprising a seat for a razor blade; and
(f) a razor blade, the razor blade having a cutting edge, the razor blade being seated in the second recess, the cutting edge traversing the second aperture, and
wherein the second recess is in registry with the aperture formed in the bottom wall, and further
wherein a bottle top is engageable with the cutting edge to sever the top from the bottle.

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5,711,202
VACUUM SERVO UNIT FOR A VEHICLE BRAKING SYSTEM

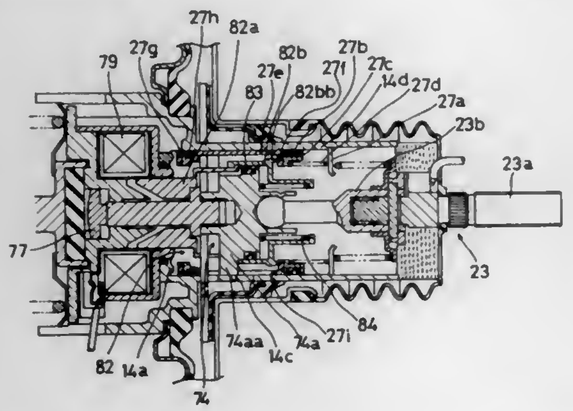
Kaoru Tsubouchi, Aichi pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 26, 1996, Ser. No. 686,429

Claims priority, application Japan, Jul. 27, 1995, 7-191868; Jul. 27, 1995, 7-191869

Int. Cl.^{6} F15B *13/16*

U.S. Cl. 91—367 **18 Claims**



10. A vacuum servo unit for a vehicle braking system comprising:

a housing defining therein a pressure chamber;

a movable wall member provided in said housing for dividing said pressure chamber into a constant pressure chamber for communicating with a negative pressure source and a variable pressure chamber for selectively communicating with the atmosphere and said negative pressure source;

a movable power piston integrally connected with said movable wall member;

an input member provided in said movable power piston, and being axially movable by brake actuation;

a plunger member provided in said movable power piston and engaged with said input member said plunger member being movable in an axial direction according to movement of said input member;

an input rod connected with a brake operating member at a first end thereof and connected with said input member at a second end thereof;

an output member outputting a propulsion force of said movable power piston caused by a movement of said movable wall toward an outside of said housing;

an atmosphere controlling valve seat formed on said plunger member;

a negative pressure controlling valve seat formed in said movable power piston;

a control valve having an atmosphere controlling seal portion for cooperating with said atmosphere controlling valve seat to control communication of said variable pressure chamber with the atmosphere, a negative pressure controlling seal portion for cooperating with said negative pressure controlling valve seat to control communication between said variable pressure chamber and said negative pressure chamber;

a solenoid selectively electrically connected with an electric power source to actuate said plunger member;

said negative pressure controlling valve seat being arranged in a position spaced from said atmosphere controlling valve seat in an axial direction, and said atmosphere controlling seal portion and said negative pressure controlling seal portion of said control valve being spaced in the axial direction to cooperate with said atmosphere controlling valve seat and said negative pressure controlling valve seat respectively, said atmosphere controlling seal portion being connected with said negative pressure controlling seal portion by a connecting portion, and said input member having a radial projection that contacts an inner peripheral portion of said movable power piston through said connecting portion.

5,711,203
PNEUMATIC BRAKE BOOSTER

Jean Pierre Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois, and Miguel Perez Revilla, Argenteuil, all of France, assignors to Bosch Systems De Freinage, Drancy, France

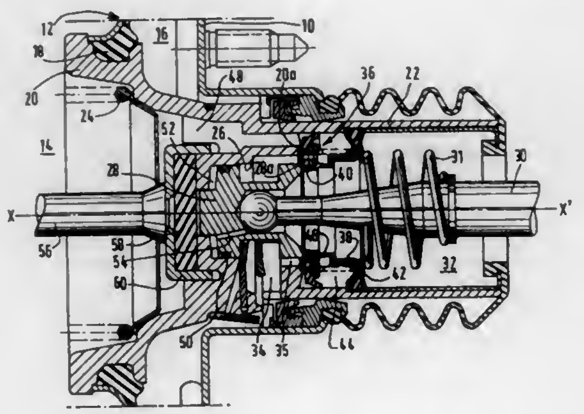
PCT No. PCT/FR95/01086, § 371 Date Aug. 23, 1995, § 102(e) Date Aug. 23, 1995, PCT Pub. No. WO96/07574, PCT Pub. Date Mar. 14, 1996

PCT Filed Aug. 17, 1995, Ser. No. 507,359

Claims priority, application France, Sep. 8, 1994, 94 10732

Int. Cl.^{6} F15B *9/10*

U.S. Cl. 91—376 R **4 Claims**



1. A pneumatic brake booster having a casing with an axis of symmetry divided in a leaktight fashion by a movable wall structure into a front chamber permanently connected to a source of low pressure, and a rear chamber connected selectively to the front chamber or a source of high pressure by a three-way valve means actuated by a control rod capable of pressing, via the front face of a plunger, on a rear face of a push rod secured to a reaction disc, said plunger sliding in a bore of the movable wall, said three-way valve including a valve element located in a tubular part of said movable wall and interacting via an annular front face with a first annular valve seat formed on said plunger and with a second annular valve seat formed on said movable wall, said first valve seat being concentric with said second valve seat formed on said movable wall, said first valve seat being concentric with said second valve seat and of a smaller diameter, said annular front face of said valve element being able to move in said tubular rear part of said movable wall and being sealed with said movable wall at an outer edge and an inner edge, said annular front face of said valve including at least one opening causing a chamber situated behind said annular front face of said valve to communicate with a space situated between said first valve seat and said second valve seat, said three-way valve being characterized in that said plunger slides in a leaktight fashion inside said bore of said movable wall by virtue of a seal which within said bore of said movable wall delimits a volume in which said front face of said plunger moves, the pressure prevailing in said volume exerting on said plunger a force such that the resultant of forces generated by said low pressure and high pressure exerted on said plunger is permanently and essentially negligible.

5,711,204
ELECTRONICALLY CONTROLLED BRAKE BOOSTER AND METHOD OF OPERATION THEREOF

Erwin Michels, Kail, Germany, assignor to Lucas Industries public limited company, United Kingdom·

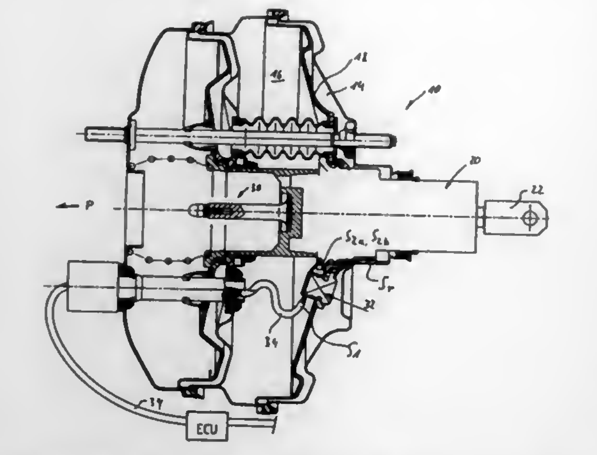
Filed Sep. 26, 1995, Ser. No. 533,754

Claims priority, application Germany, Oct. 11, 1994, 44 36 297.8

Int. Cl.^{6} F15B *9/10*

U.S. Cl. 91—376 R **4 Claims**

1. Electronically controlled brake booster for a road vehicle brake system, comprising



a housing having a vacuum chamber (**16**) and a servo chamber (**14**) separated from said vacuum chamber (**16**) by a movable wall (**18**),

an electromagnetically operable control valve device (**20**), which is coupled to said movable wall (**18**) for common relative movement with respect to said housing of said brake booster, and

a sensor (**32**) sensing operating conditions of the road vehicle brake system for an electronic control unit (ECU) and producing signals which are characteristic for said operating conditions, which signals are evaluated by said control unit (ECU) for producing drive signals (S_{1a}, S_{1b}) characterized in that

said sensor is formed as a pressure sensor (**32**) and senses at least the pressure (P_{AK}) prevailing in said servo chamber (**14**), the pressure sensor (**32**) being located at or in said movable wall (**18**).

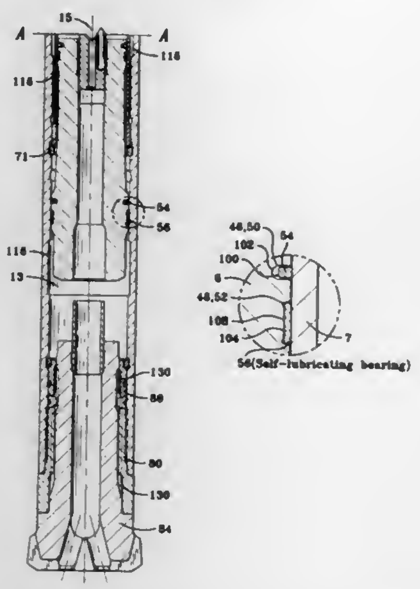
5,711,205
SELF-LUBRICATING, FLUID-ACTUATED, PERCUSSIVE DOWN-THE-HOLE DRILL

Dale R. Wolfer, Salem, and Leland H. Lyon, Roanoke, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 520,801, Aug. 30, 1995. This application Oct. 30, 1996, Ser. No. 740,543

Int. Cl.^{6} F01B *31/10*

U.S. Cl. 92—155 **1 Claim**



1. A self-lubricating, fluid-actuated, percussive, down-the-hole drill comprising;

a. backhead assembly adapted for removably affixing to a drill string;

b. a fronthead assembly, including means for removably retaining therein a drill bit;

c. a hollow, tubular casing connecting said backhead assembly and fronthead assembly;

d. a piston slidingly supported in said casing for reciprocating between a drive chamber and return chamber;

e. passageway means formed in said drill for transmitting flow of percussive fluid therethrough to actuate said piston;

f. first removable, self-lubricating seal means and first removable, self-lubricating bearing means for slidingly supporting said piston against an inner surface of said casing; and

g. second removable, self-lubricating seal means and second removable, self-lubricating seal means for slidingly supporting said piston against an inner surface of said backhead assembly.

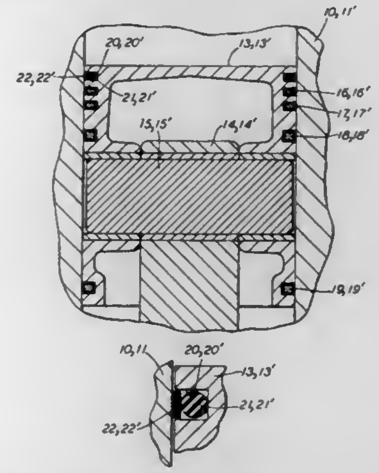
5,711,206
PISTON AND CYLINDER ASSEMBLY FOR MINIMIZING WATER BLOW-BY IN AN AIR COMPRESSOR

Walter E. Goettel, Monongahela, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 6, 1996, Ser. No. 660,627

Int. Cl.^{6} F16J *1/04*

U.S. Cl. 92—208 **9 Claims**



1. A piston and cylinder assembly for preventing water blow-by into the crankcase of an air compressor comprising, a set of metallic compression and oil rings disposed in respective annular grooves formed in the piston, and an elastic O-ring and a plastic filled O-ring which includes a bronze filler being located in another annular groove formed in the piston to prevent initial water blow-by into the crankcase of the air compressor until the metallic compression and oil rings are properly seated in the cylinder bore to prevent subsequent water blow-by Into the crankcase of the air compressor.

5,711,207
TEA MAKING DEVICE

Tsan-Kuen Wu, Tainan Hsien, Taiwan, assignor to Tsann Kuen USA Inc.

Filed Oct. 29, 1996, Ser. No. 739,415

Int. Cl.^{6} A47J *37/00*

U.S. Cl. 99—307 **17 Claims**

1. A tea making device comprising:

a hollow main body having an upper portion formed with a water receiving chamber and a lower portion formed with an accommodation chamber that is isolated from said water receiving chamber, said accommodation chamber being pro-

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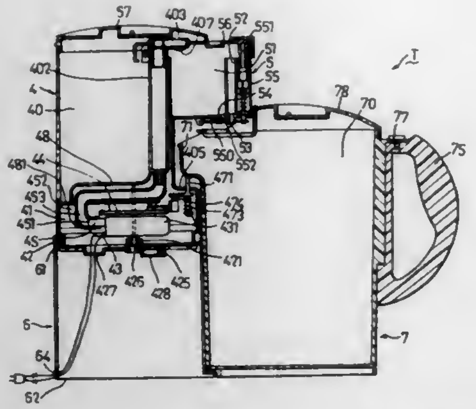


vided with a guiding tube that has a water inlet communicated with said water receiving chamber and a water outlet, said accommodation chamber being further provided with a heating device for heating water that passes through said guiding tube;

a tea brewing unit disposed on one side of said water receiving chamber of said main body and having a brewing chamber for receiving tea leaves therein, said brewing chamber being communicated with said water outlet of said guiding tube and being formed with a tea outlet for releasing brewed tea from said brewing chamber;

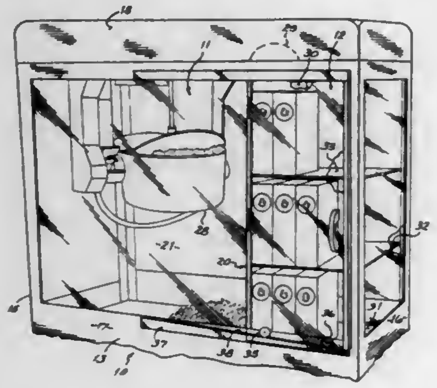
a pitcher to be disposed below said tea outlet of said tea brewing unit and capable of receiving the brewed tea that is released from said tea outlet of said tea brewing unit; and

a hollow base unit having an upper portion and a bottom portion with an open end;

said lower portion of said main body being mounted removably on said upper portion of said base unit, said main body and said tea brewing unit being capable of being received in said bottom portion of said base unit via said open end when said main body is removed from said base unit, said pitcher confining a space sufficient for receiving said base unit, said tea brewing unit and said main body therein after said main body and said tea brewing unit are received in said base unit for storage purposes.

5,711,208
POPCORN CABINET

Gary Wood, Fort Mitchell, and Leroy Hubbard, Independence, both of Ky., assignors to Gold Medal Products Company, Cincinnati, Ohio
Filed Dec. 31, 1996, Ser. No. 778,378
Int. Cl.⁶ A23L *1/18;* A47F *3/00*
U.S. Cl. 99—323.5 **13 Claims**



1. A cabinet for housing a corn popper and for storing popped corn comprising the combination of:

said cabinet having front and rear sides;

a corn popping chamber in said cabinet between said sides;

a popped corn storage chamber in said cabinet between said sides;

a first door in said rear side opening to said popping chamber;

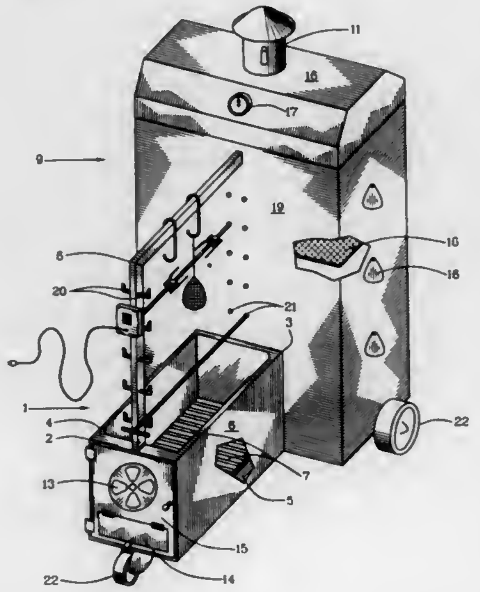
a second door in said rear side opening to said storage chamber;

a third door in said front side opening into said storage chamber; and

a partition separating said two chambers.

5,711,209
BARBECUE STOVE

James T. Guines, 3 Woodlyn La., Palm Coast, Fla. 32164
Filed May 6, 1996, Ser. No. 643,351
Int. Cl.⁶ A47J *37/00*
U.S. Cl. 99—339 **33 Claims**



1. A barbecue stove comprising:

a heater section having a door end, a chimney end, a stove top, a stove bottom and stove sides;

the heater section being sized, shaped and structured to receive select heat-producing;

a grate that is sized, shaped and structured to support the select heat-producing means and to support vapor-producing items in the heater section;

the stove top being sized, shaped and structured to transfer heat vertically upward through select heat-transfer means designedly intermediate a door end and a chimney end of the stove top;

the stove bottom being sized, shaped and structured to support select heat-producing means beneath the grate;

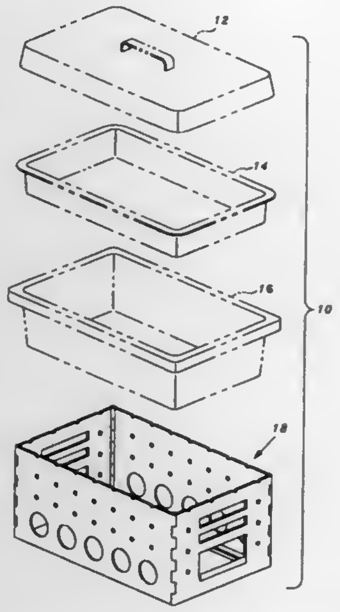
a barbecue oven into which heat, smoke, oxidation vapors, water vapor and other gases generated selectively in the heater section are transferable at the chimney end of the heater section;

the barbecue oven being sized, shaped and structured to receive design food holders; and

at least one exhaust outlet in the barbecue oven.

5,711,210
COLLAPSIBLE AND PORTABLE COMBINATION CHAFING DISH AND BARBECUE

Kenneth L. Kaufman, 6903 Amestoy Ave., Van Nuys, Calif. 91406
Continuation-in-part of Ser. No. 333,854, Nov. 3, 1994, Pat. No. 5,517,903. This application May 17, 1996, Ser. No. 651,045
Int. Cl.⁶ A47J *27/00;* F24C *1/16*
U.S. Cl. 99—340 **23 Claims**



1. An improvement in a barbecue assembly comprising a stand and a heat source, said improvement comprising:

a plurality of rigid sides comprising said stand open at an upper and at a lower end thereof, said sides being rotatably coupled together at their edges so as to be laterally collapsible;

means for temporarily rendering said stand rigid;

means for carrying a fuel adapted for barbecuing; and

at least one grill rack, said means for carrying being supported within said stand below an upper edge thereof, said grill rack being supported within said stand above said fuel.

5,711,211
CHLORINE GENERATOR FOR PRESERVATION OF FRUITS AND VEGETABLES

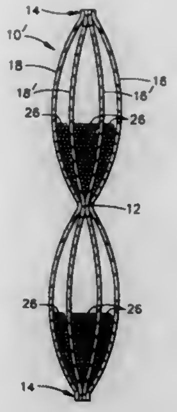
Paulina Aldunce Ide; Jessica Rodriguez Farias; Juan Pablo Zoffoli Guerra, and Bernardo Latorre, all of Santiago, Chile, assignors to Embalajes Proem Limitada, Santiago, Chile
Filed Jan. 31, 1997, Ser. No. 792,250
Int. Cl.⁶ A23B *7/00*
U.S. Cl. 99—467 **20 Claims**

1. A chlorine generator for preserving produce comprising:

(a) a first layer consisting of paper or polyethylene which is permeable to moisture and gas and which has a weight of from about 20 to about 70 g/m^2;

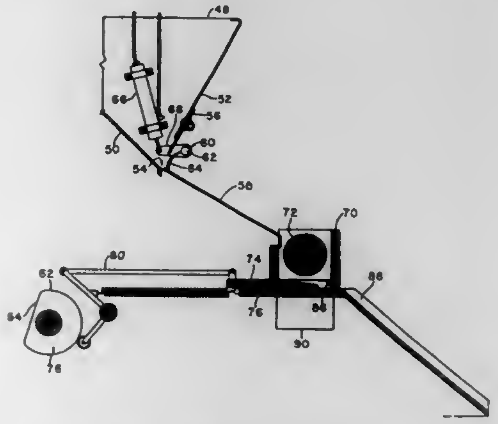
(b) a second layer consisting of polyethylene having a weight of from about 25 to about 70 g/m^2 and a thickness of from about 10 to about 17 microns, one or more bonds joining together said layers such that at least one pocket is formed between them; and

(c) a chlorine-generating composition comprising a hypochlorite material being disposed in said pocket, said hypochlorite material releasing active chlorine gas upon reaction with moisture from said produce.



5,711,212
APPARATUS FOR SPLITTING PISTACHIOS

Robert F. Lemos, Escalon, Calif., assignor to Paramount Farms, Inc., Los Angeles, Calif.
Division of Ser. No. 257,275, Jun. 9, 1994, Pat. No. 5,511,470. This application Feb. 16, 1996, Ser. No. 602,664
Int. Cl.⁶ A23N *5/00*
U.S. Cl. 99—489 **6 Claims**



1. A pistachio splitter comprising

a bin including a bottom slot and sides converging downwardly to the slot;

a horizontal trough;

an inclined ramp extending downwardly from the slot to over the trough;

a brush including a rod pivotally mounted relative to the inclined ramp parallel to the slot and bristles extending in a straight row from the rod, the bristles extending downwardly from the rod to the inclined ramp;

a sensor detecting the level of pistachios in the trough;

an actuator coupled to the rod to control pivotal location of the bristles dependent on the level of pistachios in the trough.

5,711,213
NUT CRACKER

Kirk Thomson, P.O. Box 56, Cairo, Ga. 31729
Filed Mar. 29, 1996, Ser. No. 624,079
Int. Cl.⁶ A23N *5/02*
U.S. Cl. 99—571 **15 Claims**

1. A nut cracking device comprising:

a hopper for holding a plurality of nuts;

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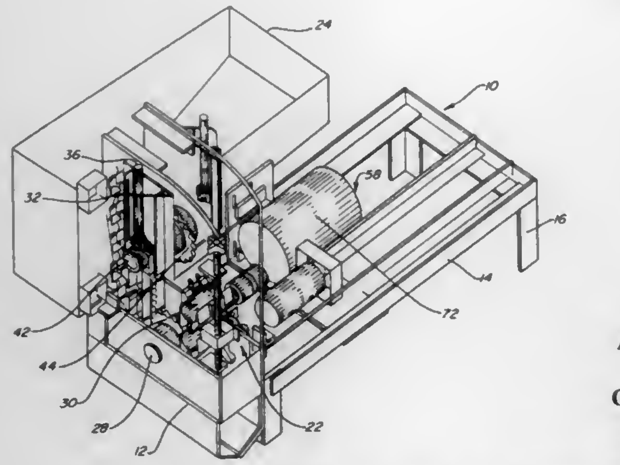


- a transport means, passing through the hopper, for retrieving nuts individually in succession from the hopper;
- a cracking means for imparting a cracking force against the cracking dye;
- an air cylinder, having an internal piston slidably disposed within the air cylinder, and a rod having a first end attached to the piston and a second end extending outwardly from the air cylinder;
- a positioning dye, attached to the second end of the rod, for receiving an end of the nut;
- wherein when the air cylinder is actuated, the piston slidably moves toward the nut such that the positioning dye positions and stresses the nut against the cracking dye; and
- a lock means for locking the rod in place when the nut is positioned and stressed against the cracking dye.

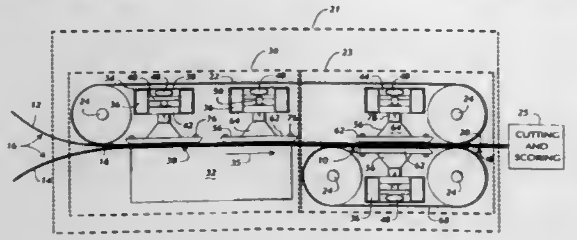
5,711,214
APPARATUS FOR DISSIPATING MOISTURE FROM AN ITEM

David M. Lauderbaugh, 8205 Overview Ct., Roswell, Ga. 30076; Park C. Jeans, III, 503 Pineland Cir., Mableton, Ga. 30059; Larry L. Tallant, 2735 Roper Rd., Cumming, Ga. 30130; James D. McDearis, 4030 Belvedere Dr., Gainesville, Ga. 30506, and Bradley L. Vogel, 3049 Mill Run Ct., Duluth, Ga. 30136

Division of Ser. No. 125,647, Sep. 22, 1993, Pat. No. 5,526,739. This application Jun. 14, 1996, Ser. No. 664,984

Int. Cl.^{6} B30B *5/02*

U.S. Cl. 100—48 **20 Claims**



1. A device for dissipating moisture from a moving surface, comprising:

- a hot member;
- a conveyor for moving a surface relative to the hot member, the hot member positioned adjacent to the moving surface;
- a frame positioned proximate to the hot member so that the moving surface moves between the frame and the hot member;
- a plurality of pressure applicators mounted on the frame for applying pressure to the moving surface, the pressure applicators forming a row of pressure applicators substantially transverse to the direction of movement of the moving surface;

each pressure applicator comprising,

- at least one foot mounted in movable relation to the frame, and
- a variable pressure source operable for variably biasing the foot away from the frame and toward the moving surface; and
- a control device for varying the pressure supplied by each variable pressure source.

5,711,215
APPARATUS FOR THE COMPRESSION OF POWDERED SUBSTANCES

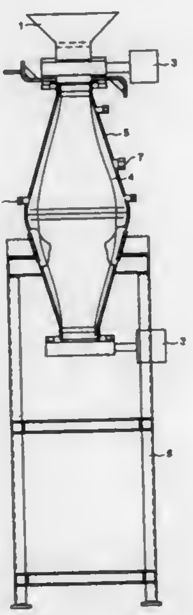
Gerhard Sextl, Geiselbach; Sabine Bartelt, Langenselbold; Klaus Wilmes, Freigericht-Bernbach; Roland Reuter, Darmstadt; Rudolf Schwarz, Alzenau-Wasserlos, and Friedel Worch, Gelnhausen-Meerholz, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 421,896, Apr. 14, 1995, abandoned, which is a division of Ser. No. 207,699, Mar. 9, 1994, abandoned. This application Sep. 16, 1996, Ser. No. 714,492

Claims priority, application Germany, Mar. 27, 1993, 43 09 995.5

Int. Cl.^{6} B30B *5/02*

U.S. Cl. 100—211 **4 Claims**



1. A device for the compression of powdered substances to a given bulk density range while preserving the powdered structure of the powder, said apparatus consisting essentially of a pressure vessel having openings at opposite ends, means for hermetically sealing said openings, a single flexible receptacle made of a material impermeable to gases and likewise open above and below and positioned within said vessel so that said openings coincide with the openings of said pressure vessel, said receptacle and said pressure vessel define a space which is capable of being pressurized, means for pressuring the space between said receptacle and said vessel without exchange of gas between the interior of the receptacle and the interior of the vessel causing the single flexible receptacle to quasi-isostatically compress a powdered substance, a source of powdered substance to be quasi-isostatically compressed, means for introducing said powdered substance into said receptacle and means for releasing the pressure to obtain a compressed powdered substance while the single flexible receptacle swells up to its original volume.

5,711,216
APPARATUS FOR DECORATING ARTICLES

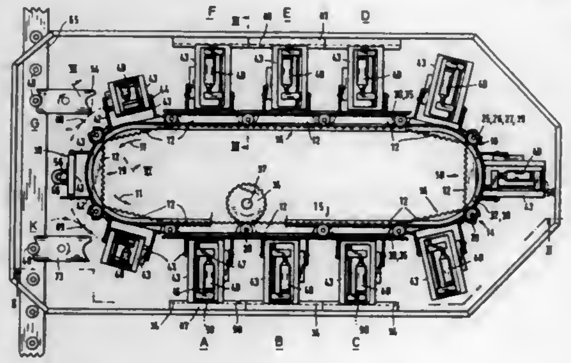
Gerhard Tiemann, Löhne, and Joachim Hellmeier, Rödinghausen, both of Germany, assignors to Werner Kammann Maschinenfabrik GmbH, Bunde, Germany

Filed Feb. 26, 1997, Ser. No. 806,767

Claims priority, application Germany, Mar. 1, 1996, 196 07 837.7

Int. Cl.^{6} B41F *17/08*

U.S. Cl. 101—40.1 **23 Claims**



1. Apparatus for decorating articles comprising:

- a transport path;
- at least one article carrier movable along the transport path;
- at least one article-decorating station;
- a station at which an article to be decorated is fed to the article carrier;
- a station at which a decorated article is removed from the article carrier;
- a circulating transport means for the at least one article carrier, the transport means circulating in a substantially horizontal plane and comprising a plurality of rigid elongate portions and connecting means connecting the transport portions together pivotably in the plane in which the transport means circulates, each said transport portion having tooth means,
- at least one drive means having tooth means engaging with the tooth means of at least one said transport portion of the circulating transport means for moving the transport means along said transport path, and
- at least one guide means defining at least a portion of the transport path, the transport portions of the transport means being guided at said guide means by way of connecting means pivotably interconnecting each two adjacent transport portions.

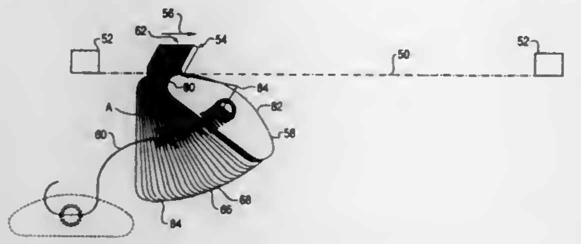
5,711,217
VECTOR SCREEN PRINTING METHOD AND APPARATUS

David E. Boring, East Berlin, Pa., assignor to Ser-Tek Systems, Inc., Hanover, Pa.

Filed Sep. 18, 1995, Ser. No. 529,755

Int. Cl.^{6} B41F *17/30*

U.S. Cl. 101—123 **26 Claims**



1. A printing apparatus for imprinting an object including an irregularly shaped or non-round object comprising:

- a print screen;
- a squeegee;
- an object carriage for holding the object to be imprinted adjacent to said print screen and said squeegee of the printing apparatus;
- a plurality of servo-motors for controlling the relative position of the object with respect to said print screen of the printing apparatus and with respect to said squeegee of the printing apparatus, said plurality of servo-motors comprising;
  - a print screen positioning servo-motor for controlling a horizontal position of said print screen;
  - a squeegee positioning servo-motor for controlling a horizontal position of said squeegee;
  - an object rotation servo-motor for controlling a rotational position of the object to be imprinted;
  - a horizontal object positioning servo-motor for controlling a horizontal position of the object to be imprinted; and
  - a vertical offset servo-motor for controlling a vertical offset between the object to be imprinted and said print screen of said printing apparatus; and
- an electronic control unit connected with and providing control information to each of said plurality of servo-motors.

5,711,218
LIGHT RADIATING DEVICE

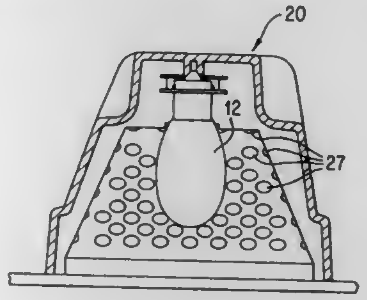
Makoto Kikuchi, Inashiki-gun, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Apr. 26, 1996, Ser. No. 638,047

Claims priority, application Japan, Apr. 28, 1995, 7-105603

Int. Cl.^{6} B41C *1/055*

U.S. Cl. 101—128.4 **4 Claims**



1. A light radiating device for a heatsensitive stencil sheet, comprising:

- a casing having an opened lower surface adapted to be placed on a perforating plane of the heatsensitive stencil sheet;
- light emitting means situated in said casing; and
- reflection mirrors situated in the casing, said reflection mirrors including a lower side plane reflection mirror adapted to contact the perforating plane; an upper side plane reflection mirror extending continuously from the lower side reflection mirror with a predetermined angle thereto and having a plurality of semi-spherical protrusions integrally formed therewith; and an upper plane reflection mirror extending continuously from the upper side reflection mirror and being disposed parallel to the perforating plane, said upper plane reflection mirror having a plurality of semispherical protrusions integrally formed therewith so that when the light emitting means is actuated, light from the light emitting means is reflected at the reflection mirrors with the semi-spherical protrusions and adapted to be uniformly irradiated onto the perforating plane.

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5,711,219
RELEASING APPARATUS FOR USE IN TREATING ROLLER OF PRINTING MACHINE

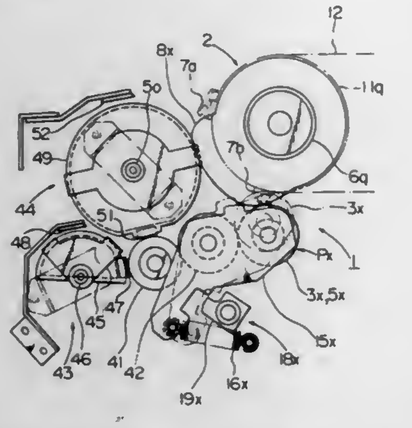
Shigehisa Ohno, Nagano, and Koichi Kamoi, Tokyo, both of Japan, assignors to Nagano Japan Radio Co., Ltd., Nagano-ken, and Gradco (Japan) Ltd., Tokyo, both of Japan

Filed Nov. 28, 1995, Ser. No. 563,767

Claims priority, application Japan, Feb. 9, 1995, 7-046517

Int. Cl.^{6} B41F *7/02;7/40;31/34*

U.S. Cl. 101—142 **14 Claims**



1. A releasing apparatus of a printing machine comprising:

a rotating plate carrier including an endless belt hung between a first pulley and a second pulley, said first pulley being mounted on a first shaft, said second pulley being mounted on a second shaft, a plurality of clamping mechanisms protruding from said plate carrier, each clamping mechanism supporting a plate on said plate carrier;

a plurality of releasing cams mounted on said plate carrier, said first shaft and said second shaft having at least one releasing cam attached thereto coaxially with each pulley;

a treating roller and a slave roller being mounted on a third shaft, said treating roller contacting said plate carrier when said cams are in a first predetermined position and said treating roller being spaced apart from said plate carrier when said cams are in a second predetermined position where said cams contact said slave roller, whereby translational movement velocity of said treating roller and mechanical efficiency of said printing machine are substantially increased while said clamping mechanisms protruding from said plate carrier pass through said printing machine without substantial interference from said treating roller.

5,711,220
SLIDABLE STOP ON A PRODUCT-GUIDING CYLINDER ASSOCIATED WITH A ROTARY PRINTING PRESS

Jean-Claude Calbrix, Rantigny; Philippe Herda, Longueil Sainte Marie, and Thierry Vauchelle, Saint Just En Chaussée, all of France, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris SA, Montataire Cedex, France

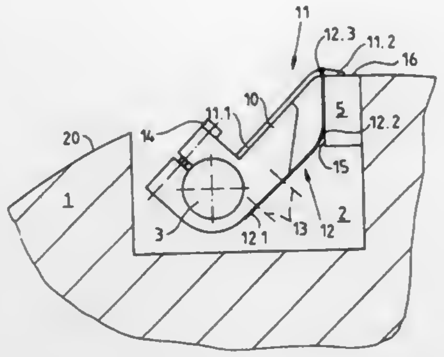
Filed Feb. 10, 1997, Ser. No. 798,512

Claims priority, application France, Feb. 9, 1996, 96 01614

Int. Cl.^{6} B41F *21/00;1/30*

U.S. Cl. 101—246 **17 Claims**

1. A gripper device for two-dimensional products on guiding cylinders for the products, the guiding cylinders having respective end faces at which the guiding cylinders are supported in respective side frames, the gripper device including gripper fingers disposed on a driven gripper shaft and cooperatively engageable with gripper pads of a radially movable gripper impact strip, comprising a stop mounted on the driven gripper shaft, said stop being supported on and movable with the gripper impact strip, the products to be accepted being alignable between the gripper fingers, on the one hand, and the gripper impact strip, on the other hand, at the start of a closed stage of the gripper fingers.



5,711,221
TRANSFER CYLINDER WITH ELECTROMOTIVE DRIVE UNIT

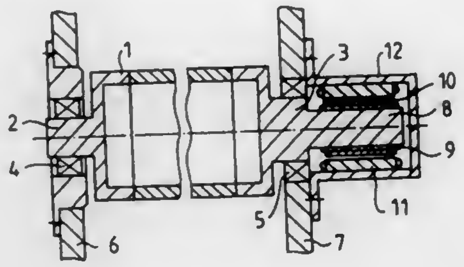
Christian Compera, Dossenheim; Martin Greive, Heidelberg; Bernd Herrmann, Malsch; Karlheinz Peter, Gernsheim, and Anton Rodi, Leimen, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Apr. 15, 1996, Ser. No. 632,085

Claims priority, application Germany, Apr. 15, 1995, 195 14 157.1; Aug. 17, 1995, 195 30 283.4

Int. Cl.^{6} B41F *13/10*

U.S. Cl. 101—375 **9 Claims**



1. Transfer cylinder with an electromotive drive unit, comprising;

a common bearing for a rotor of an electromotive drive unit and for a transfer cylinder, said bearing being disposed in a unit of a printing press supporting the electromotive drive unit and the transfer cylinder; and

the transfer cylinder having a work surface, axial ends, and bearing surfaces at each of said axial ends of the transfer cylinder, the transfer cylinder being formed as an open tube at least at one of said axial ends thereof at which the electromotive drive unit is located, said open tube an outside forming said work surface of the transfer cylinder and also said one of said bearing surfaces, said work surface and said one of said bearing surfaces being of continuous construction and having a same diameter.

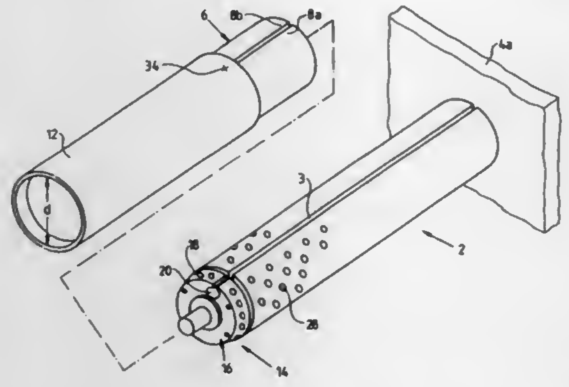
5,711,222
METHOD AND APPARATUS FOR MOUNTING A FLAT PRINTING PLATE ON A CANTILEVERED PLATE CYLINDER OF A PRINTING PRESS

Matthew Alan Taylor; Gregory William Weiss, both of Barrington, and John Joseph Dowling, Rollinsford, all of N.H., assignors to Heidelberger Druckmaschinen AG, Germany, and Heidelberg Harris, Inc., N.H.

Filed Jun. 14, 1996, Ser. No. 666,695

Int. Cl.^{6} B41F *27/00*

U.S. Cl. 101—383 **20 Claims**



1. A method for mounting a flat printing plate on a cantilevered plate cylinder of a printing press, comprising the steps of:

bending the printing plate into an essentially cylindrical shape;

inserting the printing plate into a hollow tube having an inner diameter which is slightly larger than an outer diameter of the plate cylinder;

sliding the tube and the printing plate over a mandrel from the side and onto the plate cylinder, whereby the mandrel is concentric to the plate cylinder and has an outer diameter which is smaller than the inner diameter of the tube and which is larger than the outer diameter of the plate cylinder;

fastening the printing plate to the plate cylinder by actuating a plate lock-up device; and

sliding the tube off the plate cylinder.

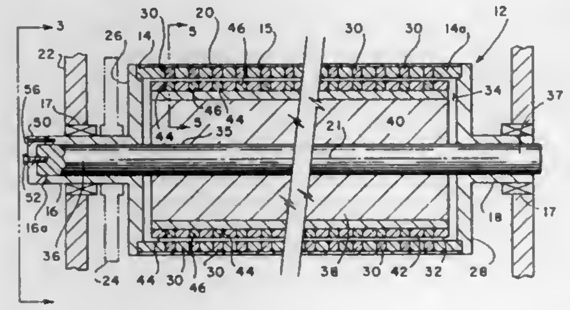
5,711,223
MAGNETIC PLATE CYLINDER

Jefferson H. Taylor, Dallas, Tex., assignor to Eugene L. Green, Sr., Dallas, Tex.

Filed Aug. 14, 1995, Ser. No. 514,894

Int. Cl.^{6} B41F *27/02*

U.S. Cl. 101—389.1 **17 Claims**



14. A plate cylinder for supporting a printing plate by magnetic forces acting on said printing plate comprising:

an outer cylinder member having a generally cylindrical outer surface for engagement with said printing plate, a plurality of elements disposed on said outer cylinder member, spaced apart, said elements being formed of a magnetic material;

an inner cylinder member disposed within said outer cylinder member and including plural spaced apart magnets disposed thereon and operable to generate magnetic lines of force which pass through said elements on said outer cylinder member to effect retention of a printing plate on said outer cylinder member;

a plurality of members of magnetic material disposed adjacent respective ones of said magnets and forming pole pieces for directing said magnetic lines of force toward said elements on said outer cylinder member to enhance the printing plate retention force provided by said magnets;

positioning means coupled to said inner cylinder member for moving said inner cylinder member relative to said outer cylinder member to effect a change in the intensity of magnetic forces acting on said printing plate;

said magnets comprise cylindrical ring magnets;

said ring magnets have poles disposed on opposed, parallel faces of said ring magnets, respectively; and,

said pole pieces have circumferentially spaced apart radially projecting teeth operable to be disposed in close proximity to said elements on said outer cylinder member.

5,711,224
DEVICE FOR FASTENING A CLAMPING BAR

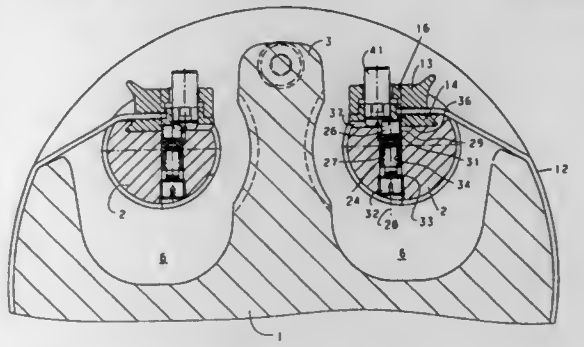
Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 3, 1996, Ser. No. 642,621

Claims priority, application Germany, May 3, 1995, 295 07 330 U

Int. Cl.^{6} B41F *1/28*

U.S. Cl. 101—415.1 **9 Claims**



1. Device for fastening a clamping bar for clamping a covering to a clamping shaft formed with a groove wherein the clamping bar engages, including a spring-loaded retainer disposed on the clamping shaft and engaging in the clamping bar, the device further comprising a locking radially displaceable in the clamping shaft, said locking element locking said clamping bar against displacement relative to said clamping shaft.

5,711,225
METHOD FOR PROCESSING A CONTINUOUS WEB EXTENDING ALONG A PREDETERMINED PATH

Torben Rasmussen, Hvidovre, Denmark, assignor to Nilpeter a/s, Slagelse, Denmark

PCT No. PCT/DK95/00043, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO95/20488, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 30, 1995, Ser. No. 687,536

Claims priority, application Denmark, Jan. 31, 1994, 0130/94

Int. Cl.^{6} B41F *13/54*

U.S. Cl. 101—483 **8 Claims**

1. A method of processing a continuous web (**10**) extending along a predetermined path by means of at least first and second printing or punching plates (**16**,**17**) mounted on first and second

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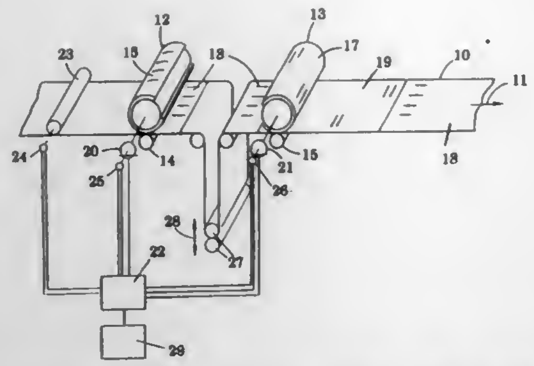


plate cylinders (**12**,**13**), respectively, mutually spaced along the length of said path, the first and second plates (**16**,**17**) each extending along only part of the circumferential length of the cylinder (**12**,**13**) on which it is mounted, said method comprising the steps of:

moving the continuous web (**10**) along said path at a substantially constant speed;

moving the first cylinder (**12**) such that the first printing or punching plate (**16**) mounted thereon is moved into and out of engagement with the moving web (**10**) so as to print or punch first formats (**18**) on the web (**10**) by means of the first printing or punching plate (**16**) such that the first formats (**18**) are mutually spaced in the direction of movement of the web (**10**);

moving the second cylinder (**13**) such that the second printing or punching plate (**17**) mounted thereon is moved into and out of engagement with the moving web (**10**) so as to print or punch second formats (**19**) on the web (**10**) in the spacings between said first formats (**18**) by means of the second printing or punching plate (**17**);

controlling the circumferential speed of the first and second plate cylinders (**12**,**13**) to be substantially equal to the moving speed of the web (**10**) while the first and second plates (**16**,**17**) respectively, mounted on said first and second cylinder (**12**,**13**) are in engagement with the web (**10**); and

controlling the circumferential speed of the first and second plate cylinders (**12**,**13**) while the first and second plates (**16**,**17**), respectively, are out of engagement with the web (**10**) in such a way that the leading edge of the respective plate (**16**,**17**) comes into the correct angular position for engagement with the web (**10**) at the desired position in relation to the position where the trailing edge of the other plate (**17**,**16**) moves out of engagement with the web (**10**) to print or punch first and second formats one after the other on the web (**10**) with a desired mutual spacing.

5,711,226
PRINTING METHOD AND APPARATUS

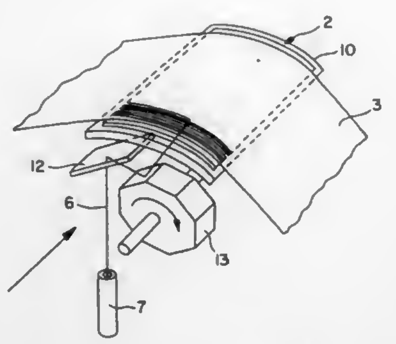
Alan John Harry; Laurence John Robinson, both of Nr. Royston; Kenneth West Hutt, Wix, and Richard Anthony Hann, Ipswich, all of Great Britain, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 397,136, Apr. 19, 1995, abandoned.
This application Mar. 4, 1997, Ser. No. 811,182
Claims priority, application United Kingdom, Sep. 11, 1992, 9219240
Int. Cl.^{6} B41L *35/14*
U.S. Cl. 101—488 **16 Claims**

1. A printing method comprising the steps of:

providing an electromagnetic radiation source which emits a beam of electromagnetic radiation beam having a curved focal plane;

providing an arcuate support means having a radius of curvature, a convex surface and an oppositely disposed concave surface, said arcuate support means being substantially transparent to said electromagnetic radiation, said arcuate support means being located relative to the electromagnetic radiation source



such that said electromagnetic radiation emitted by the radiation source will be incident upon the concave surface of the arcuate support means;

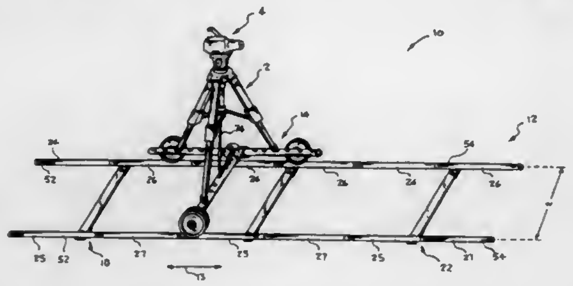
providing a dye receiver and a dye donor on the convex surface of the arcuate support means, the dye receiver being positioned between the convex surface of the arcuate support means and the dye donor, the dye donor lying substantially in a curved focal plane of said electromagnetic radiation; and

scanning said electromagnetic radiation across the arcuate support means in the direction of curvature of the arcuate support means, said electromagnetic radiation passing through the arcuate support means and the dye receiver to heat the dye donor to thereby thermally transfer dye from the dye donor to the dye receiver.

5,711,227
PORTABLE AND COLLAPSIBLE DOLLY AND TRACK

Jerome K. Johnson, 9886 Rimmele Dr., Beverly Hills, Calif. 90210

Filed Jan. 16, 1996, Ser. No. 585,514
Int. Cl.^{6} E01B *23/00*
U.S. Cl. 104—126 **25 Claims**



22. A dolly assembly for movably supporting a camera tripod, comprising:

a. a longitudinal bar and a transverse bar, each bar having means for receiving a foot of said tripod;

b. two wheels carried at opposite ends of said longitudinal bar;

c. a T-shaped adapter mounted on said longitudinal bar; and

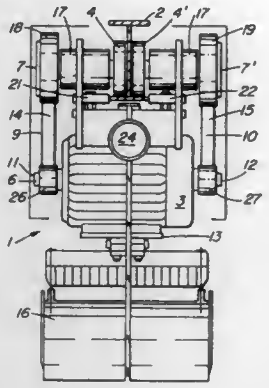
d. said transverse bar detachably connected to said T-shaped adapter at one end and carrying a wheel at the other end, forming a T-shaped dolly;

e. whereby said dolly assembly can be assembled to movably ride on said rails for supporting said tripod.

5,711,228
DRIVEN TROLLEY FOR SUSPENSION FROM AND TRAVEL ON A RAIL

Bernd Itzin, and Heiko Bollow, both of Weil am Rhein, Germany, assignors to Wampfler GmbH, Weil am Rhein, Germany

Continuation of Ser. No. 542,900, Oct. 13, 1995, abandoned.
This application Feb. 13, 1997, Ser. No. 800,099
Claims priority, application Germany, Oct. 13, 1994, 44 36 520.9
Int. Cl.^{6} B61B *3/02*
U.S. Cl. 105—154 **26 Claims**



1. A compact driven trolley for suspension from and travel on a single rail comprising:

at least one pair of first and second co-axial supporting wheels for location on and engagement with opposite sides of the rail;

first and second co-axial shafts each rotatably attached to the trolley and carrying the first and second wheels, respectively;

a driving motor located in the trolley adjacent the lower face of the rail having a single drive shaft extending from both ends of the motor parallel with and adjacent to the first and second co-axial shafts carrying the wheels;

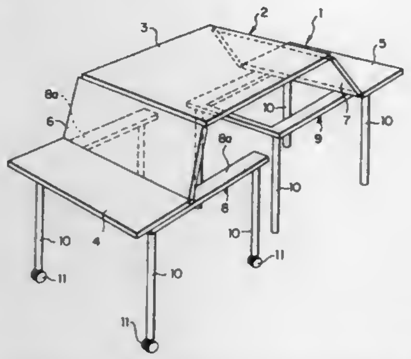
a first belt drive means connecting the first shaft directly to one end of the motor drive shaft; and

a second belt drive means connecting the second shaft directly to the other end of the motor drive shaft.

5,711,229
EXTENSIBLE TABLE

Giancarlo Piretti, Bologna, Italy, assignor to Pro-Cord S.R.L., Bologna, Italy

Filed Mar. 26, 1996, Ser. No. 621,875
Claims priority, application Italy, Apr. 6, 1995, TO95A0265
Int. Cl.^{6} A47B *1/06*
U.S. Cl. 108—67 **7 Claims**



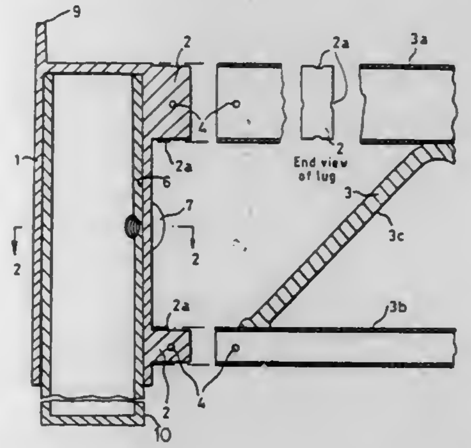
1. An Extensible table comprising a foldable board and a pair of base structures, said foldable board having opposite end portions rigidly connected to and providing the sole connection between said pair of respective base structures, said base structures being displaceable between a first operative condition, in which they are spaced apart from each other, with the foldable board fully extended, and a second operative condition, in which they are adjacent to each other, with the foldable board folded, said base structures being provided with means for their mutual fitting in said second operative condition;

wherein said foldable board comprises a central portion, said end portions and two intermediate board portions with each intermediate portion being articulated on one side to a respective end portion of the foldable board and, on an opposite side, to said central portion, so that in said second operative condition the central portion forms a table board, with the two intermediate board portions and the two end portions folded therebelow.

5,711,230
PLATFORM SYSTEM

Philip Lee Parsons, London, United Kingdom, assignor to P. L. Parsons & Company Ltd., United Kingdom

PCT No. PCT/GB93/02489, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/13907, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 3, 1993, Ser. No. 448,443
Claims priority, application United Kingdom, Dec. 4, 1992, 9225460
Int. Cl.^{6} A47B *3/00*
U.S. Cl. 108—186 **8 Claims**



1. A platform system suitable for providing staging, said system comprising: at least one unit that includes a substantially flat platform having a side frame, downwardly extending hollow corner posts located on the underside of said platform, and supporting legs inserted into the corner posts, at least two lugs being integrally formed with each respective corner post, one of said lugs being connected with an upper mating part of the side frame of the platform and another of said lugs being connected with a lower mating part of the side frame, said hollow corner posts extending downward below said one lug.

5,711,231
SERVICE ACCESS SYSTEM FOR AUTOMATIC TELLER KIOSK

Edward F. Couvrette, 10821 Airport Dr., El Cajon, Calif. 92020; Alvin E. Attig, 10250 Prospect Ave. #1, Santee, Calif. 92071, and Carl J. Jeffrey, 2141 Palomar Airport Rd. # 360, Carlsbad, Calif. 92009

Filed Mar. 7, 1997, Ser. No. 813,876
Int. Cl.^{6} E05G *1/00*
U.S. Cl. 109—2 **14 Claims**

1. A service access system for a consumer operated machine kiosk which comprises:

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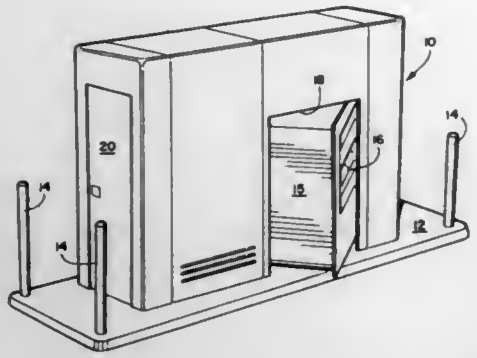
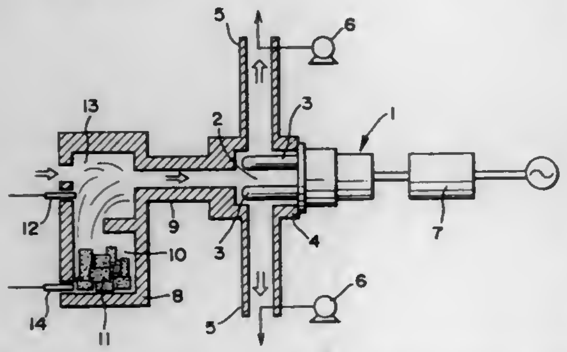


a kiosk for housing a consumer operated machine with only one of a first operating side of the machine and a second non-operating side exposed at the kiosk exterior through an opening in said kiosk;
a floor in said kiosk;
a machine baseplate;
a plurality of roller means between said machine baseplate and said floor to allow said machine baseplate to freely move relative to said floor;
an idler bar rotatably connected to a first pivot point on said floor and a second pivot point on said machine baseplate;
a driven bar rotatably connected between a third pivot point on said floor and a fourth pivot point on said baseplate;
drive means for rotating said driven bar about said third pivot point;
said pivot points and bars configured so that said baseplate simultaneously rotates and translates to move said machine operating side between an operating position substantially flush with said kiosk opening and at least partially filling said opening and a service position with said machine operating side within said kiosk and said second side substantially flush with said kiosk opening and at least partially filling said opening.

5,711,232

HEATER MEANS FOR STIRLING ENGINES

Akira Yamaguro, Chiryu; Naoki Minamoto, Toyota; Tomohiro Tokunaga, and Akio Otsuka, both of Fukuoka-ken, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, and Kabushiki Kaisha Semitsu, Osaka, both of Japan
Filed Jun. 30, 1994, Ser. No. 268,957
Claims priority, application Japan, Jun. 30, 1993, 5-183310
Int. Cl.^{6} F23B *5/02*
U.S. Cl. 110—212 **5 Claims**

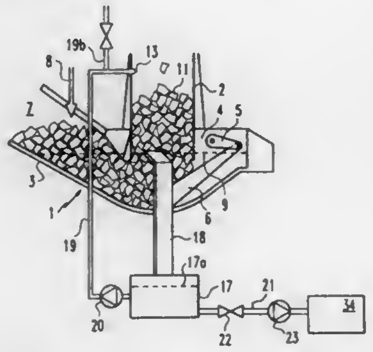


1. Heater means for Stirling engines having a combustion chamber, comprising:
at least one flue conduit for discharging gases in a combustion chamber of the Stirling engine outwardly;
at least one fan located in the flue conduit to draw the gases outwardly;
a furnace having a primary combustion chamber for burning industrial waste materials and a secondary combustion chamber for burning combustible dry distillation gases from the primary combustion chamber; and
conduit means for connecting the secondary combustion chamber of the furnace with the combustion chamber of the Stirling engine, and for providing hot combustion gases generated by burning combustible dry distillation gases in the secondary chamber of the furnace to the combustion chamber of the Stirling engine.

5,711,233

PROCESS AND ARRANGEMENT FOR THE TREATMENT OF SOLID COMBUSTION RESIDUES IN A COMBUSTION INSTALLATION, IN PARTICULAR IN A WASTE INCINERATION PLANT

Johannes J. E. Martin; Oliver Gohlke, and Walter J. Martin, all of Munich, Germany, assignors to Martin GmbH fuer Umwelt- und Energietechnik, Munich, Germany
Filed Mar. 8, 1996, Ser. No. 612,758
Claims priority, application Germany, Mar. 9, 1995, 195 08 488.8
Int. Cl.^{6} F23J *1/00*
U.S. Cl. 110—165 R **27 Claims**



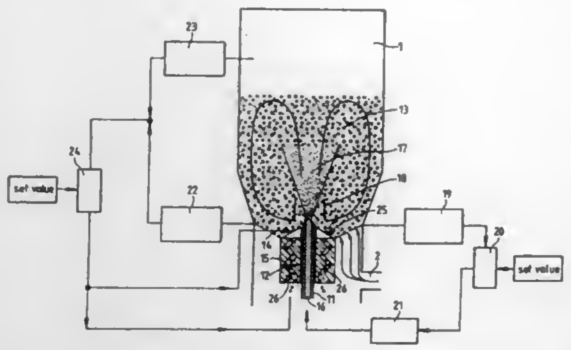
1. In a process for treating solid combustion residues in a combustion installation such as in a waste incineration plant, having a furnace grate and an ash discharger which is connected thereto and is filled with liquid and having a fall shaft and a push-out ram and which discharges combustion residues through the means of an ascending push-out chute, the improvement comprising the step of:
washing the combustion residues in the ash discharger in which the combustion residues are built up in the fall shaft by suitable regulation of the discharge rate, the washing liquid flowing downward through combustion residues.

5,711,234

PROCESS FOR CONTINUOUS FLUIDIZED BED AGGLOMERATION

Hans Uhlemann, Solingen; Josef Schmoll, Goslar, and Manfred Bücheler, Overtah, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 193,836, Feb. 8, 1994, Pat. No. 5,480,617. This application May 8, 1995, Ser. No. 437,266
Claims priority, application Germany, Feb. 15, 1993, 43 04 405.0
Int. Cl.^{6} F23G *5/00;7/00*
U.S. Cl. 110—245 **7 Claims**

1. Process for the continuous agglomeration of a powder in a fluidized bed which comprises the steps of
(a) providing said powder, a granulating liquid and propellant air to a three-substance nozzle arranged axially at the bottom center of the fluidized bed granulator, comprising an outer tube and an inner tube which is concentrically arranged within the outer tube to form an annular channel between the outer and the inner tube,

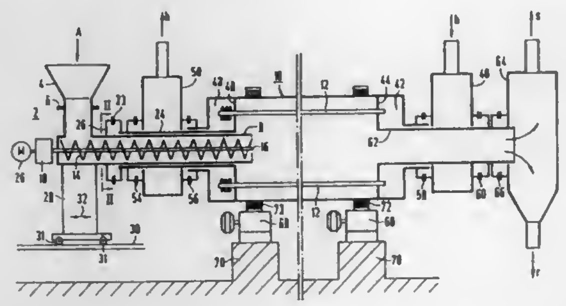


(b) supplying the powder together with propellant air to said annular channel and the granulating liquid to the inner tube,
(c) discharging said powder, granulating liquid and propellant air out of said three-substance nozzle as a three-phase mixture of powder, granulating liquid and propellent air in the form of a spray cone,
(d) spraying said three-phase mixture into the fluidized bed, and
(e) discharging agglomerated product out of the fluidized bed through a gas classifier located at the base of the fluidized bed granulator and concentric to the fluidized bed nozzle.

5,711,235

WASTE CONVEYOR AND METHOD FOR INSPECTING THE CONTENTS OF A CONVEYOR CHANNEL FOR WASTE

Karl May, Bad Vilbel; Hartmut Herm, Dreieich, and Karlheinz Unverzagt, Seligenstadt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Feb. 20, 1996, Ser. No. 603,937
Claims priority, application Germany, Aug. 17, 1993, 43 27 633.4
Int. Cl.^{6} F23G *5/00*
U.S. Cl. 110—257 **11 Claims**

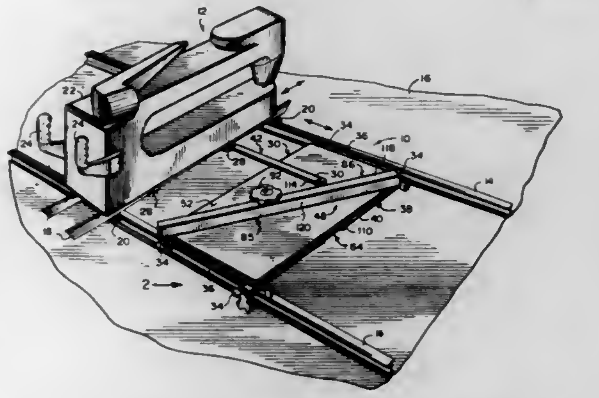


1. A conveyor for waste, comprising:
a waste feed shaft;
a conveyor channel being connected to said waste feed shaft, said conveyor channel having an interior, a longitudinal direction and being formed of an upper shell part and a lower shell part, said upper shell part being releasably connected to said lower shell for allowing access to said interior of said conveyor channel;
a screw conveyor disposed in said interior of said conveyor channel and extending in the longitudinal direction of said conveyor channel;
a motor connected to and driving said screw conveyor;
a housing into which said conveyor channel discharges;
said screw conveyor and said conveyor channel forming a unit being disconnectably secured to said housing for engaging and disengaging said housing; and
a traveling mounting supporting said unit and said traveling mounting assisting in removal of said unit from said housing.

5,711,236

ACCESSORY FOR A PROFESSIONAL QUILTING MACHINE

Hartley B. Badger, 98686 Fox Dr., Brookings, Oreg. 97415
Filed Dec. 2, 1996, Ser. No. 759,061
Int. Cl.^{6} D05B *11/00*
U.S. Cl. 112—117 **19 Claims**

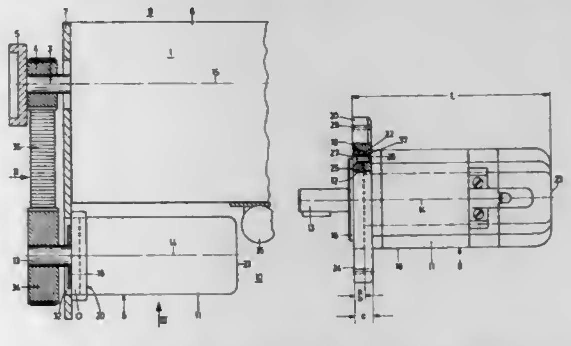


1. An accessory for a professional quilting machine having a pair of parallel spaced apart lower rails on a support surface, a pair of parallel spaced apart upper rails with a plurality of rollers to transversely ride upon the lower rails, a machine head with operating handles having a plurality of support brackets with rollers that ride upon the upper rails, said accessory comprising:
a) a platform having a threaded central aperture, whereby said platform extends between the lower rails;
b) a plurality of grooved rimmed wheels extending from opposite ends of said platform to ride on the lower rails;
c) a brake assembly on one side of said platform, to retain said platform in a stationary position on the lower rails;
d) an idler arm;
e) means for attaching a first end of said idler arm to a right front support bracket under the machine head, so that said idler arm will extend at a right angle from the machine head and over said platform; and
f) means connected between a second end of said idler arm and a top surface of said platform, for guiding the machine head to make diagonal quilting sewing lines through layers of fabric.

5,711,237

FLANGE MOTOR FOR SEWING MACHINES

Walter Ripplinger, Rheinhausen, Germany, assignor to Frankl & Kirchner GmbH & Co KG Fabrik für Elektromotoren u. elektrische Apparate, Schwetzingen, Germany
Filed Sep. 6, 1996, Ser. No. 706,695
Claims priority, application Germany, Sep. 8, 1995, 295 14 444 U; Mar. 14, 1996, 296 04 747 U
Int. Cl.^{6} D05B *69/12*
U.S. Cl. 112—220 **10 Claims**



1. A flange motor (8) for a sewing machine (2), comprising a motor casing (11), which has an outside contour (18),

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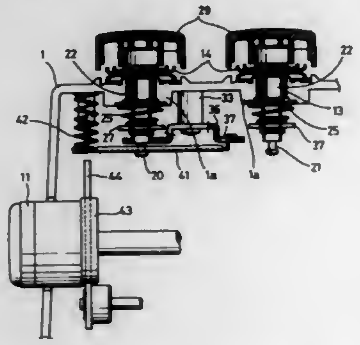
a drive shaft journal (**13**) projecting over the motor casing (**11**) at an exit of the drive shaft journal (**13**) from the motor casing (**11**),
a casing flange (**12**) of the motor casing, said casing flange (**12**) being allocated to the exit of the drive said journal (**13**) from the motor casing (**11**) and having a front (**25**),
an adapter flange (**20**), which has an opening (**21**) overlapping the outside contour (**18**) of the motor casing (**11**), a depression (**22**) in the adapter flange receiving the casing flange (**12**) and a bearing face (**24**) allocated to the front (**25**) of the casing flange (**12**), and
screws (**27**) joining the casing flange (**12**) and the adapter flange (**20**).

5,711,238
OVERLOCK SEWING MACHINE

Osamu Matsuo, and Yoshikazu Suzuki, both of Osaka, Japan, assignors to Jaguar Co., Ltd., Osaka, Japan
Filed Mar. 5, 1996, Ser. No. 610,915
Claims priority, application Japan, Mar. 30, 1995, 7-074140
Int. Cl.^{6} D05B *1/20;47/02*
U.S. Cl. 112—255 **6 Claims**

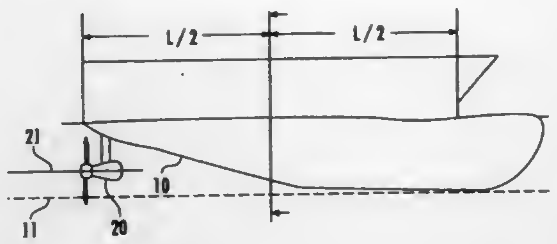


1. An overlock sewing machine comprising:
a sewing machine frame;
a thread tension shaft being supported by said sewing machine frame;
a pair of thread tension discs being fitted with said thread tension shaft to face each other;
a main spring pressing said pair of thread tension discs against each other and providing a looper thread passing through between said thread tension discs with thread tension being necessary for forming an ordinary over-edge chain stitch;
an auxiliary spring providing said looper thread passing through between said thread tension discs with thread tension being necessary for forming a rolled seam in association with the main spring, said main spring and said auxiliary spring each applying pressure to the pair of thread tension discs; and
a release mechanism for releasing said auxiliary spring from action on said thread tension discs.

5,711,239
PROPELLER CONFIGURATION FOR SINUSOIDAL WATERLINE SHIPS

Roar Rolland Ramde, Horten, Norway, assignor to Petroleum Geo-Services AS, Norway
Continuation-in-part of Ser. No. 230,640, Apr. 21, 1994, Pat. No. 5,598,802. This application Dec. 27, 1995, Ser. No. 579,332
Int. Cl.^{6} B63B *1/06;1/08*
U.S. Cl. 114—56 **16 Claims**

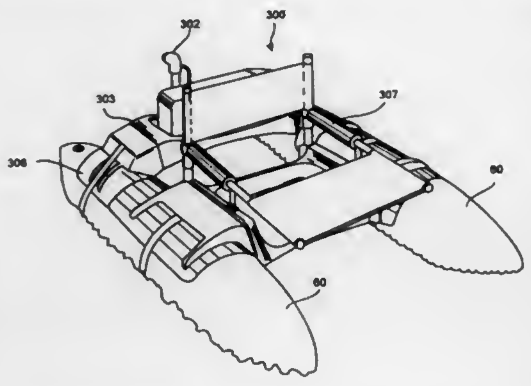
1. A ship of a displacement type with a pointed bow and a transom stern, a longitudinal length of L, and defining a base plane and a design waterline plane, the ship comprising:
approximately sinusoidal waterlines;



a surface extending from the transom stern at the design waterline plane to the base plane at about L/2 and defining an angle between:
the base plane and
an oblique plane, said oblique plane being defined by:
a line at the intersection of the transom stern and the design waterline plane and
a point located on said surface at about 0.2 L from the transom stern, and a first propeller which is attached to the ship, wherein the maximum local hull wake through said first propeller is less than 0.50, and wherein said first propeller swivels so that an axis of said first propeller turns in any direction parallel to the base plane of the ship.

5,711,240
INFLATABLE PONTOON FLOAT DEVICE

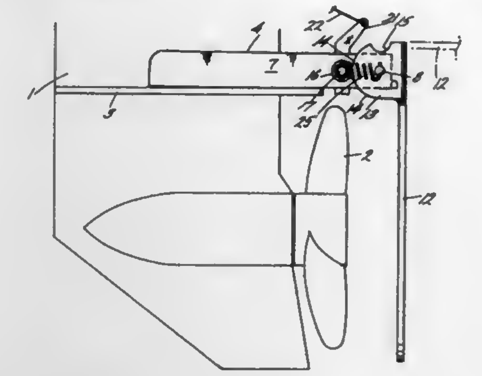
Norm Baker, P.O. Box 9007, Nampa, Id. 83652-9007
Filed Sep. 11, 1995, Ser. No. 526,711
Int. Cl.^{6} B63B *1/14;7/08*
U.S. Cl. 114—61 **4 Claims**



1. A floatation device comprising:
an integral frame and seat member, having an upper sitting surface, a bottom surface, a front edge, a back edge and two side edges;
a pair of rigid pontoon support wings, each being pivotally attached to, and extending from one of the side edges, the support wings being pivotal between a float position having the wings lying generally in the same plane as the integral frame and seat member and a backpack position having the wings folded inward and back toward the bottom surface of the integral frame and seat member to partially enclose a storage compartment;
a pair of inflatable pontoon floats;
attachment means for removably attaching each pontoon to one of the support wings;
a back rest member being removably attachable to the integral frame and seat member near its back edge; and
a cover shaped and configured to be stretched over upper and lower ends of the support wings to complete the storage compartment enclosure and hold the wing members in their backpack position.

5,711,241
TROLLING PLATE

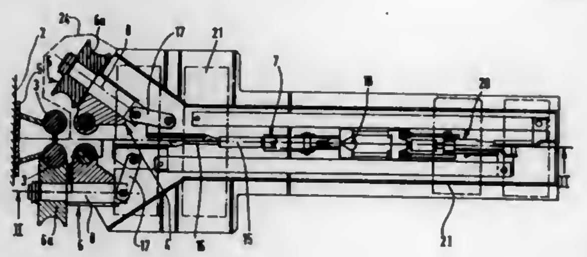
William B. Dyer, 3359 Taylor Rd., Central Point, Oreg. 97502
Continuation-in-part of Ser. No. 630,512, Apr. 10, 1996, abandoned. This application Sep. 30, 1996, Ser. No. 724,003
Int. Cl.^{6} B63H *25/48*
U.S. Cl. 114—145 A **10 Claims**



1. A trolling palte assembly for installation on a boat propulsion unit, said plate assembly comprising,
a bracket attachable to the propulsion unit,
a trolling plate structure,
pivot means coupling said plate structure to said bracket permitting the plate structure to move to an upright positon to disrupt backwash from the propulsion unit,
spring means acting on said plate structure to urge same to the upright position,
said plate structure having ears thereon each having a curved track and a recess therein,
follower means including rollers separately entrained on each of said tracks for travel therealong toward said recess during plate structure travel about said pivot means between the upright position and a raised horizontal position,
means biasing each of said rollers toward said tracks and into said recess to lock the trolling plate in a horizontal position, and
positioning means for displacing said rollers away from each said recess to permit upright positioning of the plate structure by said spring means.

5,711,242
DEVICE FOR MOORING A CRAFT TO A DOCKING POINT

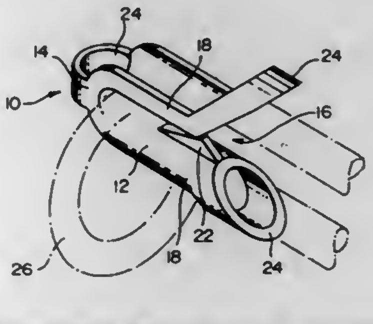
Pierre Blanc, Aix-En-Provvence, and Alain Lecoq, Sartrouville, both of France, assignors to GTM, Nanterre, France
PCT No. PCT/FR94/00963, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO95/04193, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 29, 1994, Ser. No. 596,118
Claims priority, application France, Jul. 30, 1993, 93 09433
Int. Cl.^{6} B63B *21/00*
U.S. Cl. 114—230 **12 Claims**



1. A device for mooring a craft to a docking point, which comprises a combination of at least one guide rail rigidly fixed vertically to the docking point permitting no relative movement between the rail and the docking point, and clamp forming means rigidly joined to the craft and including jaws suited, in a closed position, for clamping two opposite faces of the guide rail and for moving along the guide rail, driving means rigidly joined to the craft for controlling the movement of the jaws between said closed position and an open position in which the jaws are separated from the guide rail, and wherein the full set of mobile members, including the clamp forming means and the driving means are mounted inside a casing, said casing being fixed to the craft via damping devices.

5,711,243
CHAFE PROTECTION DEVICE

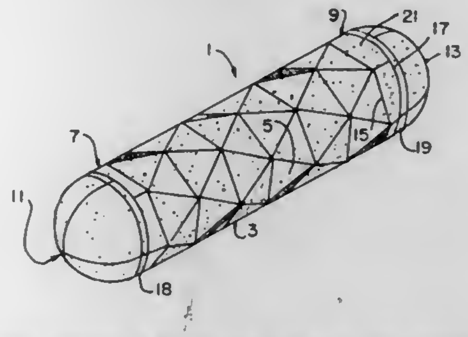
Billy Dunham, 12450 NE. 130th Ct. #F302, Kirkland, Wash. 98034
Filed Mar. 6, 1996, Ser. No. 611,343
Int. Cl.^{6} B63B *2/00*
U.S. Cl. 114—230 **9 Claims**



1. A chafe prevention device for use in protecting rope from chafing comprising:
a thimble shaped base having an arcuate end and an open end, said thimble shaped base being sized and shaped to flex sufficiently to allow said open end to open wider, and
a removal means attached to said arcuate end such that when said removal means is pulled on said base flexes allowing for removal of said thimble shaped base from a potential chafing object.

5,711,244
POLYHEDRALLY STIFFENED CYLINDRICAL (PC) PRESSURE HULL

Ronald H. Knapp, 98-1033 Kupukupu Pl., Aiea, Hi. 96701
Filed Oct. 6, 1995, Ser. No. 540,212
Int. Cl.^{6} B63B *3/13*
U.S. Cl. 114—312 **33 Claims**



1. A shell structure apparatus with buckling and pressure resistances, comprising an undulated shell body, having a longitudinal axis and plural polyhedral faces, first and second curved shell ends, and first and second transition sections, said transition sections having first straight edges at inner ends and second edges at opposite outer ends, said first edges being attached to edges of faces of the shell body and said second edges being curved and

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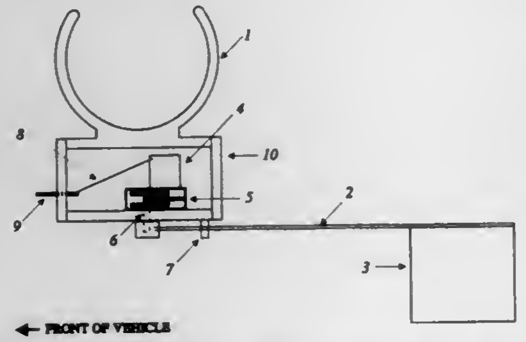
being attached to the curved shell ends, and wherein a distance of the first edge from the longitudinal axis is similar to a distance of the second edge from the longitudinal axis.

18. PC shell apparatus comprising transition sections having first straight edges and second curved edges for attaching a PC shell body with plural polyhedral faces to first and second circular cylindrical rings, each ring having first and second edges, wherein the first edges are attached to hemispherical shell caps, and the second edges are attached to the transition sections.

5,711,245
METHOD AND APPARATUS FOR TEMPORARILY EXTENDED ALIGNMENT GUIDE FOR VEHICLE FLUID OUTLET PORT

Kenneth John Knirck, San Luis Obispo, Calif., assignor to Valterra Products Inc., San Fernando, Calif.
Filed Nov. 23, 1994, Ser. No. 344,129
Int. Cl.^{6} G08B *5/00*
U.S. Cl. 116—28 R **5 Claims**

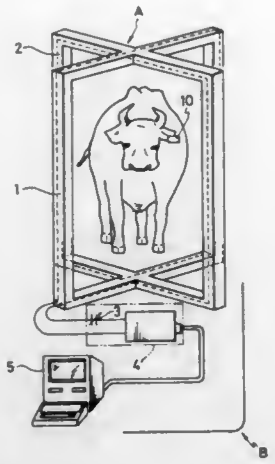


5. A device for visually indicating to a vehicle driver the location of one of a vehicle drain fitting, refilling port and external electricity connection comprising:
- an indicator in the form of a flag and mast attached thereto;
- means for attaching the indicator to a selected one of said fitting, port and connection;
- means for moving the indicator between a non-deployed position where the flag is out of the view of the vehicle driver to a deployed position where the flag is in the view of the vehicle driver; and
- wherein the moving means comprises means for remotely rotating the indicator along a plane between the non-deployed and deployed positions.

5,711,246
SYSTEM FOR IDENTIFYING LIVESTOCK AND OTHER INDIVIDUALS

Tomoji Yano; Hisashi Asoh, and Kazundo Tanaka, all of Tokyo, Japan, assignors to Electronics on Animal Industries Research Association, Tokyo, Japan
Filed Feb. 5, 1996, Ser. No. 596,491
Claims priority, application Japan, Jun. 13, 1995, 7-169315
Int. Cl.^{6} A01K *29/00*
U.S. Cl. 119—51.02 **3 Claims**

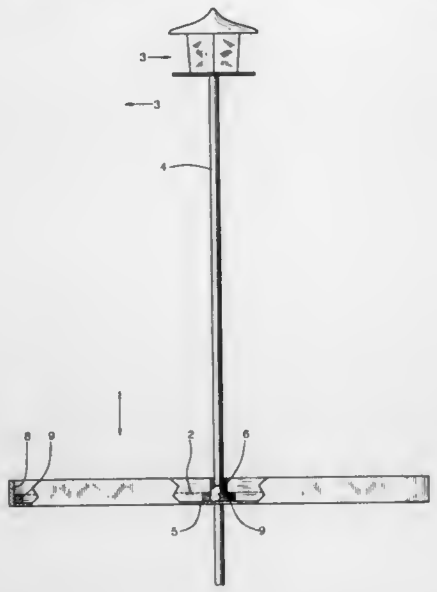
1. A system for identifying livestock and other individuals, said system comprising:
- an identification plate for identifying the livestock and other individuals; and
- a gate-shaped antenna;
- said identification plate being a marker plate fabricated from a soft material;
- said identification plate including:
  - a flexible printed board;
  - an antenna coil;
  - a tuning condenser;



  - an electric circuit;
- said gate shaped antenna comprising:
  - a first unit antenna;
  - a first coil wound within said first unit antenna;
  - a second unit antenna;
  - a second coil wound within said second unit antenna;
  - said first and second coils being disposed angularly relative to each other such that said coils cross each other so that electromagnetic fields can be generated over a wide range of area without interfering with each other during transmission/reception of a radio wave for retrieving data on said identification plate.

5,711,247
BIRD FEED RECYCLER

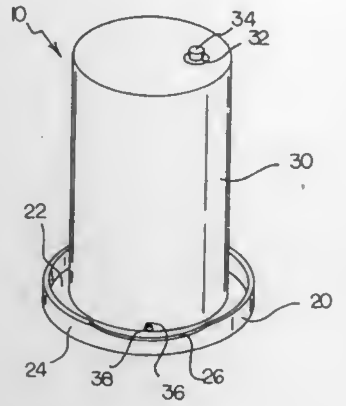
Thomas A. Henshaw, 1667 Carriage Dr., West, Titusville, Fla. 32796
Filed Jul. 15, 1996, Ser. No. 679,825
Int. Cl.^{6} A01K *39/01*
U.S. Cl. 119—57.8 **18 Claims**



1. A bird-feed recycler comprising:
- a base frame sized, shaped and structured for positioning under a bird feeder;
- a screen on the base frame;
- the screen being sized, shaped and structured to contain bird feed dropped from a bird feeder under which the base frame is positioned;
- a pole attachment on the base frame; and
- the pole attachment being sized, shaped and structured for attachment to a bird-feeder pole.

5,711,248
WILD GAME WATERING SYSTEM

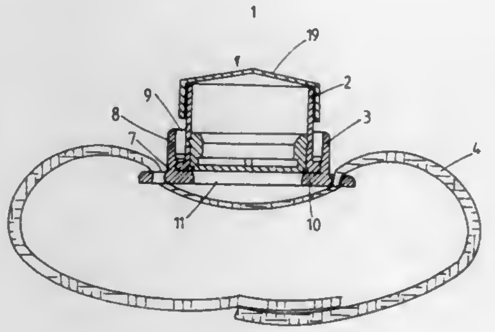
Leslie D. Boyd, Rt. 2 Box 350A, Port Lavaca, Tex. 77979
Filed May 7, 1996, Ser. No. 646,032
Int. Cl.^{6} A01K *7/00*
U.S. Cl. 114—77 **4 Claims**



1. A Wild Game Watering System comprising:
- a water retaining pan;
- a water storage container removably positioned on the water retaining pan for retaining water within; and
- the water retaining pan comprises a horizontal bottom wall member secured orthogonally to a side wall ring member forming a water tight pan
- wherein the water storage container includes a filling aperture on the upper portion of the water storage container, and a filling cap member for removably covering the filling aperture; and
- a water releasing aperture located near the lower portion of the water storage container and a removable water releasing plug for removably projecting into the water releasing aperture.

5,711,249
MARKING DEVICE

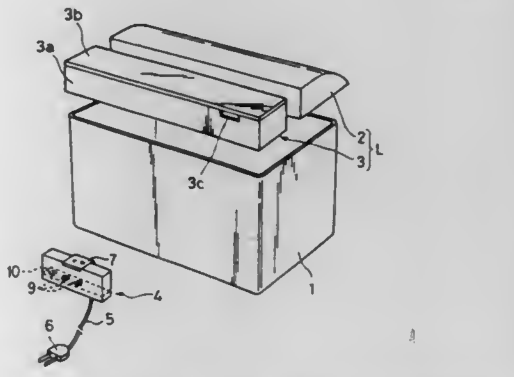
Gerard Bert Winders, Invercargill, New Zealand, assignor to Genesis Industries Incorporated, Spring Valley, Wis.
Filed Nov. 29, 1995, Ser. No. 564,924
Claims priority, application New Zealand, Nov. 30, 1994, 270027
Int. Cl.^{6} A01K *11/00*
U.S. Cl. 119—174 **14 Claims**



1. A marking device for attachment to a user's wrist or other appendage, comprising:
- (a) a cartridge receiver having a receptacle and a lower outer part;
- (b) a marker cartridge having a container for holding a marker means, the marker cartridge and the cartridge receiver having twist-lock means for securely engaging the marker cartridge in the receptacle of the cartridge receiver; and
- (c) at least one strap attachment means connected to the lower outer part.

5,711,250
DEVICE FOR RAISING AQUARIUM FISH AND ITS RECEPTACLE ASSEMBLY

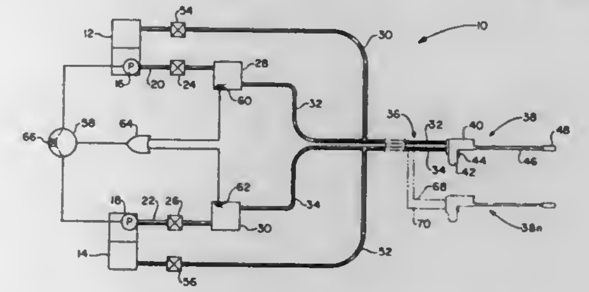
Toshihiro Tsuchiya, Kashiwa, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan
Division of Ser. No. 210,282, Mar. 18, 1994, Pat. No. 5,501,614. This application Nov. 21, 1995, Ser. No. 561,398
Claims priority, application Japan, Mar. 19, 1993, 5-18156
Int. Cl.^{6} A01K *63/06*
U.S. Cl. 119—259 **2 Claims**



1. A device for raising aquarium fish, comprising a combination of a water tank and a receptacle assembly;
- said water tank having an upper opening and a lid for closing the upper opening, said lid comprising a front housing, an illumination mechanism in the front housing, a rear housing having a housing body, a filtration mechanism in the rear housing and a fastening portion formed on the housing body of the rear housing;
- said receptacle assembly supplying electricity to the illumination mechanism and the filtration mechanism and having a fastened portion detachably engageable with said fastening portion of said lid.

5,711,251
GERMICIDE APPLICATOR FOR COW UDDERS

Thomas S. Green, Atwater, and Eric G. Hilston, Streetsboro, both of Ohio, assignors to ABC Dispensing Technologies, Inc., Akron, Ohio
Filed Apr. 3, 1996, Ser. No. 626,987
Int. Cl.^{6} A01J *7/04*
U.S. Cl. 119—670 **19 Claims**



1. A germicide applicator for cow udders, comprising:

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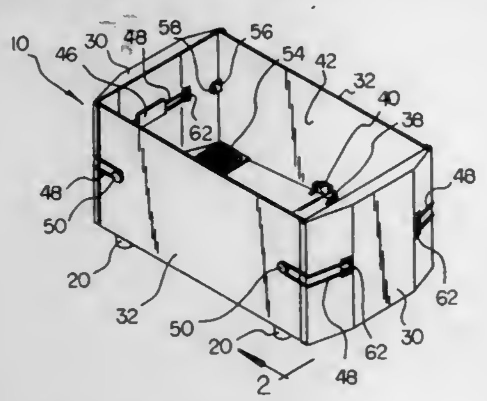
a plurality of supply sources for constituent ingredients of a germicide;
a plurality of dispensing lines, a separate dispensing lines in communication with each of said supply sources at first ends thereof;
a dispensing gun interconnected with said dispensing lines at second ends thereof;
a separate pump in association with each of said supply sources for urging the constituent ingredients from said supply sources, through said dispensing lines, and out of said dispensing fun; and
means interconnecting said plurality of dispensing lines for mixing the constituent ingredients into the germicide to be applied to a cow teat immediately prior to application so that the germicide is applied to the cow only in the proper mixture, and not in such a manner that any of the ingredients alone contacts the cow's udders.

5,711,252
PET BATH APPARATUS

Lanae Brandolino, 2004 Shipway Ave., Long Beach, Calif. 90815

Filed Dec. 11, 1995, Ser. No. 570,126
Int. Cl.^{6} A01K *13/00*
U.S. Cl. 119—673 **15 Claims**



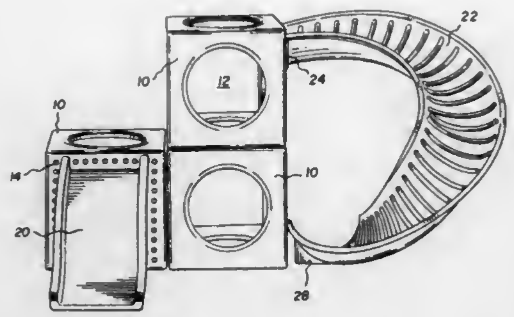
1. A pet bath apparatus, comprising:
a sloped floor unit which includes an elevated portion, a lower portion, and a drain portion located in said lower portion,
a set of support legs projecting downward from a bottom side of said sloped floor unit,
set of four wall units supported by said sloped floor unit, and
connector assemblies, supported by said wall units, for selectively connecting said set of wall units together;
wherein said set of wall units includes:
  a pair of end wall units, wherein each end wall unit is supported by an end portion of said sloped floor unit, and
  a pair of side wall units, wherein each side wall unit is supported by a side portion of said sloped floor unit,
  wherein each end wall unit includes a transverse ledge for resting on an end portion of said sloped floor unit,
  wherein each end wall unit has a concave shape with said transverse ledge extending from one edge to another of said concave shape.

5,711,253
SMALL ANIMAL CONNECTIBLE PLAY CUBE SYSTEM

Gerald Phillips, Wantagh; Steven Wilkonski, East Meadows, and Marvin Goldman, North Hills, all of N.Y., assignors to Penn-Plax, Inc., Garden City, N.Y.

Filed Jun. 18, 1996, Ser. No. 665,803
Int. Cl.^{6} A01K *1/00*
U.S. Cl. 119—706 **9 Claims**

1. A small animal connectible play cube system comprising:

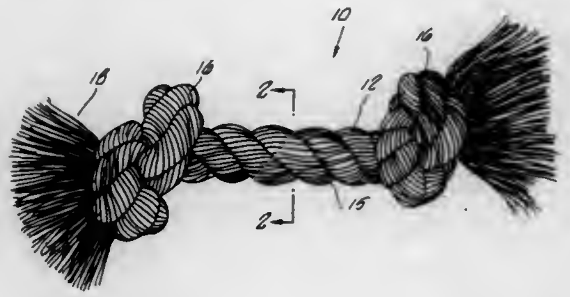


at least two connectible small animal play cubes, each cube having at least one surface with a single large opening;
at least one attaching adaptor, said adaptor having means on opposite sides for attaching said adaptor to said large opening of said one surface;
wherein said at least two cubes are connectible together in various configurations of said one surface of one cube relative to said one surface of another cube; and
wherein said attaching adaptor comprises a ring member having a main annular body, a central flange extending radially inwardly and radially outwardly of said annular body, a pair of radially inwardly directed first engaging elements extending around at least part of the circumferential edge of each end of said main annular body, and a pair of radially outwardly directed second engaging elements extending around at least part of the circumferential edge of each end of said main annular body.

5,711,254
DOG CHEW TOY

Anthony O'Rourke, Malibu, Calif., assignor to Aspen Pet Products, Inc., Denver, Colo.

Division of Ser. No. 69,702, Jun. 1, 1993, Pat. No. 5,477,815, which is a continuation-in-part of Ser. No. 932,770, Aug. 20, 1992, Pat. No. 5,215,038. This application Dec. 22, 1995, Ser. No. 577,088
Int. Cl.^{6} A01K *29/00*
U.S. Cl. 119—710 **30 Claims**

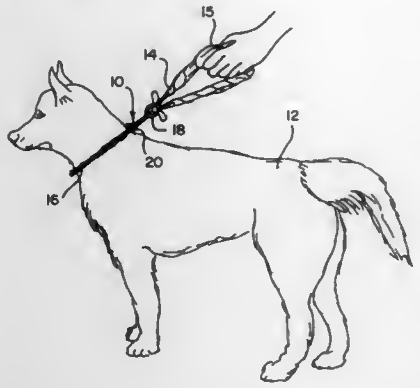


1. A chew toy for dogs comprising a plurality of soft pliable threads twisted about a plurality of fibers so as to substantially encase and retain said fibers within said soft pliable threads, said fibers being less absorbent than said soft pliable threads whereby upon said toy being chewed by a dog and wetted by the dog's saliva, said soft pliable threads will provide a cleaning of the dog's teeth and massaging of its gums and the fibers within said threads will promote drying of the toy to inhibit bacteria growth therein.

5,711,255
ANIMAL COLLAR WITH INTEGRAL LEAD

Stewart S. Rudolph, 61-49 Dry Harbor Rd. K-10, Middle Village, N.Y. 11379

Filed Sep. 18, 1995, Ser. No. 529,586
Int. Cl.^{6} A01K *27/00*
U.S. Cl. 119—793 **19 Claims**

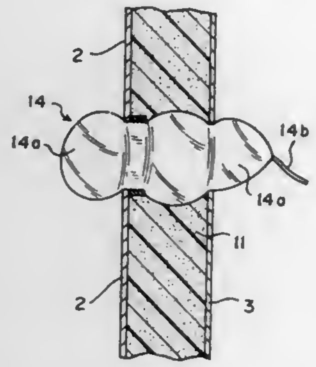


1. A collar for an animal comprising:
a first loop sized and shaped to be secured around the neck of the animal, and
a second loop having a size sufficient to fit over the head and around the neck of the animal, said second loop being attached to said first loop at a securing point, said second loop being movable about the head of the animal between a stowed position wherein said second loop can be located around the neck of the animal, adjacent to said first loop, and a usable position wherein said second loop can be located remote of the neck of the animal so that said second loop may function as a lead, said second loop being a bandanna which is made from a soft flexible textile.

5,711,256
APPARATUS FOR MASKING COMPONENTS OF A HOT WATER TANK FROM INSULATION

Bob C. Brandon, 5883 Hwy. 69 South, Columbus, Miss. 39702

Filed Dec. 10, 1996, Ser. No. 763,546
Int. Cl.^{6} F22B *5/00*
U.S. Cl. 122—13.1 **2 Claims**

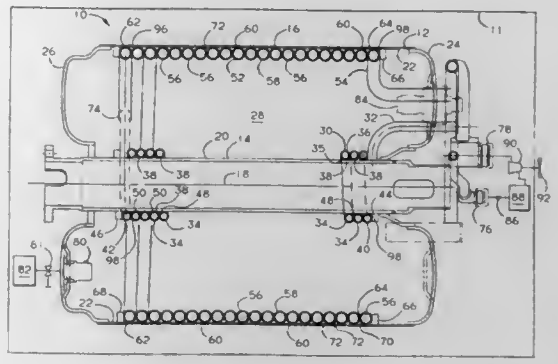


1. In combination, a hot water heater having an inner tank and an outer shell spaced from the inner tank, at least one fitting mounted on the inner tank, said fitting having a threaded bore, an opening in the outer shell aligned with said threaded bore, and a masking device inserted through said opening and into said threaded bore, and foamed insulation injected into the space between the inner tank and outer shell, whereby the masking device prevents the insulation from covering the threaded bore and escaping to the outside of the outer shell.

5,711,257
SLEEVED BOILER-REACTOR

John T. Buford, and Jeffrey M. Makulec, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 24, 1996, Ser. No. 590,843
Int. Cl.^{6} F22B *1/02*
U.S. Cl. 122—32 **6 Claims**



1. A boiler-reactor comprising:
a) a casing including a first cylindrical sleeve defining a longitudinal axis and a first interior surface of said casing;
b) a first and a second end closure integrally attached respectively to opposite axial ends of said sleeve to define a cavity for receipt of a reaction bath within said casing;
c) a first boiling tube structure comprising a first tube formed to define a plurality of turns continuously helically disposed within said cavity in fluid communication with one another about said longitudinal axis;
  each of said turns of said tube structure being wound to closely axially abut an adjacent turn of said structure, and further wound to have a portion of an outer surface thereof circumferentially abutting said interior surface of said casing; and
d) lug means attached to said casing for urging said turns into substantially intimate axial abutment with said adjacent turns of said first boiling tube structure and thereby limiting fluid communication of said reaction bath between said cavity, and said casing;
e) said axial abutment of said adjacent turns in conjunction with said circumferential abutment of said turns with said interior surface defines a helically shaped channel extending generally axially along said first of said outer surfaces of each of said turns that generally faces said interior surface, whereby said belically shaped channel substantially reduces circulation of said reaction bath across said portion of said outer surface of each of said turns that generally faces said interior surface.

5,711,258
COOLING SYSTEM FOR AN INTERNAL-COMBUSTION ENGINE

Roland Saur, Stuttgart, Germany, assignor to Behr Thermot-tronik GmbH & Co., Kornwestheim, Germany

Filed Feb. 13, 1997, Ser. No. 799,805
Claims priority, application Germany, Feb. 21, 1996, 196 06 202.0
Int. Cl.^{6} F01P *3/00*
U.S. Cl. 123—41.29 **20 Claims**

1. A cooling system for an internal-combustion engine which is cooled by a liquid coolant and which is arranged in a circulating system having a coolant radiator, to which circulating system at least one heat exchanger of an accessory device is connected by way of a switching valve which contains a valve element which can be switched into two positions and which, in one of said positions, blocks a connection between the coolant circulating system and the heat exchanger of the accessory device and, in the other of said position, opens up said connection,

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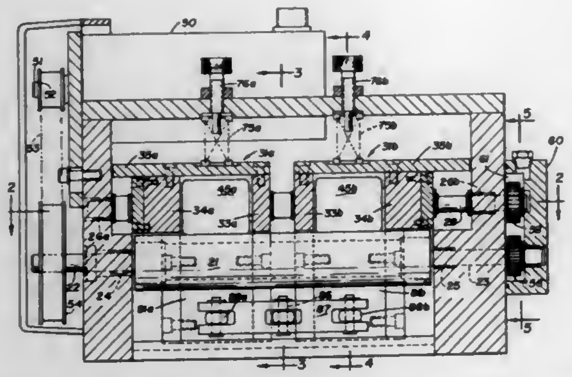


wherein a thermostatic working element is provided for switching the valve element, said thermostatic working element being biased by a restoring spring, being acted upon by the coolant and being provided with an electric heater,

and wherein the thermostatic working element contains an expansion material which is designed for a switching temperature which is higher than a maximal operating temperature of the coolant flowing to the thermostatic working element.

5,711,259

METHOD OF MEASURING A VALVE PLAY OF AN ENGINE-CYLINDER VALVE OPERATED BY AN ELECTROMAGNETIC ACTUATOR

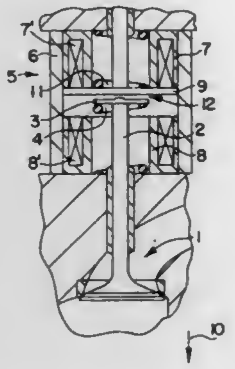
Franz Pischinger; Günter Schmitz, and Martin Pischinger, all of Aachen, Germany, assignors to FEV Motorentechnik GmbH & Co. KG, Aachen, Germany

Filed Aug. 8, 1996, Ser. No. 694,273

Claims priority, application Germany, Aug. 8, 1995, 195 29 155.7

Int. Cl.^{6} F01L *1/20;9/04*

U.S. Cl. 123—90.11 **10 Claims**



1. A method of measuring a valve play in a reciprocating valve having open and closed positions and being operated by an electromagnetic actuator including an opening electromagnet, a closing electromagnet, an armature movable between pole faces by electromagnetic forces against a spring force of return spring means for moving said valve into an open position; said valve play being defined by a clearance between said armature and said valve when said armature is in contact with the pole face of said closing magnet and said valve is in said closed position; the method comprising the following steps:

(a) detecting a motion of the armature within said clearance as a function of at least one of a course of voltage and a course of current in said closing electromagnet; and

(b) deriving the size of said valve play from an irregularity in at least one of said course of voltage and said course of current; said irregularity being caused by an impacting of said armature on at least one of said valve and said pole face of said closing electromagnet.

5,711,260

CYLINDER HEAD OF AN INTERNAL COMBUSTION ENGINE

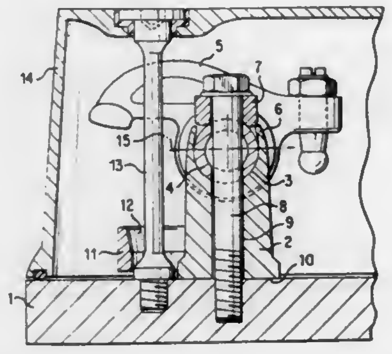
Walter Aupperle, Korb, and Horst Bärwaldt, Stuttgart, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 24, 1996, Ser. No. 774,301

Claims priority, application Germany, Jan. 9, 1996, 196 00 441.1

Int. Cl.^{6} F01L *1/18*

U.S. Cl. 123—90.39 **22 Claims**



17. A rocker support assembly for supporting a plurality of rockers of an internal combustion engine at an engine cylinder head, comprising:

a rocker shaft for pivotally supporting the rockers, and

at least one rocker bracket detachably attachable to the cylinder head and having a trough shaped depression facing away from the cylinder head and accommodating the rocker shaft,

wherein side parts of the depression extend above the depression and form bendable tab like extensions which hold the rocker shaft on the depression.

5,711,261

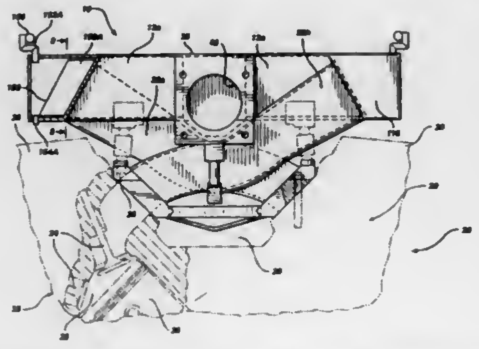
INTAKE SYSTEM FOR V-TYPE ENGINE

C. Bruce Gambardella, 199 McNamara Rd., Spring Valley, N.Y. 10977

Continuation-in-part of Ser. No. 456,144, May 31, 1995, Pat. No. 5,551,386. This application Aug. 30, 1996, Ser. No. 705,607

Int. Cl.^{6} F02M *35/10*

U.S. Cl. 123—184.35 **7 Claims**



1. An inlet manifold system for an internal combustion engine having a bank of cylinders, said bank having a plurality of combustion cylinders, the manifold comprising:

a first elongated plenum disposed substantially parallel to and above the bank of cylinders;

a first set of a plurality of substantially parallel, spaced apart demand runners joined to the first plenum along its length, each demand runner extending from the first plenum to a respective cylinder and in fluid connection with the first plenum and the cylinder;

a first set of a plurality of substantially parallel, spaced apart supply runners joined to the first plenum along its length and in fluid connection therewith;

the demand runners and the supply runners connected to the first plenum such that each pair of adjacent spaced apart demand runners has a supply runner therebetween;

valve means disposed in the first plenum operative between a first position and a second position, said valve means operative in the first position to allow communication between the demand runners and the supply runners and operative in the second position to segment the plenum into a series of discrete segments containing a single supply runner and demand runner to cause dedicated flow from a specific supply runner to a specific adjacent demand runner, said valve means comprising:

a plurality of flapper valves, each one of said flapper valves constructed and arranged to pivotably move between said first position and said second position to segment the plenum;

each one of the plurality of flapper valves having a surface contour to conform to a cross-sectional shape of the manifold;

an actuator means constructed and arranged for connection to the plurality of flapper valves to produce synchronous movement for the plurality of flapper valves; and

pivot points for the plurality of flapper valves, the pivot points constructed and arranged adjacent to an outer edge of the manifold.

5,711,262

VISCOUS FLUID TYPE HEAT GENERATOR

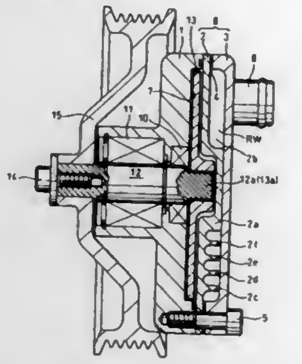
Takashi Ban; Hidefumi Mori, and Kiyoshi Yagi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Sep. 9, 1996, Ser. No. 711,123

Claims priority, application Japan, Sep. 11, 1995, 7-232691

Int. Cl.^{6} F02N *17/02;* **F22B** *3/06*

U.S. Cl. 123—142.5 R **7 Claims**



1. A viscous fluid type heat generator comprising:

a case means including a front case and a rear case which define, therein, a heat generating chamber having an inner surface;

a heat receiving chamber formed in at least one of said front and rear cases so as to extend contiguously with said heat generating chamber to form a heat exchanging fluid passage through which a heat exchanging fluid is circulated;

a drive shaft supported by said case means to be rotatable about an axis of rotation thereof;

a rotor element mounted on said drive shaft for rotation together in said heat generating chamber;

a viscous fluid, filling a space between said inner surface of said case means defining said heating chamber and an outer surface of said rotor element, for heat generation by the rotation of said rotor element; and

a connecting means for connecting said rotor element to said drive shaft so that said rotor element is unable to turn relative to said drive shaft but is able to incline to the axis of rotation of said drive shaft and to move axially on said drive shaft.

5,711,263

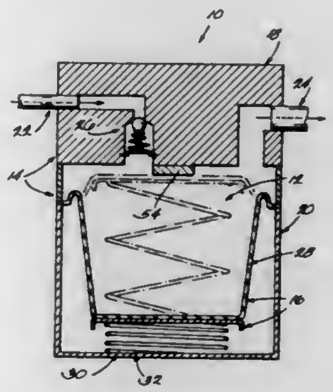
FUEL PRIMER PRESSURE ACCUMULATOR

Peter W. Brown, Lake Villa, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 22, 1996, Ser. No. 635,839

Int. Cl.^{6} F02M *1/16;69/34*

U.S. Cl. 123—179.9 **15 Claims**



1. A fuel primer pressure accumulator for an internal combustion engine comprising:

a chamber;

a fuel inlet passage connected to the chamber;

a fuel outlet passage connected to the chamber;

a primer control valve connected to the fuel outlet passage; and

a check valve coupled to the fuel inlet passage permitting the passage of pressurized fuel into the chamber when the internal combustion engine is running and restricting the passage of fuel out of the chamber when the internal combustion engine is stopped, thereby trapping fuel under pressure in the chamber.

5,711,264

COMBUSTION ENGINE COMPRESSION RELEASE MECHANISM

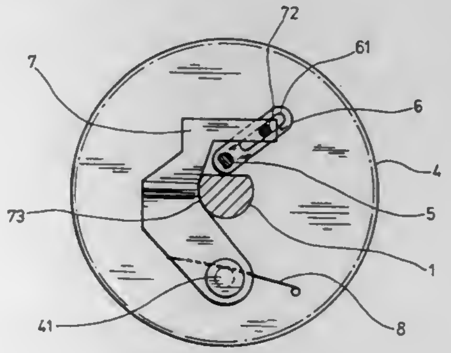
Jaroslav Jezek; Josef Jarosik, and Emanuel Wertheim, all of Ceske Budejovice, Czech Rep., assignors to Motor Jikov a.s., Ceske Budejovice, Czech Rep.

Filed Mar. 26, 1997, Ser. No. 824,298

Claims priority, application Czech Rep., Apr. 9, 1996, 1029-96

Int. Cl.^{6} F01L *13/08*

U.S. Cl. 123—182.1 **3 Claims**



1. A combustion engine compression release mechanism having a cam shaft provided by a cam operating an exhaust valve lifter and a cam shank operating the same exhaust valve lifter independently of the cam during the starting speed of the engine to release the compression within the engine cylinder comprising

a cam shank mounted on the cam shaft for rotatable motion and having a cam portion for engaging the exhaust valve lifter during the low starting speed of the engine,

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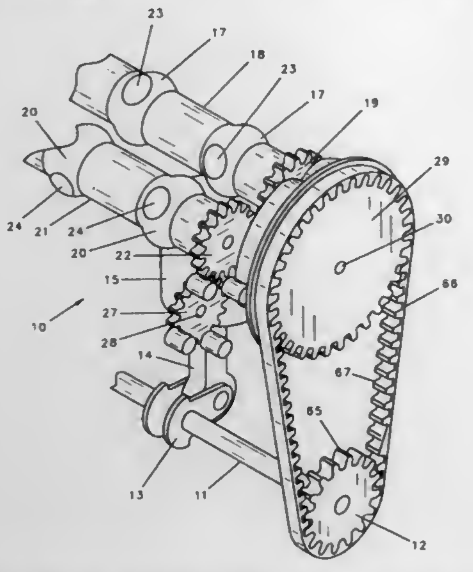
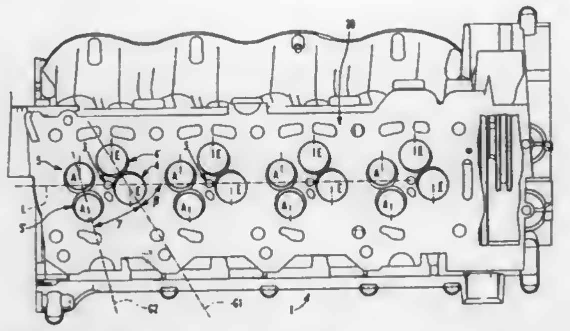
a rocker arm extending radially from the cam shank and provided by a guide having an upper and a lower end,
a slide block mounted in the guide for motion along the guide and fixed to an eccentric body adapted to move by effect of centrifugal force with relation to the cam shaft and to operate the slide block,
means urging the eccentric body and the cam shank in a position where the cam portion of the cam shank engages the exhaust valve lifter.

5,711,265
ROTARY VALVE DRIVE MECHANISM
Donald A. Duve, 835 Donna Ave., Aurora, Ill. 60505
Filed Jul. 22, 1996, Ser. No. 684,998
Int. Cl.^{6} F01L *7/10*
U.S. Cl. 123—190.2 **18 Claims**



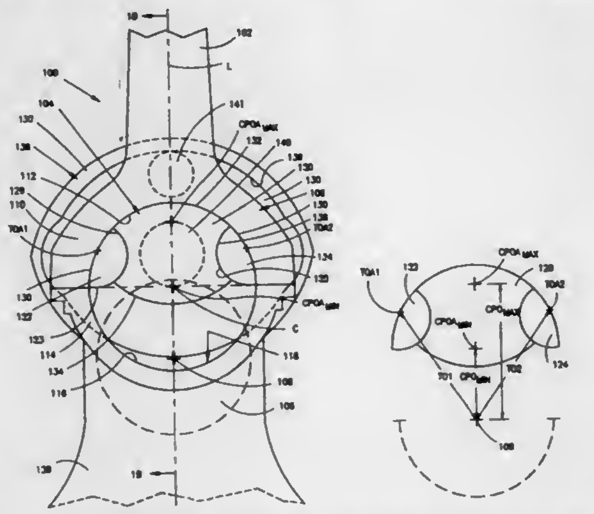
1. In an internal combustion engine of the type having a crankshaft rotatable by the operation of said engine, at least one engine cylinder, said cylinder having at least one inlet or exhaust port, said engine further having at least one rotary engine valve mounted to a valve shaft and having a valve passage formed therethrough, said valve shaft being rotatable to bring said valve passage into and out of alignment with said port, the improvement comprising:
means for rotating said valve shaft,
said rotation means including means to index said valve with said passage in a selected attitude of rotation with respect to said port,
said indexing means including rotatable indexing gear means and cam driver means positioned in driving relation with said rotatable indexing gear means for interrupting the rotation of said valve in said selected attitude of rotation without interrupting the rotation of said crankshaft.

5,711,266
CYLINDER HEAD FOR AN INTERNAL COMBUSTION ENGINE
Josef Astner, Stuttgart, Germany, and Lucian Betke, Pod Zavêrkon, Czechoslovakia, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Dec. 9, 1996, Ser. No. 762,523
Claims priority, application Germany, Dec. 21, 1995, 195 48 088.0
Int. Cl.^{6} F02F *7/00*
U.S. Cl. 123—193.5 **19 Claims**



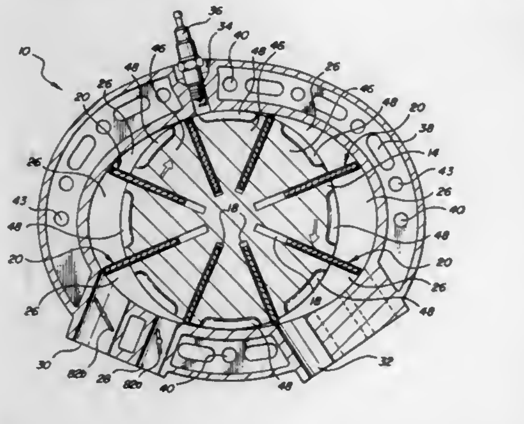
1. A cylinder head for an internal combustion engine having a plurality of cylinders arranged in line, said cylinder head having a longitudinal center line and including two intake valves and two exhaust valves for each cylinder of which one of the intake and one of the exhaust valves of each cylinder are disposed at opposite sides of said longitudinal center line, an injector mounted in said cylinder head in the center of the cross-sectional area of each cylinder and having an injection nozzle tip extending from said cylinder head, said intake and exhaust valves being grouped around said central injection nozzle tip, said cylinder head having a top including an injector trough extending centrally along said cylinder head top and having bores extending from said trough centrally into the respective cylinders for receiving and supporting said injectors, intake and exhaust valve rocker arms mounted on opposite sides of said injector trough and engaging the respective intake and exhaust valves and a camshaft mounted on each side of said injector trough above the respective intake and exhaust valve rocker arms and having intake and exhaust cams disposed adjacent the respective intake and exhaust valve rocker arms for operating said intake and exhaust valves.

5,711,267
INTERNAL COMBUSTION ENGINE WITH OPTIMUM TORQUE OUTPUT
Kenneth A. Williams, 506 N. Greenwood Ave., Clearwater, Fla. 34615
Filed Nov. 1, 1996, Ser. No. 743,003
Int. Cl.^{6} F02B *75/04*
U.S. Cl. 123—197.4 **31 Claims**



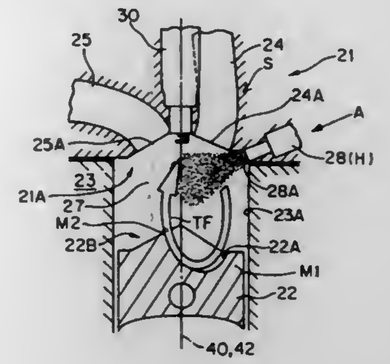
1. A mechanism for translating reciprocating motion to rotary motion on a cyclic basis in combination with an internal combustion engine comprising:
at least one cylinder in said internal combustion engine, a reciprocating piston slidably provided within each said cylinder of said internal combustion engine;
synchronous control means which supplies a combustible mixture to each said cylinder and ignites the mixture for producing a combustion force causing the piston in said cylinder to move in one direction of its reciprocating motion to provide a power stroke for said cylinder; and
an engine output shaft rotatably mounted with said internal combustion engine, connection means for operatively connecting said engine output shaft to each said reciprocating piston for translating the reciprocating motion of each said piston to rotary motion of said shaft through a variable moment arm between the axis of rotation of said engine output shaft and the point of operative connection between each said piston and said shaft for providing a substantially constant engine torque output throughout each increment of rotation of the engine output shaft, taking into consideration the torque contributions and demands of all cylinders, said connection means including crankpin means for each piston, said crankpin means being fixed to rotate with the engine output shaft and defining a plurality of fixed crankpin offsets which sequentially vary the moment arm in a predetermined manner during the rotation of the engine output shaft to produce a substantially constant engine torque output during each increment of rotational movement of said engine output shaft.

5,711,268
ROTARY VANE ENGINE
Carl J. Holdampf, Farmington Hills, Mich., assignor to C & M Technologies, Inc., Farmington Hills, Mich.
Filed Sep. 18, 1995, Ser. No. 529,743
Int. Cl.^{6} F02B *53/00*
U.S. Cl. 123—243 **6 Claims**



1. A rotary vane internal combustion engine wherein a cylindrical rotor having a plurality of radial guide slots slidingly retaining a plurality of vanes is rotatably mounted inside of a generally elliptical housing having intake means, ignition means, and exhaust means, characterized in that:
the housing has an internal surface comprising a series of tangent arcs and at least one non-linear transition segment interposed between at least two of the tangent arcs, the at least one transition segment providing a more gradual change in radius of curvature between the at least two tangent arcs and the internal surface being concave at every point on the surface.

5,711,269
IN-CYLINDER INJECTION INTERNAL COMBUSTION ENGINE
Hideyuki Oda, and Kenji Goto, both of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP96/00802, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO96/30632, PCT Pub. Date Mar. 10, 1996
PCT Filed Mar. 27, 1996, Ser. No. 750,161
Claims priority, application Japan, Mar. 28, 1995, 7-069815
Int. Cl.^{6} F02B *19/08*
U.S. Cl. 123—262 **17 Claims**



1. An in-cylinder injection internal combustion engine provided with:
a combustion chamber (27) formed by a cylinder head lower wall (21A) and a top wall of a piston fittedly inserted within a cylinder,
an intake valve arranged in said cylinder head lower wall (21A) of said combustion chamber (27),
an exhaust valve arranged in said cylinder head lower wall (21A) of said combustion chamber (27),
an intake port (24) communicating at a lower end thereof to said combustion chamber (27) through said intake valve so that a longitudinal swirl of inducted air is formed within said combustion chamber (27),
an exhaust port (25) communicating at a lower end thereof to said combustion chamber (27) through said exhaust valve so that combustion gas in said combustion chamber (27) is exhausted,
a spark plug (30) arranged on said cylinder head lower wall (21A) of said combustion chamber (27), and
fuel injection means (H) for directly injecting fuel into said combustion chamber (27), characterized in that:
said piston (22) has a recessed portion (22A) arranged in said top wall of said piston (22) to promote the formation of said longitudinal swirl with inducted air introduced into said combustion chamber (27) through said intake valve, and
a peripheral edge of said recessed portion is formed blunter at a corner portion (M1) on an inlet side of said vertical swirl than at another corner portion (M2) on an outlet side of said vertical swirl.

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5,711,270
METHOD OF CONTROLLING THE FUEL SUPPLY TO A DIESEL ENGINE WHICH BY HIGH-PRESSURE INJECTION MAY BE SUPPLIED WITH BOTH FUEL OIL AND FUEL GAS, AND A HIGH-PRESSURE GAS INJECTION ENGINE OF THE DIESEL TYPE

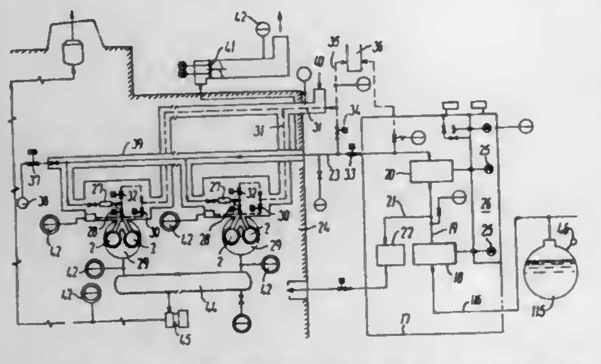
Peter Sunn Pedersen, Havdrup, Denmark, assignor to Man B&W Diesel A/S, Copenhagen SV, Denmark

Filed Jan. 8, 1997, Ser. No. 780,583

Claims priority, application Denmark, Jan. 15, 1996, 0035/96

Int. Cl.^{6} F02M *43/00*

U.S. Cl. 123—304 **11 Claims**



1. A method of controlling the fuel supply to a diesel engine which by high-pressure injection can be supplied with both fuel oil and fuel gas, wherein the engine includes cylinders in which combustions occur, each combustion being initiated by injection of fuel oil, and gas can be injected after initiation of the combustion, a total fuel amount being injected per combustion and the gas share thereof being adjustable, and the gas injection being prevented by a safety device in case of failing injection of fuel oil, and wherein a starting time for injection of fuel gas in relation to a starting time for injection of fuel oil is varied so that the gas injection is delayed when the gas share of the total amount of fuel is smaller, and vice versa.

5,711,271
THROTTLE APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Walter Schlagmueller, Schwieberdingen; Gerhard Schellenberg, Fellbach; Thomas Wiesa, Vaihingen; Rolf Litzinger, Hechingen; Harald Laue, Esslingen; Jurgen Rottler, Karlsruhe; Ralph Schimitzek, Obersulm/Sulzbach, and Peter Jauernig, Tiefenbronn, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

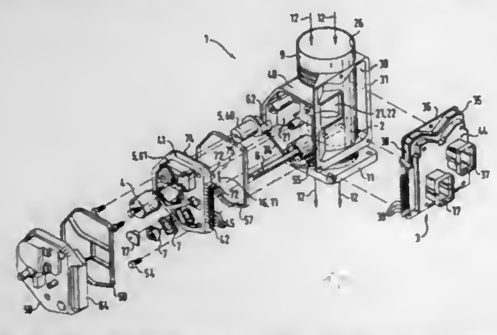
PCT No. PCT/DE96/00394, § 371 Date Feb. 12, 1997, § 102(e) Date Feb. 12, 1997, PCT Pub. No. WO96/35047, PCT Pub. Date Nov. 7, 1996

PCT Filed Mar. 6, 1995, Ser. No. 765,253

Claims priority, application Germany, May 5, 1995, 195 16 584.5

Int. Cl.^{6} F02M *3/00*

U.S. Cl. 123—339.24 **11 Claims**



1. A throttle apparatus for air flow of an internal combustion engine, having a housing, at least one throttle device rotatably supported in a throttle valve support of the housing, a bypass conduit that bypasses some air flow through the throttle device, the cross section of said bypass conduit is variable by an idling adjuster (5), the throttle device (2) and the idling adjuster (5) are accommodated in the housing (9, 30, 40), and an electronic control unit (3) and a regeneration valve (4) are also disposed in the housing (9, 30, 40).

5,711,272
FUEL PROPERTY DETECTION FOR AN ENGINE USING ENGINE SPEED

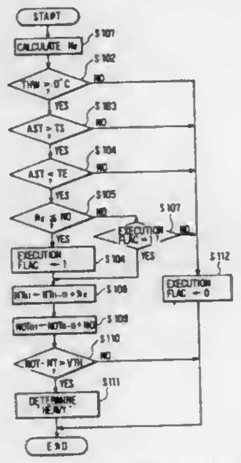
Yoshinori Maegawa, and Hisashi Iida, both of Kariya, Japan, assignors to Denso Corporation, Kariya, Japan

Filed Nov. 26, 1996, Ser. No. 756,490

Claims priority, application Japan, Dec. 6, 1995, 7-317851

Int. Cl.^{6} F02P *5/15;* **G01N** *33/22*

U.S. Cl. 123—418 **12 Claims**



1. A fuel property detecting system for an internal combustion engine, comprising:
- speed detecting means for detecting a rotation speed of an internal combustion engine;
- speed integrating means for integrating the engine speed detected by said speed detecting means for a predetermined period of time after a start of said internal combustion engine; and
- volatility determining means for determining the volatility of fuel fed to said internal combustion engine, on the basis of an integrated value of said engine speed integrated by said speed integrating means in relation to a predetermined determination value.

5,711,273
METHOD FOR CONTROLLING THE OPERATION OF A DRIVER CIRCUIT IN RESPONSE TO AN ELECTRICAL FAULT CONDITION

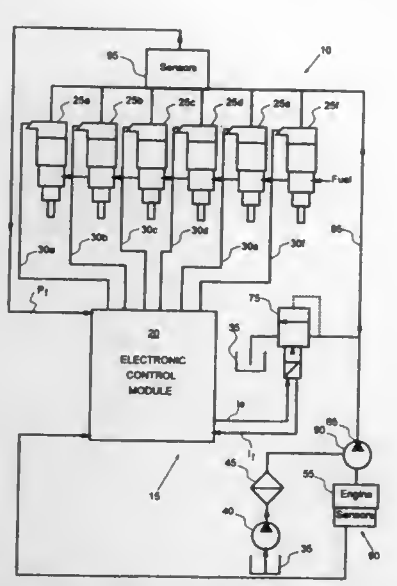
Travis E. Barnes, and Prasad V. Parupalli, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1995, Ser. No. 522,214

Int. Cl.^{6} F02M *47/02*

U.S. Cl. 123—446 **5 Claims**

1. A method for controlling the operation of a driver circuit in response to an electrical fault condition, the driver circuit energizing an electrohydraulic device that regulates the pressure of fluid, the method comprising the steps of:
- producing a desired fluid pressure signal (P_d) indicative of the magnitude of a desired fluid pressure;
- receiving the desired fluid pressure signal (P_d), and producing a desired current signal (I_d);
- receiving the desired current signal (I_d) and responsively regulating the fluid pressure at the desired fluid pressure;
- producing a feedback current signal (I_f); and
- switching from one control strategy to another control strategy to produce the desired electrical current signal (I_d) in response to the feedback current signal magnitude being less than a predetermined value.



5,711,274
SYSTEM AND METHOD FOR REDUCING THE FUEL PRESSURE IN A FUEL INJECTION SYSTEM

Eugen Drummer, Steyr, Austria, assignor to Robert Bosch GmbH, Stuttgart, Germany

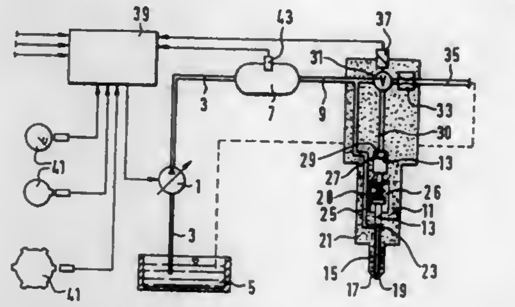
PCT No. PCT/DE95/00713, § 371 Date Oct. 25, 1996, § 102(e) Date Oct. 25, 1996, PCT Pub. No. WO96/19659, PCT Pub. Date Jun. 27, 1996

PCT Filed Jun. 1, 1995, Ser. No. 696,870

Claims priority, application Germany, Dec. 20, 1994, 44 45 586.0

Int. Cl.^{6} F02M *41/00*

U.S. Cl. 123—456 **15 Claims**



1. A method for reducing the fuel pressure in a fuel injection system for internal combustion engines, in which the fuel injection system includes a pump (1) for feeding fuel into a common rail (7), pressure lines (9) that lead to first and second pressure chambers in injection valves (11), a valve member in said injection valve, a control valve (31) on the injection valve (11), said method comprising controlling said control valve to control an injection through the injection valve (11) which for the control connects said second pressure chamber (29, 323) of the injection valve (11) that acts upon a valve member (15) of the injection valve (11) with the common rail (7) or a relief line (35) into a supply tank (5), controlling the pressure in the common rail (7), after shutoff of the engine to terminate fuel feeding by the pump (1), controlling the control valve to relieve the supply tank (5) via the control valve (31), connecting the control valve (31) to the pressure chamber (29, 323) of the injection valve (11) briefly with the common rail (7) or the supply tank (5) so that the pressure acting upon the valve member (15) of the injection valve (11) in the opening direction remains below an opening pressure of the injection valve (11), and this triggering operation of the control valve (31, 323) is repeated until a desired reduced pressure in the common rail (7) is attained.

5,711,275
FUEL SUPPLY APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

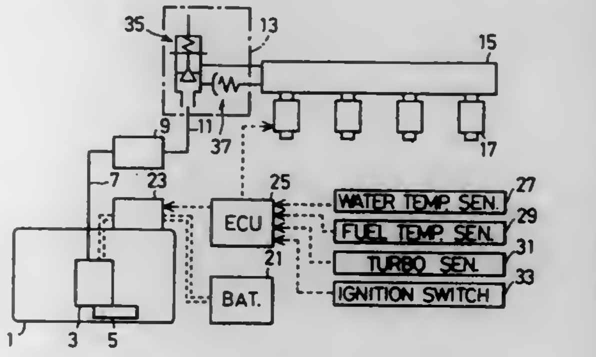
Kazuji Minagawa, Tokoname; Kiyotoshi Oi, Toyohashi, and Katsumi Arai, Tatebayashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Kyosan Denki Co., Ltd., Tokyo, both of Japan

Continuation-in-part of Ser. No. 694,065, Aug. 8, 1996. This application Aug. 21, 1996, Ser. No. 700,868

Claims priority, application Japan, Sep. 1, 1995, 7-225241

Int. Cl.^{6} F02M *41/00*

U.S. Cl. 123—458 **28 Claims**



1. A fuel supply apparatus for an internal combustion engine, said apparatus comprising;
- a fuel injector for injecting fuel into said engine;
- a fuel rail for supply fuel to said fuel injector;
- a fuel pump for pressurizing and discharging fuel to said fuel rail through a fuel supply passage;
- a pressure control valve for maintaining fuel pressure in said fuel rail on a downstream side thereof at a predetermined value;
- a bypass passage connecting an upstream side of said pressure control valve to said downstream side of said pressure control valve so as to bypass said pressure control valve; and
- a bypass valve for opening or closing said bypass passage, wherein said bypass valve releases pressurized fuel from said upstream side to fuel rail on said downstream side.

5,711,276
AGGREGATE FOR FEEDING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE, AND METHOD OF PRODUCING THE SAME

Kurt Frank, Schelmenwasen 14, 73614 Schorndorf, Germany

Filed Nov. 13, 1996, Ser. No. 748,390

Claims priority, application Germany, Dec. 30, 1995, 195 49 196.3

Int. Cl.^{6} F02M *37/04;* **F01D** *1/02*

U.S. Cl. 123—495 **12 Claims**

1. An aggregate for feeding fuel from a supply tank to an internal combustion engine of a motor vehicle, comprising a feed pump having a disk-shaped feeding member; and means for forming a pump chamber in which said feeding member rotates, said means including a first wall part and a second wall part arranged at a distance from one another in direction of a rotary axis of said feeding member, at least one of said wall parts having a ring portion formed for a radial limiting and connectable with the other of said wall parts, said first and second wall parts and said feeding member which is preliminarily increased in volume are positioned

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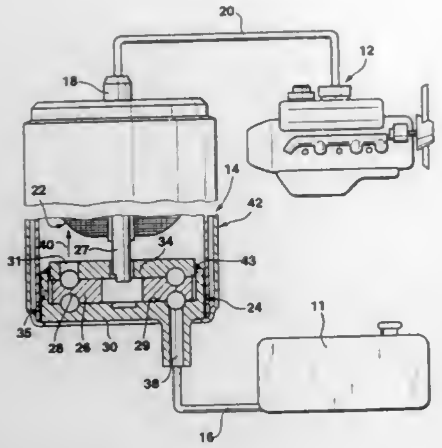


relative to one another without a gap, and thereafter said first and second wall parts are fixedly connected with one another.

5,711,277
ACCUMULATING FUEL INJECTION APPARATUS

Tsutomu Fuseya, Yokohama, Japan, assignor to Isuzu Motors Limited, and Hirohisa Tanaka, both of Tokyo, Japan

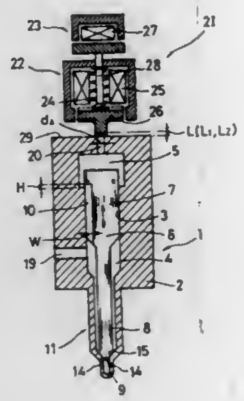
PCT No. PCT/JP96/02218, § 371 Date Feb. 6, 1997, § 102(e) Date Feb. 6, 1997, PCT Pub. No. WO97/08452, PCT Pub. Date Mar. 6, 1997

PCT Filed Aug. 6, 1996, Ser. No. 776,698

Claims priority, application Japan, Aug. 29, 1995, 7-242387

Int. Cl.^{6} F02M *37/04*

U.S. Cl. 123—496 **10 Claims**



1. An accumulating fuel injection apparatus comprising an injection nozzle provided with injection ports in a lower end portion thereof, a needle valve adapted to open and close said injection ports, a balancing chamber adapted to apply a fuel pressure to said needle valve, a supply passage for supplying a fuel from a fuel supply port formed in said injection nozzle to said balancing chamber, a discharge passage for discharging the fuel from said balancing chamber, a solenoid valve adapted to open and close said discharge passage, and a means for controlling the lift of said solenoid valve; the lift of said solenoid valve, the opening area of said discharge passage which increases and decreases in accordance with lift of said solenoid valve, the lift of said needle valve which increases and decreases in accordance with the opening area of said discharge passage, the opening area of said supply passage which increases and decreases in accordance with the lift of said needle valve, and the degree of opening of said injection ports which increases and decreases in accordance with the lift of said needle valve being controlled by an operation of said lift control means.

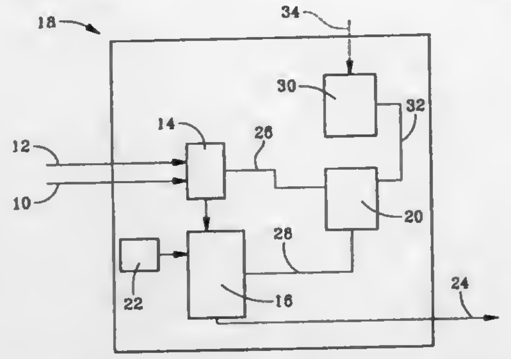
5,711,278
CIRCUIT AND METHOD FOR SYNCHRONIZING A FUEL PUMP OR THE LIKE

A. John Santos, Farmington, and Mark E. LaCroix, New Hartford, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Feb. 29, 1996, Ser. No. 608,837

Int. Cl.^{6} F02M *37/04*

U.S. Cl. 123—501 **15 Claims**



1. A method for electronically synchronizing a fuel injector pump with respect to an engine having a rotating member, the method comprising:

sensing a reference signal having a reference pulse characterizing an angular position of the rotating member, the reference pulse having a reference pulse angular frequency;

sensing an angular clock signal having an angular clock pulse characterizing the speed of rotation of the rotating member and having an angular clock pulse angular frequency greater than the reference pulse frequency; and

producing an output signal having a output pulse shifted angularly with respect to the reference pulse of the reference signal by an integral number of angular clock pulses to provide a coarse adjustment.

5,711,279
FUEL SYSTEM

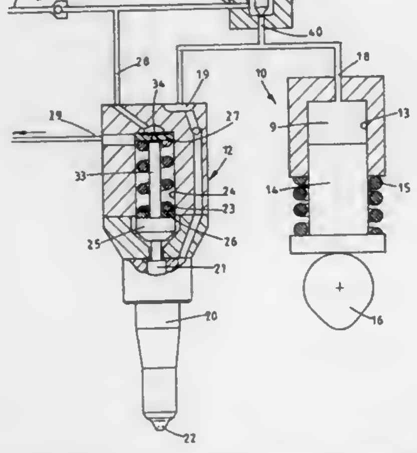
Alan Conway Green, Maidstone, and John William Stevens, Gillingham, both of United Kingdom, assignors to Lucas Industries, PLC, England

Filed Feb. 6, 1996, Ser. No. 595,871

Claims priority, application United Kingdom, Feb. 11, 1995, 9502671

Int. Cl.^{6} F02M *41/00;41/16*

U.S. Cl. 123—506 **9 Claims**



1. A fuel injection system for supplying fuel to an internal combustion engine comprising a cam actuated plunger pump having a pump chamber, an outlet from the pump chamber, a fuel injection nozzle, the nozzle having a fuel pressure actuated valve member, means arranged to resiliently bias the valve member to a closed position in which it is in engagement with a seating, the valve member being arranged to be lifted from the seating to allow fuel flow through a nozzle outlet when the fuel pressure within the pump chamber attains a sufficiently high value and a spill valve operable to spill fuel from the pump chamber thereby lowering the pressure therein and allowing closure of the valve member of the nozzle to prevent further flow of fuel through said outlet, wherein said resilient means comprises a coiled compression spring one end of which engages an abutment movable to compress the spring as the valve member is moved away from the seating, the other end of the spring engaging a piston slidable in a bore, the end face of the piston remote from the spring, when the spill valve is opened, being subjected to the pressure of fuel flowing through the spill valve thereby to displace the piston to facilitate closure of the valve member onto its seating.

5,711,280
METHOD AND APPARATUS FOR TRIGGERING AN ELECTROMAGNETIC CONSUMER

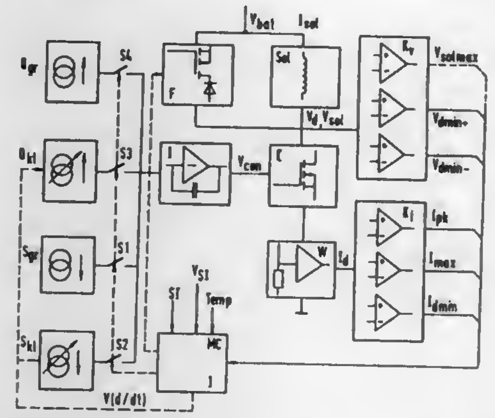
Ralf Foerster, Regensburg; Hartmut Gerken, Nittendorf, and Manfred Weigl, Berg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 9, 1996, Ser. No. 711,095

Claims priority, application Germany, Sep. 7, 1995, 195 33 131.1

Int. Cl.^{6} F02M *37/04*

U.S. Cl. 123—506 **7 Claims**



1. In an apparatus for triggering a power end stage for a magnet valve for a Diesel injection pump in an internal combustion engine, connected in series with the magnet valve to a supply voltage, the improvement comprising:

a free-running circuit connected to the magnet valve for switching over from low to high free-running voltage;

a timing control circuit;

an integrator having an input and having an output connected to the end stage for supplying an output voltage as a control voltage for the end stage;

at least one small and one large current source and one small and one large current sink supplying output currents;

switches connected between said current sources and current sinks and said input of said integrator, for delivering the output currents of said current sources and current sinks to said input of said integrator for rapidly and slowly charging and discharging said integrator; and

a control circuit connected to said switches, connected to said free-running circuit and associated with said timing control circuit, for actuating said switches and a switchover of said free-running circuit as a function of a control signal, of certain values of a voltage applied to the end stage or to the magnet valve, and of certain values of a current flowing through the end stage or the magnet valve, and of said timing control circuit specifying a certain time period.

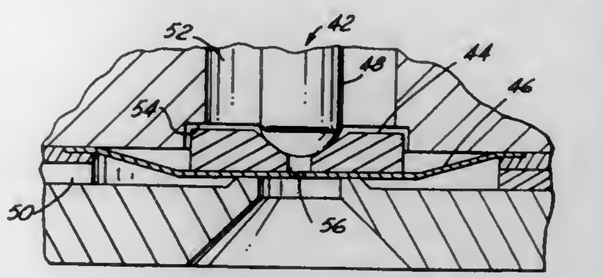
5,711,281
FUEL INJECTOR WITH AIR ATOMIZATION

Jack R. Lorraine, Newport News, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Oct. 24, 1996, Ser. No. 736,152

Int. Cl.^{6} F02M *23/00*

U.S. Cl. 123—531 **8 Claims**



1. A fuel injector with air atomization for obtaining a desired amount of air flow with fuel flow, said fuel injector having an injector valve stem, and said injector valve stem movable over a displacement length, the fuel injector with air atomization comprising:

an air passage via which atomizing air enters;

a fuel passage via which atomized fuel exits;

means for moving the valve stem from its normal position over the displacement length to its end position;

spring means;

an injector seat mounted on said spring means for holding the injector seat to the injector valve stem from its normal position to a position intermediate said normal and said end positions for opening the air passage allowing atomizing air to flow;

a stop means for halting movement of the injector seat prior to the injector valve stem moving to its end position, opening up the fuel passage; and

bias means for returning the injector valve stem to its normal position closing the air and fuel passages.

5,711,282
METHOD FOR FORMING A FUEL-AIR MIXTURE AND FUEL SUPPLY DEVICE FOR AN INTERNAL COMBUSTION ENGINE

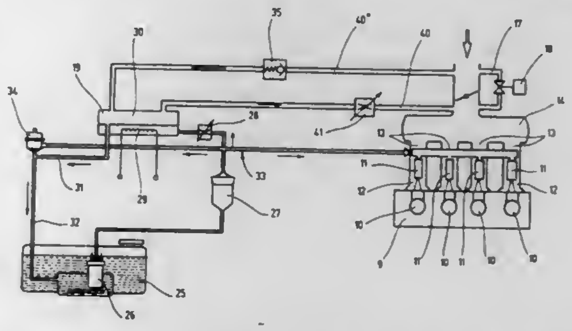
Ernst-Walter Lang, Gerlingen, and Klaus Joos, Walheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 14, 1996, Ser. No. 663,723

Claims priority, application Germany, Jun. 17, 1995, 195 22 075.7

Int. Cl.^{6} F02M *21/02;31/125;69/30;71/04*

U.S. Cl. 123—549 **17 Claims**



1. A method for forming a fuel-air mixture for an internal combustion engine during a warmup phase of the engine after starting the engine, which comprises,

supplying fuel to be supplied to an engine from a fuel tank to a vaporizer at a relatively low temperature of the engine,

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at least partially vaporizing the fuel in the vaporizer at a temperature from 60° to 80°,

supplying the vaporized fuel to an air input to the engine and mixing the vaporized fuel with the air aspirated by the engine, returning the non-vaporized fuel components to said fuel tank whereby only highly volatile fuel components exist for forming the fuel-air mixture directed to the engine.

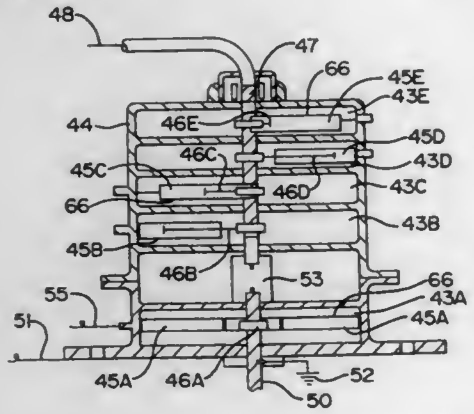
5,711,283
SYSTEM FOR COMBUSTING FUEL

Vernon A. Trigger, deceased, late of Palms, Mich., by Vera W. Trigger, legal representative, assignor to Jerry B. Morof, Bloomfield; Angelo Lotti, Beverly Hills, and Vera W. Trigger, Palms, all of Mich.

Division of Ser. No. 476,619, Jun. 7, 1995, Pat. No. 5,503,133, which is a division of Ser. No. 141,235, Oct. 22, 1993, Pat. No. 5,423,306. This application Feb. 29, 1996, Ser. No. 608,715

Int. Cl.^{6} F02P *15/68*

U.S. Cl. 123—637 **20 Claims**



1. A combustion chamber for an energy generating device comprising:

a cylinder for an energy generating device;

a cylinder head located adjacent said cylinder;

an anode extending through the cylinder head, the anode being operable to carry and deliver a positive charge to the cylinder;

a piston located within the cylinder, the piston being negatively charged and operable to reciprocate relative to the cylinder head; and

a varying gap of combustible matter, the gap at least partially defined by the area of space between the anode and the piston.

5,711,284
PAINT BALL PROJECTILE ATTACHMENT DEVICE FOR BOWS

Duane Keenan, Jr., 939 Grove St., Aurora, Ill. 60505

Filed Dec. 14, 1995, Ser. No. 572,034

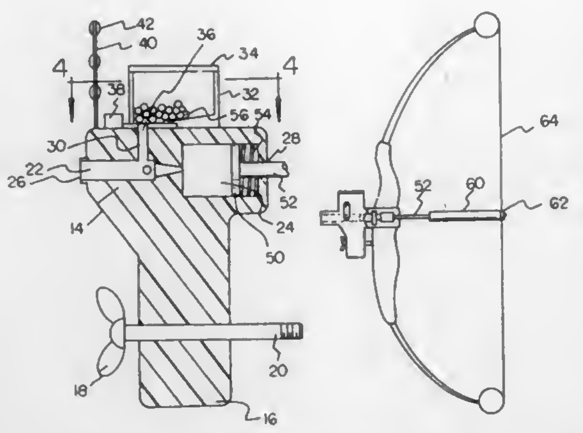
Int. Cl.^{6} F41B *5/14*

U.S. Cl. 124—49 **1 Claim**

1. A paint ball projectile system (**10**) as for bows for securing to a bow to launch paint balls (**56**) comprising, in combination:

a housing (**12**) securable to a bow, the housing (**12**) having a first chamber (**22**) and a second chamber (**24**) therein, the first chamber (**22**) integral, and in pneumatic communication, with the second chamber (**24**), the first chamber (**22**) having an opening (**26**) extending out a front end of the housing (**12**), the second chamber (**24**) having an opening (**28**) extending out a back end of the housing (**12**), the housing (**12**) having a top end having a downwardly extending chamber (**30**) adjoining the first chamber (**22**);

a bin (**32**) secured to the top end of the housing, the bin (**32**) having an opening (**36**) in a lower portion thereof, the opening (**36**) aligning with the downwardly extending chamber (**30**) of the top end;



an internal piston (**50**) and an internal spring (**54**) there adjacent and with an associated shaft (**52**) having an internal end slidably disposed within the second chamber (**24**) of the housing (**12**), the shaft (**52**) extending through the opening (**28**) with an external end couplable to a bow string for effecting the movement thereof;

a plurality of paint balls (**56**) positioned within the bin (**32**), the plurality of paint balls (**56**) dispensed through the opening (**36**) in the bin (**32**), the paint balls (**56**) singlely positionable within the first chamber (**22**) for ejection out the opening therein by the forward movement of the internal piston, internal spring and shaft;

a release door (**38**) pivotally secured to the lower portion of the bin (**32**), the release door optionally covering the opening therein; and

a sight device secured to the top end of the housing, the sight device having a plurality of sight pins therein, the sight device serving to provide a means for viewing a target.

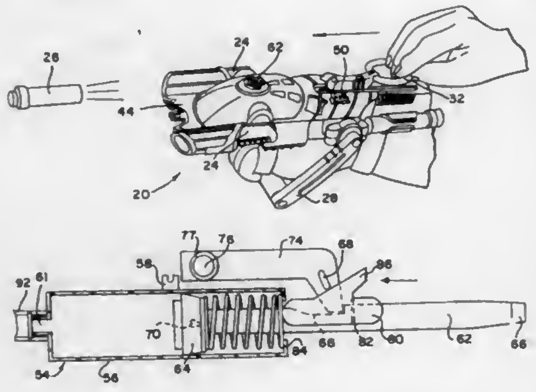
5,711,285
WRIST-MOUNTED PROJECTILE LAUNCHER

Randolph C. Stewart, Cincinnati, Ohio; Daniel G. Meiser, Butler, Ky., and Robert L. Brown, Cincinnatti, Ohio, assignors to Hasbro, Inc., Pawtucket, R.I.

Filed Jul. 29, 1996, Ser. No. 681,807

Int. Cl.^{6} F41B *11/14*

U.S. Cl. 124—67 **22 Claims**



17. A wrist-mounted projectile launcher comprising:

a housing;

a wrist mounting connector joined to the housing;

a projectile launch tube pivotally joined to the housing for movement between an inoperative position and an operative position;

a launch tube spring biasing the launch tube toward the operative position;

a sear for releasably engaging the launch tube in the inoperative position; and

a launcher mounted to the housing and in communication with the launch tube.

5,711,286
GAS-POWERED REPEATING PISTOL

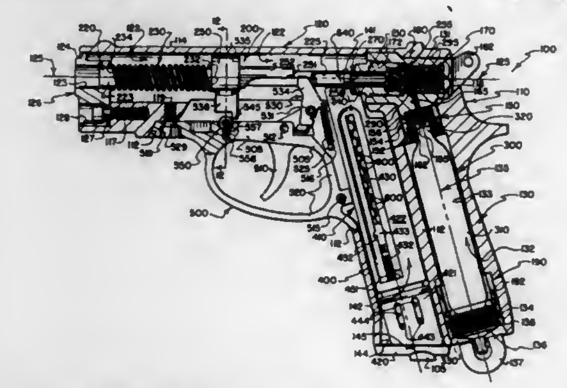
Aleksei Lvovich Petrosyan, Moscow; Aleksei Borisovich Shipachov, Kazan, and Andrei Borisovich Kapustin, Tversk Region, all of Russian Federation, assignors to ANICS Corp., Cleveland, Ohio

Filed May 31, 1996, Ser. No. 655,799

Claims priority, application Russian Federation, Jun. 2, 1995, 95109061; Jun. 2, 1995, 95109062; Mar. 6, 1996, PCT/RU96/00052

Int. Cl.^{6} S41B *11/00*

U.S. Cl. 124—73 **67 Claims**



1. A gas-powered gun, comprising:

a) frame means for defining 1) an elongate barrel passage having a rear end region and having a front end region that defines a front opening, 2) an elongate gas supply passage having one end that communicates with the rear end region of the barrel passage, having an opposite end that is configured to receive a removable gas passage cover, and having a central portion that is configured to receive a cylinder of compressed gas that can be inserted therein when the cover is removed, and 3) an elongate magazine passage that extends side-by-side with the gas supply passage and intersects with the barrel passage at a loading station that is spaced forwardly along the barrel passage from the rear end region of the barrel passage;

b) valve means disposed in the rear end region of the barrel passage for receiving pressurized gas from the cylinder of compressed gas carried in the central portion of the gas supply passage and for dispensing a burst of compressed gas when a forwardly-biased movable valve member of the valve means is briefly moved rearwardly a short distance;

c) barrel means including an elongate barrel extending through the barrel passage and being reciprocally movable therein for defining a projectile passage that extends from a muzzle end region of the barrel through a central region of the barrel to a breech end region of the barrel, with the muzzle end region being slidingly connected to the frame near the front opening of the barrel passage, with the breech end region being slidingly connected to the valve means and being configured to receive within a breech end region of the projectile passage gas that is dispensed in a burst by the valve means, with the central region defining a hammer mass that extends circumferentially about the projectile passage, with a loading port that communicates with the projectile passage and that faces toward the magazine passage being defined through a thin bottom wall portion of the breech end region of the barrel, with the barrel being reciprocally movable relative to the frame means to permit the loading port to move in forward and rearward directions through the loading station, and with the barrel being biased rearwardly into engagement with the movable valve member toward a position wherein the loading port is located rearwardly with respect to the loading station;

d) trigger means carried by the frame means and being engageable with the barrel means for being operated to move the rearwardly-biased barrel forwardly a sufficient distance to move the loading port through the loading station, and for thereafter releasing the rearwardly-biased barrel to travel rearwardly to impact the forwardly-biased movable valve member to move the movable valve member briefly rearwardly to cause a burst of pressurized gas to be dispensed into the breech end region of the projectile passage; and,

e) an elongate magazine having a foot end and a dispensing end, and being configured 1) to define an interior magazine chamber capable of receiving therein a plurality of BB pellets, with the magazine chamber having a dispensing passage located near the dispensing end of the magazine, 2) to be insertable dispensing-end-first into the magazine passage to a fully inserted position wherein the dispensing end of the magazine is positioned near to but spaced from the thin bottom wall portion of the breech end region of the barrel, 3) to define exit door means for normally closing the dispensing passage to retain BB pellets within the magazine chamber, and for moving to an open position when the magazine is moved into the fully inserted position, and 4) to define follower means within the magazine chamber a) for biasing BB pellets in the magazine chamber along the dispensing passage toward the door, and b) for biasing a BB pellet that passes at least partially out of the dispensing passage when the door is opened into engagement with the thin bottom wall portion of the breech end region of the projectile passage at the loading station so that, when the loading port of the projectile moves through the loading station in response to forward movement of the barrel due to operation of the trigger means, the BB pellet that has been biased into engagement with the thin bottom wall portion of the breech end region of the barrel will be caused to move through the loading port into the projectile passage for being contained therein briefly until being fired through the projectile passage for discharge from the muzzle end region of the barrel in response to said burst of pressurized gas being dispensed into the breech end region of the projectile passage when the rearwardly-biased barrel is released by the trigger means and moves rearwardly to impact and move the movable valve member a short distance rearwardly.

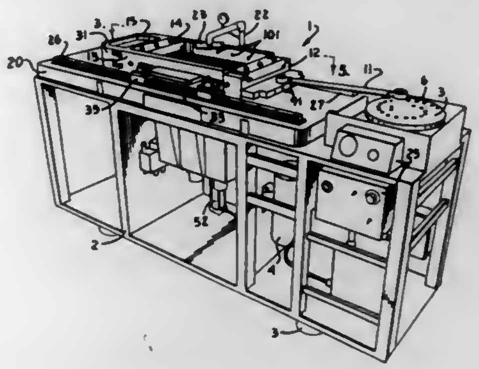
5,711,287
RECIPROCATING SLURRY SAW

Radleigh J. Speer, 4104 W. 66th St., Prairie Village, Kans. 66208

Filed Aug. 14, 1996, Ser. No. 699,073

Int. Cl.^{6} B28D *1/06*

U.S. Cl. 125—16.01 **40 Claims**



1. A slurry saw including a blade head with a pair of opposing side members positioned on either side of a generally rectangular cutting area with a blade pack positioned within said cutting area, the blade head being attached to a plurality of bearing housings via respective bearing mounts, each said bearing housing being, in turn, attached to a respective one of a pair of spaced rails such that the blade head is supported by said bearing housings such that it can be linearly reciprocated along the rails, the improvement comprising:

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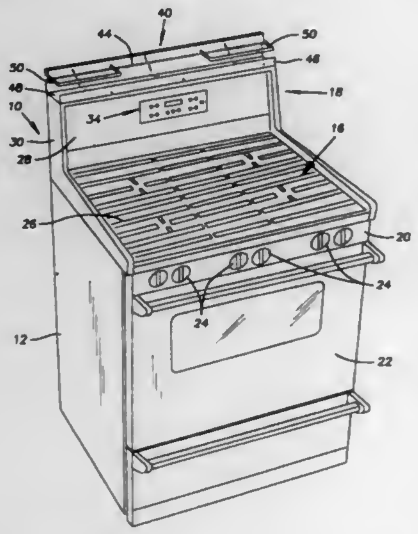
at least one of said bearing mounts comprises a rotatable bearing mount having a first plate attached to a respective one of said blade head side members and a second plate attached to a respective one of said bearing housings, said first and second plates of said rotatable bearing mount being attached to each other such that they are rotatable with respect to each other.

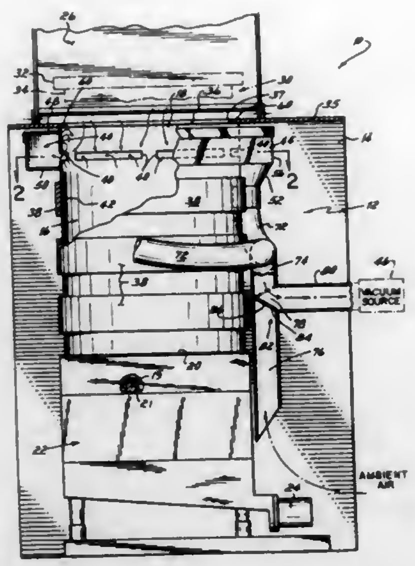
5,711,288
COOKING RANGE MOUNTED SPICE RACK
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 3, 1995, Ser. No. 552,382
Int. Cl.^{6} F24C *15/10*
U.S. Cl. 126—37 R **20 Claims**



1. A range, comprising:
a cabinet including a rear wall, a pair of lateral side walls, a cook top extending between said panels, and a splash guard extending upwardly from said cook top, said cook top having a front wall, a top wall including at least one heating element, and a pair of end walls;
a shelf for storage of cooking ingredient containers adapted to mount to said cabinet, said shelf comprising:
a bottom panel delimited by a front edge and a rear edge;
a front panel extending upwardly from said front edge;
a rear panel extending upwardly from said rear edge,
wherein said bottom, front, and rear panels cooperate to define an elongated channel for receipt of ingredient containers, and said bottom panel overlies said splash guard such that containers received within said channel are isolated from said at least one heating element to minimize heating thereof.

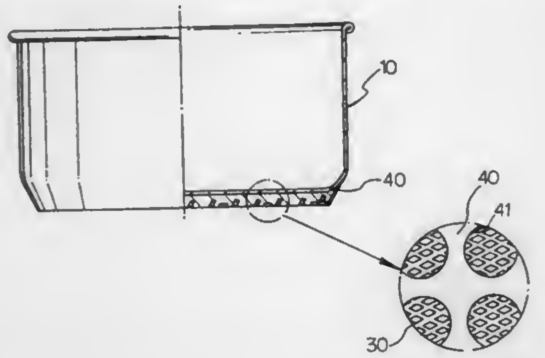
5,711,289
VAPOR REMOVAL SYSTEM FOR BULK ADHESIVE HANDLING SYSTEMS
Gregory J. Gabryszewski, Lithonia, Ga., assignor to Nordson Corporation, Westlake, Ohio
Filed Jan. 17, 1995, Ser. No. 373,045
Int. Cl.^{6} F27B *14/00;14/12*
U.S. Cl. 126—284 **28 Claims**

1. A vapor removal system comprising:
an apparatus including a hopper sized to receive material to be melted, said hopper having an open upper end, a side wall, and a deflector projecting inwardly over said open upper end of said hopper and along the entire perimeter thereof, said deflector adapted to deflect downwardly gas moving upwardly along said side wall of said hopper;
a melting unit for melting the material within said hopper;



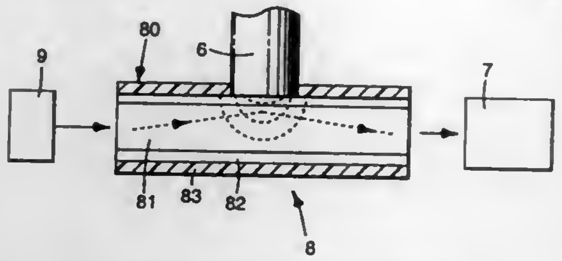
a plurality of vent holes formed in said side wall of said hopper, said vent holes being adapted to withdraw gas from said hopper; and
a vacuum source operatively interconnected to said plurality of vent holes such that gas is withdrawn through each of said vent holes.

5,711,290
BOTTOM STRUCTURE FOR MULTI-PLY IMPACT BONDED BOTTOM COOKWARES
Myung-Suk Kim, Hyundae Apartment 112-603, 297, Abgujeong-Dong, Kangnam-Ku, Seoul, Rep. of Korea
Filed May 23, 1996, Ser. No. 652,801
Claims priority, application Rep. of Korea, May 24, 1995, 95-11250
Int. Cl.^{6} A47J *27/00*
U.S. Cl. 126—390 **5 Claims**



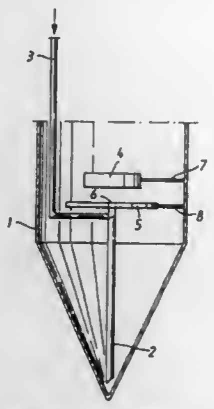
1. A bottom structure for multi-ply impact bonded bottom cookwares comprising a stainless base body and an aluminum ply pressed to the outer bottom of said stainless base body for improving the heat transfer rate of the bottom, further comprising:
means for capsuling an edge portion of said aluminum ply to compensate for the thermal brittleness of said aluminum ply and to prevent said edge portion from being cracked or broken due to the thermal brittleness, said capsuling means being impact bonded to said edge portion of the aluminum ply to form the same plane as the outer surface of the aluminum ply and having at least one opening on its central portion for partially exposing the outer surface of the aluminum ply.

5,711,291
BLOOD PRESSURE TRANSDUCER
Sunsuke Takaki, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
PCT No. PCT/US93/06105, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO94/00051, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 18, 1993, Ser. No. 351,323
Claims priority, application Japan, Jun. 29, 1992, 4-170949; Jun. 1, 1993, 5-130516
Int. Cl.^{6} A61B *5/00*
U.S. Cl. 128—667 **19 Claims**



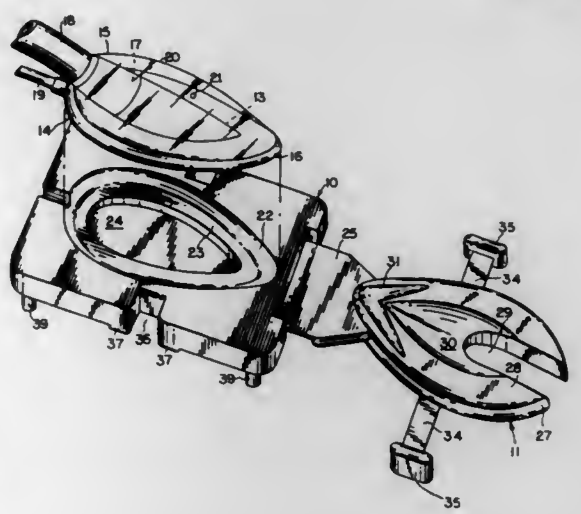
1. A blood pressure transducer system, comprising:
a catheter (**1***a*) having a first end and a second end,
a pressure tube (**6**) connected to one of the ends of said catheter (**1***a*) wherein said pressure tube (**6**) and said catheter (**1***a*) are in fluid communication, and
a pressure transducer (**8**) connected to an end of said pressure tube (**6**), wherein said pressure transducer (**8**) comprises an optical fiber (**80**) made of a transparent elastomer and having a deformable side surface, a first end and a second end, wherein said pressure transducer (**8**) comprises a light source (**9**; **221**) and an optical sensor (**7**; **223**), wherein said pressure tube (**6**) is connected to said optical fiber (**80**) at an intermediate part of said optical fiber (**80**), and wherein said optical sensor (**7**; **223**) is capable of detecting the change of the intensity of the light of said light source (**9**; **221**) resulting from the change of a transmission factor of the optical fiber in response to the change of pressure exerted through said pressure tube (**6**) on the deformable side surface of said optical fiber (**80**).

5,711,292
MEANS FOR PRODUCING AN AEROSOL
Nils Hammariund, Sollentuna, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden
PCT No. PCT/SE95/00087, § 371 Date Sep. 11, 1996, § 102(e) Date Sep. 11, 1996, PCT Pub. No. WO95/25556, PCT Pub. Date Sep. 28, 1995
PCT Filed Jan. 31, 1995, Ser. No. 716,203
Claims priority, application Sweden, Mar. 18, 1994, 9400927
Int. Cl.^{6} A61M *11/00*
U.S. Cl. 128—200.21 **10 Claims**



1. A device for producing a fine non-homogeneous aerosol, comprising a liquid container (**1**), a liquid-conducting pipe (**2**) whose outlet orifice (**6**) is located in a first disc (**5**), whose other end extends towards the bottom of the container (**1**) and which defines a passageway, wherein the outlet orifice (**6**) of the liquid-conducting pipe (**2**) in the first disc (**5**) is located in the proximity of, and directed generally at right angles to, a second disc (**4**), wherein the device includes a gas conduit (**3**) which is connected to a source of pressurized gas outside the container (**1**) and terminates in the pipe (**2**) near the outlet orifice (**6**), the second disc (**4**) is smaller than the first disc (**5**), wherein the gas conduit (**3**) directs gas to the pipe (**2**) and thereby draws liquid through the passageway and generates, adjacent the pipe outlet orifice, a first aerosol which is directed towards the second disc (**4**), wherein the large liquid particles of the first aerosol impinge on the second disc (**4**) and form thereon a film which spreads radially over the second disc (**4**) and is therewith thinned out and breaks down at the border edges of the second disc (**4**) to form droplets which form in the gas a second non-homogeneous aerosol which combines with a portion of the first aerosol that does not impinge on the second disc (**4**).

5,711,293
FORMING TOOL FOR USE WITH A LARYNGEAL MASK
Archibald Ian Jeremy Brain, Sandford House, Fan Ct. Gardens, Longcross Road, Chertsey, Surrey KT16 0DJ, United Kingdom
Filed Jan. 24, 1996, Ser. No. 590,488
Int. Cl.^{6} A61M *16/00*
U.S. Cl. 128—200.24 **30 Claims**



1. A tool for forming to a predetermined shape the fully deflated profile of a laryngeal mask, wherein the mask comprises an airway tube connected to a backplate having peripherally continuous connection in essentially a single plane to a surrounding inflatable peripheral ring which must be deflated for insertion in a patient via the throat, said ring having means for selective inflation thereof, to establish sealed airway-tube communication exclusively through the backplate to the trachea, said tool comprising:
a base member having a flat upper surface and a contoured peripherally continuous concave recess within confines of said upper surface, said recess conforming generally to the contour of said ring in its inflated state and on one side of said plane; and
a closure member having a convexly contoured lower peripheral surface conforming generally to the predetermined shape of said ring in its deflated state and on the other side of said plane, said members being adapted for registration of their respective concave and convex contours with the ring of an interposed laryngeal mask, whereby the predetermined shape of the deflated profile can be achieved by squeezing compression of said members against the interposed ring in the course of fully deflating said ring.

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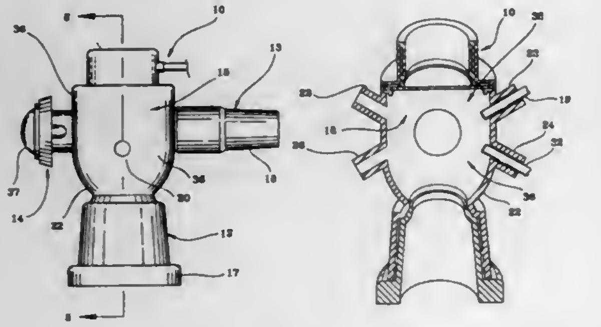
5,711,294
VENTILATOR MANIFOLD HAVING CLEANING PORTS AND METHOD OF USE THEREOF

Kok-Hiong Kee, St. Louis, and Ari M. Bai, University City, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 21, 1994, Ser. No. 360,499

Int. Cl.^{6} A62B *9/04;7/10;19/00;23/02*

U.S. Cl. 128—202.27 **18 Claims**



12. A method of cleaning a manifold having an interior chamber and a plurality of ports, including a first port for attachment to a tracheal tube, a second port for connection to a breathable gas source, a third port for attachment of accessory devices thereto, a fourth port for weaning a patient off the respiratory support system, and at least one additional port sized for directly accessing and cleaning the interior chamber with at least one cleaning device while maintaining Positive End Expiratory Pressure, the method comprising the steps of:

a) connecting said manifold to a tracheal tube which is intubating a patient and a breathing gas source;
b) ventilating the patient with PEEP;
c) uncapping the at least one additional port while PEEP is being delivered to the patient;
d) cleaning the interior chamber with the at least one cleaning device; and
e) recapping the at least one additional port after completion of said cleaning step the method being performed without disturbing patient ventilation.

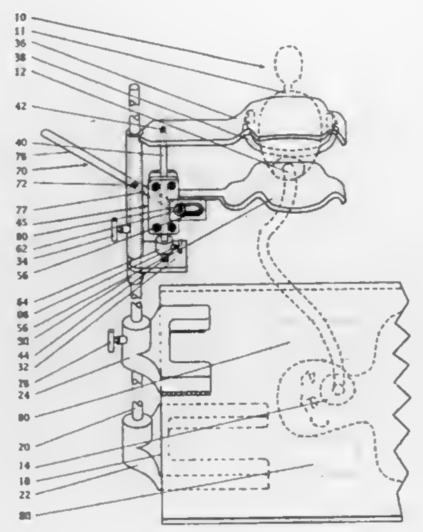
5,711,295
RESUSCITATION DEVICE

Robert E. Harris, II, 207A Lytle Rd., Rossville, Ga. 30741

Filed Apr. 19, 1996, Ser. No. 635,375

Int. Cl.^{6} A61M *16/00*

U.S. Cl. 128—202.28 **2 Claims**



1. A resuscitation device for resuscitating a patient, comprising

a an apparatus comprising
  a' an air bag of predetermined size
  b' a valve of predetermined size
  c' a mask of predetermined size
  d' an endotracheal tube of predetermined size,

said mask and said endotracheal tube being capable of being secured to said patient and being securely joined to said bag and to said valve by tubing of predetermined size and length,

b a bed for supporting the patient,
c a supply of air and a supply of oxygen
d manually operable mechanical means for safely securing said apparatus in conjunction with said patient, and alternately compressing and releasing the air bag whereby a predetermined amount of air or oxygen is alternately forced into and released from a patient's lungs, said mechanical means comprising
  a' a portable stand comprising
    a" a vertical column,
    b" a bottom horizontal clamp segment
    c" a vertically movable, slidably mounted upper horizontal clamp segment,
    d" means for securing said upper horizontal clamp to said vertical column at predetermined locations, said vertical column, being of predetermined size and length, and being integral to said bottom horizontal clamp segment, extends upward from said bottom clamp segment through said upper horizontal clamp segment,
  b' means for clamping said stand to the bed,
  c' a slidable carriage comprising
    a" a tubular body of predetermined size and length having a base and having an upper end integral thereto and being mounted on said column
    b" a horizontal flat platform having a top surface comprising a central area, said platform of predetermined dimensions, integral to said tubular body, and located at the base of said tubular body,
    c" an upper horizontal hand having a bottom surface, integral to said tubular body and located at the upper end of said tubular body,
    d" straps attached to the bottom surface of said upper horizontal hand,
  a square shaped vertical post of predetermined size and length located in the central area of the top surface of said platform and extending vertically to the bottom surface of said upper horizontal hand,
  e' means for releasably securing said post to said platform and to said upper hand,
  f' a rectangularly shaped conveyor comprising
    a" a plurality of bearings having bearing stems
    b" a front cover,
    c" a back cover,

said bearings, held in horizontal position between said front cover and said back cover by the bearing stems extending through the front cover and the back cover, said conveyor being mounted on said post with the bearings being located on opposite sides of said post for vertical movement on the post, said conveyor further comprising

    d" a lower horizontal hand integral to said conveyor and extending horizontally to a position directly beneath the location of said upper hand,
    e" boxed horizontal twin bearing races having a raised divider between said races,
    f" twin bearings having a common stem on which said bearings are mounted in conjunction with said boxed horizontal twin bearing races,
  g' a hand lever of predetermined size and length pivotally attached at a predetermined location to said carriage, having an end of said lever pivotally attached to said stem of said twin bearings, said lever further having a handle on an opposite end of said lever whereby manual downward pressure on said handle end of said lever will cause said lower hand to advance upward toward the bottom surface of said upper hand, and upward manual pressure on said handle will cause said lower hand to retreat from the bottom surface of said upper hand, said bag apparatus being positioned between said upper hand and said lower hand, and held in place by the straps attached to said upper hand, whereby manual upward and downward pressure on said handle end will cause said bag apparatus to alternately force said air or oxygen into a patient's lungs and to eject said air or oxygen from a patient's lungs,

said device further comprising means for attaching the mechanical means to said bed.

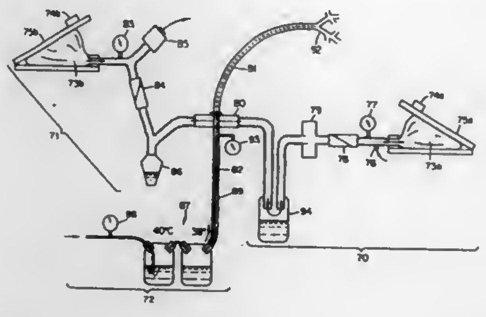
5,711,296
CONTINUOUS POSITIVE AIRWAY PRESSURE SYSTEM

Theodor Kolobow, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 85,948, Jul. 6, 1993, Pat. No. 5,429,127, which is a continuation-in-part of Ser. No. 878,784, May 6, 1992, Pat. No. 5,305,740, which is a continuation-in-part of Ser. No. 758,824, Sep. 12, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 231,718

Int. Cl.^{6} A61M *16/08*

U.S. Cl. 128—205.13 **14 Claims**



1. A passive continuous positive airway intratracheal pulmonary ventilation apparatus which comprises:

an inspiration limb having an inspiration passageway with a one way valve therein:

an expiration limb having an expiration passageway with a one way valve therein and an exhaust port;

a connector joining an end of each of the inspiration passageway and the expiration passageway so that the inspiration passageway and expiration passageway are in communication with each other;

an endotracheal tube, one end in communication with both the expiration passageway and the inspiration passageway via the connector; and

means for generating a constant positive pressure in each of the inspiration limb and the expiration limb and for maintaining the constant positive pressure at a near equal level in each of the inspiration limb and the expiration limb, the positive pressure generating and maintaining means further comprising a first inflatable bag in communication with the inspiration passageway, a second inflatable bag in communication with the expiration passageway, a throttle valve as said exhaust port to provide a constant expiratory leak during inspiration and expiration and a means for applying a constant force to each of the first and second inflatable bags;

whereby a oxygen containing gas is supplied to a patient via the inspiration passageway and endotracheal tube and expiration flow from said patient is supplied to said expiration passageway via the endotracheal tube and wherein maintaining of the constant positive pressure to a nearly equal level permits a patient to both inhale and exhale at peak inspiratory and expiratory flow rates without a resistance which Would cause patient exhaustion or shortness of breath.

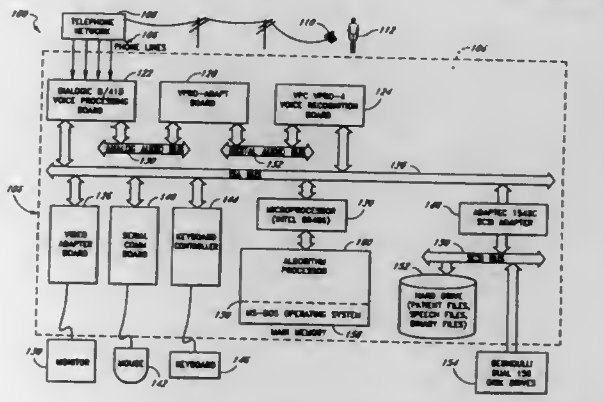
5,711,297
COMPUTERIZED MEDICAL ADVICE SYSTEM AND METHOD INCLUDING META FUNCTION

Edwin C. Iliff, La Jolla, Calif., assignor to First Opinion Corporation, La Jolla, Calif.

Continuation of Ser. No. 176,857, Dec. 29, 1993. This application Jan. 30, 1996, Ser. No. 593,825

Int. Cl.^{6} A61B *10/00*

U.S. Cl. 128—630 **31 Claims**



1. A method of evaluating a problem of a patient over time and providing advice in an automated medical advice system, comprising the steps of:

receiving, through an input device, data indicative of symptoms of a patient;

creating a consultation history database, the database comprising a sequence of records based on the received patient data, each record including the following fields: a date, a medical problem, an anatomical system, and a cause of the problem;

storing the consultation history database in a computer;

analyzing the consultation history database using a match pattern, wherein the step of analyzing comprises:
  accessing a set of records within the consultation history database by use of a time window, the time window comprising a range of preselected dates;
  comparing the match pattern to each of the accessed records; and
  calculating a consultation frequency value from matched records identified by the comparing step; generating a recommendation if the frequency value satisfies a match threshold; and

communicating the recommendation through an output device.

5,711,298
HIGH RESOLUTION INTRAVASCULAR SIGNAL DETECTION

Laszlo Littmann, Charlotte, N.C.; Liming Lau, Menio Park, and Omar Amirana, Palo Alto, both of Calif., assignors to Cardima, Inc., Fremont, Calif.

Continuation of Ser. No. 484,202, Jun. 7, 1995, abandoned, which is a division of Ser. No. 443,657, May 18, 1995, which is a continuation-in-part of Ser. No. 188,619, Jan. 27, 1994, Pat. No. 5,509,411. This application Feb. 24, 1997, Ser. No. 805,901

Int. Cl.^{6} A61B *5/04*

U.S. Cl. 128—642 **3 Claims**

1. A method of detecting electrical activity of a patient's heart from within a blood vessel thereof, comprising:

a) introducing into a patient's vasculature an intravascular catheter which has
  an elongated catheter shaft having proximal and distal ends, a first array of sensing electrodes on a distal section having a relatively small interelectrode spacing and a second array of sensing electrodes on the distal section with an interelectrode spacing which is larger than the interelectrode spacing in the first array, and means to transmit electrical

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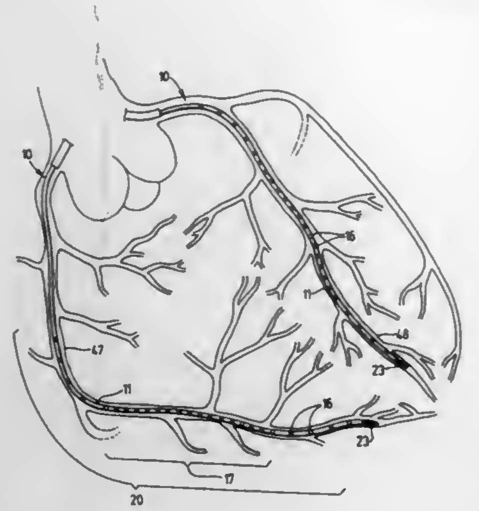


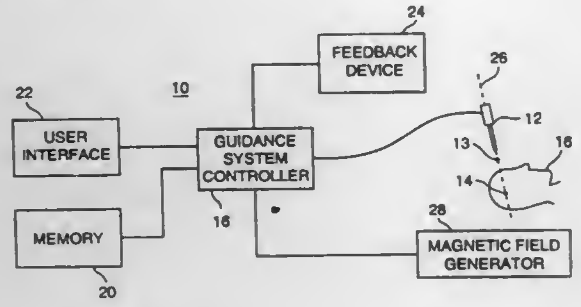
activity sensed by the individual electrodes in the first array and the second array to electrical connector means on a proximal extremity of the shaft;
- b) advancing the catheter within the patient's vasculature until the distal section of such catheter is disposed within a first coronary artery or cardiac vein of the patient's heart;
- c) detecting electrical activity of the patient's heart from within the cardiac vein or the coronary artery by means of the electrodes in the second array of sensing electrodes to detect a general region within the patient's heart where the electrical activity is located; and
- d) detecting electrical activity of the patient's heart from within the cardiac vein or the coronary artery by means of the sensing electrodes in the first array of sensing electrodes to more accurately detect the location within the patient's heart of the electrical activity.

5,711,299
SURGICAL GUIDANCE METHOD AND SYSTEM FOR APPROACHING A TARGET WITHIN A BODY

Kim H. Manwaring, 3440 E. Tonto Dr., Ahwatukee, Ariz. 85044, and Mark L. Manwaring, SW 1430 Wadleigh Dr., Pullman, Wash. 99163

Filed Jan. 26, 1996, Ser. No. 592,053
Int. Cl.^{6} A61B *5/05*

U.S. Cl. 128—653.1 **25 Claims**



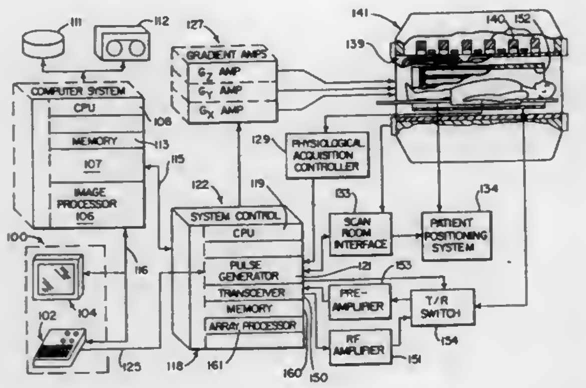
1. A surgical guidance method for approaching a target along a trajectory extending between an initial point and said target, said method comprising the steps of:
- establishing a magnetic field having geometric characteristics relative to said target such that said magnetic field has a predetermined orientation along said trajectory;
- detecting a magnitude of said magnetic field in said predetermined orientation; and
- indicating, in response to said detecting step, a position of a surgical instrument relative to said trajectory.

5,711,300
REAL TIME IN VIVO MEASUREMENT OF TEMPERATURE CHANGES WITH NMR IMAGING

Erika Schneider, Rexford; Harvey Ellis Cline; Ronald Dean Watkins, both of Schenectady, all of N.Y.; Sheila Srinivasan Washburn, New Berlin, Wis., and Christopher Judson Hardy, Schenectady, N.Y., assignors to General Electric Company, Wausksha, Wis.

Filed Aug. 16, 1995, Ser. No. 515,876
Int. Cl.^{6} A61B *8/00*

U.S. Cl. 128—653.2 **12 Claims**



1. A method for producing an image indicative of temperature changes in a subject positioned in an NMR system, the steps comprising
- a) performing a scan by executing an NMR pulse sequence having an echo time (TE_1) to acquire reference NMR data from tissues in the subject;
- b) reconstructing a reference phase image from the acquired NMR data
- c) performing a scan by executing an NMR pulse sequence having an echo time (TE_2) to acquire measurement NMR data from said tissues;
- d) reconstructing a measurement phase image from the acquired measurement NMR data; and
- e) producing a temperature map based on the difference between the measurement phase image and the reference phase image.

5,711,301

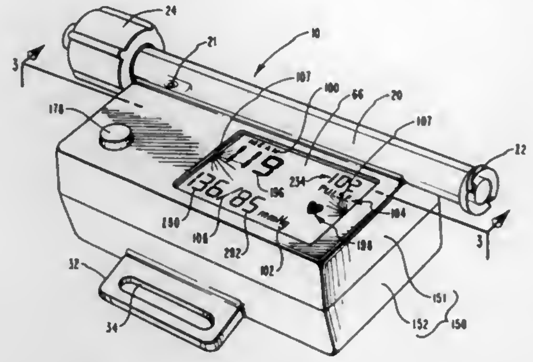
Patent Not Issued For This Number

5,711,302
DISPOSABLE TRANSDUCER WITH DIGITAL PROCESSING AND READOUT

Fred P. Lampropoulos, Sandy; Don C. Kartchner, West Jordan, and Steven R. Taylor, Salt Lake City, all of Utah, assignors to Merit Medical Systems, Inc., South Jordan, Utah

Filed Mar. 3, 1994, Ser. No. 205,321
Int. Cl.^{6} A61B *5/02*

U.S. Cl. 128—672 **25 Claims**



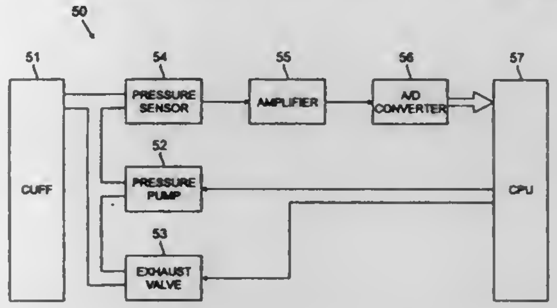
1. A totally self-contained, disposable pressure monitoring apparatus for monitoring and displaying physiological pressures of a patient that are either essentially constant intracompartmental pressures or cyclic hemodynamic pressures, comprising:
- housing means for defining a transducer chamber and comprising a pressure monitoring port means for providing communication of fluid pressures to the transducer chamber;
- transducer means, situated in said transducer chamber so as to be totally self-contained within said housing means and disposable therewith, for sensing said fluid pressures and for outputting an electrical signal proportional to said sensed fluid pressures, said transducer means being placed in fluid communication with said pressure monitoring port means;
- electronic circuit means, electrically connected to said transducer means and mounted within said housing means so as to be totally self-contained within said housing means and disposable therewith, for receiving said electrical signals and for electronically processing said signals, said electronic circuit means comprising digital processor means programmed so as to (1) automatically derive electronic data responsive to the electrical signal sensed by said transducer means so that the derived data will represent either the cyclic hemodynamic or essentially constant intracompartmental physiological pressures of the patient, and so as to (2) automatically alter the output of a digital display responsive to the electrical signal sensed by said transducer means so that depending on whether the electronic data represent the cyclic hemodynamic pressures or the essentially constant intracompartmental pressure of the patient;
- display means, electrically connected to said electronic circuit means and contained within said housing means so as to be totally self-contained within said housing means and disposable therewith, for providing a visual display of the physiological pressures of the patient, said display means responding to said electronic circuit means so as to automatically alter the output of the display so that, in the case of data representing the cyclic hemodynamic pressures, locations are provided on said display for displaying a mean pressure value, a pulse rate value, and systolic and diastolic values, and said display means responding to said electronic circuit means so as to automatically display, in the case of data representing an essentially constant intracompartmental pressure, only a constant pressure value displayed at each said location; and
- power means, mounted within said housing means so as to be totally self-contained within said housing means and disposable therewith, for supplying all operational electrical power to said transducer means, said electronic circuit means, and said display means.

5,711,303
DEVICE TO MEASURE VASCULAR FUNCTION

Masashi Shimizu, Yokohama; Osamu Shirasaki, Amagasaki; Shinsaku Yanagi, Tokuya-machi, and Yoshinori Miyawaki, Otsu, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Division of Ser. No. 245,112, May 17, 1994, Pat. No. 5,582,179. This application Oct. 30, 1996, Ser. No. 741,109
Claims priority, application Japan, May 17, 1993, 5-114875
Int. Cl.^{6} A61B *5/02*

U.S. Cl. 128—687 **19 Claims**



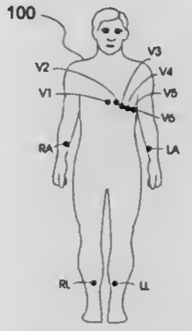
1. A measuring device for measuring a vascular function of an artery, comprising:
- a cuff that is attachable to a specified part of a body to constrict the artery;
- a pulse wave amplitude calculating device that calculates amplitudes of a series of pulse waves that are synchronous with successive systolic and diastolic pressures in said artery and are based on changes in volume of the artery between said systolic and diastolic pressures; and,
- an inference device that infers a vascular function that includes data indicating the degree of sclerosis of an artery and that corresponds to a pressure-to-volume characteristic of said artery based on said amplitudes of said series of pulse waves and corresponding cuff pressures in said cuff.

5,711,304
SIGNAL PROCESSING APPARATUS AND METHOD FOR ADDING ADDITIONAL CHEST LEADS TO THE 12-LEAD ELECTROCARDIOGRAM WITHOUT ADDITIONAL ELECTRODES

Gordon Ewbank Dower, 1505 Tolmie St., Vancouver, Canada, V6R 4B5

Continuation of Ser. No. 385,817, Feb. 9, 1995. This application Jul. 29, 1996, Ser. No. 688,212
Int. Cl.^{6} A61B *5/0402*

U.S. Cl. 128—696 **17 Claims**



1. Signal processing apparatus for use with an electrocardiograph monitoring activity of the human heart, said apparatus comprising:
- (a) input means for receiving input signals from electrodes attached to the body of a subject whose heart activity is being monitored, said electrodes comprising chest electrodes positioned at conventional positions V1, V2, V3, V4, V5 and V6

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of said body and limb electrodes positioned at conventional positions RA, LA and LL of said body;

(b) signal processing means operatively connected to said input means for synthesizing a signal from said input signals when said electrodes are so positioned, said synthesized signal substantially corresponding to an unsynthesized signal that would be produced by a further chest electrode, if such a further chest electrode was used on said body at a chest position other than said conventional positions; and,

(c) signal output means for providing said synthesized signal as an output to said electrocardiograph.

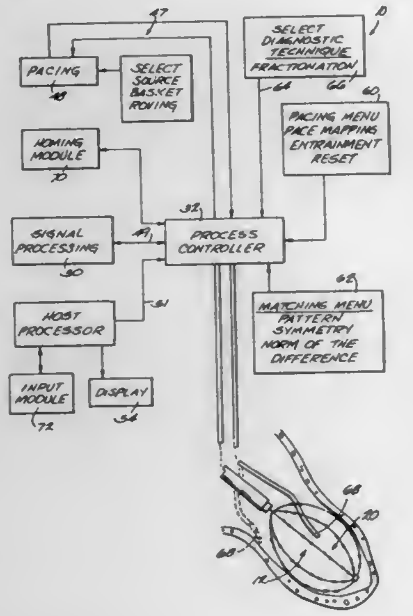
5,711,305
SYSTEMS AND METHODS FOR ACQUIRING ENDOCARDIALLY OR EPICARDIALLY PACED ELECTROCARDIOGRAMS

David K. Swanson, Mountain View; James G. Whayne, Saratoga, and Dorin Panescu, Sunnyvale, all of Calif., assignors to EP Technologies, Inc., San Jose, Calif.

Filed Feb. 17, 1995, Ser. No. 393,158

Int. Cl.⁶ A61B *5/0402;* **A61N** *1/36*

U.S. Cl. 128—697 **43 Claims**


47
10
PACING
48
SELECT SOURCE BASKET ROVING
SELECT DIAGNOSTIC TECHNIQUE FRACTIONATION
64
66
60
PACING MENU PACE MAPPING ENTRAINMENT RESET
HOMING MODULE
70
32
SIGNAL PROCESSING
49
30
PROCESS CONTROLLER
51
62
HOST PROCESSOR
MATCHING MENU PATTERN SYMMETRY NORM OF THE DIFFERENCE
INPUT MODULE
72
DISPLAY
54
68
20
68

1. A processing element for analyzing biopotentials in myocardial tissue comprising

first means for inputting a template of a cardiac event of known diagnosis, the input template comprising a plot of biopotentials over time and not a spacial distribution of endocardial surface activation,

second means for inputting a sample of a cardiac event acquired by pacing from at least one electrode in operative association with a region of heart tissue, the input sample comprising a plot of biopotentials over time and not a spacial distribution of endocardial surface activation, and

third means for electrically comparing the input sample to the input template and generating an output based upon the comparison comprising a matching factor indicating how alike the input sample is to the input template.

5,711,306
ONE-USE DEVICE FOR DIRECTLY TAKING A SAMPLE OF EXPIRED AIR FROM A SUBJECT

Roger Guilluy, Saint Bonnet de Mure, France, assignor to INBIOMED International, Lyons, France

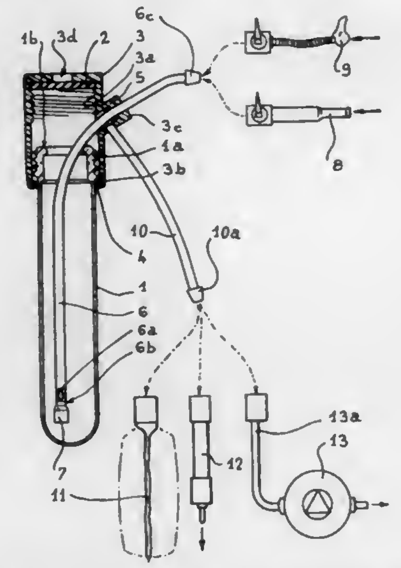
PCT No. PCT/FR95/00346, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/25462, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 21, 1995, Ser. No. 704,520

Claims priority, application France, Mar. 22, 1994, 94 03618

Int. Cl.⁶ G01N *33/00;* **A61R** *5/08*

U.S. Cl. 128—730 **8 Claims**



1. One-use device for directly taking a sample of expired air from a subject, comprising, in combination:

a rigid recipient (1), whose volume corresponds to that desired of the sample to be taken;

a stopper (3) adapted to take two axial positions on the recipient (1), ensuring obturation of an upper, open part thereof in one or the other of the two positions, which stopper is fast with a lateral tube (3*c*) whose inner opening is obturated by a wall of the recipient when said stopper has been brought to a lower axial position of seal;

a cannula (6) engaged to slide axially in the lateral tube (3*c*), the subject blowing into one of the ends of this cannula, while an opposite end which opens freely in the recipient (1) is provided with a blind, annular, projecting stop (7);

an evacuation pipe (10) of which the opening in the lateral tube (3*c*) is obturated by the blind annular stop (7) of the cannula (6) once the cannula has been displaced axially by an operator pulling;

and a control volume (11, 12, 13) which is connected to the free end of the evacuation pipe (10) and which is arranged to indicate to the operator that a sufficient volume of expired air has passed through and scavenged the recipient (1).

5,711,307
METHOD AND APPARATUS FOR DETECTING MYOELECTRIC ACTIVITY FROM THE SURFACE OF THE SKIN

Matthijs P. Smits, Ashland, Mass., assignor to Liberty Mutual Insurance Company, Boston, Mass.

Filed Apr. 13, 1995, Ser. No. 421,602

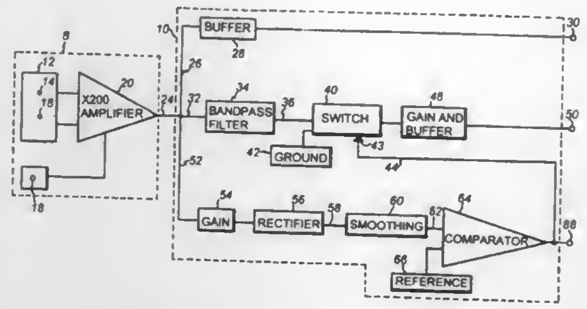
Int. Cl.⁶ A61B *5/04*

U.S. Cl. 128—733 **11 Claims**

1. An apparatus for use with a myoelectrode that provides a myoelectric signal, the apparatus comprising:

a comparator, electrically coupled to the myoelectrode, for receiving a first signal derived from the myoelectric signal and for comparing the first signal to a threshold signal, the comparator providing an output signal indicating whether or not the first signal exceeds the threshold signal; and

a switch, electrically coupled to the myoelectrode and to the comparator, for receiving a second signal derived from the myoelectric signal and for receiving a control signal derived from the output signal of the comparator, the switch providing at an output lead an output signal in response to the control signal.



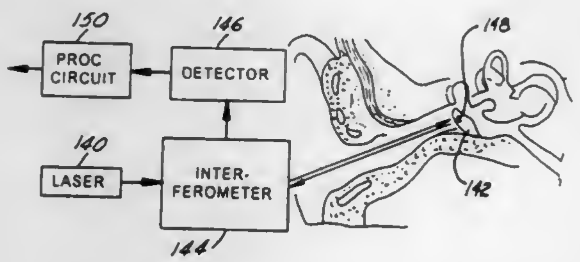
5,711,308
WEARABLE APPARATUS FOR MEASURING DISPLACEMENT OF AN IN VIVO TYMPANUM AND METHODS AND SYSTEMS FOR USE THEREWITH

Andrew J. Singer, Palo Alto, Calif., assignor to Interval Research Corporation, Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 475,349

Int. Cl.⁶ A61B *5/12*

U.S. Cl. 128—746 **64 Claims**



1. A method of producing an auditory environment based upon a first acoustic pressure wave sensed by a first individual, the method comprising the steps of:

dynamically sensing a displacement of a tympanic membrane of the first individual in response to the first acoustic pressure wave;

producing an electrical signal in dependence upon the sensed displacement; and

generating a second acoustic pressure wave in dependence upon the electrical signal, wherein the auditory environment is based upon the second acoustic pressure wave.

5,711,309
APPARATUS FOR COLLECTING MIDDLE EAR SPECIMENS

Robert A. Goldenberg, 501 Stonehaven Rd., Dayton, Ohio 45429

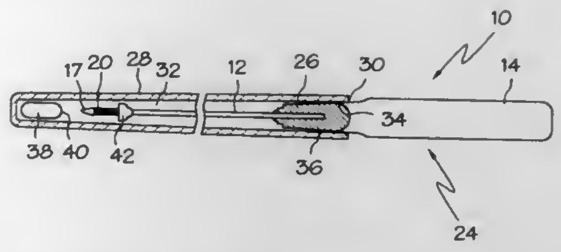
Filed Jan. 26, 1996, Ser. No. 592,589

Int. Cl.⁶ A61B *5/00*

U.S. Cl. 128—760 **20 Claims**

1. An apparatus for collecting a middle ear fluid specimen through the ear drum of a patient, said apparatus comprising:

a needle having a distal end adapted for puncturing through the ear drum of a patient; and



a fluid absorbent material disposed on said needle and operatively adapted to absorb a specimen of middle ear fluid.

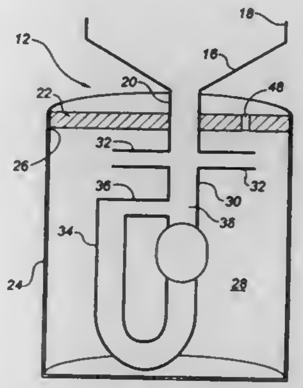
5,711,310
APPARATUS FOR COLLECTING A MID-STREAM URINE SAMPLE

Thuraiayah Vinayagamoorthy, 5216 - 14 Avenue, Edmonton, Alberta, Canada, T6L 1Z8, and Edmond Charleton, #105, 2841 - 109 Street, Edmonton, Alberta, Canada, T6J 6B7

Filed Jul. 19, 1996, Ser. No. 684,661

Int. Cl.⁶ A61B *5/00*

U.S. Cl. 128—760 **9 Claims**



1. An apparatus for collecting a mid-stream urine sample, comprising:

a funnel having a wide end and a narrow end;

means for supporting the funnel over a specimen container with the narrow end of the funnel at a mouth of a liquid receiving cavity of the specimen container; and

a tubular receptacle depending from and in fluid communication with the narrow end of the funnel, the tubular receptacle having at least one radial overflow passage adjacent the narrow end of the funnel and below the support means, such that once the tubular receptacle is filled with urine, any further urine entering the tubular receptacle overflows through the at least one radial overflow passage, the tubular receptacle forming a loop with a remote end of the tubular receptacle being in fluid communication with an upper throat of the tubular receptacle.

5,711,311

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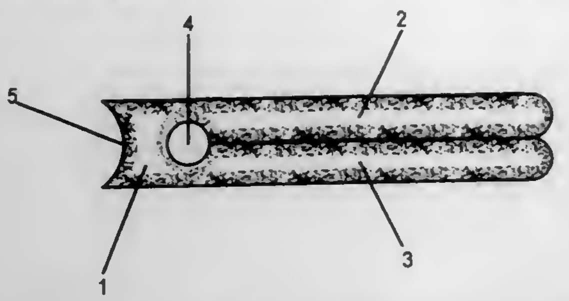
5,711,312
SELF-ADHESIVE READY-TO-USE SUPPORT FOR THE PATELLA

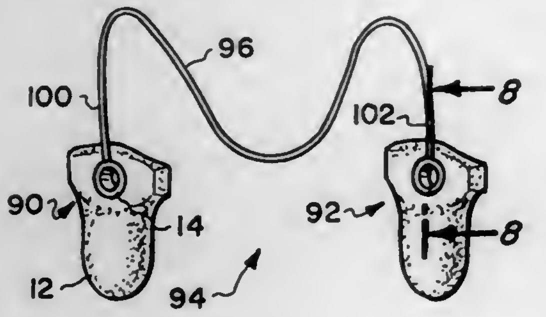
Peter Staudinger, Tornesch, Germany, assignor to Beiersdorf AG, Hamburg, Germany
Filed Jul. 5, 1996, Ser. No. 676,015
Int. Cl.^{6} A61F *15/00*
U.S. Cl. 128—845 **9 Claims**



1. Ready-to-use support with a self-adhesive coating on one side for stabilizing and guiding the patella, characterized in that the ready-to-use support consists of an elongate strip which has, approximately over the entire length, a slit in the longitudinal direction on one side, and in that a cutout is located at the inner end of the slit and serves to receive the patella when the ready-to-use support is applied to the knee.

5,711,313
DISCOVERABLE EARPLUG

Thomas Walter Fleming, San Diego, Calif., assignor to Howard S. Leight & Associates, San Diego, Calif.
Filed Jan. 23, 1997, Ser. No. 785,415
Int. Cl.^{6} A61F *11/00*
U.S. Cl. 128—864 **14 Claims**

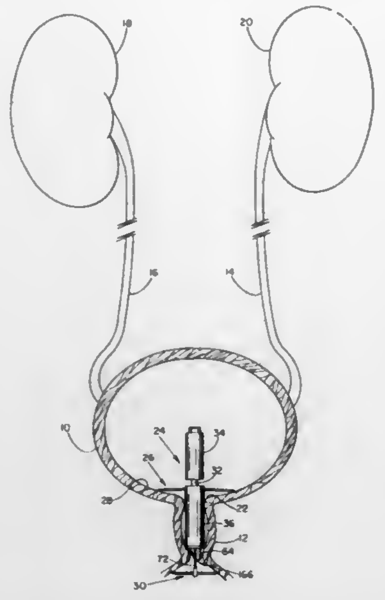


1. A noise-blocking detectable earplug comprising:
- an earplug body having an axis extending in forward and rearward directions, said earplug having a forward portion constructed to fit into a human ear canal and block noise thereat;
- remotely detectable insert that includes electrically conductive material attached to said body;
- said insert comprising a fastener with a shaft extending primarily in a lateral direction, which is perpendicular to said axis, through said body.

5,711,314
URINARY INCONTINENCE VALVE WITH DISTAL AND PROXIMAL ANCHORING MEANS

James R. Ardito, Coon Rapids, Minn., assignor to PriMed International Corporation, Coon Rapids, Minn.
Filed Nov. 8, 1996, Ser. No. 746,429
Int. Cl.^{6} A61F *5/48*
U.S. Cl. 128—885 **13 Claims**

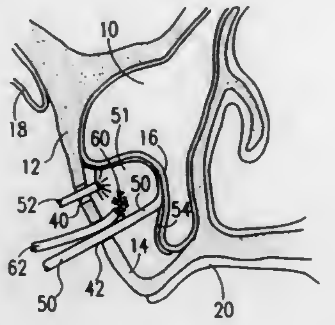
1. A urinary incontinence valve disposable in the urethra in a patient for controlling the flow of urine therethrough comprising:



- (a) a tubular member having a proximal end and an distal end and a lumen extending longitudinally from said proximal end to said distal end through which urine can flow;
- (b) a valve mechanism in said tubular body for selectively allowing passage of urine through said lumen;
- (c) a first anchoring mechanism affixed proximate said distal end of said tubular body; and
- (d) a second anchoring mechanism selectively positioned on said proximal end of said tubular body whereby said second anchoring mechanism is selectively positioned to custom-fit said valve for said patient, wherein said first anchoring means includes a deployable mechanism affixed to said tubular body proximate its distal end.

5,711,315
SINUS LIFT METHOD

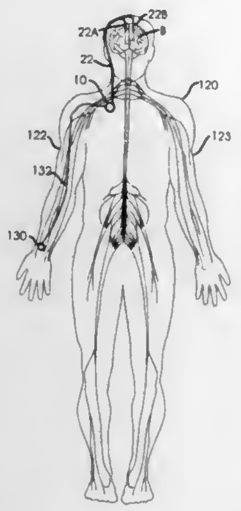
Israel Jerusalmy, 6 Kissufim Street, Tel Aviv 69355, Israel
Filed Feb. 15, 1996, Ser. No. 601,708
Int. Cl.^{6} A61B *19/00*
U.S. Cl. 128—898 **1 Claim**



1. A method for subantral augmentation without osteotomy comprising the steps of:
- lifting the schneiderian membrane from the antral floor; and
- placing graft material between the schneiderian membrane and the antral floor; and wherein the schneiderian membrane is lifted by grasping said membrane with a tool introduced through the maxillary sinus, and wherein said graft material is introduced via the maxillary sinus through an incision in the schneiderian membrane, said incision being subsequently packed by a portion of said graft material.

5,711,316
METHOD OF TREATING MOVEMENT DISORDERS BY BRAIN INFUSION

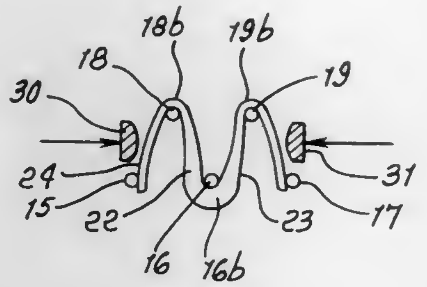
Dennis D. Elsberry, New Hope; Mark T. Rise, Monticello, and Scott R. Ward, Grove Heights, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 30, 1996, Ser. No. 640,359
Int. Cl.^{6} A61B *19/00*
U.S. Cl. 128—898 **29 Claims**



1. A system for using one or more drugs to treat a movement disorder resulting in abnormal motor behavior, comprising:
- an implantable pump:
- a catheter having a proximal end coupled to said pump and a discharge portion adapted to infuse a therapeutic dosage of said one or more drugs into a predetermined infusion site in a brain;
- an implantable sensor for generating a signal related to the extent of said abnormal motor behavior; and
- control means responsive to said sensor signal for regulating said therapeutic dosage, whereby the dosage is adjusted in response to an increase in said abnormal motor behavior to decrease said abnormal motor behavior.

5,711,317
MULTIPLE FOLDING OF OPTICAL LENS UNIT AND PLACEMENT IN THE EYE

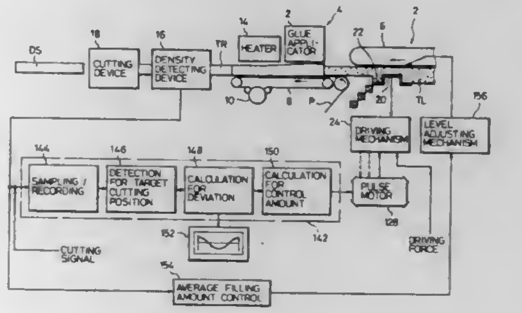
Henry H. McDonald, 525 Cordova Street, Pasadena, Calif. 91101, assignor to Henry H. McDonald, and William W. Haefliger, both of Pasadena, Calif., a part interest
Filed Jul. 17, 1996, Ser. No. 680,683
Int. Cl.^{6} A61B *19/00*
U.S. Cl. 128—898 **16 Claims**



9. In the method of inserting a foldable plastic lens unit into the eye, the steps that include
- a) providing a folding tool having a first set of three folding elements and a second set of two folding elements, and effecting relative movement of said sets to fold a lens unit extending between said sets, thereby to form at least three folds,
- b) and thereafter grasping the folded unit to hold it in folded state, and then inserting the folded unit into the eye through an opening formed in the eye.

5,711,318
TRIMMING CONTROL DEVICE FOR CIGARETTE MANUFACTURING MACHINE

Masayoshi Saitoh; Shigemitsu Inomata, and Shigenobu Kushihashi, all of Tokyo, Japan, assignors to Japan Tobacco, Inc., Tokyo, Japan
Filed Feb. 15, 1996, Ser. No. 601,772
Claims priority, application Japan, Feb. 15, 1995, 7-027142
Int. Cl.^{6} A24C *5/18*
U.S. Cl. 131—84.1 **8 Claims**



1. A trimming control device for a cigarette manufacturing machine comprising:
- trimming means for trimming a shredded tobacco layer, said trimming means including a rotatable trimming disk, the trimming disk having pockets on the peripheral edge thereof, a thickness of the shredded tobacco layer being adjusted by rotation of the trimming disk when the shredded tobacco layer is continuously fed toward a wrapping device for forming a tobacco rod in said cigarette manufacturing machine so that after the trimming of the shredded tobacco layer, increase portions whose thickness is increased by the pockets are cyclically formed;
- detecting means for detecting a filling density of the shredded tobacco in the tobacco rod in a process that the formed tobacco rod is continuously sent out from the wrapping device to a cutting device in said cigarette manufacturing machine and for continuously outputting the detected filling density;
- data processing means for acquiring a filling density distribution of the shredded tobacco in a cigarette rod based on the filling density output from said detecting means, the cigarette rod being obtained by cutting the increase portions of the tobacco rod in the cutting device;
- determining means for determining a target cutting position of the tobacco rod at a central position of a zone showing the increase portion based on the filling density distribution; and adjusting means for detecting a deviation between the target cutting position and a cut end of the cigarette rod and for adjusting a rotation phase of the pockets of the trimming disk in the direction to eliminate the deviation,
- said determining means extracts a peak zone including a peak of density from the density distribution and determines a target cutting position at the central position in view of the width direction of the peak zone.

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5,711,319
DRY ICE EXPANDED TOBACCO

Clive Stewart Cumner, Surrey, United Kingdom, assignor to Messer UK Limited, Surrey, United Kingdom

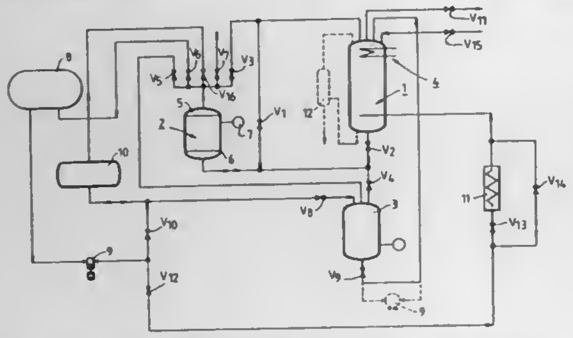
PCT No. PCT/GB95/00102, § 371 Date Oct. 10, 1996, § 102(e) Date Oct. 10, 1996, PCT Pub. No. WO95/21545, PCT Pub. Date Aug. 17, 1995

PCT Filed Jan. 19, 1995, Ser. No. 687,523

Claims priority, application United Kingdom, Feb. 9, 1994, 9402473

Int. Cl.^{6} A24B *3/18*

U.S. Cl. 131—291 **18 Claims**



1. A process for expanding tobacco comprising the steps of:
selecting an equilibrium pressure within a process vessel containing a mixture of gaseous carbon dioxide and liquid carbon dioxide;
charging a sample volume of tobacco from a batch of tobacco into a sealable impregnator vessel;
transferring liquid carbon dioxide at said selected equilibrium pressure from said process vessel into said impregnator vessel;
maintaining said liquid carbon dioxide in said impregnator vessel sufficiently long to permit liquefied carbon dioxide to penetrate the cells of the tobacco;
transferring liquid carbon dioxide from said impregnator vessel into a drain vessel;
reducing said pressure within the impregnator vessel sufficiently to cause the solidification of liquid carbon dioxide contained within said cells of said tobacco;
heating said tobacco sufficiently to vaporise said carbon dioxide in said tobacco cells thereby expanding said tobacco;
determining the degree of tobacco expansion obtained; and,
re-selecting said equilibrium pressure within said process vessel to control the amount of solid carbon dioxide formed during the de-pressurisation step of a subsequent impregnation cycle or cycles to optimise the degree of expansion of tobacco for said remainder of the batch, wherein liquid carbon dioxide is transferred from said process vessel into said impregnator vessel under the action of gravity and subsequently liquid carbon dioxide is transferred from the impregnator vessel into said drain vessel also under the action of gravity.

5,711,320
PROCESS FOR FLAVORING SHREDDED TOBACCO AND APPARATUS FOR IMPLEMENTING THE PROCESS

Mario Martin, Silea, Italy, assignor to Comas-Costruzional Machine Speciali-S.p.A., Silea, Italy

PCT No. PCT/EP94/01123, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/23597, PCT Pub. Date Oct. 27, 1994

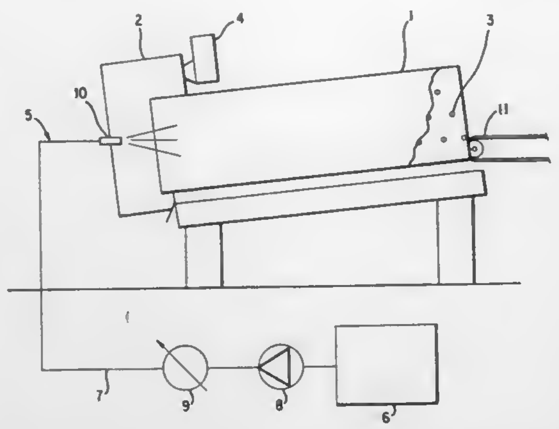
PCT Filed Apr. 12, 1994, Ser. No. 464,817

Claims priority, application Italy, Apr. 20, 1993, VE93A0012

Int. Cl.^{6} A24B *3/12*

U.S. Cl. 131—305 **10 Claims**

1. A process for flavoring shredded tobacco compromising:
introduction shredded tobacco to an inside of a rotary cylinder through a first opening of said rotary cylinder,
advancing said shredded tobacco along said rotary cylinder,
cooling an outside of said rotary cylinder, a liquid mixture of alcohol, water and flavoring essences to a temperature below ambient temperature, and
atomizing said liquid mixture onto said shredded tobacco in correspondence of a second opening facing said first opening.



5,711,321

Patent Not Issued For This Number

5,711,322
TOBACCO FILTER MATERIAL AND A METHOD OF PRODUCING THE SAME

Hitoshi Tsugaya, Kawachinagano, and Syu Shimamoto, Himeji, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 6, 1994, Ser. No. 301,017

Claims priority, application Japan, Sep. 6, 1993, 5-246462; Jun. 3, 1994, 6-145578

Int. Cl.^{6} A24D *3/08;3/10;3/16*

U.S. Cl. 131—341 **22 Claims**

1. A tobacco filter material in the form of a sheet having a web structure which is substantially free from a plasticizing substance and is wet-disintegratable, said filter material comprising a mixture of a cellulose ester having a combined organic acid content of 30 to 62% and having a either particulate form with an average particle diameter of 0.1 to 600 μm or a non-crimped fibrous form with a fiber fineness of 1 to 10 deniers and a fiber length of 1 to 10 mm and a wood pulp with a Canadian standard freeness of 150 to 700, wherein the proportion of said cellulose ester relative to said wood pulp is 15/85 to 80/20 (weight %).

5,711,323
SPHERICAL HAIR STYLING DEVICE

Sabrina Denebeim, 260 Avila St., San Francisco, Calif. 94123

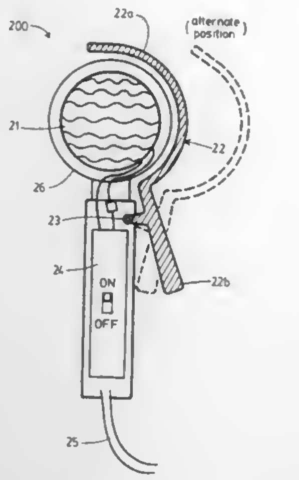
Continuation-in-part of Ser. No. 363,256, Dec. 23, 1994, Pat. No. 5,515,874. This application May 1, 1996, Ser. No. 644,616

Int. Cl.^{6} A45D *1/04*

U.S. Cl. 132—232 **6 Claims**

1. A hair curling iron comprising:
a handle;

a head attached to said handle, said head having a substantially spherical shape; and
a hair retaining member pivotally attached to said curling iron and releasably engagable with said head for securing a portion of hair between said hair retaining member and said head.



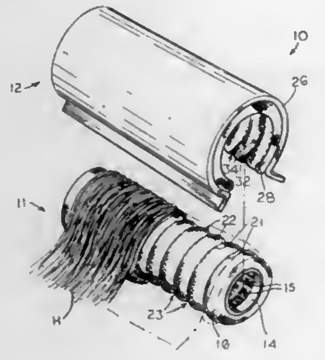
5,711,324
HAIR DRYING CURLER APPARATUS

Lonnie G. Johnson, Smyrna, Ga.; Francis E. LeVert, Knoxville, Tenn., and John Applewhite, Atlanta, Ga., assignors to Johnson Research & Development Co., Inc., Atlanta, Ga.

Filed Apr. 29, 1996, Ser. No. 639,143

Int. Cl.^{6} A45D *6/16*

U.S. Cl. 132—252 **21 Claims**



1. A hair drying curler apparatus for use in drying and curling locks of damp hair, comprising,
a curler roller having a curler body, a layer of moisture permeable material mounted about said curler body to form a cavity therebetween, and a mass of free-flowing, granular hair drying expediting material positioned within said cavity for flowing movement therein; and
retaining means mountable to said curler roller for retaining a lock of hair wrapped about said curler roller,
whereby a lock of damp hair wrapped about the curler roller is dried by the action of the expediting material therein.

5,711,325
METHOD OF RINSING IN A DISHWASHER AND DEVICE FOR CARRYING OUT THE METHOD

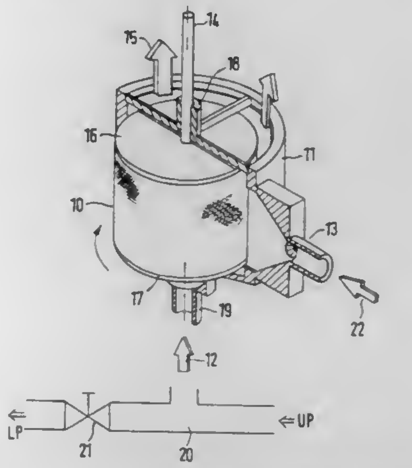
Gerd Kloss, Hüttigweiler; Christa Maurer, Ottweiler; Ludwin Rauber, Tholey-Bergweiler, and Reinold Rheia, Neunkirchen, all of Germany, assignors to Whirlpool Europe B.V., Veldhoven, Netherlands

Filed Sep. 21, 1995, Ser. No. 531,878

Claims priority, application Germany, Sep. 22, 1994, 44 33 842.2

Int. Cl.^{6} B08B *17/00*

U.S. Cl. 134—104.1 **10 Claims**



1. A device for cleaning a filter in a dishwasher in which rinsing water is evacuated by a circulating pump from the sump of the wash chamber and, passing through a filter, is supplied to spray devices in the wash chamber, the filter being cleaned in counterflow to the rinse water by means of supplied cleaning water, the device comprising:
a filter housing;
a hollow cylindrical filter rotarily mounted in the filter housing,
the filter closed at one end face and provided on the opposite end face with an input for the rinse water to be filtered,
an annular chamber surrounding the filter, the annular chamber being formed between the filter housing and the filter and having an input for the cleaning water, and
the filter housing, facing away from the input for the rinse water, incorporated as an output for the cleaning water unified with the rinse water in the rinse water circuit.

5,711,326
DISHWASHER ACCUMULATOR SOIL REMOVAL GRATING FOR A FILTER SYSTEM

Edward L. Thies, Tipp City, Ohio, and Roger J. Bertsch, Stevensville, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 8, 1996, Ser. No. 694,217

Int. Cl.^{6} B08B *3/02*

U.S. Cl. 134—104.4 **11 Claims**

5. A centrifugal soil separator, comprising:
a rotating element;
a surrounding wall;
an outlet water conduit receiving water flow from said rotating element;
a soil/water flow channel receiving water with entrained soil from adjacent said surrounding wall;
a soil screening channel having a screen element on a top side thereof for passing water therethrough while retaining soil below, and a plate on a bottom side thereof, said screening channel surrounding said surrounding wall, said soil/water flow channel flow connected to said screening channel;
a soil accumulator sump flow connected to said screening channel by a plurality of radial slots spaced around said plate; and

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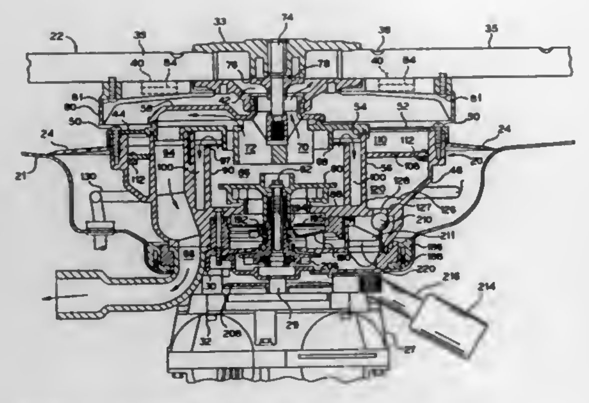


means for draining soil from said accumulator sump.

5,711,327

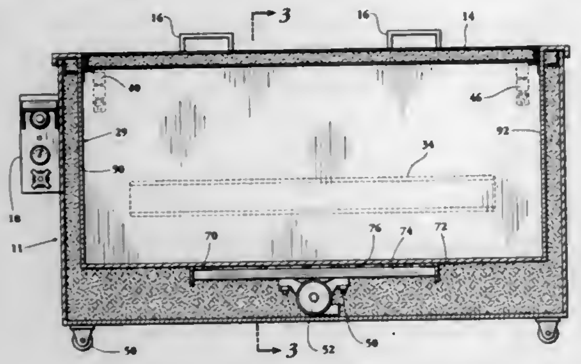
SYSTEM FOR VIBRATION CLEANING OF ARTICLES INCLUDING RADIATORS

John T. Fields, 2107 E. 48th St., Tulsa, Okla. 74105

Filed Oct. 10, 1995, Ser. No. 541,532

Int. Cl.^{6} B08B *3/10*

U.S. Cl. 134—105 **1 Claim**



1. An apparatus for cleaning an article which comprises:
a container for receiving a cleaning fluid in which the cleaning fluid is in contact with the inner wall of said container;
a vibrator attached to the wall of said container;
means to actuate said vibrator;
a heater to heat the liquid and means for controlling the temperature of cleaning fluid within said container;
spaced apart parallel angle irons welded to the underside of the bottom of said container;
a square tube extending between the two angle irons and welded therto and in a manner as to leave a space between the square tube and the outside of the bottom of the tank;
said vibrator is attached to said square tube;
said container is rectangular having two spaced apart ends a distance of L apart in which one angle iron is ¼ from one end and the other angle iron is ¼ from the other end, with the distance between the angle irons ½.

5,711,328

CLEANING DEVICE FOR THE SHAVING HEAD OF A DRY SHAVER

Gebbard Braun, Kelkheim, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

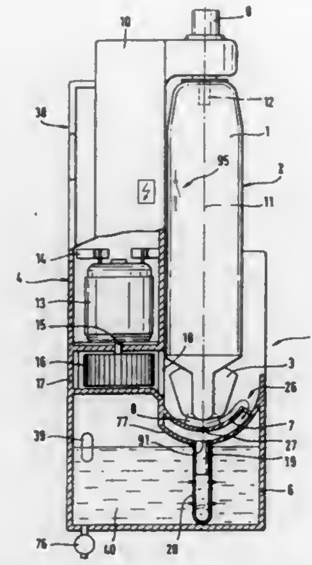
Filed Jan. 23, 1995, Ser. No. 376,849

Claims priority, application Germany, Jan. 26, 1994, 44 02 238.7

Int. Cl.^{6} B08B *3/04*

U.S. Cl. 134—111 **27 Claims**

17. A cleaning device comprising:



a cradle structure adapted to receive a shaving head of a shaving apparatus,
a cleaning fluid container,
a feed device for feeding cleaning fluid from said cleaning fluid container to said cradle structure, said cradle structure being arranged above a fluid level of the cleaning fluid in said cleaning fluid container during the feeding of said cleaning fluid to said cradle structure, said feed device including a suction side and a delivery side, and
a collecting dish and a filter, said collecting dish being positioned underneath the cradle structure and including an outlet opening connecting with the filter, the outlet opening being connected to the suction side of the feed device, the filter being in communication with the delivery side of the feed device.

5,711,329

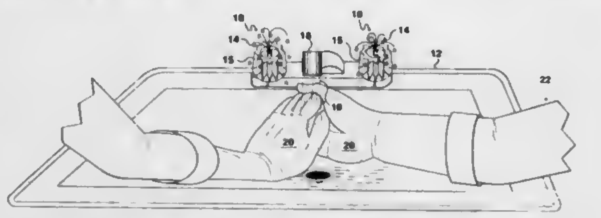
SELF-CLEANING KNOB WATER FAUCET

Min Tet Soon, P.O. Box 10341, 88803 Kota Kinabalu, Sabah, Malaysia

Filed May 28, 1996, Ser. No. 654,214

Int. Cl.^{6} B08B *3/02*

U.S. Cl. 134—115 R **17 Claims**



1. A self-cleaning knob water faucet, comprising:
a) a hollow water faucet body having an interior space and a spout from which water can exit;
b) a water valve assembly disposed in said hollow water faucet housing and having a distal end extending outwardly therefrom, said water valve further having a closed position in which water does not exit said spout of said hollow water faucet body and an open position in which water exits said spout of said hollow water faucet body;
c) a knob disposed on said distal end of said water valve and rotatable by a hand of user for moving said water valve assembly through said closed position of said water valve assembly and said open position of said water valve assembly; and
d) water showering means for showering water on said knob when said water valve assembly is in said open position of said water valve assembly, so that any contamination deposited on said knob when said knob is rotated by the hand of the user is removed, wherein said water valve assembly includes said water showering means, wherein said water valve assembly further includes a hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem that has a longitudinal axis, a proximal end disposed in said hollow water faucet body, a distal end disposed outside said hollow water faucet body, and an internally-disposed and longitudinally-oriented channel that extends from said proximal end of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly to said distal end of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly, wherein said proximal end of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly has a laterally-oriented and internally-threaded metering throughbore that passes completely through said proximal end of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly; said laterally-oriented and internally-threaded metering throughbore of said proximal end of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly opens into both said internally-disposed and longitudinally-oriented channel of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly and said interior space of said hollow faucet body, so that there is an amount of direct fluid communication between said internally-disposed and longitudinally-oriented channel of said hollow, longitudinally-oriented, externally-threaded, cylindrically-shaped, and slender valve stem of said water valve assembly and said interior space of said hollow faucet body.

5,711,330

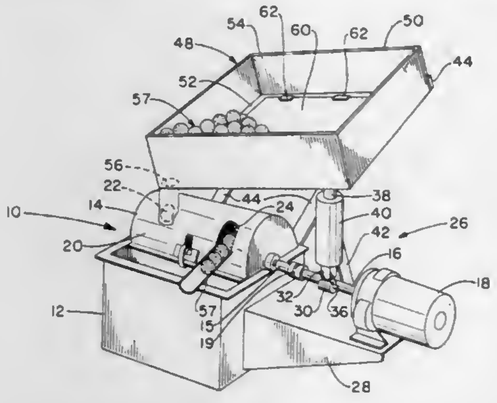
GOLF BALL WASHER WITH INTEGRAL AGITATOR

Donald C. Nelson, Medina, Ohio, assignor to S.G.D. Co., Inc., Medina, Ohio

Filed Aug. 11, 1995, Ser. No. 514,323

Int. Cl.^{6} B08B *1/04*

U.S. Cl. 134—133 **18 Claims**



15. A golf ball washer comprising:
a washing device having a ball entry hole and a ball exit chute;
a shaft with a cam thereon, said shaft connected to said washing device at a first end thereof;
a motor connected to a second end of said shaft for rotatably driving said shaft;
a golf ball holding box connected to said washing device, said holding box receiving a plurality of golf balls and feeding the golf bails to said washing device;
an agitator tray having a base with upstanding side walls around its perimeter, said tray having a bail delivery chute feedingly connected to said ball entry hole;
an agitator plate received within said tray and hingedly mounted at one end to said base; and
a plurality of brackets mountably supporting said tray upon said washing device; and
agitation means interposed between said shaft and said holding box for agitating said holding box to assure passage of the golf balls from the holding box to the washing device.

5,711,331

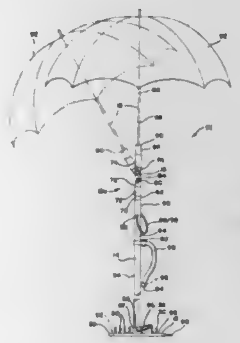
PORTABLE SHADE UNIT

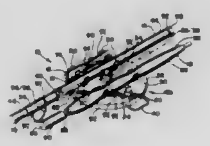
Johnel Harris, 215 Timber Oaks Dr., North Aurora, Ill. 60542

Filed Jul. 12, 1995, Ser. No. 501,603

Int. Cl.^{6} A45B *3/00*

U.S. Cl. 135—16 **7 Claims**





6. A shade unit comprising:
a base having a top wall carrying an upward facing bushing and three pairs of spaced apart spring clips,
a standard defined in apart by an inner member slidably disposed in an outer guide tube having a lower end releasably carried in said base bushing,
a knuckle connector having a pair of sleeves spaced apart by and joined to a tiltable pivot joint, each said sleeve formed with an inner passageway with a top end portion of said standard inner member releasably carried in one said sleeve inner passageway, and
a shading element comprising an umbrella having a gripping handle end releasably carried in said other knuckle connector sleeve inner passageway,
wherein during use said unit provides an area of shade selectively adjustable by placement of said base, by a location of said standard inner member in said standard outer guide tube, and by an angular position of said shading element umbrella, and during periods of non-use said shading element, said knuckle connector, and said standard be readily disconnected and then selectively placed in said pairs of said spring clips to transform said unit in a kit for travel or storage.

5,711,332

STRUTLESS UMBRELLA

Phillip C. Apple, Mt. Pleasant Mills, Pa., assignor to American Holtzkraft, Inc., Mt. Pleasant Mills, Pa.

Continuation-in-part of Ser. No. 592,527, Jan. 26, 1996, abandoned. This application Oct. 7, 1996, Ser. No. 726,475

Int. Cl.^{6} A45B *25/16;* **E04H** *15/00*

U.S. Cl. 135—20.3 **20 Claims**

1. An umbrella including a central post having an upper end, a plurality of ribs surrounding the post, said ribs having upper ends, rib pivot connections located a distance from the upper ends of the ribs, said connections joining the ribs to the upper end of the post, a member movable along the post, a plurality of links, each link having a first link connection and a second link connection, said

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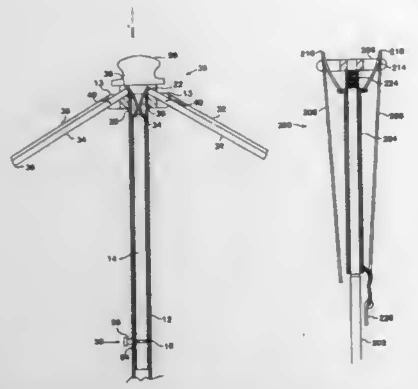


first-link connections joining the links to the upper ends of the ribs, said second link connections joining the links to the member, and a canopy on the ribs.

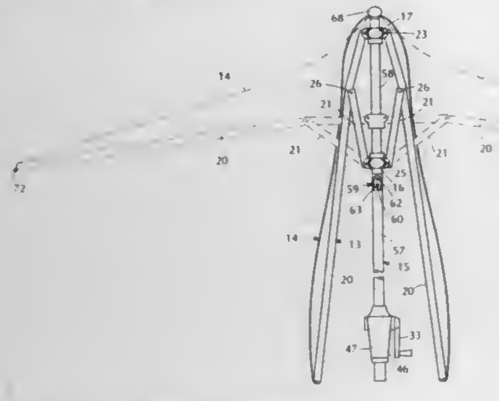
5,711,333
UMBRELLA FRAME AND UMBRELLA FOR OUTDOOR FURNITURE

Robert D. Vanderminden, Sr., Granville, N.Y., assignor to Telescope Casual Furniture Co., Granville, N.Y.

Filed Jan. 29, 1997, Ser. No. 788,502

Int. Cl.^{6} A45B *25/00;25/18*

U.S. Cl. 135—20.3 **21 Claims**



1. An umbrella frame comprising
an pole;
a first yoke fixedly mounted on said pole;
a second yoke movably mounted on said pole above said first yoke;
means for moving said second yoke along said pole between a remote position and a distal position relative to said first yoke;
a plurality of radially disposed ribs, each rib being pivotally connected at one end to said second yoke to move therewith; and
a plurality of radially disposed struts, each strut being pivotally connected at one end to said first yoke and being pivotally connected at an opposite end to a respective one of said ribs whereby said struts cause said ribs to splay outwardly of said pole in response to movement of said second yoke to said distal position and said struts cause said second yoke to move towards said remote position in response to collapsing of said ribs inwardly under gravity.

5,711,334
AMBULATORY AID

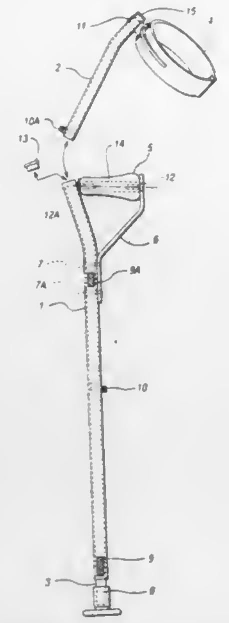
Christian Roux, 561 Woodlawn, Ypsilanti, Mich. 48198

Filed Dec. 18, 1996, Ser. No. 769,502

Int. Cl.^{6} A61H *3/02;* **A45B** *1/00*

U.S. Cl. 135—65 **12 Claims**

1. An ambulatory aid for use by handicapped or disabled persons, comprising:



a middle section including an upper section-receiving region and hand grip-supporting region;
a hand grip extending from the hand grip-supporting region to the upper section-receiving region, the hand grip including a longitudinal axis A—A, the longitudinal axis and the upper section-receiving region defining therebetween an angle less than 90°;
an upper section slidingly receivable within the upper section-receiving region of the middle section; and
a forearm-engaging ring member supported for rotation from the upper section about a fixed axis of rotation B—B, the ring member, the upper section, the handle and the middle section thereby forming a combined crutch-cane assembly.

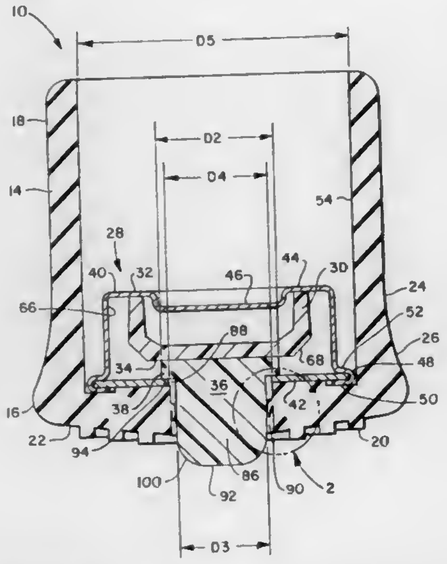
5,711,335
MEDICAL WALKER FOOT WITH COLLAPSIBLE TIP

Ralph Carpinella, Middlebury, Conn., assignor to Carpin Manufacturing, Inc., Waterbury, Conn.

Filed Aug. 28, 1996, Ser. No. 703,961

Int. Cl.^{6} A45B *9/04*

U.S. Cl. 135—77 **19 Claims**



1. A grounding foot for attachment to a lower end of a medical walker leg, comprising:

shell means defining a cavity for receiving the lower end of the medical walker leg and a base for contacting the ground, said base including an exterior surface, an interior surface and an opening traversing said surfaces;
a tip member comprising a pad end and a stem extending downwardly from said pad end to a distal tip, said distal tip comprising a rounded smooth surface which is slidably moveable over a ground surface, wherein said pad end is retained in said shell while said stem is slidably disposed in said opening of said base between an extended position wherein said distal tip is proud of said exterior surface and a retracted position wherein said distal tip is disposed within said base; and
biasing means disposed in said cavity for biasing said tip member to the extended position.

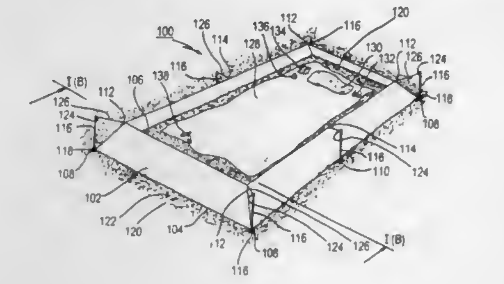
5,711,336
SUNBATHER'S SHELTER AGAINST CHILL WINDS AND WIND-BLOWN SAND

Chittaranjan N. Nirmel, 1108 Portner Rd., Alexandria, Va. 22314

Filed Jul. 24, 1996, Ser. No. 685,749

Int. Cl.^{6} E04H *17/00;15/00*

U.S. Cl. 135—87 **34 Claims**



1. An apparatus for sheltering from wind and any jetsam entrained therewith, comprising:
a wall having a lower edge and an upper edge and extending therebetween to circumscribe and define an open sheltered zone; and
wall-support means for supporting substantially the entire upper edge above the lower edge so that a substantial portion of the wall is inclined toward an interior of the sheltered zone.

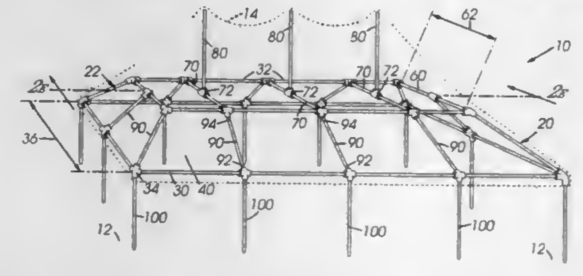
5,711,337
TENT FRAME AND PARTY TENT

Joseph E. McKenney, 335 Devonshire Ln., Columbia, S.C. 29212

Filed Feb. 18, 1997, Ser. No. 801,959

Int. Cl.^{6} E04H *15/34*

U.S. Cl. 135—121 **20 Claims**



1. A tent frame for supporting a covering over a surface, said tent frame comprising:
an outer frame having a first dimension and a second dimension;
a plurality of truss members carried by said outer frame;
an inner frame carried by said truss members, said inner frame having a first dimension and a second dimension, said first dimension of said inner frame being smaller than said first dimension of said outer frame, and said second dimension of said inner frame being smaller than said second dimension of said outer frame;
at least one vertical member carried by said inner frame and extending away from the surface, said at least one vertical member is supported by at least one cable extending across said inner frame; and
means connected to said outer frame for positioning said outer frame in spaced relationship relative to the surface.

5,711,338
REGULATING DRUM FOR MULTIPHASE EFFLUENTS AND ASSOCIATED DRAW-OFF MEANS AND METHOD FOR OPERATING SAME

René Talon, Carrieres sur Seine, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

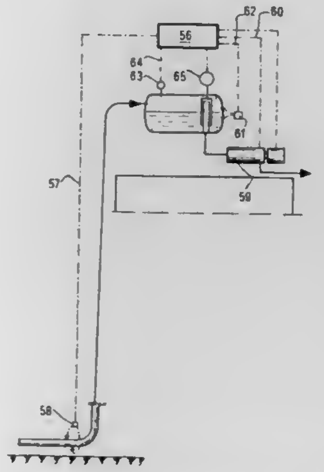
PCT No. PCT/FR95/00930, § 371 Date May 24, 1996, § 102(e) Date May 24, 1996, PCT Pub. No. WO96/02732, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 11, 1995, Ser. No. 615,267

Claims priority, application France, Jul. 13, 1994, 94 08766

Int. Cl.^{6} F15D *1/00*

U.S. Cl. 137—8 **12 Claims**



12. A process for regulating a multiphase effluent comprising:
causing the multiphase effluent to flow into a drum containing a mechanism comprising at least two relatively moveable, perforated surfaces defining openings of adjustable cross section for drawing the multiphase effluent from the drum;
sensing at least one flow condition of the multiphase effluent; and
adjusting flow through the mechanism as a function of the at least one sensed flow condition of the multiphase effluent.

5,711,339
FUEL OUTFLOW PREVENTING VALVE DEVICE

Kazumasa Kurihara, Fujisawa, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Sep. 30, 1996, Ser. No. 723,529

Claims priority, application Japan, Jan. 8, 1996, 8-017068

Int. Cl.^{6} F16K *31/22;33/00*

U.S. Cl. 137—43 **11 Claims**

1. A fuel outflow preventing valve device comprising:
a housing having a flow path, a plurality of orifices communicating with the flow path and situated laterally away from

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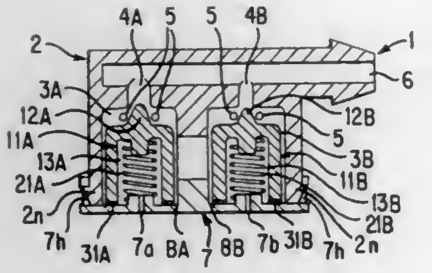


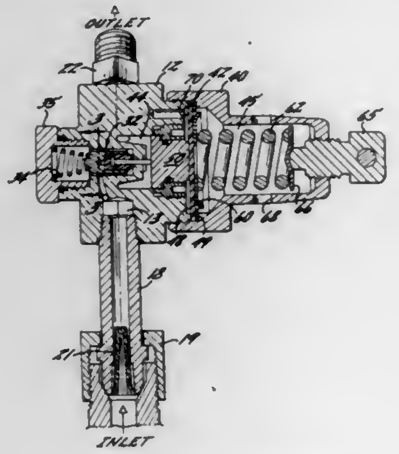
each other, a plurality of cavities disposed under the orifices, each cavity communicating with each orifice, at least one partition situated between the cavities so that each of the cavities is laterally separated from each other, and a plurality of openings communicating with the cavities;

a plurality of valves, each valve being situated in each cavity to move in a direction relative to the corresponding orifice; and

a plurality of energizing members, each energizing member being situated in each cavity at a side opposite to the orifice to support each valve thereon and having a strength such that each energizing member can only move the valve toward the orifice against a weight of the valve to close the orifice when fluid enters into the cavity through the openings and provides buoyancy to the valve, each energizing member having insufficient strength to move the valve toward the orifice to close the orifice by the weight of the valve.

5,711,340
GAS PRESSURE REDUCING REGULATOR

Frank J. Gusky, Quinby, and Gregory W. Diehl, Florence, both of S.C., assignors to The ESAB Group, Inc., Florence, S.C.
Filed Jan. 16, 1996, Ser. No. 585,802
Int. Cl.^{6} G05D *16/02*
U.S. Cl. 137—68.19 **10 Claims**



1. A gas pressure reducing regulator comprising

a body member having an inlet passage, an outlet passage, and a valve chamber interconnecting said inlet passage and said outlet passage and which includes a valve seat,

a valve slider positioned in said valve chamber so as to permit controlled gas flow between said inlet and outlet passages and mounted for limited movement in an axial direction between a closed position closing said valve seat and an open position wherein said valve seat is open, said valve slider including a valve pin extending axially through said valve seat, and first spring biasing means for biasing said valve slider toward said closed position,

a closure cap mounted to said body member so as to define a chamber on the outlet passage side of said valve seat,

a diaphragm assembly mounted in said chamber for limited axial movement and so as to engage said valve pin of said valve slider and axially divide the chamber into a lower chamber region on the side of the diaphragm assembly which faces the valve chamber, and an upper chamber region on the other side of said diaphragm assembly, said diaphragm assembly including a flexible diaphragm which has one side which faces said upper chamber region,

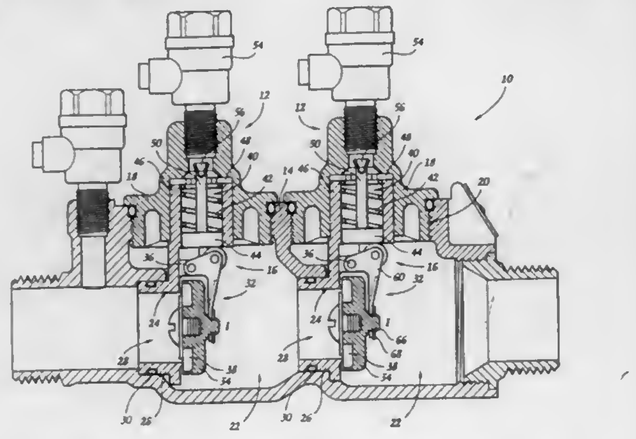
second spring biasing means for selectively biasing said diaphragm assembly and said valve slider in a direction against the force of said first spring biasing means so as to cause said valve slider to move a controlled distance away from said closed position and thereby open said valve seat, said second spring biasing means including a back-up plate overlying said one side of said flexible diaphragm, and a spring mounted in said upper chamber region and engaging said back-up plate and so as to bias said diaphragm assembly toward said valve slider, and with said back-up plate including a vent opening extending axially therethrough,

said closure cap including vent means venting said upper chamber region of said chamber to the atmosphere,

whereby in the event of an overpressure in said lower chamber region resulting for example from ignition of the gas passing through said regulator, and such overpressure reaches the flexible diaphragm, the flexible diaphragm is able to rupture and release the pressure through said vent opening in said back-up plate and then through said vent means in said closure cap so that the pressure is released to the atmosphere.

5,711,341
SWING-TYPE CHECK VALVE ASSEMBLY RETAINED WITHIN A VALVE HOUSING BY ABUTTING ENGAGEMENT WITH A VALVE COVER AND A PORT OF THE VALVE HOUSING

Robert Vernon Funderburk, Charlotte, and Timothy Duane Price, Monroe, both of N.C., assignors to Conbraco Industries, Inc., Matthews, N.C.
Filed Feb. 25, 1997, Ser. No. 806,115
Int. Cl.^{6} F16K *25/00*
U.S. Cl. 137—454.6 **14 Claims**



1. A swing-check valve for controlling fluid flow comprising:

a valve housing having a port for fluid flow therethrough, said valve housing including a removable cover for accessing an interior of said valve housing; and

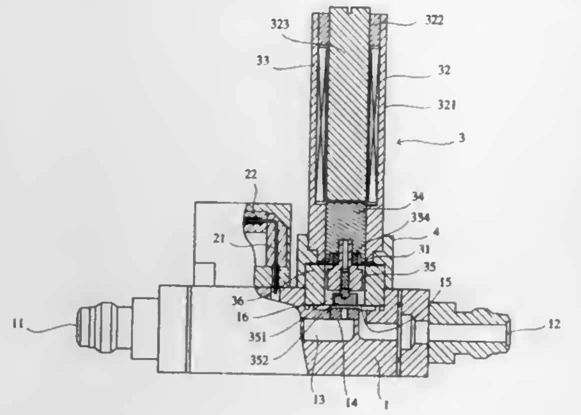
a valve assembly disposed within the interior of said valve housing for controlling the fluid flow through said valve housing, said valve assembly including together as a modular unit a seat subassembly including a valve seat that is frictionally positionable within the port of said valve housing so that fluid flow through the port flows through said valve seat, a clapper subassembly having a clapper pivotable between a first position in abutting engagement with said valve seat for preventing fluid flow through the port and a second position out of engagement with said valve seat for permitting fluid

flow through the port, and a spring subassembly that urges said clapper towards said first position;

said cover defining a bore therein and said spring subassembly being received within said bore of said valve cover for abutting engagement therewith when said valve assembly is disposed within said valve housing and said cover is attached thereto, and wherein said valve assembly is retained and supported within said valve housing substantially only by said frictional disposition of said valve seat within the port of said valve housing and by said abutting engagement of said spring assembly with said cover, said valve assembly being removable from within said valve housing by removing said cover and withdrawing said valve assembly from its frictional disposition in the port of said valve housing.

5,711,342
MASS FLOW CONTROLLER, OPERATING METHOD AND ELECTROMAGNETIC VALVE

Yoichiro Kazama, Mie-ken; Tomihisa Oyama, Fukaya; Makoto Tanaka, Yokkaichi, and Makoto Ishikawa, Kuwana, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Continuation of Ser. No. 279,165, Jul. 22, 1994, Pat. No. 5,447,173. This application Jun. 27, 1995, Ser. No. 495,701
Claims priority, application Japan, Jul. 23, 1993, 5-182401; Apr. 22, 1994, 6-084313
Int. Cl.^{6} G05D *7/06*
U.S. Cl. 137—486 **7 Claims**



1. A mass flow controller comprising:

(a) a valve casing having a flow path for a fluid;

(b) a diaphragm valve means disposed in said flow path for adjusting the degree of opening said flow path, said diaphragm valve means comprising a valve seat disposed in said flow path and a diaphragm biased toward said valve seat by a spring force, wherein the spring force increases proportionally with the displacement of said diaphragm from said valve seat;

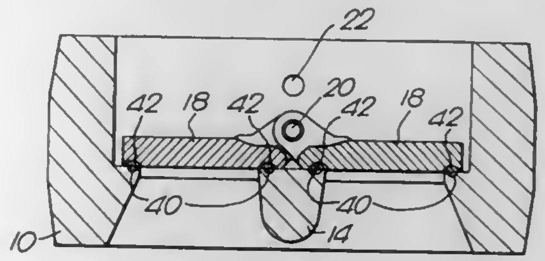
(c) an electromagnetic actuator comprising a stationary yoke made of a soft magnetic material, an electromagnetic coil for magnetizing said stationary yoke, and a movable yoke made of a soft magnetic material and movable toward said stationary yoke against the spring force by energizing said electromagnetic coil to displace said diaphragm from said valve seat to a point at which the magnetic attraction force of said electromagnetic coil and the spring force are balanced, both of said stationary yoke and said movable yoke having a magnetic flux density of 1.5 T or more at 300 AT/m;

(d) a sensor pipe disposed on said upstream side of said diaphragm valve means and bypassing said flow path; and

(e) a pair of sensor colts wound around said sensor pipe on the upstream and downstream sides.

5,711,343
DUAL PLATE CHECK VALVE

Kim Stuart Beckett, Stoke-on-Trent, United Kingdom, assignor to Goodwin International Limited, United Kingdom
Filed Jul. 30, 1996, Ser. No. 688,365
Int. Cl.^{6} F16K *15/00*
U.S. Cl. 137—512.1 **24 Claims**



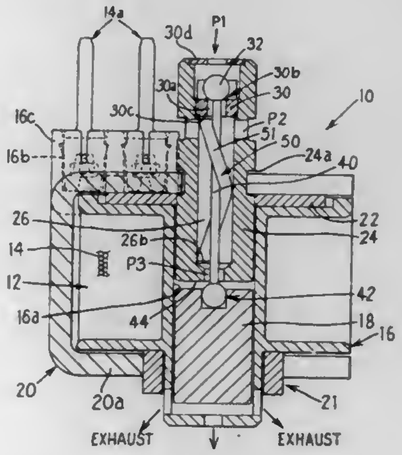
14. A method of forming a valve sealing face portion of a dual plate check valve having a substantially cylindrical valve body provided with a diametrical cross-member thereby defining a pair of substantially D-shaped apertures, and two substantially D-shaped plates, pivotally connected by a hinge means parallel to said cross-member, and pivotable between a valve open position and a valve closed position in which the sealing face portion of each plate engages a sealing face portion provided on a valve seat which surrounds each aperture, the method including the steps of:

(a) providing a groove in each sealing surface;

(b) forming a weld inlay in said groove.

5,711,344
ELECTROMECHANICAL FLUID CONTROL VALVE WITH SPIRAL CENTERING MEMBER FOR VALVE ACTUATING PIN

Charles J. Mullally, Muskegon, Mich., assignor to Saturn Electronics & Engineering, Inc., Coopersville, Mich.
Filed Aug. 23, 1996, Ser. No. 702,050
Int. Cl.^{6} F15B *13/044;* F16K *31/06;1/14*
U.S. Cl. 137—596.17 **11 Claims**



1. In an electromechanical fluid control valve, an actuating pin in a fluid passage for actuating a fluid control valve and a pin locating member for positioning said actuating pin relative to said fluid control valve, said pin locating member comprising a spiral member disposed about said actuating pin in a manner that said spiral member is not subjected to axial forces and with a spiral axis substantially coaxial with a longitudinal axis of said actuating pin, said spiral member defining a spiral fluid flow path about said actuatinq pin and having a spiral surface for guiding movement of the actuating pin relative to said fluid control valve.

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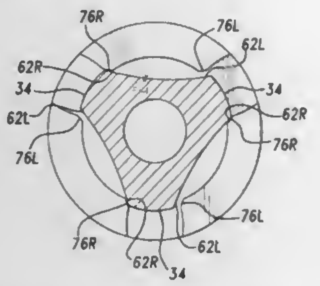
5,711,345
METHOD AND APPARATUS FOR FORMING A CONTROL VALVE FOR HYDRAULIC CIRCUITS

Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Southfield, Mich.

Filed Dec. 22, 1995, Ser. No. 577,415

Int. Cl.^{6} F15B *13/04;9/10*

U.S. Cl. 137—625.23 **3 Claims**



1. A rotary control valve for use in a hydro-mechanical system, said valve comprising:

a housing;

a sleeve rotatably mounted within said housing; and

a spool shaft mounted within said sleeve and having an end having an extended portion having a circumferential outer surface, said extended portion having a plurality of circumferential notches spaced equidistantly apart, each of said plurality of notches having a continuous curvalinear surface extending a predetermined distance between a pair of edges formed with said circumferential outer surface, said sleeve and spool shaft rotatable with respect to each other to control the passage of fluid through said valve;

a pinion shaft mounted in said housing and having a near end having a plurality of arms defining a loose fitting complementary recess adapted to receive said plurality of circumferential notches therein, each of said plurality of arms having a pair of stop teeth.

5,711,346
FLUID CONTROL ELEMENT

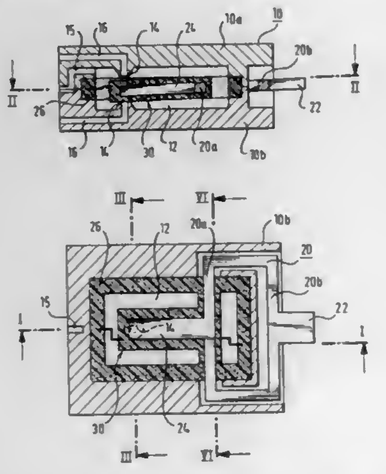
Manfred Pieloth, Dresden; Dieter Schrepel, Friedewald, and Heinz Töpfer, Dresden, all of Germany, assignors to Burkert Werke GmbH & Co., Germany

Filed Apr. 30, 1996, Ser. No. 640,311

Claims priority, application Germany, May 3, 1995, 29507380 U

Int. Cl.^{6} F16K *11/044*

U.S. Cl. 137—625.44 **13 Claims**



1. A fluid control element comprising a housing, a fluid control space formed in said housing and into which at least two flow ducts open, at least one sealing seat arranged in said fluid control space and associated with one of said flow ducts, an elongate reed forming a two-armed lever whereof one arm is formed by a lug extending into said fluid control space in a longitudinal direction of said reed, and movable between a closed position in which it covers said sealing seat and an open position in which it clears said sealing seat, and wherein a second arm of said reed extends out from said fluid control space forming an actuating arm, said reed further having a bearing arm extending transversely in relation to the longitudinal direction of said reed, said bearing arm having outer ends and at least said outer ends of said bearing arms being tightly surrounded by a casing of elastic material held between opposed wall portions of said housing for attaching said reed in a pivotal manner to said housing.

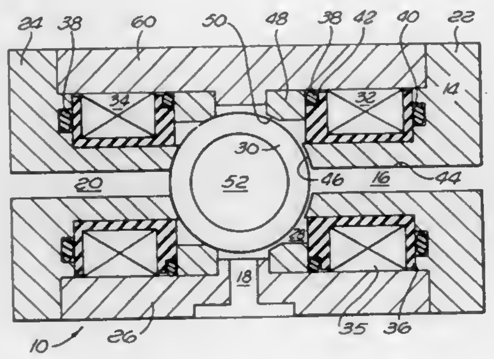
5,711,347
DOUBLE SOLENOID LATCHING BALL VALVE WITH A HOLLOW BALL

Oded E. Sturman, 3973 Santa Monica Ct., Newbury Park, Calif. 91320, and Steven Massey, 1106 Via Montoya, Camarillo, Calif. 93010

Filed Aug. 27, 1996, Ser. No. 703,522

Int. Cl.^{6} F15B *13/044*

U.S. Cl. 137—625.65 **5 Claims**



1. A control valve, comprising:

a housing that has an inlet port, a drain port, a cylinder port and a valve chamber, said housing further having a pair of radial seats;

a hollow ball valve that can move within said valve chamber between a first position and a second position, wherein said hollow ball valve allows fluid communication between said cylinder port and said drain port when in said first position and fluid communication between said inlet port and said cylinder port when in said second position;

solenoid means for generating a magnetic flux that flows through said hollow ball valve and said housing and moving said hollow ball valve between said first and second positions; and,

a pair of outer poles that are attached to said housing and each have a radial seat, said outer poles provide a return path for said magnetic flux flowing through said hollow ball valve.

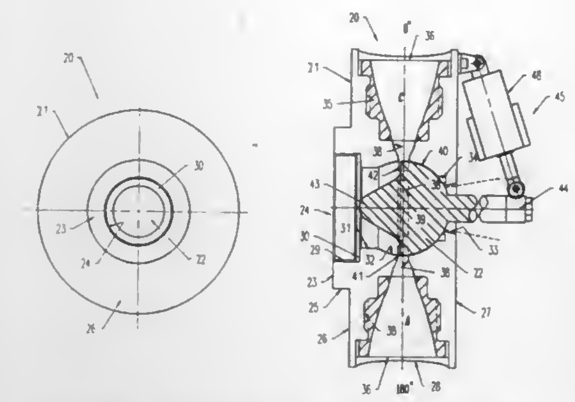
5,711,348
HOT GAS CONTROL VALVE

Douglas H. Morash, Elma, N.Y., and Hans G. Toews, East Aurora, N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Aug. 14, 1996, Ser. No. 696,612

Int. Cl.^{6} F16K *11/076*

U.S. Cl. 137—875 **10 Claims**



1. A control valve adapted to apportion a gas flow among a plurality of outlets, comprising:

a body having an inlet communicating with an internal cavity, said cavity being partially bounded by a partly-spherical concave surface, said body having a plurality of outlet passages terminating in ports at said concave surface;

a valve member operatively arranged within said cavity for omni-directional pivotal movement therewithin, said valve member having a surface sealingly engaging said body concave surface and terminating in an edge, said edge cooperating with said ports to form variable-area metering orifices therebetween and being so configured and arranged as to vary the areas of said orifices as a function of the angular position of said valve member relative to said body such that the sum of the individual open areas of said metering orifices is substantially constant and independent of valve member position over an operating range of valve member movement relative to said body.

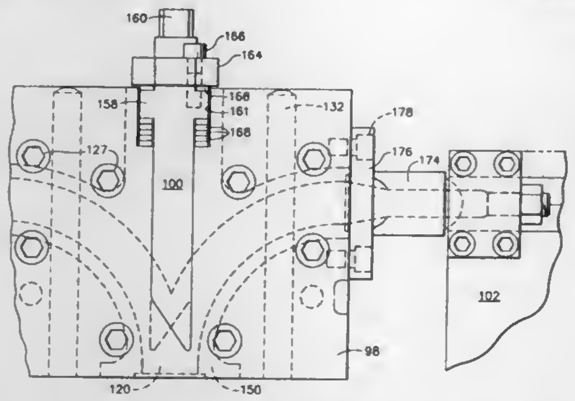
5,711,349
FLOW DIVIDER WITH DIVERTER VALVE

Siegfried R. Wissmann, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 419,306, Apr. 10, 1995, Pat. No. 5,616,350. This application Jan. 10, 1997, Ser. No. 781,253

Int. Cl.^{6} F16K *11/02*

U.S. Cl. 137—876 **2 Claims**



1. A flow divider for receiving a melt stream from a plastics extruder and separating the melt stream into first and second flow channels that supply associated extrusion dies, wherein the flow divider includes a diverter valve comprising:

(a) an elongated cylindrical body received within the flow divider and adapted for rotation therein;

(b) a diverter end connected to the elongated cylindrical body and extending into the melt stream where the melt enters the flow divider and begins to separate into the two flow channels, the diverter end being configured to cause resistance to the melt stream entering the respective flow channels, and rotatable through a range of orientations including (i) a first extreme that maximizes resistance to the first flow channel and minimizes resistance to the second flow channel, (ii) a neutral, intermediate orientation that causes equal resistance to the two channels, and (iii) a second extreme that minimizes resistance to the first flow channel and maximizes resistance to the second flow channel; and

(c) an actuator end extending out of the flow divider and having means for rotating the elongated cylindrical body through incremental adjustments, such that rotation of the body changes the orientation of the diverter end in the melt stream and varies the relative flow resistance to the first and second flow channels,

the flow divider further comprising adjustment means in connection with the diverter valve for varying the distance that the diverter end extends into the melt stream.

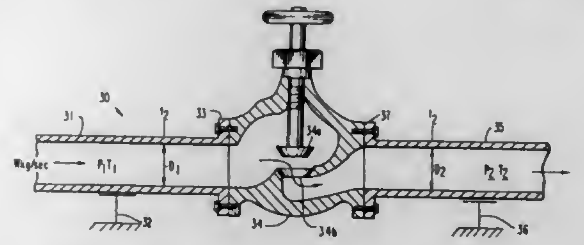
5,711,350
PIPING SYSTEMS PROVIDING MINIMAL ACOUSTICALLY-INDUCED STRUCTURAL VIBRATIONS AND FATIGUE

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy International Inc., Clinton, N.J.

Continuation-in-part of Ser. No. 526,613, Sep. 11, 1995, abandoned. This application Jul. 31, 1996, Ser. No. 690,043

Int. Cl.^{6} F15D *55/00*

U.S. Cl. 138—45 **10 Claims**



1. A piping system adapted for handling flowing fluids under high pressure and flow velocity conditions, with minimal acoustically-induced vibrations, said system comprising:

(a) an elongated upstream pipe section having inner diameter D_1 and wall thickness t_1;

(b) a pressure-reducing device connected pressure-tightly to the upstream pipe section outlet end, said device including an orifice having diameter less than the inner diameter of said upstream pipe section; and

(c) an elongated downstream pipe section connected pressure-tightly to said pressure-reducing device and having inner diameter D_2, and wall thickness t_2; whereby the piping system has an operational acoustic power level PWL which for said downstream pipe section during fluid flowing operation does not exceed that determined by the relationship PWL allowable=173.6–0.125 D_2/t_2 so as to minimize acoustically-induced structural vibrations in the piping system.

5,711,351
FORMING OPENINGS IN PIPES

Douglas John Wheatley, Hudson Hill, Hedingham Road, Wethersfield, Braintree, United Kingdom

PCT No. PCT/GB93/02323, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/11130, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 432,208

Claims priority, application United Kingdom, Nov. 12, 1992, 92 23686

Int. Cl.^{6} F16L *55/18;* **B21B** *17/02*

U.S. Cl. 138—97 **3 Claims**

1. A method of fitting a replacement fill-pipe into an existing fill-pipe projecting downwardly into a tank, comprising:

forming at least one opening through the wall of the existing fill-pipe adjacent the upper end thereof by means of a method comprising the steps of:

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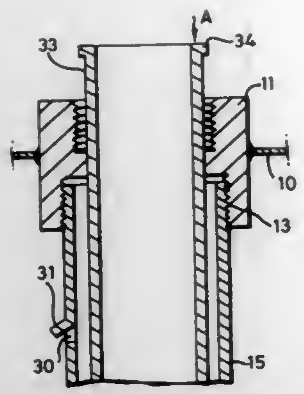
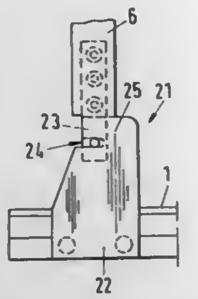


locating within the existing fill-pipe an expandable ram so that the axis of the ram extends substantially transversely of the existing fill-pipe, the ram having on at least one end thereof a cutting tool;
and expanding the ram so as to cause the cutting tool to engage the inner wall of the pipe with the other end of the ram engaging the inner wall of the pipe at an opposed location;
continuing the expansion of the ram to force the cutting tool through the pipe wall, with the reaction to the cutting force being provided by the engagement of said other end of the ram with said opposed location of the pipe wall;
whereafter the method comprises the further steps of:
removing the ram from the existing fill-pipe;
lowering the replacement fill-pipe axially into the existing fill-pipe; and
securing the replacement fill-pipe in position, from the upper end of the replacement fill-pipe.

5,711,352
MOUNTING ARRANGEMENT FOR LINEARLY DRIVEN HEALD FRAMES

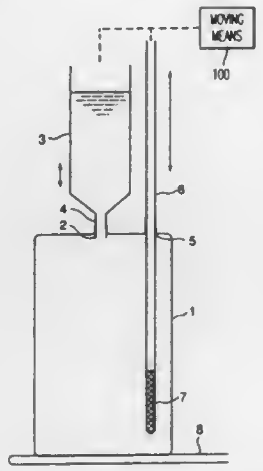
Robert Bucher, Frick, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland
Filed Mar. 29, 1996, Ser. No. 630,867
Claims priority, application United Kingdom, Mar. 14, 1996, 96810163
Int. Cl.^{6} D03C *5/06;13/00*
U.S. Cl. 139—455 **10 Claims**



1. Apparatus for forming a weaving shed comprising:
two heddle carrying rails;
a plurality of heddles for receiving and moving warp threads, the heddles being arranged between the heddle carrying rails to form a heald frame;
a plurality of linear drives each having an armature part, each linear drive being mounted to one of the heddle carrying rails via its corresponding armature part; and
connection means for connecting the armature parts to the heddle carrying rails, the connection means comprising a first part connected to one of said armature parts and a second part connected to a heddle carrying rail, the connection means being configured such that the first and second parts are movable relative to one another in a direction transverse to a working direction of the heald frame.

5,711,353
POWDER FILLING METHOD AND POWDER FILLING DEVICE

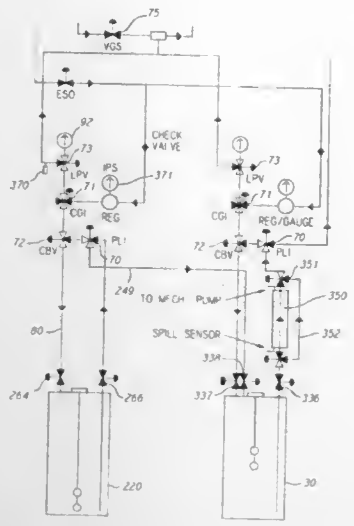
Hideo Ichikawa; Sunao Ikeda, both of Numazu; Michiharu Narushima, Shimizu, and Nobuhiro Makita, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 19, 1996, Ser. No. 589,003
Claims priority, application Japan, Jan. 26, 1995, 7- 010910
Int. Cl.^{6} B65B *1/04*
U.S. Cl. 141—67 **8 Claims**



1. A powder filling method, comprising the steps of:
inserting an air aspirating pipe in a powder container filled with a toner powder;
aspirating air in said powder through said air aspirating pipe;
moving one end of said air aspirating pipe from a bottom portion to a top portion of said powder container, corresponding to an amount of said powder filled in said container; connecting airtightly one of a hopper and a funnel to said powder container through a nozzle, one of said hopper and said funnel being filled with said powder, one of said hopper and said funnel having a discharge hole at a bottom thereof connected to said powder container through said nozzle; blowing air from a wall of said nozzle into said powder container; filling said powder container from one of said hopper or said funnel; and aspirating said air in said powder container through said air aspirating pipe through a hole formed in said powder container.

5,711,354
LEVEL CONTROL SYSTEMS FOR HIGH PURITY CHEMICAL DELIVERY SYSTEMS

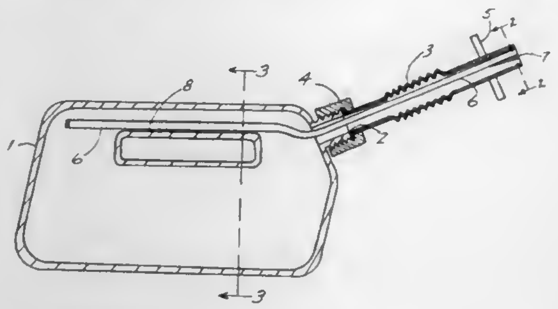
Stephen H. Siegele, Campbell; Craig M. Noah, Mountain View, both of Calif., and John N. Gregg, Marble Falls, Tex., assignors to Advanced Delivery & Chemical Systems, Inc., San Jose, Calif.
Continuation of Ser. No. 345,244, Nov. 28, 1994, which is a continuation-in-part of Ser. No. 184,226, Jan. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 54,597, Apr. 28, 1993, Pat. No. 5,465,766. This application Jun. 7, 1995, Ser. No. 485,968
Int. Cl.^{6} F17C *13/00*
U.S. Cl. 141—198 **12 Claims**



11. A level control system comprising a refillable ampule;
a bulk container for containing a high purity source chemical;
a refill line interposed between and communicating with said ampule and said bulk container for transferring the high purity source chemical from said bulk container to said ampule;
a first metallic float level sensor inside said ampule having at least one trigger point for detecting a first level of the high purity source chemical;
an interface circuit for interfacing said metallic float level sensor with a CVD reactor, said CVD reactor having an indicator that provides a signal to indicate that the high purity source chemical in said ampule is at said first level when the level of the high purity source chemical in said ampule reaches the trigger point of said metallic float sensor; and,
a manifold comprising a process line isolation valve interposed in said refill line for isolating said bulk container from a portion of said refill line; a carrier gas isolation valve for isolating said bulk container from an inert gas pressure source; a low pressure vent valve for isolating a vacuum source from said carrier gas line; and a canister bypass valve for bypassing said pressure source and the vacuum source to at least a portion of said refill line that was not isolated by said process isolation valve.

5,711,355
PORTABLE LIQUID TRANSFER CONTAINER AND DISPENSING NOZZLE WITH NON-MOVABLE PART FREE FLOW, VAPOR RECOVERY AND OVERFILL PREVENTION SYSTEM

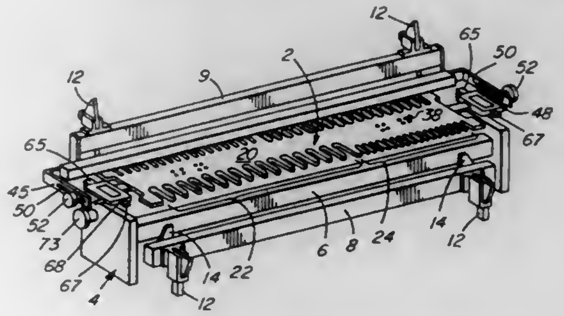
John Francis Kowalczyk, 8421 SW. 47th Ave., Portland, Oreg. 97219
Filed Apr. 9, 1996, Ser. No. 629,527
Int. Cl.^{6} B67D *3/00*
U.S. Cl. 141—382 **12 Claims**



1. In combination:
a portable dispensing container having an exterior which defines a forward region, a back opposite the forward region, a top and a bottom on which the container rests in a normal upright orientation, and the container also having a neck at the forward region of the container and an interior wall member near the top of the container, and
a nozzle attachable to the neck of the container for gravity transfer of liquid from the container by tilting the container forward from the normal upright orientation to a dispensing orientation, the nozzle comprising a flexible outer sleeve defining a passage for flow of liquid from the container and a flexible internal conduit mounted in the outer sleeve and extending toward the back of the container above the interior wall member, the flexible internal conduit having an inner end which is above the surface of liquid in the container both when the container is in its normal upright orientation and when it is in its dispensing orientation,
and wherein the combination has no moving parts.

5,711,356
FINGER JOINT TEMPLATE

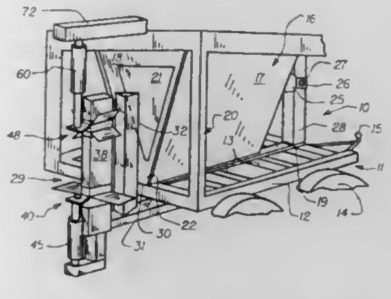
Kenneth M. Grisley, c/o Leigh Industries, P.O. Box 357, Port Coquitlam, B.C., Canada, V3C 4K6
Continuation of Ser. No. 274,854, Jul. 14, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,239
Int. Cl.^{6} B27M *3/00*
U.S. Cl. 144—144.51 **12 Claims**



1. A template for use with a cutting tool and a jig having a positioning member to locate workpieces comprising:
guide means for supporting and guiding the cutting tool to cut joint members in the workpieces; and
means for moving the guide means with respect to the workpiece positioning member a pre-determined distance between a first position to cut joint members in one workpiece and a second position to cut complementary joint members in another workpiece.

5,711,357
ADJUSTABLE LOG SPLITTING HEAD

John R. Smith, 752 E. Hill Rd., Ludlow, Vt. 05149
Filed Feb. 14, 1997, Ser. No. 800,785
Int. Cl.^{6} B27L *7/00*
U.S. Cl. 144—195.1 **12 Claims**



1. An adjustable multi-wedge splitting head for a log splitting apparatus equipped with a ram and guide means for axially advancing pre-cut logs toward said splitting head in a horizontal direction, said splitting head comprising:
a) a vertically oriented stationary post of substantially uniform rectangular cross-sectional configuration bounded by opposed front and rear flat surfaces, paired side surfaces, and upper and lower extremities,
b) an elongated straight stationary splitting wedge disposed in vertical orientation forwardly of said front surface,

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- c) upper and lower multiple splitting wedge assemblies slideably mounted upon and removable from said post, and
- d) activating means which controllably slide said multiple splitting wedge assemblies upon said post.

5,711,358

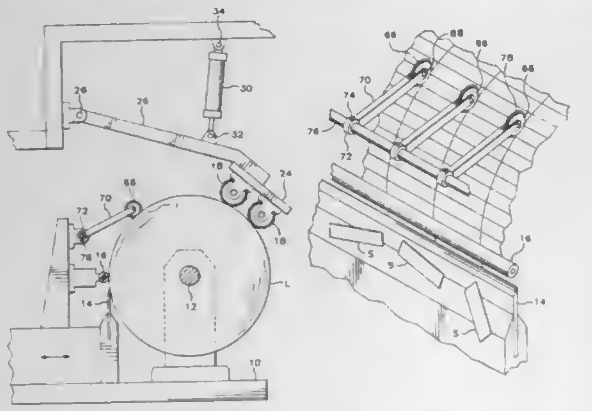
METHOD AND APPARATUS FOR MAKING VERTICAL GRAIN WOOD STRANDS

Bobby G. Willis, 2420 York St., Eugene, Oreg. 97404

Filed Dec. 26, 1995, Ser. No. 578,133

Int. Cl.^{6} B27M *1/08;* **B27L** *5/00;* **B27C** *1/00*

U.S. Cl. 144—367 **19 Claims**



1. The method of making vertical grain wood strands from wood logs, comprising:

- a) rotating a log on its longitudinal axis,
- b) subjecting the rotating log to the cutting action of a plurality of cutters to effect cutting the log longitudinally at circumferentially spaced apart positions of between 0.25 and 1.0 inch and circumferentially at longitudinally spaced apart positions of between 2 and 12 inches to define the width and length, respectively of wood strands, and
- c) subjecting the rotating log to the cutting action of a peeler knife to effect cutting the log to a predetermined depth of between 0.01 and 0.04 inch to define the thickness of wood strands.

5,711,359

VENETIAN BLIND HAVING REPLACEABLE LADDER CORD COVERS

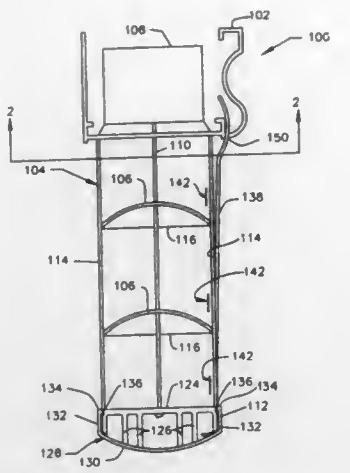
Terry Simon, West Olive, Mich., and Merrill Gitkin, Franklin Lakes, N.J., assignors to Jencraft Corporation, Totowa, N.J.

Filed Feb. 8, 1995, Ser. No. 385,321

Int. Cl.^{6} E06B *9/30*

U.S. Cl. 160—168.1 R **22 Claims**

1. A blind comprising a headrail having an opening, support means extending from said headrail for supporting a plurality of slats, and cover means removably attachable to said support means for concealing a portion thereof, said cover means comprising an elongated strip including at least one fastener attaching said strip to said support means, said strip having a portion extendable into said headrail through said opening to conceal the end thereof, said portion comprising a loose end extending into said headrail and being unattached, whereby said strip may be removed and replaced with another one of said strips.



5,711,360

OPERATING DEVICE FOR ROLLING SHUTTER ASSEMBLIES

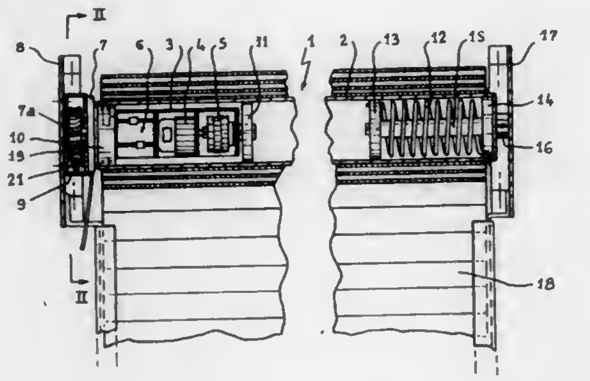
Christophe Viotte, Arc-Les-Gray, France, assignor to SIMU, Arc-les-Gray, France

Filed Feb. 11, 1997, Ser. No. 798,762

Claims priority, application France, Feb. 14, 1996, 96 02085

Int. Cl.^{6} E06B *9/56*

U.S. Cl. 160—310 **11 Claims**



1. An operating device for rolling shutter assemblies comprising,

a reeling shaft having an elongated axis and first and second ends,

a shutter mounted to said shaft, said shaft being caused to rotate by a motor connected to a flange,

a wheel having a plurality of spaced teeth connected to said flange adjacent said first end of said shaft,

a screw means mounted adjacent said wheel and having thread portions for selectively meshing between said teeth of said wheel so that a mechanical connection is selectively established between said screw means and said wheel, said thread portions of said screw means having at least one flat portion whereby said screw can be disengaged from said wheel upon rotation of said screw means to align one of said at least one flat portions adjacent said teeth of said wheel.

5,711,361

METHOD FOR PRODUCING READY-TO-USE CASTING SHELLS OR CORE ASSEMBLIES

Werner Landua, Mannheim, and Werner Pichler, Brühl, both of Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Mannheim, Germany

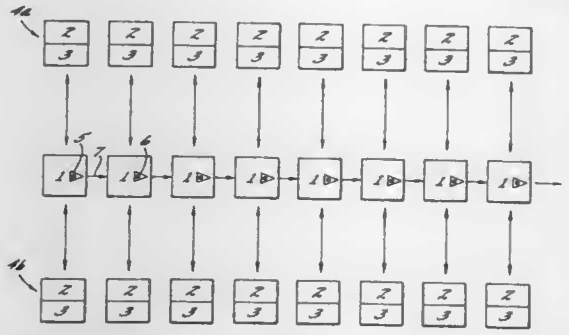
PCT No. PCT/DE94/01421, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/15231, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 1, 1994, Ser. No. 652,498

Claims priority, application Germany, Dec. 3, 1993, 43 41 123.3

Int. Cl.^{6} B22C *9/10;13/08*

U.S. Cl. 164—21 **3 Claims**



1. A method of producing ready to pour multi-part core assemblies adapted for use as a foundry mold and comprising the steps of

- (a) providing an apparatus for making such core assemblies which includes at least two core shooting machines (**1**) disposed along a production line (**7**), at least two sets of tools (**4***a* and **4***b*) operatively associated with each core shooting machine, with each set of tools for each shooting machine comprising an upper tool (**2**) and a lower tool (**3**),
- (b) shooting in one of the two sets of tools (**4***a*) of a first core shooting machine a first core (**6**), and moving the first core on a conveyor plate (**5**) which served as the lower tool (**3**) of the one set of tools to a second shooting machine,
- (c) shooting in one of the two sets of tools (**4***a*) of a second core shooting machine a second core (**6**), lowering the lower tool (**3**) of the one set of tools of the second core shooting machine, moving the conveyor plate (**5**) with the first core (**6**) thereon below the upper tool (**2**) of the second shooting station, and depositing the second core (**6**) on the first core (**6**) carried on the conveyor plate (**5**),
- (d) exchanging on the first core shooting machine the other of the two sets of tools (**4***b*) for the one set of tools (**4***a*) after the conveyor plate (**5**) with the first core (**6**) thereon has left the first core shooting station, and
- (e) exchanging on the second core shooting machine the other of the two sets of tools (**4***b*) for the one set of tools (**4***a*) after the conveyor plate (**5**) with the first and second cores thereon has left the second core shooting station,

whereby both of the cores deposited on the conveyor plate (**5**) are made with the tools of the one set (**4***a*) and both of the cores deposited on a subsequent conveyor plate are made with the tools of the other set (**4***b*).

5,711,362

METHOD OF PRODUCING METAL MATRIX COMPOSITES CONTAINING FLY ASH

Pradeep K. Rohatgi, Milwaukee, Wis., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Nov. 29, 1995, Ser. No. 564,517

Int. Cl.^{6} B22D *19/14*

U.S. Cl. 164—97 **22 Claims**

1. A method for producing a metal matrix composite, comprising steps of:

combining a reinforcing phase comprising a fly ash with an aqueous medium comprising a binder to produce a slurry;

drying said slurry to produce a solid, porous preform; and

introducing molten metal into said preform,

whereby said metal matrix composite is produced.

5,711,363

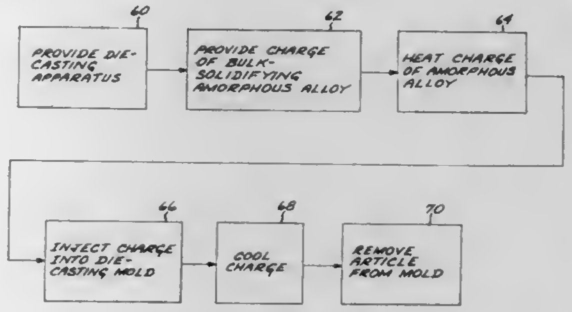
DIE CASTING OF BULK-SOLIDIFYING AMORPHOUS ALLOYS

David M. Scruggs, Oceanside; William L. Johnson, and Atakan Peker, both of Pasadena, all of Calif., assignors to Amorphous Technologies International, Laguna Niguel, Calif.

Filed Feb. 16, 1996, Ser. No. 602,899

Int. Cl.^{6} B22D *17/04*

U.S. Cl. 164—113 **16 Claims**


60
PROVIDE DIE-CASTING APPARATUS
62
PROVIDE CHARGE OF BULK-SOLIDIFYING AMORPHOUS ALLOY
64
HEAT CHARGE OF AMORPHOUS ALLOY
66
INJECT CHARGE INTO DIE-CASTING MOLD
68
COOL CHARGE
70
REMOVE ARTICLE FROM MOLD

1. A method for preparing solid die-cast articles, comprising the steps of:

providing a die-casting apparatus including

a die-casting mold having a metal injection port leading to a die mold cavity with an internal molding surface,

a metal injector disposed to force metal into the injection port, and

a metal heater operable to heat a charge of metal and provide the heated charge to the metal injector;

providing a charge of a bulk-solidifying amorphous alloy of sufficient volume to fill the die-casting mold cavity, the bulk-solidifying amorphous alloy having a linear coefficient of expansion of no greater than about 10×10^{-6} per °C. when measured at a temperature below T_g, where T_g is the temperature corresponding to a viscosity of the bulk-solidifying amorphous alloy of about 10^{13} poise;

heating the charge of the bulk-solidifying amorphous alloy to an injection temperature whereat its viscosity is less than about 10^2 poise at the injection temperature using the metal heater;

injecting the charge of heated bulk-solidifying amorphous alloy into the die-casting mold using the metal injector; and

cooling the charge in the die-casting mold at a cooling rate such that the charge remains amorphous in structure.

5,711,364

METHOD OF AND APPARATUS FOR CASTING PIPE

Atsushi Ota, Toyota; Masatada Nakamichi, Okazaki; Hidehiko Kadono, Toyota; Seizi Uda, Okazaki; Hiroaki Mori, and Shinichi Yoshida, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 13, 1996, Ser. No. 696,059

Claims priority, application Japan, Aug. 30, 1995, 7-221945

Int. Cl.^{6} B22D *17/08*

U.S. Cl. 164—113 **1 Claim**

1. A method of casting a pipe having an axially elongate hole of which a front end is closed, comprising the steps of:

positioning a rod-like center pin for forming the hole in a cavity of a die in a predetermined positional relation thereto such that a stem position of the center pin is cantilever supported in the die and a free end of the center pin is found in the cavity;

supporting the positioned center pin sidewise with a support pin to prevent positional deviation of the center pin;

charging molten metal into the die cavity;

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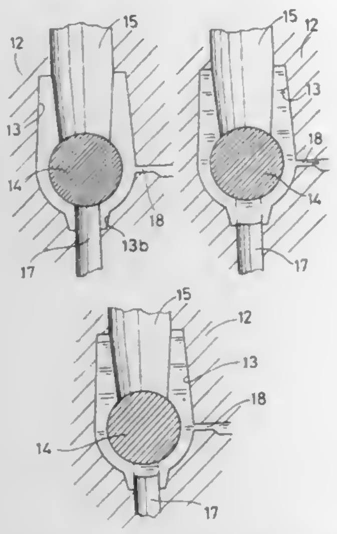
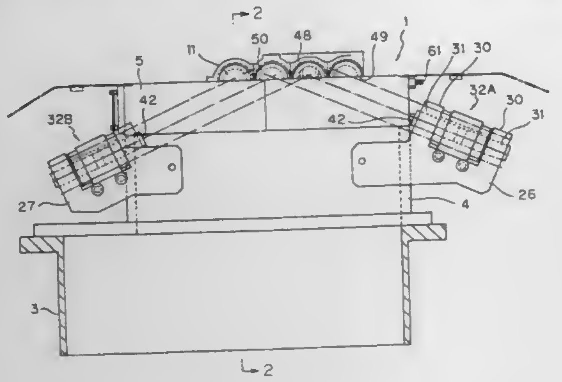


retreating the support pin apart from the center pin; and replenishing a space formed by the retreat of the support pin with molten metal.

5,711,365
SHELL MOLDING APPARATUS

Akio Shimizu, Yokkaichi; Taiti Yoshikawa, Kameyama; Hiroshi Suzuki, Suzuka; Shigeyuki Kinoshita; Keiji Wada, both of Kameyama, and Yasuo Kawai, Suzuka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1996, Ser. No. 626,605
Claims priority, application Japan, Apr. 3, 1995, 7-077877; Apr. 4, 1995, 7-078957; Apr. 4, 1995, 7-078958
Int. Cl.^{6} B22C *13/08;17/00;15/02*
U.S. Cl. 164—165 **14 Claims**

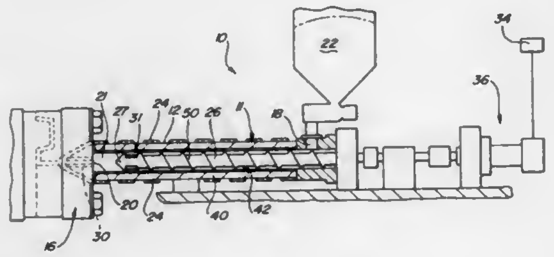


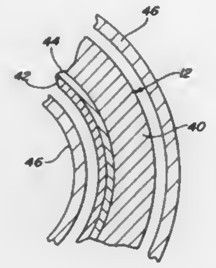
1. A shell molding apparatus, comprising:
a lower die comprising:
a plurality of shell molding inserts disposed adjacent to one another, each of said shell molding inserts having the shape of a halved cylinder so as to include a curved surface, said shell molding inserts having a spiny insert receiving recess formed in said curved surface, and
spiny inserts retractably provided in the spiny insert receiving recesses, each spiny insert having a curved surface of the same curvature as the curved surface of the shell molding insert and provided with many protrusions on the curved surface;
an upper die in which a body thereof has a plurality of continuously formed recesses corresponding to the plurality of shell molding inserts of said lower die;
spiny insert actuating means for projecting and retracting the spiny inserts by moving withdrawal pins connected to the spiny inserts;
stopper means for positioning said withdrawal pins at a position where said withdrawal pins exhibit an identical displacement due to thermal expansion; and
thermal expansion absorbing means for absorbing thermal expansion of said withdrawal pins.

5,711,366
APPARATUS FOR PROCESSING CORROSIVE MOLTEN METALS

John Mihelich, Winston, Ga., and Raymond F. Decker, Ann Arbor, Mich., assignors to Thixomat, Inc., Ann Arbor, Mich.

Filed May 31, 1996, Ser. No. 658,945
Int. Cl.^{6} B22D *17/00;* **B22C** *3/00*
U.S. Cl. 164—312 **28 Claims**





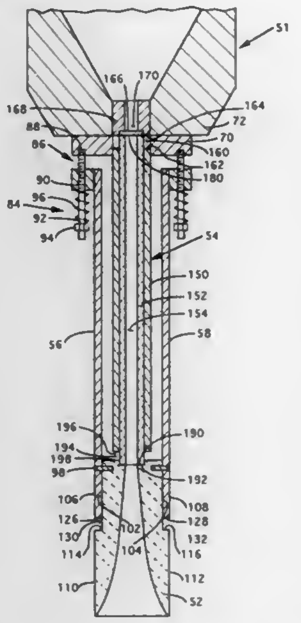
1. Apparatus for processing a molten or semi-molten metallic material into a thixotropic state, said metallic material being corrosive when in a molten or semi-molten state, said apparatus comprising;
a barrel having opposing ends, said barrel having an outlet at one of said ends and having an inlet toward the other of said ends, said inlet located a distance from said outlet, said barrel having an inner surface of alloy Nb-30Ti-20W, said inner surface defining a passageway through said barrel and adapted to contact the metallic material as it passes through said apparatus, said inner surface being resistant to corrosion and erosion by metallic material and said passageway communicating said inlet with said outlet;
a screw located within said passageway for rotation relative thereto, said screw including a body having at least one vane thereon, said vane at least partially defining a helix around said body to propel the metallic material through said barrel, said screw having an outer surface being adapted to contact the metallic material as it passes through said apparatus and being resistant to corrosion and erosion by metallic material;
drive means for rotating said screw and shearing said metallic material at a rate sufficient to inhibit complete formation of dendritic structures therein while said metallic material is in a semi-molten state, rotation of said screw by said drive means further causing said metallic material to be discharged in a thixotropic state from said barrel and through said outlet for forming into a predetermined article;
feeder means for introducing said metallic material into said barrel through said inlet; and
heating means for transferring heat to said barrel and said metallic material therein such that said metallic material is in a semi-molten state and at a temperature between the liquidus and solidus temperatures of said metallic material.

2. Apparatus for processing a molten or semi-molten metallic material into a thixotropic state, said metallic material being corrosive when in a molten or semi-molten state, said apparatus comprising;
a barrel having opposing ends, said barrel having an outlet at one of said ends and having an inlet toward the other of said ends, said inlet located a distance from said outlet, said barrel having an inner surface defining a passageway through said barrel and adapted to contact the metallic material as it passes through said apparatus, said inner surface being resistant to corrosion and erosion by metallic material and said passageway communicating said inlet with said outlet;
a screw located within said passageway for rotation relative thereto, said screw including a body having at least one vane thereon, said vane at least partially defining a helix around said body to propel the metallic material through said barrel, said screw including an outer surface of alloy Nb-30Ti-20W, said outer surface being adapted to contact the metallic material as it passes through said apparatus and being resistant to corrosion and erosion by metallic material;
drive means for rotating said screw and shearing said metallic material at a rate sufficient to inhibit complete formation of dendritic structures therein while said metallic material is in a semi-molten state, rotation of said screw by said drive means further causing said metallic material to be discharged in a thixotropic state from said barrel and through said outlet for forming into a predetermined article;
feeder means for including said metallic material into said barrel through said inlet; and
heating means for transferring heat to said barrel and said metallic material therein such that said metallic material is in a semi-molten state and at a temperature between the liquidus and solidus temperatures of said metallic material.

5,711,367
APPARATUS FOR DELIVERING MOLTEN METAL TO A CASTER INCLUDING WEAR STRIPS

Wilhelm F. Lauener, Gerlafingen/SO, Switzerland, assignor to Larex A.G., Recherswil Solothurn, Switzerland

Filed Jan. 11, 1996, Ser. No. 567,179
Int. Cl.^{6} B22D *41/50*
U.S. Cl. 164—432 **19 Claims**



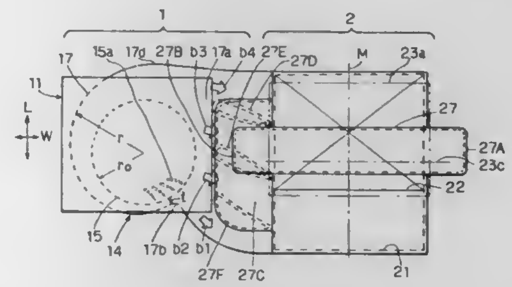
1. A molten metal delivery apparatus for introducing molten metal into a mold of a caster, said molten metal delivery apparatus comprising:
a tundish;
a nozzle for receiving molten metal from said tundish and discharging said molten metal into said mold;
a plurality of tubes interposed between said tundish and said nozzle for transporting said molten metal from said tundish to said nozzle; and
a plurality of wear strips having a first end portion secured to said tundish and a second end portion secured to said nozzle, said wear strips (i) securing said nozzle to said tundish; (ii) providing a tight secure fit of said tubes to said nozzle and (iii) protecting said nozzle from wearing.

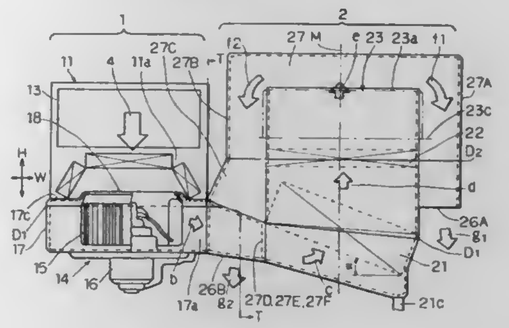
18. The apparatus of claim 1, wherein
said caster is a twin belt caster including a pair of opposed movable belts and a pair of opposed side dams which together form said mold.

5,711,368
AIR CONDITIONING APPARATUS FOR A VEHICLE

Koji Ito, Nagoya; Teruhiko Kameoka, Okazaki; Hisashi Tanaka; Yuichi Shirota, both of Anjo; Manabu Miyata, Kariya, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 3, 1996, Ser. No. 675,597
Claims priority, application Japan, Jul. 6, 1995, 7-170970
Int. Cl.^{6} F25B *29/00*
U.S. Cl. 165—42 **12 Claims**





1. An air conditioning apparatus for a vehicle having a passenger compartment, comprising:
a blower for blowing conditioned air;
a heating heat exchanger disposed substantially horizontally, into which blown air blown by said blower is introduced from a lower side thereof, for heating and discharging said blown air upwardly;
a foot air outlet opened to a foot area in said passenger compartment to supply conditioned air thereto; and
a foot air duct to introduce the conditioned air heated by said heating heat exchanger from an upper portion of said heating heat exchanger to said foot air outlet, wherein,
said foot air duct includes a passage portion passing through an outlet side path of said blower.

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5,711,369

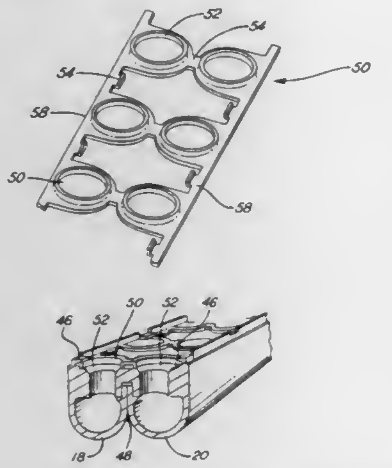
HEAT EXCHANGER MANIFOLD HAVING A SOLDER STRIP

Howard Murray Huddleston, Cambridge City, Ind., and Ramchandra L. Patel, Southgate, Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Dec. 16, 1996, Ser. No. 771,357

Int. Cl.⁶ B23K *1/00*

U.S. Cl. 165—79 **11 Claims**



1. A method of making a manifold for a heat exchanger, comprising the steps of:
- providing a generally elongate, plastically deformable block of material;
- forming a longitudinal channel member on one side of said block, the longitudinal channel member having a geverally planar base member and a pair of vertically depending walls projecting generally perpendicularly to the plane of said base member and defining a stepped portion extending along the longitudinal length thereof;
- forming a plurality of fluid conducting passageways in said base member;
- forming a hollow longitudinal conduit in said block on a side opposite the channel member;
- providing a generally planar solder strip in said channel member, the solder strip having a plurality of apertures corresponding to each of said plurality of fluid conducting passageways; and
- bending the stepped portion of said channel member over the solder strip to hold the solder strip in a given position.

6. A method of making a manifold for a heat exchanger, comprising the steps of:
- providing a generally elongate, plastically deformable block of material;
- forming a first longitudinal channel member in said block on one longitudinal side thereof, the first longitudinal channel member having a generally planar base member and a pair of vertically depending walls projecting generally perpendicularly to the plane of said base member;
- forming a second longitudinal channel member in said block on a side opposite said first channel member, the second longitudinal channel member having a generally planar base member and a pair of vertically depending walls projecting generally perpendicularly to the plane of said base member, said walls defining a stepped portion extending along the longitudinal length thereof;
- forming a plurality of fluid conducting passageways in said base member;
- forming a hollow longitudinal conduit in said first channel member;
- providing a solder strip in said second channel member, the solder strip having a plurality of apertures corresponding to each of said plurality of fluid conducting passageways; and
- bending said stepped portion of said second channel member over said solder strip to hold the solder strip in a given position.

5,711,370

INLET AND OUTLET UNION MECHANISMS OF A HEAT EXCHANGER

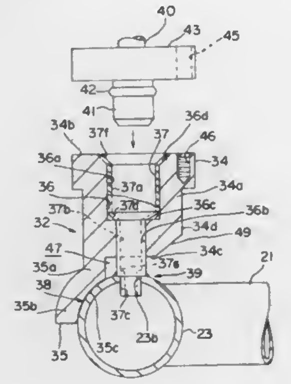
Hiroshi Tanaka, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jun. 6, 1996, Ser. No. 659,514

Claims priority, application Japan, Jun. 9, 1995, 7-168303

Int. Cl.⁶ F28F *9/04*

U.S. Cl. 165—178 **24 Claims**



1. A heat exchanger for conducting a fluid comprising:
- a plurality of heat transfer tubes each having opposite first and second ends;
- first and second header pipes fixedly and hermetically mounted to the first and second ends, respectively; and
- a pair of union joint means connected to said first and second header pipes respectively for linking said heat exchanger to an external element of a fluid circuit, each of said union joint means comprising:
- a union element;
- a fluid passage member disposed in said union element;
- a brazed area wherein one end of said fluid passage member is brazed to a hole formed in said first and second header pipes; and
- wherein said union joint means has a space formed around said brazed area for observing the brazed area, said space extending substantially completely around said area where said fluid passage member is brazed to the hole formed in said header pipe, said space facilitating the flow of flux to said brazed area to effect a more secure connection.

5,711,371

DOWN HOLE SUBMERSIBLE PUMP

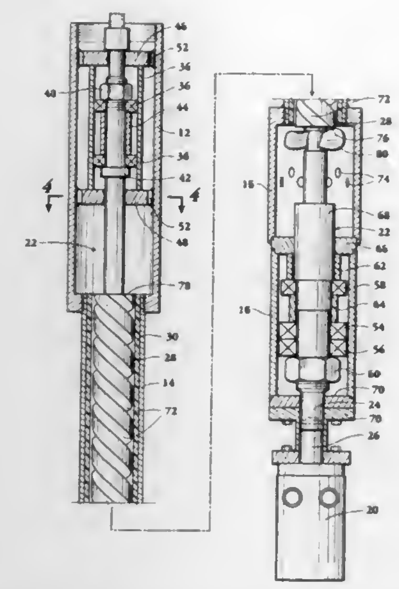
Bill S. Bingham, 70 W. South Park, Broken Arrow, Okla. 74011

Filed Jun. 2, 1995, Ser. No. 459,824

Int. Cl.⁶ E21B *43/38*

U.S. Cl. 166—106 **20 Claims**

1. A down hole submersible pump for attachment to the lower end of a string of tubing extending to the earth's surface comprising:
- a tubular pump casing having an upper end, a lower end and an internal cylindrical surface;
- means connecting said pump casing upper end to said tubing string lower end;
- a cylinder rotatably positioned concentrically within said pump casing, the cylinder having a top and bottom end, an external peripheral surface in close proximity to said casing internal cylindrical surface and a cylindrical axis, at least one spiraled groove being formed in said external peripheral surface extending the full length thereof;
- a motor having a drive shaft connected concentrically to said cylinder by which said cylinder is rotated;
- means supporting said motor to said pump casing lower end;
- fluid inlet means in said pump casing between said motor and said cylinder lower end, fluid being moved by the rotation of said cylinder from said fluid inlet through said at least one spiral grove to above said cylinder and thence to the earth's surface when said cylinder is rotated by said motor; and
- a propeller positioned on said drive shaft adjacent to and below said cylinder lower end.



5,711,372

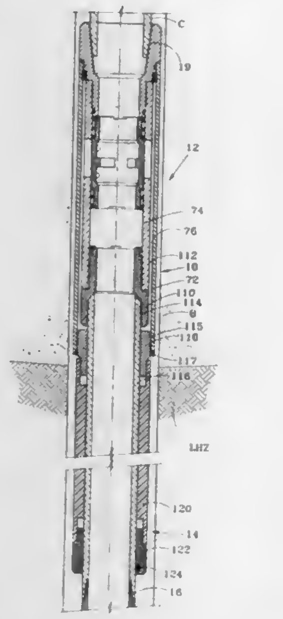
INFLATABLE PACKER WITH PORT COLLAR VALVING AND METHOD OF SETTING

Charles O. Stokley, Houston, Tex., assignor to TAM International, Houston, Tex.

Filed May 21, 1996, Ser. No. 651,966

Int. Cl.⁶ E21B *23/06;31/127*

U.S. Cl. 166—187 **21 Claims**



11. A method of setting an inflatable packer positioned along a tubular string in a wellbore, the inflatable packer including a sleeve-shaped packer body having a throughbore therein and an elastomeric packer element radially outward of the packer body, the elastomeric packer element and the sleeve-shaped packer body defining an inflation chamber radially therebetween, the method comprising:
- securing an actuating tool along a work string;
- lowering the actuating tool and the work string through the tubular string;
- mechanically engaging the actuating tool and a valve collar supported on the packer body;
- manipulating the work string to selectively open the valve collar;
- transmitting an inflation fluid through the open valve collar and to the inflation chamber to inflate the packer element; and
- mechanically manipulating the work string to selectively close the valve collar and seal the inflation chamber from the wellbore.

5,711,373

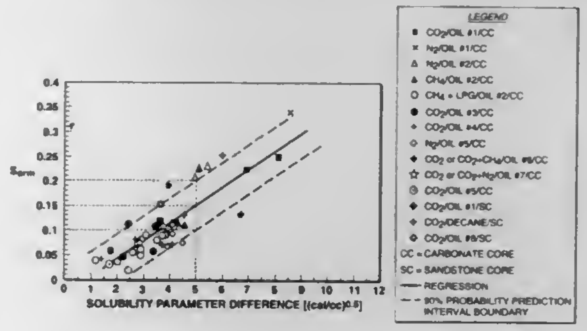
METHOD FOR RECOVERING A HYDROCARBON LIQUID FROM A SUBTERRANEAN FORMATION

Elaine Austin Lange, Bellaire, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 12, 1996, Ser. No. 599,910

Int. Cl.⁶ E21B *43/22;47/10*

U.S. Cl. 166—252.2 **6 Claims**



1. A method for predetermining the amount of a hydrocarbon liquid remaining in a subterranean formation resulting from introducing a substantially non-aqueous displacement fluid into said formation and producing at least a portion of the hydrocarbon liquid, comprising:
- a) determining a solubility parameter for the hydrocarbon liquid in said formation before introducing said displacement fluid into said formation;
- b) determining a solubility parameter for the displacement fluid before introducing it into said formation;
- c) determining the difference between said hydrocarbon liquid and displacement fluid solubility parameters;
- d) predetermining from the said difference the amount of hydrocarbon liquid that should remain in said formation resulting from introducing said displacement fluid into said formation;
- e) introducing a substantially non-aqueous displacement fluid into said formation; and
- f) producing at least a portion of said hydrocarbon liquid.

5,711,374

METHOD FOR CYCLONE SEPARATION OF OIL AND WATER AND AN APPARATUS FOR SEPARATING OF OIL AND WATER

Tore Kjos, Oslo, Norway, assignor to Read Process Engineering A/S, Hvalstad, Norway

PCT No. PCT/NO93/00193, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/13930, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 16, 1993, Ser. No. 454,386

Claims priority, application Norway, Dec. 17, 1992, 924896

Int. Cl.⁶ E21B *43/40*

U.S. Cl. 166—265 **18 Claims**

1. An oil well system for separating oil from water in a production flow from a hydrocarbon reservoir at the lower end of a production pipe string; the system comprising:
- a perforated casing; and

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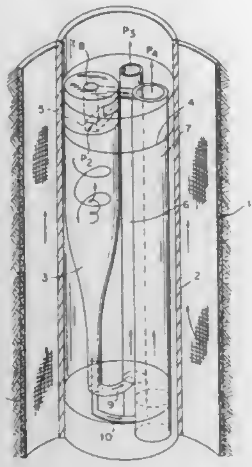


a demountable separation module disposed within the casing, the separation module having a cylindrical housing and comprising;

threaded means for attaching the separation module to the production pipe string;

a separation module inlet opening in the cylindrical housing for admitting the production flow;

a cyclone separator disposed within the separation module and including a cyclone lateral tangential inlet terminating at the separation module inlet opening on an outer surface of the cylindrical housing, an oil outlet, and a water outlet;

a screening device disposed on the cylindrical housing to cover the separation module inlet opening, the screening device including apertures smaller than the cyclone inlet;

means for re-injecting water from the water outlet into the reservoir; and

a water injection system for the reservoir, wherein the means for re-injecting water from the water outlet into the reservoir includes means for re-injecting water via deviated wells for geometric coverage as part of the water injection system;

wherein an annular space between the separation module and the perforated casing comprises means for distributing unseparated oil/water to the cyclone separator.

5,711,375
WELL STABILIZATION TOOLS AND METHODS

Krishna M. Ravi, Duncan; Robert M. Beirute, Tulsa; Alan B. Duell; Henry E. Rogers, both of Duncan; Dick A. Murray, Okmulgee, and Earl D. Webb, Healdton, all of Okla., assignors to Halliburton Company, Duncan, Okla.

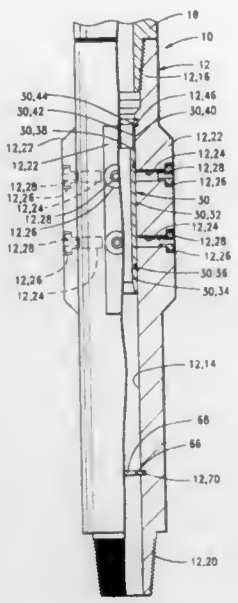
Filed Aug. 2, 1996, Ser. No. 692,868
Int. Cl.^{6} E21B ***23/00***

U.S. Cl. 166—285 **40 Claims**

10. A method of stabilizing an unstable subterranean zone or formation passed through by a well bore during the drilling of the well bore with a drill bit connected to a drill string comprising the steps of:

(a) placing a well stabilization tool in the drill string near the drill bit, said tool having a longitudinal fluid flow passage therethrough, having one or more lateral fluid jet forming ports therein and having an internal valve which can be selectively moved between a first position whereby fluid pumped into the drill string is flowed through said fluid flow passage of said tool and through the drill bit and a second position whereby said fluid is flowed through said lateral fluid jet forming ports of said tool;

(b) drilling the well bore with said valve of said tool in said first position until the well bore has been drilled through the unstable subterranean zone or formation;



(c) moving said valve of said tool from said first position to said second position and pumping fluid through said jet forming ports at a rate while moving said tool through the portion of the well bore in the unstable zone or formation whereby the diameter of the well bore is enlarged by fluid jet erosion;

(d) pumping a hardenable cementitious material through the drill string and through said jet forming ports of said tool at a rate while moving said tool through the enlarged portion of the well bore in the unstable zone or formation whereby the enlarged portion of the well bore is filled with said hardenable cementitious material;

(e) moving said valve of said tool back to said first position while said cementitious material is allowed to harden; and

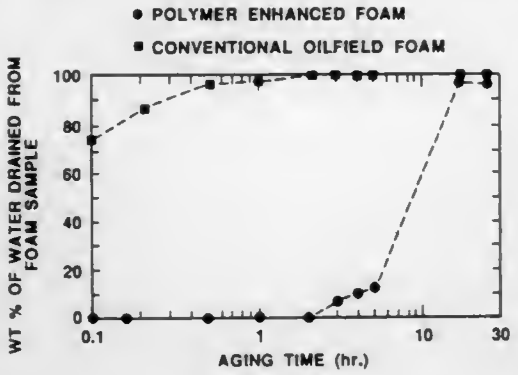
(f) drilling the well bore through said hardened cementitious material.

5,711,376
HYDRAULIC FRACTURING PROCESS

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 7, 1995, Ser. No. 568,872
Int. Cl.^{6} E21B ***43/26***

U.S. Cl. 166—308 **29 Claims**



5. A fracturing process applied to a subterranean formation below an earthen surface in fluid communication with a wellbore comprising the steps of:

(a) preforming a foamed fracturing fluid at the surface comprising an aqueous solvent, a water-soluble synthetic polymer, a surfactant, and a gas, wherein the fluid is substantially free of agents which are capable of crosslinking the polymer and wherein said polymer is selected from the group consisting of polyacrylamide; partially hydrolyzed polyacrylamide; acrylamide copolymers; acrylamide terpolymers containing acrylamide, a second species, and a third species; tetrapolymers containing acrylamide, acrylate, a third species, and a fourth species; polyvinyl alcohol; polyethylene oxide; polyvinyl pyrrolidone; and mixtures thereof; and

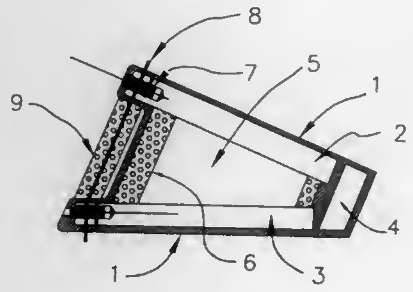
(b) injecting said fracturing fluid into said formation via said wellbore at a pressure sufficient to induce at least one fracture in said formation.

5,711,377
ELEVATED HORSESHOE

Burke Lee Foster, 11520 Calvert Rd., Mobile, Ala. 36608, assignor to Burke Lee Foster, Mobile, Ala.

Filed Sep. 27, 1995, Ser. No. 534,871
Int. Cl.^{6} A01L ***7/02***

U.S. Cl. 168—14 **2 Claims**



2. An elevated horseshoe for the front feet of gaited performance horses such as the Tennessee Walking horse wherein the heel height is predetermined and the rebound characteristics are adjustable comprising:

a) an elevated horseshoe with a shape similar to, yet larger around than, a horse's hoof, having a heel height higher than the toe height, molded or formed in one piece and having resilient skin and body material, having at least one chamber within said horseshoe body in the rear ⅔ portion of said horseshoe;

b) the top and bottom surfaces of said horseshoe being structurally capable of being nailed or otherwise attached to a nailer plate or the horse's hoof, the bottom surface of said horseshoe having a flexible portion near the toe which will bend when required during heel compression of said horseshoe body;

c) the sidewall and heel portion of said horseshoe body being extensible and compressible, such that when the body of said horseshoe is compressed the top surface of said horseshoe can become parallel with the bottom surface of said horseshoe, and such that when the heel portion of said horseshoe is fully extended the top surface of said horseshoe may make a predetermined angle of substantially 20 degrees with the bottom surface of said horseshoe;

d) said at least one chamber in said horseshoe being sealed from atmospheric pressure, and having means to pressure compensate said at least one chamber within said horseshoe to control the rebound characteristics of said horseshoe.

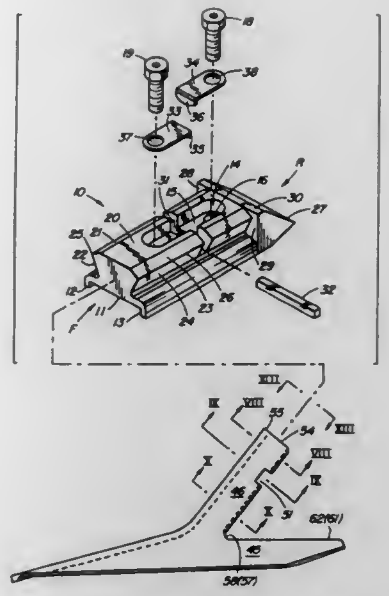
5,711,378
KNOCK-ON EARTH WORKING TOOL SECUREMENT ASSEMBLY

Linus I. Yeager, St. Brieux, Canada, assignor to F. P. Bourgault Tillage Tools, Ltd., St. Brieux, Canada

Filed Apr. 17, 1996, Ser. No. 633,482
Int. Cl.^{6} A01B ***15/00***

U.S. Cl. 172—730 **18 Claims**

1. An assembly for securement of an earth working tool to an elongated member complementary with a socket of the tool to secure the tool to an earth working implement attached to said



elongated member by a wedging frictional grip between said elongated member and said socket, said arrangement comprising, in combination:

(a) said elongated member being an elongated tapered adaptor, said elongated tapered adaptor including:
  i) a first end and an opposed second end;
  ii) securement means for fixedly securing the adaptor to said earth working implement;
  iii) opposed surfaces complementary with inner surfaces of the socket of said earth working tool for a wedging frictional grip between the adaptor and the socket upon a forced insertion of the socket over and along the adaptor, in a direction from said first end to said second end of the adaptor; and

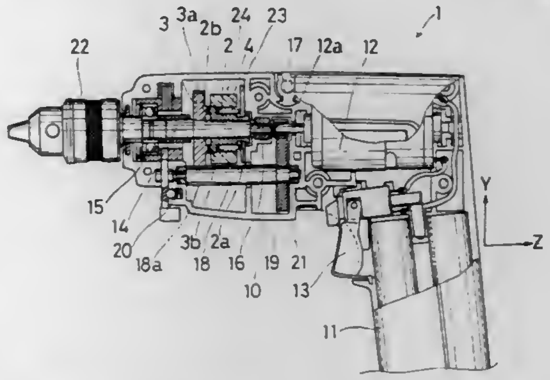
b) blocking means adapted to block an additional relative movement between the socket and the adaptor excessively beyond a location corresponding to a firm wedging frictional grip between the socket and the adaptor required for operative securement of the tool to the implement, to allow release of the tool from the implement by a hammer blow even if there has been said additional relative movement due to an excessive impact at the tool.

5,711,379
HAMMER DRILL

Kunio Amano, and Akihito Hara, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

Filed May 23, 1996, Ser. No. 651,257
Claims priority, application Japan, May 29, 1995, 7-130407
Int. Cl.^{6} B23B ***45/16***

U.S. Cl. 173—48 **4 Claims**



1. A hammer drill comprising:
a housing;

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a spindle supported by bearings mounted in the housing, said spindle movable in an axial direction relative to the housing within a predetermined range;

a rotatable cam member fixedly mounted on the spindle;

means for rotating said rotary cam member together with said spindle;

cylindrical means mounted on said spindle and being movable in the axial direction relative to the spindle;

means for preventing rotational movement of said cylindrical means;

means for normally biasing said cylindrical means toward said rotary cam member in the axial direction of the spindle;

said cylindrical means including a clutch member and a weight member substantially configured as a cylinder with a first and a second flat outer surface at diametrically opposed positions;

said means for preventing rotational movement having the configuration of a U-shaped bracket fixed relative to the housing, said bracket having a first and a second flat surface configured to slidably contact the first and the second outer surfaces;

a first cam provided on said rotatable cam member, a second cam provided on said clutch member, the cams facing each other in the axial direction of the spindle and cooperating with each other so that in response to spindle rotation, said cylindrical means repeatedly moves toward and away from the rotating cam member, whereby the cylindrical means applies vibrations to the spindle in the axial direction, the impacting force of the vibrations improving the performance.

5,711,380

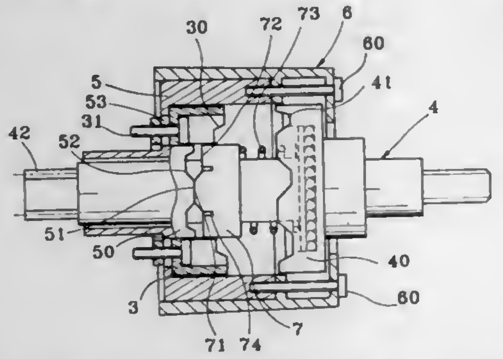
ROTATE PERCUSSION HAMMER/DRILL SHIFT DEVICE

Yueh Chen, 9-5., Fl. No. 149, Sec. 2, Chi-Lung Rd., Taipei, Taiwan

Filed Feb. 6, 1997, Ser. No. 795,661

Int. Cl.^{6} B25D *11/04*

U.S. Cl. 173—48 **3 Claims**



1. A rotate percussion hammer/drill shift device suitable for mounting on a hand drill comprising:

a drill comprising a tubular housing, at least an output spindle and a threaded socket disposed at the same side of said tubular busing;

at least a stationary percussion cam disposed at suitable position at said drill, an output shaft connected to said output spindle of said drill in a coaxial manner wherein said output shaft can be selectively moved to a working position from a normal position, said output shaft further including a rotary cam by which said output shaft may rotate synchronously with said spindle of the drill;

a clutch mechanism retaining said output shaft in a normal position or a working position, said clutch mechanism comprising:

a clutch cam which is disposed to perform an angular movement centered on said output shaft, an annular controlling ring being connected to said clutch cam by a plurality of screws, a clutch member being sleeved onto said output shaft, said clutch cam further including a stopper disposed at a central position of said clutch cam, a sector hole which may receive the projected threaded socket being provided, an axial end portion of said stopper being provided with a stop peak portion and a stop valley portion which are disposed at different axial positions, said clutch being configured with a ring configuration and wherein said output shaft can pass through loosely, said clutch being provided with a meshing surface which is projected toward said stopper, said meshing surface being configured with a peak portion and a valley portion, the other end of said clutch being connected to said output shaft, a first spring being provided wherein the clutch is biased such that the meshing surface may selectively contact with the stop peak portion or stop valley portion, wherein when said controlling ring is rotated to the working position, said stop peak portion is engaged with the valley portion and when said controlling ring is moved to a normal position, the stop peak portion is disengaged with the valley portion.

5,711,381

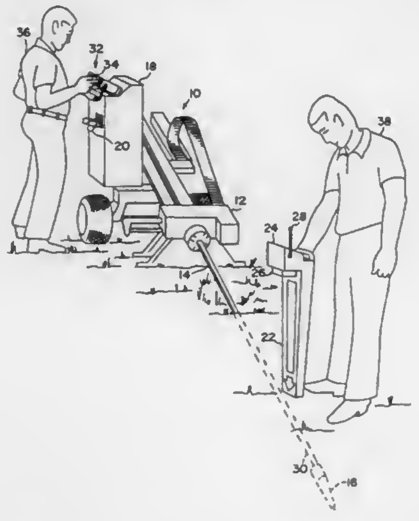
BORE LOCATION SYSTEM HAVING MAPPING CAPABILITY

John T. Archambeault, Joliet, Ill.; David J. Gasmovic, Simpsonville, S.C., and Morio Mizuno, Iwakura, Japan, assignors to McLaughlin Manufacturing Company, Inc., Greenville, S.C.

Filed Jan. 16, 1996, Ser. No. 583,303

Int. Cl.^{6} G01V *1/00*

U.S. Cl. 175—45 **25 Claims**



1. A system for mapping horizontal bores below a ground surface, said system comprising:

a transmitting source configured to radiate a location signal from the bore;

a receiver device configured to receive the location signal and to indicate, responsively to the location signal, the lateral position of the horizontal bore with respect to said receiver device;

a measurement device configured to measure the depth of the bore with respect to the ground surface at selected locations along the bore; and

a monitor device configured to receive depth data from the measurement device, to compile the depth data associated with the selected locations with respect to at least one reference position, and to output the compiled depth data so that the depth of the bore at the selected locations may be collectively identified.

5,711,382

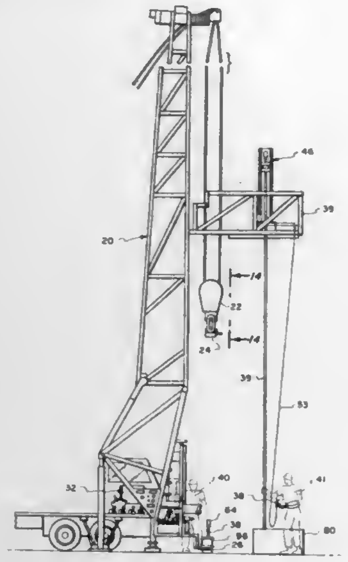
AUTOMATED OIL RIG SERVICING SYSTEM

James Hansen, 3708 S. Real Rd., Bakersfield, Calif. 93309, and Louis E. Witte, 6300 Seven Seas Ave., Bakersfield, Calif. 93306

Filed Jul. 26, 1995, Ser. No. 506,955

Int. Cl.^{6} E21B *19/70*

U.S. Cl. 175—52 **27 Claims**



1. A mobile oil well servicing system having a derrick and hydraulic system mounted on a chassis of a vehicle the improvement comprising;

automatic tong assembly means pivotally mounted on said derrick for automatically disconnecting and reconnecting tubulars to service an oil well;

said automatic tong assembly means comprising;

frame means pivotally mounted on said derrick;

tong means mounted on said frame means;

hydraulic moving means for moving tong means into and out of engagement with a tubular string;

said hydraulic moving means including automatic control means for automatically moving said tong means into engagement with a tubular string, rotating a string section to disconnect or connect said section from the tubular string; retracting said tong means when the disconnection or connection is complete;

remote controlled tubular racking means for racking and unracking tubulars when a well is being serviced;

hydraulically operated elevator means for raising and lowering a tubular string during well servicing;

whereby a well may be serviced with minimum handling of servicing equipment by personnel.

5,711,383

CEMENTITIOUS WELL DRILLING FLUIDS AND METHODS

Dralen T. Terry, Duncan; Garland W. Davis, Comanche; Bobby J. King; Jiten Chatterji, both of Duncan; David D. Onan, Lawton, and Patty L. Totten, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 19, 1996, Ser. No. 635,443

Int. Cl.^{6} E21B *21/00*

U.S. Cl. 175—72 **19 Claims**

1. An improved drilling fluid for use in drilling a subterranean well bore which forms fluid loss reducing filter cake on the walls of the well bore comprising:

water;

a water viscosity increasing material selected from the group of hydratable polymers, uncalcined clays and mixtures thereof; and

a cementitious material which when deposited on the walls of said well bore as a part of said filter cake is caused to harden and consolidate said filter cake into a stable mass that readily bonds to cement used for primary cementing subsequently placed in said well bore.

5,711,384

ANCHORING APPARATUS FOR THE BORING WAGON OF A MOBILE EARTH BORING MECHANISM

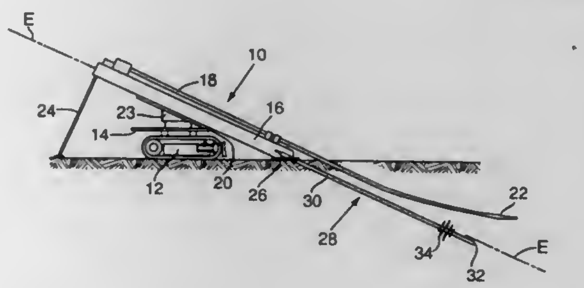
Dietmar Jenne, Strengelbach, Switzerland, assignor to Terra AG fuer Tiefbautechnik, Strengelbach, Switzerland

Filed Feb. 21, 1996, Ser. No. 604,419

Claims priority, application Germany, Feb. 23, 1995, 195 06 337.6

Int. Cl.^{6} E21B *19/08*

U.S. Cl. 175—203 **12 Claims**



1. An anchoring apparatus for use with a mobile earth boring mechanism supported on and movable over the earth's surface and operable to create bores in the earth extending generally parallel to the earth's surface, which mechanism includes a boring wagon having an undercarriage, a ramp with a forward end arranged on the undercarriage for holding and guiding a boring rod extending along the length of the ramp, the ramp being movable relative to the undercarriage to and from a working position at which working a position said ramp is located in a plane inclined to the earth's surface and at which said forward end of said ramp is supported on the earth's surface, and a drive unit for rotating and axially moving the boring rod along the length of the ramp, said anchoring apparatus comprising at least one anchor having an elongated shaft, and a connecting device for connecting the anchor to the boring wagon with the anchor so positioned that the elongated shaft of the anchor is arranged nearly parallel to said inclined plane in which the ramp is located when the ramp is in said working position.

5,711,385

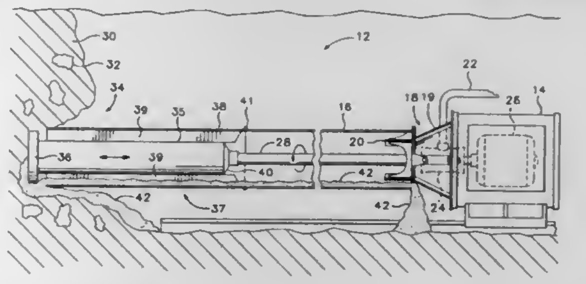
AUGERLESS BORING SYSTEM

Jim Brotherton, 11 S. Frontage Rd., Gold Hill, Oreg. 97525

Filed Apr. 12, 1996, Ser. No. 631,789

Int. Cl.^{6} E21B *10/64*

U.S. Cl. 175—257 **22 Claims**



1. An assembly for pushing a casing in an augerless boring system, comprising:

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a thrust adapter including a back plate for mounting on a drilling advance unit and an extension assembly extending in a forward direction from the back plate; and

a size adapter coupled to the thrust adapter, the size adapter including a push plate for pushing an aft end of the casing and a mounting sleeve welded onto the push plate and extending forward from the push plate for holding different diameter casings in a stationary position on the push plate.

5,711,386
EQUIPMENT TO REDUCE TORQUE ON A DRILL STRING

George Swietlik, Sandings Broadview Rd, Oulton Broad Lowestoft, United Kingdom, UK NR32 3PL

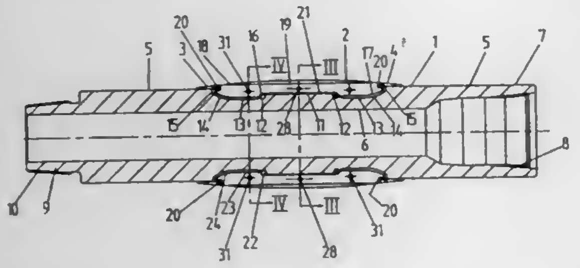
PCT No. PCT/GB94/01778, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/05521, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 15, 1994, Ser. No. 596,304

Claims priority, application United Kingdom, Aug. 17, 1993, 9317128

Int. Cl.^{6} E21B *17/10*

U.S. Cl. 175—325.3 **15 Claims**



1. A drill string torque-reducing sub-assembly comprising:

a hollow longitudinally-extending one-piece mandrel capable of being coupled between adjacent first and second drill pipes in the drill string;

a sleeve freely rotatable about the mandrel, the sleeve having an external diameter larger than that of any connection component of the first or second drill pipe, and the sleeve being prevented by means mounted internally of the sleeve from longitudinal displacement relative to the mandrel; and

bearing means to allow free rotation of the sleeve about the mandrel:

wherein the mandrel has (a) a central region which serves as a hub, (b) two circumferential grooves at opposite ends of the central region, and (c) two legs which extend longitudinally outwardly beyond the two grooves;

wherein the bearing means comprises two ball races, the balls of the ball races being partially located in the respective circumferential grooves, the grooves each forming a first portion of one of the ball races;

wherein the sleeve extends over the hub, over the circumferential grooves and over at least the majority of the legs of the mandrel;

wherein the sleeve has concave regions each forming a second portion of one of the ball races and which partially accommodate the balls of the ball races for cooperation with the grooves to prevent longitudinal displacement of the sleeve relative to the mandrel while allowing free rotation of the sleeve about the mandrel; and

wherein the diameter of the hub exceeds the diameter of the circumferential grooves, and the diameter of the grooves exceeds the diameter of the legs, whereby the legs are free to flex without compromising or inhibiting the ability of the mandrel to rotate freely with respect to the sleeve.

5,711,387
ENGINE COOLING SYSTEM

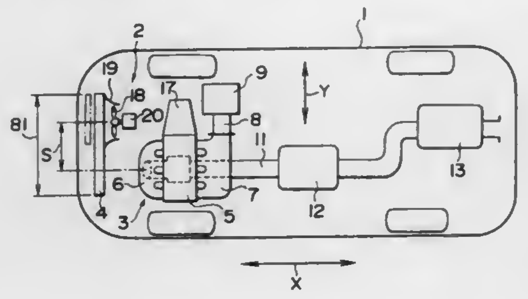
Shinichi Murata; Masahiko Kubo; Tetsuo Kataoka, and Kiyoshi Hatano, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 114,352, Sep. 1, 1993, abandoned. This application May 22, 1996, Ser. No. 653,922

Claims priority, application Japan, Sep. 4, 1992, 4-236920

Int. Cl.^{6} B60K *11/06*

U.S. Cl. 180—68.1 **8 Claims**



1. An engine cooling system for a horizontal engine disposed in a front part of a vehicle and having a crankshaft being axially parallel with an axle of the vehicle, the engine having a partial cylinder operation mode by disconnecting a portion of cylinders and including a catalyst downstream of an exhaust manifold, the exhaust manifold being disposed in front of the engine, the engine cooling system comprising:

a radiator for radiating heat from engine cooling water, the radiator being positioned in front of the engine and extending at least across substantially the entire transverse width of the engine, a first transverse portion of the radiator adapted for directing first cooling airstreams from a front part of the vehicle onto the engine while the vehicle is in motion;

a radiator fan assembly consisting of a single radiator fan for generating second cooling airstreams, the radiator fan being disposed in a vicinity of a second portion of the radiator and at a position offset from a front side of the exhaust manifold toward a lateral side of the vehicle such that the first portion of the radiator is positioned laterally offset from the single radiator fan; and

a fan shroud for directing the second cooling airstreams from the single radiator fan to the rear part of the vehicle, while the single radiator fan is operating, so that the second cooling airstreams diverge from the engine.

5,711,388
ROBOTIC GOLF CADDY APPARATUS AND METHOD

Ronald C. Davies, San Jose, and Frederick J. Fowler, Fremont, both of Calif., assignors to GolfPro International, Inc., Santa Clara, Calif.

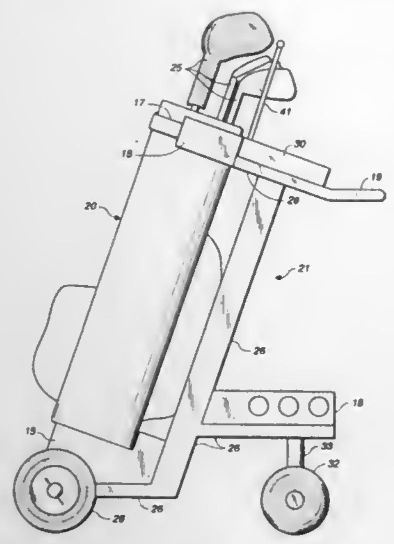
Filed Jul. 17, 1996, Ser. No. 682,105

Int. Cl.^{6} B62D *1/28*

U.S. Cl. 180—168 **42 Claims**

29. An autonomous robotic caddy apparatus comprising:

a powered rolling caddy frame assembly adapted to carry at least one golf bag, a computer control assembly carried by said frame assembly and coupled to control powered movement of said frame assembly, and communications assembly carried by said frame assembly and coupled to said computer control assembly, said communications assembly being formed to determine the position of said caddy apparatus using differential GPS signals, and said computer control assembly having a stored golf course map and stored navigational rules therein, said computer control assembly being responsive to signals from said communications assembly to control of the movement of said caddy apparatus at least in part based upon the position of said caddy apparatus on said golf course and said navigational rules wherein,



said communications assembly is further formed to receive position signals from a golfer transmitter and is adapted to determine the position of a golfer therefrom; and

said navigational rules in said computer control assembly further control movement of said caddy apparatus at least in part based upon the position of said golfer.

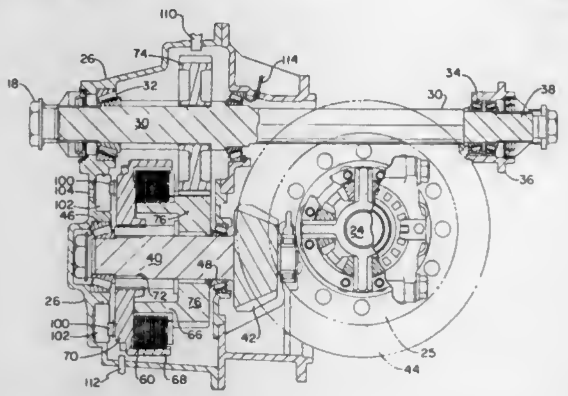
5,711,389
TANDEM REAR DRIVE AXLE ASSEMBLY

Kraig J. Schlosser, Ft. Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 3, 1995, Ser. No. 552,912

Int. Cl.^{6} B60K *17/36*

U.S. Cl. 180—197 **17 Claims**



1. A tandem rear drive axle assembly for an automotive vehicle, said tandem rear drive axle assembly comprising

(a) a first rear axle;

(b) a second rear axle which is axially spaced from said first rear axle;

(c) a longitudinally extending input shaft adapted to be in driving engagement at one end with a vehicle drive shaft and at a second end with a first drive train for said first rear axle;

(d) said first drive train and said first rear axle being in full time driving engagement with said input shaft;

(e) a second drive train for said second rear axle, said second drive train including a pinion shaft which is spaced from and parallel to said input shaft and is in driving engagement with said second rear axle, said second drive train being adapted to be placed selectively into and out of engagement with said input shaft;

(f) a clutch pack for selectively engaging and disengaging said second drive train, said clutch pack comprising a plurality of parallel annular disks arranged in inter-leaved first and second sets, the disks of said first set being in full time driven relationship with said input shaft, and the disks of said second set drivingly engaging said pinion shaft, and

(g) a clutch actuator assembly for actuating said clutch pack, said clutch actuator assembly comprising:

(1) first and second speed sensors for sensing the rotational speeds of said first axle and said second axle respectively;

(2) a control device for generating an output signal when the difference in rotational speeds of said first and second axles, as sensed by said speed sensors, exceeds a predetermined limit;

(3) an axially moveable annular compression member disposed adjacent to an end face of said clutch pack, said compression member being actuated in response to said output signal to compress said clutch pack and thereby place said second drive train and said second axle in driving relationship with said input shaft so that torque is transmitted simultaneously to said first and second axles.

5,711,390
MOTORCYCLE HEIGHT ADUSTING METHOD AND APPARATUS

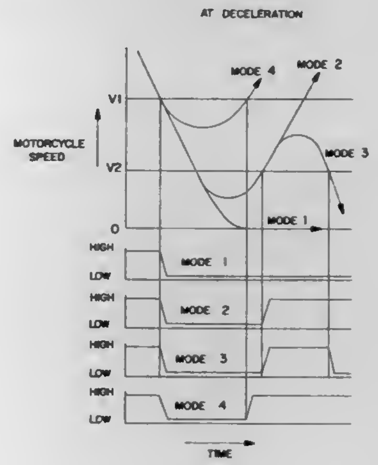
Toichiro Hikichi; Kazumitsu Kushida; Morio Sato, and Sumitaka Ogawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 476,315

Claims priority, application Japan, Aug. 30, 1994, 6-205085

Int. Cl.^{6} B60G *17/01*

U.S. Cl. 180—219 **24 Claims**



1. A method for adjusting the height of a motorcycle equipped with a motorcycle-height changing means for increasing and decreasing the height of said motorcycle in accordance with the operation of an actuator controlled in accordance with information on the speed of said motorcycle comprising the following steps:

setting first data of set speed information for starting the operation of said actuator to decrease the height of said motorcycle; and

setting second data of set speed information lower than said first set speed information for starting the operation of said actuator to increase the height of said motorcycle.

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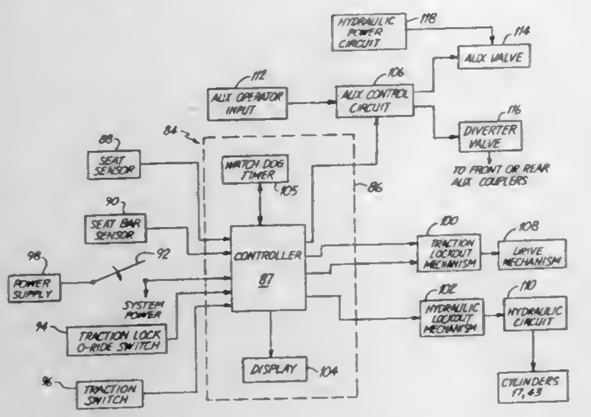
5,711,391
AUXILIARY INTERLOCK CONTROL SYSTEM FOR POWER MACHINE

Kenneth A. Brandt, Wyndmere, and Scott B. Jacobson, Kindred, both of N. Dak., assignors to Clark Equipment Company, Woodcliff Lake, N.J.

Filed Jun. 17, 1996, Ser. No. 664,403

Int. Cl.^{6} B60K *28/04*

U.S. Cl. 180—273 **21 Claims**



1. An apparatus for controlling operation of a skid steer loader having a frame, wheels supporting the frame, a seat supported by the frame, a drive mechanism for driving the wheels, a lift arm structure manipulated by hydraulic actuators, and a hydraulic circuit providing hydraulic fluid under pressure to the hydraulic actuators, the apparatus comprising:

an operating state sensor, coupled to the skid steer loader, providing an operation signal indicative of whether the skid steer loader is in an operational state;

a traction locking apparatus, coupled to the drive mechanism, for selectively locking the drive mechanism to preclude driving of the wheels;

a first hydraulic valve coupled to at least a first of the hydraulic actuators to control flow of hydraulic fluid between the hydraulic circuit and the first hydraulic actuator;

an auxiliary coupling device, connected to the hydraulic circuit, for providing hydraulic fluid under pressure to an output thereof;

an auxiliary operator input providing an auxiliary control signal based on an operator input;

an auxiliary control circuit including a second hydraulic valve coupled between the hydraulic circuit and the auxiliary coupling device, the auxiliary control circuit being coupled to the auxiliary operator input and controlling flow of hydraulic fluid between the hydraulic circuit and the auxiliary coupling device based on the auxiliary control signal; and

a controller coupled to the operating state sensor, the traction locking apparatus, the first hydraulic valve and the auxiliary control circuit and providing an output to control operation of the traction locking mechanism, the first hydraulic valve and the auxiliary control circuit based on the operation signal.

5,711,392
PROTECTIVE DEVICE FOR A MOTOR VEHICLE TO PREVENT UNAUTHORIZED USE

Ulrich Büdel, Leinfelden-Echterdingen, Germany, assignor to Mercedes-Benz AG, Germany

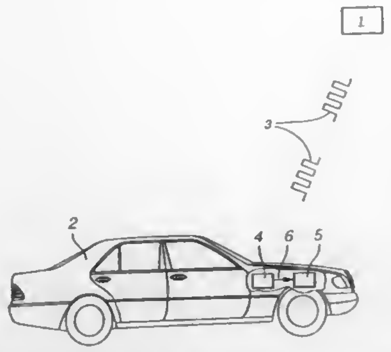
Filed Oct. 20, 1995, Ser. No. 546,134

Claims priority, application Germany, Nov. 17, 1994, 44 40 975.3

Int. Cl.^{6} B60R *25/00*

U.S. Cl. 180—287 **4 Claims**

1. Device to protect against unauthorized use of a motor vehicle having a usage control device mounted on the vehicle which enables or prevents the operation of at least one operationally critical vehicle assembly as a function of transmitted usage information, said device comprising:



at least one transmitter situated at a fixed location outside said vehicle for transmitting usage authorization information periodically and sequentially at preset time intervals by means of an electromagnetic transmission link having a transmission range which covers a predetermined authorized use area for said vehicle, said usage authorization information including vehicle-specific usage authorization signals; and

a usage control device for receiving said usage authorization signals and, in response to each receipt of a usage authorization signal, enabling operation of said at least one operationally critical vehicle assembly for a predetermined time period following such receipt, and blocking operation of said at least one operationally critical vehicle assembly when said usage control device fails to receive a further usage authorization signal within said predetermined time period.

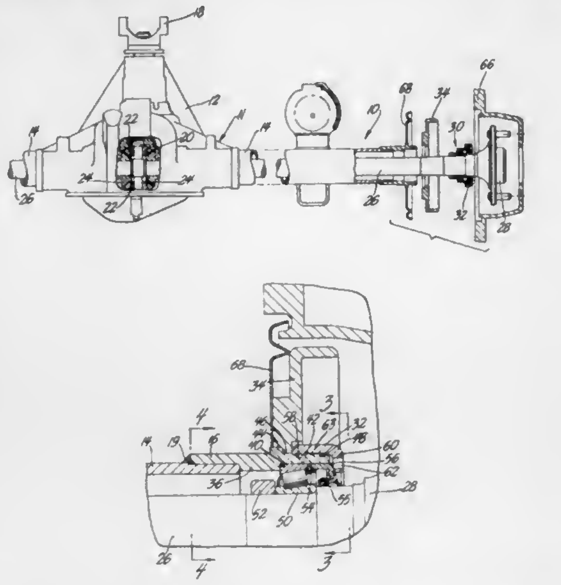
5,711,393
DRIVE AXLE ASSEMBLY WITH SCREW CAP

Garrett W. Gage, Goodrich, Mich., assignor to American Axle & Manufacturing Inc., Detroit, Mich.

Filed Jul. 20, 1995, Ser. No. 504,589

Int. Cl.^{6} B60B *35/00*

U.S. Cl. 180—385 **17 Claims**



1. A drive axle assembly having a gear housing, axle tubes extending outwardly of the gear housing, and an axle shaft disposed in each axle tube comprising:

each axle shaft being rotatably supported at a remote end of the axle tube by a bearing assembly that is mounted on the axle shaft and retained in the end of the axle tube by a screw cap that is threadably connected to the remote end of the axle tube,

the axle tube having an external flange adjacent the remote end,

the drive axle assembly further including an external brake member mounted on the remote end of the axle tube in juxtaposition to the external flange, and

the screw cap clamping the brake member against the external flange to locate the brake member on the axle tube in an axial direction and to nonrotatably couple the brake member to the axle tube.

5,711,394
POWER STEERING APPARATUS WITH MOTOR DRIVEN PUMP

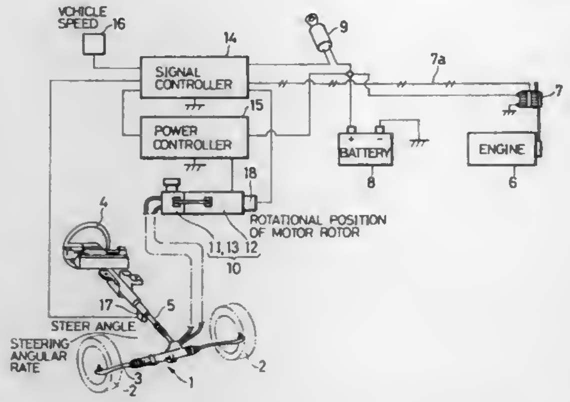
Tadaaki Fujii, and Toshiro Yoda, both of Saitama-ken, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1996, Ser. No. 661,715

Claims priority, application Japan, Jun. 19, 1995, 7-151477

Int. Cl.^{6} B62D *5/09*

U.S. Cl. 180—422 **8 Claims**



1. A power steering apparatus with motor driven pump in which a fluid pressure pump is driven by a motor to feed a fluid pressure to a power cylinder in accordance with a steering operation, thereby producing a steering assist force;

characterizing in that the motor which drives the fluid pressure pump comprises a D.C. brushless motor which is provided with means for detecting the rotational position of a rotor thereof, further including motor control means for controlling the brushless motor so as to rotate at a given number of revolutions, and vehicle speed detecting means for detecting the running speed of a vehicle, a control over the number of revolutions of the brushless motor which takes place by the motor control means being based on the vehicle speed available from the vehicle speed detecting means and information representing the number of revolutions of the motor which is derived from a detection signal from the rotational position detecting means within the brushless motor.

5,711,395
ROTARY SLIDE VALVE FOR POWER-ASSISTED STEERING MECHANISMS OF MOTOR VEHICLES

Rudolf Schurr, Aalen, and Gunther Breu, Iggingen, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP94/01510, § 371 Date Jan. 17, 1996, § 102(e) Date Jan. 17, 1996, PCT Pub. No. WO94/26574, PCT Pub. Date Nov. 24, 1994

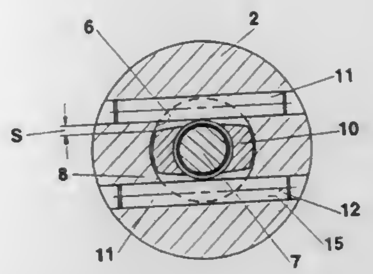
PCT Filed May 10, 1994, Ser. No. 545,795

Claims priority, application Germany, May 13, 1993, 43 16 005.0

Int. Cl.^{6} B62D *5/08*

U.S. Cl. 180—441 **3 Claims**

1. A rotary slide valve having an axis for power-assisted steering mechanisms of motor vehicles which comprises:



a rotary slide and a valve sleeve arranged coaxially to permit movement relative to one another, the rotary slide being connected to the valve sleeve by a torsion rod which includes a backlash coupling having a pivot path, in such a way that the rotary slide and valve sleeve are rotatable about each other by maximally the distance of the pivot path of the backlash coupling;

a valve inlet member connected to the rotary slide;

a valve outlet member connected to the valve sleeve;

and wherein a part of the backlash coupling is formed on the rotary slide by claws which project, perpendicular to the axis of the rotary slide valve with the remaining part of the backlash coupling being formed by two pins which are disposed parallel to one another in the valve sleeve and which have axes that are located in a plane extending perpendicular to the axis of the rotary slide valve, and the two pins are sealed with an oil-proof seal into the valve sleeve.

5,711,396
SERVOMOTOR ASSISTED RACK-AND-PINION STEERING OR CONTROL SYSTEM

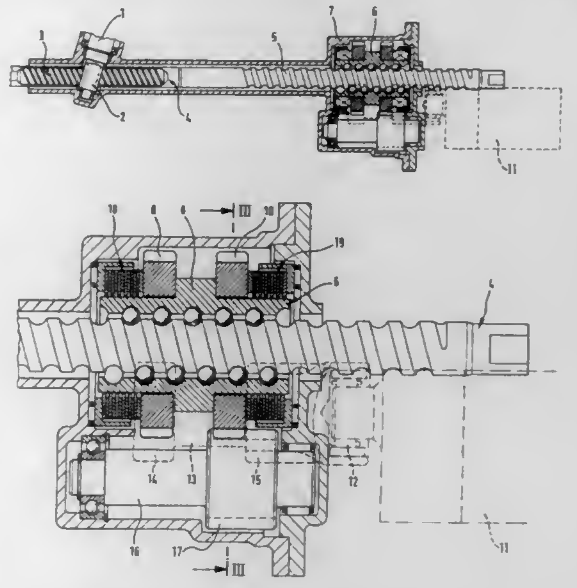
Wolfgang Joerg, Stuttgart; Jaromir Bordovsky, Berglen; Aydogan Cakmaz, Stuttgart; Hubert Heck, Duesseldorf; Arno Roehringer, Ditzingen; Claus Gall, Fellbach; Reinhold Abt, Neuhausen; Rainer Strauss, Kaarst, and Karl-Hans Koehler, Wernau, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 31, 1995, Ser. No. 550,566

Claims priority, application Germany, Oct. 31, 1994, 44 38 930.2

Int. Cl.^{6} B62D *5/04*

U.S. Cl. 180—444 **9 Claims**



1. A rack-and-pinion control system, comprising:

a housing;

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a rack having arranged thereon a non-rotatable screw axially displaceable together with said rack;

a recirculating ball sleeve interacting with said non-rotatable screw of said rack, said recirculating ball sleeve being provided with a limited ability for axial displacement;

a frictional clutch arrangement controlled via said recirculating ball sleeve; and

a servomotor coupled to said rack via a mechanical transmission, said servomotor continuously driving two wheels in opposite directions;

wherein said frictional clutch arrangement couples one of said two wheels to said recirculating ball sleeve depending on a direction of axial displacement of said recirculating ball sleeve, and

wherein when said recirculating ball sleeve is in a central position, said frictional clutch arrangement maintains said recirculating ball sleeve uncoupled from said two wheels;

and wherein said recirculating ball sleeve includes a central web,

wherein said two wheels include a first coaxial gear wheel disposed on the ball sleeve at one axial side of the central web and a second coaxial gear wheel disposed on the ball sleeve on an opposite side of the central web, and

wherein said frictional clutch arrangement includes a first coaxial clutch assembly disposed on the ball sleeve in between one axial side of the housing and the first coaxial gear wheel and a second coaxial clutch assembly disposed on the ball sleeve in between an opposite axial side of the housing and the second coaxial gear wheel.

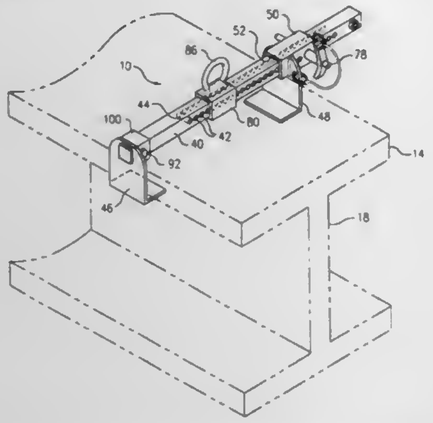
5,711,397
SAFETY DEVICE FOR STEELWORKERS

Charles D. Flora, 1303 136th Ave., Sumner, Wash. 98390, and Billy D. Davis, 3222 S. Way Rd., Olympia, Wash. 98503

Filed Feb. 3, 1995, Ser. No. 383,061

Int. Cl.⁶ E06C *7/18*

U.S. Cl. 182—3 **6 Claims**



1. A safety device for use by workers to provide attachment for fall catchment life-lines to beams at a temporary working location, said safety device of the type that may be releasably and slideably connected to a flanged beam, said safety device comprising:

(a) an elongate bar member, said elongate bar member having a plurality of apertures therethrough, wherein each of said plurality of apertures is defined by a through wall portion;

(b) a first L-shaped jaw member affixed to said elongate bar member;

(c) a second L-shaped jaw member, said second L-shaped jaw member slidably affixed to said elongate bar member by a slide housing attachment portion, said slide housing attachment portion further comprising

(i) a barrel portion adapted to allow said elongate bar member to slidably pass therethrough in a close fitting relationship, and

(ii) at least one aperture through said barrel portion, said at least one aperture through said barrel portion defined by a second through wall portion.

(d) a lifeline attachment portion, said lifeline attachment portion including a barrel portion, said barrel portion surrounding said elongate bar member in a close fitting relationship and securely and slideably engaged therewith;

(e) a locking pin, said locking pin adapted to pass through

(i) any one of said plurality of apertures in said elongate bar member, and

(ii) one of said at least one apertures through said barrel portion of said slide housing attachment portion,

when repositioned from a first, unengaged position to a second, inserted, locking position, so that when in said second, inserted, locking position, said locking pin penetrates through said barrel portion of said slide housing attachment portion and thereby interlocks said elongate bar member and said barrel portion of said slide housing attachment portion, to thereby adjustably fix the distance between said first L-shaped jaw member and said second L-shaped jaw member.

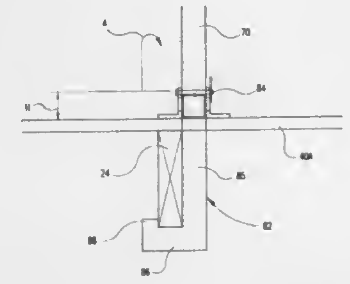
5,711,398
SAFETY RAIL SYSTEM FOR USE DURING CONSTRUCTION OR MAINTENANCE REPAIR OF PITCHED ROOFS

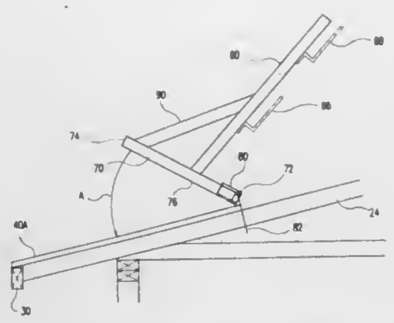
Paul F. Bartholomew, 10312 Baileywick Rd., Raleigh, N.C. 27613

Filed Nov. 27, 1995, Ser. No. 562,654

Int. Cl.⁶ E04G *3/12*

U.S. Cl. 182—45 **9 Claims**





1. In combination with a pitched roof under construction or maintenance repair, the pitched roof having a roof edge, a truss structure formed by inclined, generally parallel spaced apart joists running generally perpendicular to the roof edge and a sheet overlay on said joists defining gaps between the courses of sheets forming the overlay, a safety rail system located near the edge of the roof to serve as a barrier to prevent a roof worker who has lost his footing from falling off the edge of the roof, said safety rail system comprising:

multiple rail support assemblies spaced apart along the roof edge, each rail support assembly including:

an upstanding stanchion carrying means for receiving and supporting end-lapped safety planks;

an elongate base joined to said stanchion and overlying one of said joists so as to be oriented substantially perpendicular to said roof edge, said base having a first end remote from said roof edge and a second end closer to said roof edge, said stanchion being joined to said elongate base at a location spaced from said base second end;

a securement assembly located at the first end of said elongate base detachably securing the rail support assembly to the roof, said securement assembly comprising means residing in the gap between two courses of sheet overlay near the roof edge for (i) lockingly engaging the elongate base to its respective underlying joist and for (ii) disengaging the joist upon completion of roof construction or maintenance repair to permit removal of the rail support assembly,

wherein said means residing in the gap between two courses of sheet overlay comprises a thin-flat J-hook having an upper end, a main body portion and a bottom portion, said J-hook being pivotally secured by a hinge at its upper end to the first end of said elongate base about a horizontal pivoting axis and said J-hook residing in the gap between the two courses of plywood overlay near the roof edge with the J-hook bottom portion in locking engagement with the underside of the respective joist,

wherein said J-hook includes an upstanding tip portion in engagement with the side of the joist opposite the main body portion of the J-hook to provide three-sided engagement of the J-hook to the joist, whereby rotation of the support assembly about the horizontal pivoting axis causes said bottom portion to come into locking engagement with the joist, and

end-lapped safety planks supported in the respective means carried by each stanchion to define continuous safety rails at a selected height or heights near the roof edge.

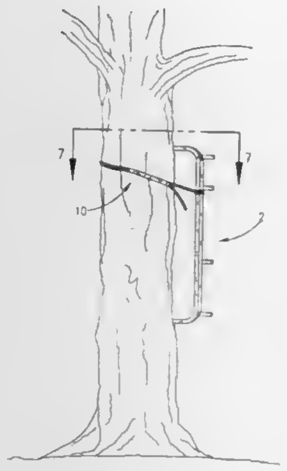
5,711,399
PORTABLE HUNTER'S LADDER

L. Wayne-Prejean, 291 Tanner Rd., Searcy, Ark. 72143

Continuation of Ser. No. 297,245, Aug. 25, 1994, Pat. No. 5,509,499, which is a continuation-in-part of Ser. No. 93,006, Jul. 19, 1993, abandoned. This application Apr. 18, 1996, Ser. No. 634,585

Int. Cl.⁶ E06C *1/10*

U.S. Cl. 182—93 **6 Claims**



1. A portable hunting ladder for use in climbing trees comprising:

a) a pair of elongated tubular side rails of substantially equal length, each of said side rails being bent in a generally "C" shape, and whereas said elongated tubular side rails are held in a spaced apart, substantially parallel relationship at distance larger than a typical hunter's boot and less than twice such width, by;

b) a plurality of spaced apart, ladder rungs, interconnecting said side rails along their length, said rungs being curved in an arc parallel to the arc of the outside surface to a tree to which the ladder is attached;

c) a flexible means for tightly encircling a tree, with said flexible means affixed to said ladder generally between the mid-point of said ladder and next adjacent rung, thereby supporting said hunting ladder when suspended from a tree, said flexible means being placed in substantial tension at such time as said tree has been encircled and weight exerted on said ladder rungs.

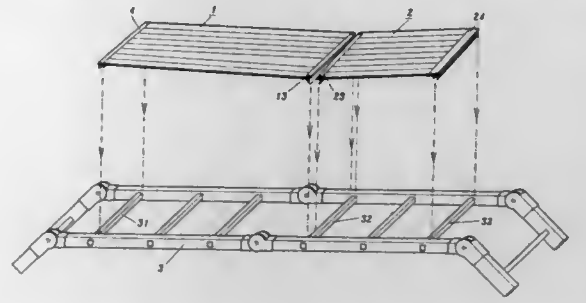
5,711,400
MOUNTABLE WORK PLATFORM FOR A LADDER

Su-Fen Tan, 4th Floor, 243 Juikuang Road, Neihu, Taipei 114, Taiwan

Filed Apr. 2, 1997, Ser. No. 832,053

Int. Cl.⁶ E06C *5/44*

U.S. Cl. 182—119 **1 Claim**



1. A mountable work platform for use on a ladder, comprising two plates of different length and equal width, each of said plates in turn comprising:

a plurality of rectangular single plates, arranged next to each other with abutting longitudinal edges, common first and second lateral edges, a common upper side and a common lower side, and four corners each, each of said single plates having, in a symmetrical arrangement, on both said upper side and said lower side, close to said first and second edge near said corners, depressions with an inclined bottom side, one of every pair of neighboring single plates having a ridge along the abutting longitudinal edge with a T-shaped cross-section, the other having a groove along the abutting longitudinal edge, into which said ridge with a T-shaped cross-section fits, such that said single plates are stably connected;

a connection bar along said first lateral edge of said single plates, having a U-shaped cross-section with a base at an outward side, an upper leg and a lower leg with inner surfaces, said inner surfaces being provided with protrusions, which fit into said depressions of said plates close to said first lateral edge, while an embracing part extends from said lower leg downwards and, after a turn of 90°, outwards; and

a clamp bar along said second lateral edge of said single plates, having a U-shaped cross-section, with an upper leg and a lower leg with inner surfaces, said inner surfaces being provided with protrusions, which fit into said depressions of said plates close to said second edge, a first clamp plate extending downwards and a second clamp plate extending, less far than said first clamp plate, downwards;

wherein said plates are adapted to be placed on said ladder, such that said connection bars of said long plate and of said short plate together embrace a step of said ladder and said clamp bars of said long plate and of said short plate each hold another step of said ladder in a grip.

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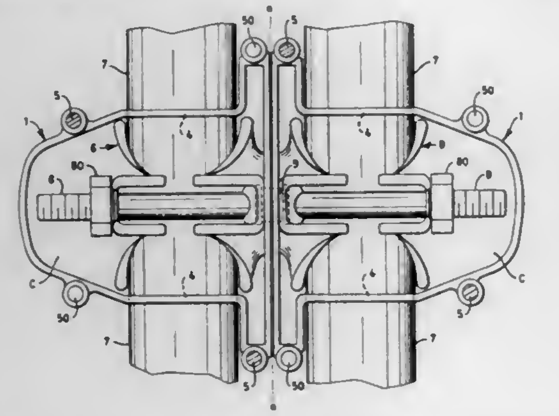
5,711,401
SAFETY PROTECTION MEANS FOR METAL SCAFFOLDS ESPECIALLY WITH JOINTS OF VARIABLE GEOMETRY

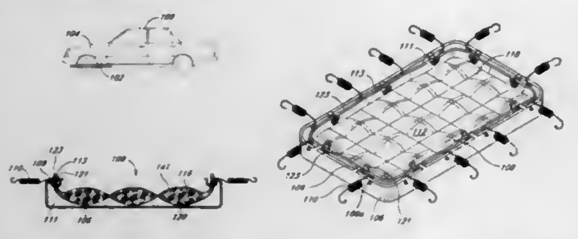
Abazid Amin Rchid, Via Liguria, 11, 50145 Firenze, Italy
Filed Jul. 29, 1996, Ser. No. 681,918
Claims priority, application Italy, Jul. 31, 1995, FI950078 U
Int. Cl.^{6} E04G *1/00*
U.S. Cl. 182—129 **4 Claims**



1. A safety protection device for joints of metal scaffolds, comprising:
- two caps which are disposed with slight clearance on opposite sides with respect to a center line of the joint, each of said two caps including two bodies, each of said bodies having two facing semicircular recesses defining two facing chambers for housing corresponding parts or portions of the joint and two circular holes for the passage of two tubes connected by the joint, said bodies of each one of said caps being connectable to each other in a fixed but removable way by connection means, said connection means including at least one of pins and corresponding bushes defined and delimited by said bodies, screw means, tightening straps and a fixed coupling.

5,711,402
OIL DRIP COLLECTOR

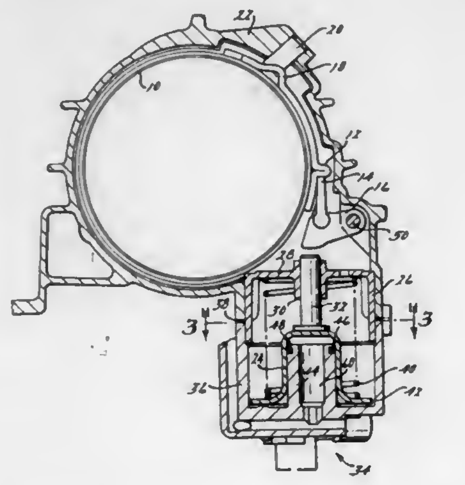
Alray Sumpter, Sr., 17489 Star Canyon Ct.,, Riverside, Calif. 92503
Filed Nov. 21, 1996, Ser. No. 753,219
Int. Cl.^{6} F16W *31/00*
U.S. Cl. 184—106 **7 Claims**



1. An apparatus for capturing oil dripping from a vehicle comprising:
- a pan configured to be attached to said vehicle in a location wherein oil dripping from said vehicle will fall within a space defined by said pan; and
- a pad having a mesh material that is formed so as to have a plurality of separated segmented pockets, wherein a granular absorbent material is positioned within each of said segmented pockets, and wherein said pad is positioned within said space defined by said pan so that said oil dripping from said engine lands on said mesh material and seeps through said mesh material and is then absorbed by said granular absorbent material, wherein said pan includes a plurality of inwardly extending protrusions and said pad includes a plurality of openings formed in an outer surface of said pad so that said protrusions can be inserted into said plurality of openings in said pad so as to retain said pad in a position whereby said pad covers substantially the entire area of said space defined by said pan.

5,711,403
RAPID APPLY SERVO FOR A BRAKE BAND OF AN AUTOMATIC TRANSMISSION

Douglas S. Sparks, Lathrup Village, and Robert Cary Haase, Southfield, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Nov. 4, 1996, Ser. No. 743,586
Int. Cl.^{6} F16D *51/00*
U.S. Cl. 188—77 W **11 Claims**

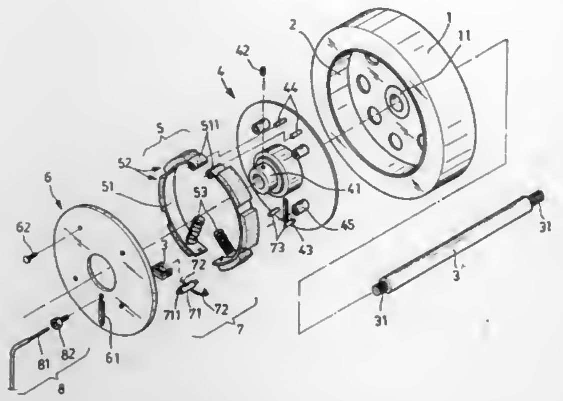


1. In an automatic transmission, a system for operating a hydraulic servo that controls the apply and release states of a brake band, comprising:
- a cylinder having a central axis;
- a piston located in the cylinder, displaceable along the axis, having a first hydraulically sealed pressure area and a second hydraulically sealed pressure area thereon;
- means adapted to apply and release the brake band in response to displacement of the piston;
- a sump adapted to contain fluid at relatively low pressure;
- a source of line pressure at relatively high pressure, hydraulically communicating with the first pressure area; and
- a valve responsive to the magnitude of line pressure for alternately opening communication between the sump and the second pressure area, and for opening communication between the line pressure source and the second pressure area.

5,711,404
MAGNETIC ADJUSTABLE LOADING DEVICE WITH EDDY CURRENT

Ying-Che Lee, No. 1-2, Lane 975, Chun-Jih Rd., Tao-Yuan City, Taiwan
Filed Feb. 5, 1997, Ser. No. 794,888
Int. Cl.^{6} F16F *15/03;* **B60L** *7/28*
U.S. Cl. 188—164 **4 Claims**

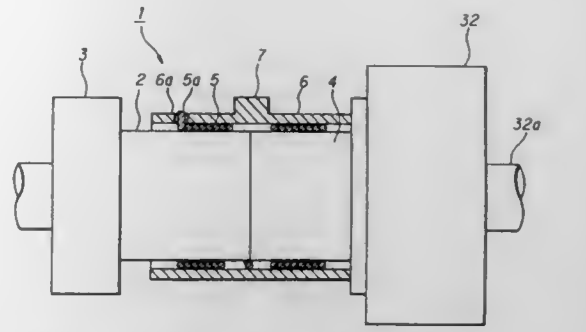
1. A magnetic adjustable loading device with eddy current comprising:
- a flywheel having a bearing disposed therein, a transmission element being disposed at outer side;
- a metal conductor being disposed at an inner rim of said flywheel;
- a shaft being provided for mounting said bearing of said flywheel and said transmission element thereof, both end of said shaft being provided with threaded portions;



- a stator disk being provided and disposed at inner side of said flywheel, said stator disk being locked to said shaft by a flush-head bolt disposed at central portion;
- a stator being installed to said stator disk;
- a cover lid being locked to said stator disk to enclose said stator therein, an adjusting means and a braking means being also provided;
- characterized in that said stator is configured by a pair of opposite circular magnetic plates made from magnetic material, an outer rim portion being provided with a permanent magnet, a top portion of said circular plate being pivotally mounted to said stator disk, a bottom end of said circular plate being free to move, the inner rim portion of said circular plate facing toward the central portion of said stator disk being disposed with a biasing spring;
- said adjusting means comprising an adjusting element which is provided with projected pin at both ends, said projected pin being movably received within the grooves of said stator disk and said cover lid such that said projected pins can move up and down within said grooves, said projected pin being further connected to the bottom portion of said stator with a cable, said cable being further guided by a pair of guiding posts disposed at sides of said grooves;
- said braking means being connected to a controller on a sporting equipment by a cable, said cable being installed to said cover lid by means of an eyelet, said cover lid being provided with a transfer idle cam which is connected to said adjusting element of said adjusting means;
- by the provision of those above described elements, the level of said adjusting element can be readily adjusted by said braking means, consequently, an air gap between said stator and said metal conductor of said flywheel is varied and the magnetic flux density is also changed, as a result, the resistance can be readily changed and adjusted in a stepless manner.

5,711,405
SPRING CLUTCH MECHANISM AND A CLUTCH MECHANISM FOR USE IN A PAPER FEEDING APPARATUS

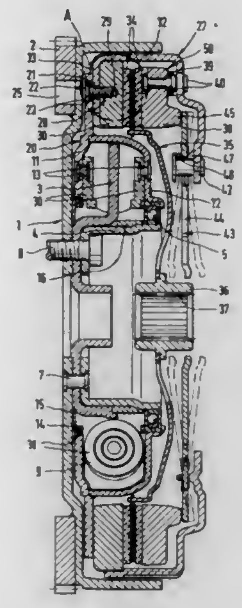
Masato Tamehira, Yamabe-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 29, 1996, Ser. No. 638,737
Claims priority, application Japan, Jun. 16, 1995, 7-150173
Int. Cl.^{6} F16D *13/00*
U.S. Cl. 192—26 **30 Claims**



1. A spring clutch mechanism for selectively transmitting rotation of a driving shaft to a driven shaft through a coil spring, said spring clutch mechanism comprising:
- driving and driven shafts disposed opposite to each other on a common axis;
- a coil spring formed of coil wire fitted on said driving and driven shafts;
- a sleeve formed with an engaging portion at a site on the peripheral surface thereof; and
- a stopper selectively engaging the engaging portion of said sleeve that rotates in a rotational direction of the driving shaft, for restricting rotation of said sleeve, wherein said coil spring is formed such that the coil wire is wound around from the driving-shaft side toward the driven-shaft side in a winding direction opposite to that of the rotational direction of said driving shaft and the coil end on the driving-shaft side of said coil spring is engaged with said sleeve while the other coil end on the driven-shaft side of said coil spring is left free.

5,711,406
FRICTION CLUTCH FOR THE TRANSMISSION OF A MOTOR VEHICLE AND A FLYWHEEL ASSEMBLY FOR A FRICTION CLUTCH

Joachim Lindner, Schweinfurt, and Bernhard Schierling, Kürnach, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Aug. 15, 1995, Ser. No. 515,348
Claims priority, application Germany, Aug. 17, 1994, 44 28 829.8
Int. Cl.^{6} F16D *13/58*
U.S. Cl. 192—70.17 **20 Claims**



1. A friction clutch for a transmission of a motor vehicle, said friction clutch comprising:
- a first centrifugal mass to be connected to a motor vehicle drive;
- a second centrifugal mass;
- said second centrifugal mass being rotatable with respect to said first centrifugal mass;
- a clutch housing;
- said clutch housing being disposed on said second centrifugal mass;

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a clutch disc disposed within said housing, said clutch disc defining an axis of rotation and an axial direction parallel to the axis of rotation;

said clutch disc having first and second sides;

a pressure plate;

said pressure plate being disposed within said clutch housing and being movable in the axial direction to apply an axial force to said clutch disc;

a biasing structure to bias said pressure plate with respect to said clutch disc;

said pressure plate being disposed adjacent said first side of said clutch disc;

a counter pressure plate;

said counter pressure plate having a first side and a second side and an outer periphery connecting said first and second sides;

said first side of said counter pressure plate being disposed adjacent said second side of said clutch disc;

said second side of said counter pressure plate being disposed opposite said clutch disc and said first side of said counter pressure plate;

said clutch housing comprising first and second portions;

said first portion of said clutch housing being disposed adjacent said pressure plate and a distance from said counter pressure plate;

said second portion of said clutch housing being disposed adjacent said outer periphery;

said second portion of said clutch housing being disposed at a distance from said pressure plate and adjacent said counter pressure plate;

said second portion of said clutch housing extending in the axial direction from said first side of said counter pressure plate toward said second side of said counter pressure plate;

said first and second portions of said clutch housing comprising an integral, unitary, one-piece structure;

at least one fastening element being disposed through said clutch housing and into said counter pressure plate; and

said clutch housing and said counter pressure plate being configured and disposed to comprise a pre-assembled unit.

5,711,407
TORSIONAL VIBRATION DAMPER

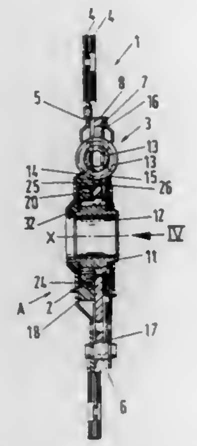
Steffen Maier, Lauf, Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Germany

Filed Jun. 7, 1995, Ser. No. 475,295

Claims priority, application Germany, Jun. 30, 1994, 44 22 919.4

Int. Cl.⁶ F16D *3/12;3/14;13/64*

U.S. Cl. 192—201 **58 Claims**



49. A composite torsional vibration damper, comprising input and output members angularly movable with and relative to each other about a common axis; and first and second dampers installed in series between said input and output members, said first damper having a first rigidity and said second damper having a second rigidity greater than said first rigidity, said first damper comprising energy storing elements operative to permit an angular movement of said members relative to each other through a first angle and to transmit a maximum torque of at most 20 N-m, said energy storing elements being constructed, installed and arranged to generate a frictional damping action which varies as a function of changes of said first angle, said second damper being operative to permit an angular movement of said members relative to each other through a second angle of at least 15° and having a torsional spring rate in the range of between about 5 and 40 N-m/°.

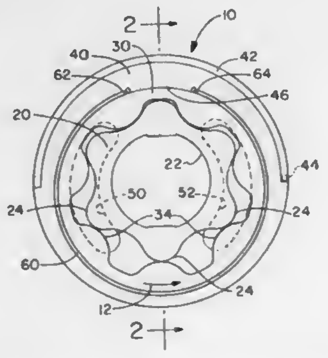
5,711,408
REVERSIBLE GEROTOR PUMP

Joseph A. Dick, Ft. Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed May 9, 1996, Ser. No. 647,359

Int. Cl.⁶ F04C *2/10*

U.S. Cl. 192—85 R **20 Claims**



8. A reversible gerotor pump apparatus for use in a motor vehicle drivetrain subassembly having a first rotatable member, a second rotatable member and a hydraulically actuated clutch assembly to selectively frictionally couple the first rotatable member and the second rotatable member, said reversible gerotor pump comprising:

an eccentric ring;

an outer rotor positioned within said eccentric ring, said outer rotor including a plurality of internal teeth;

an inner rotor including a plurality of external teeth meshingly engaged with at least a portion of said internal teeth of said outer rotor, said inner rotor coupled to rotate with one of the first rotatable member and the second rotatable member; and

a drag spring positioned around and frictionally engaged with at least a portion of said outer rotor such that said drag spring exerts a force on said eccentric ring only upon rotation of said outer rotor.

5,711,409
TWIN-CLUTCH-TYPE TRANSMISSION

Kiyohito Murata, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 15, 1995, Ser. No. 490,784

Claims priority, application Japan, Jun. 20, 1994, 6-137136

Int. Cl.⁶ F16D *25/14;* **B60K** *41/22;* **F16H** *3/08*

U.S. Cl. 192—87.11 **10 Claims**

1. A twin-clutch-type transmission comprising:

a first clutch mechanism including an input member, a first output member, a first pressure plate, and a first thrust means which selectively pushes said first output member to engage said first output member itself to one side of said input member through said first pressure plate;

a second clutch mechanism including an input member, a second output member, a second pressure plate, and a second thrust means which selectively pushes said second output member to engage said second output member to the other side of said input member through said second pressure plate;

a first gear mechanism connected to said first output member of said first clutch mechanism, said first gear mechanism having gear sets for providing a first group of gear ratios;

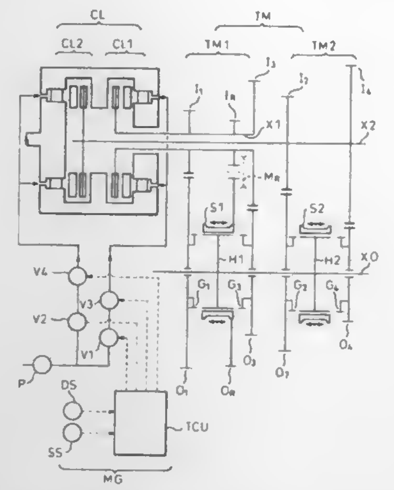
a second gear mechanism connected to said second output member of said second clutch mechanism, said second gear mechanism having gear sets for providing a second group of gear ratios;

a control means for controlling the thrust forces generated by said thrust means to change one of said two clutch mechanism from an engaged condition to a disengaged condition and to change the other of said two clutch mechanisms from a disengaged condition to an engaged condition; and

means for mechanically interlocking said first pressure plate of said first clutch mechanism and said second pressure plate of said second clutch mechanism such that movement of one of said pressure plates is interrelated to movement of the other of said pressure plates during gear changes of said transmission,

wherein said means for mechanically interlocking has an elastic element always biasing said first pressure plate and said second pressure plate against each other in a direction of disengaging, even when said first pressure plate is not pushed by said first piston and said second pressure plate is not pushed by said second piston,

wherein said control means changes one of said two clutch mechanisms from an engaged condition to a disengaged condition and changes the other of said two clutch mechanisms from a disengaged condition to an engaged condition, under an action of said interlocking means such that said two clutch mechanisms are both disengaged for some period during at least some of said gear changes.



5,711,410
CONVEYOR CONTROL SYSTEM

Chunsheng Cai, New Fairfield, Conn., and Pao-Ter Huang, Alpharetta, Ga., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Feb. 2, 1996, Ser. No. 595,665

Int. Cl.⁶ B65G *47/26*

U.S. Cl. 198—460.1 **26 Claims**

17. A system for positioning an object at a desired position on a conveyor, comprising:

a drive mechanism for operating a conveyor having a known acceleration rate and a known deceleration rate;

a detection mechanism operative to detect movement of said object past a detection point along said conveyor;

a controller programmed and adapted to control said drive mechanism in order to accelerate and decelerate said conveyor;

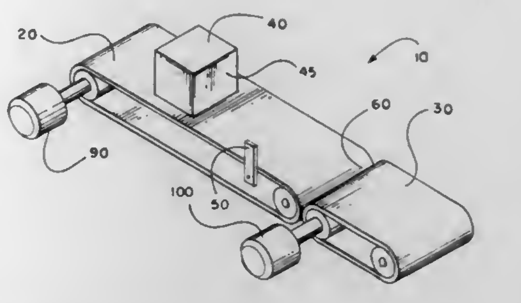
said controller being responsive to said detection mechanism and being further programmed

to begin acceleration of said conveyor,

to measure the acceleration time of said conveyor from a start time to a time at which said object reaches said detection point,

to calculate a delay period after the elapse of which deceleration of said conveyor, at said known deceleration rate, will result in said object reaching a position adjacent to said desired position on said conveyor; and

to decelerate said conveyor at said known deceleration rate at the end of said delay period.



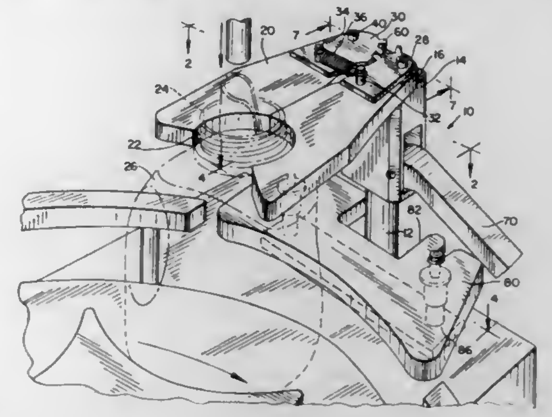
5,711,411
QUICK CHANGEOVER FILLING, CENTERING BRACKET

William Joseph Zurweller, Florissant, Mo., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 13, 1995, Ser. No. 557,748

Int. Cl.⁶ B65G *25/00*

U.S. Cl. 198—470.1 **7 Claims**



1. An apparatus comprising

a bottle gripper removably supported on an apparatus base, said bottle gripper including a plurality of finish gripping arms forming a medially disposed finish accommodating opening, and means urging said gripping arms medially toward each other, and said apparatus further comprising a foot associated with but separate and spaced from said apparatus and positioned to support a bottle received within said bottle gripper, said foot removably supported on a foot base.

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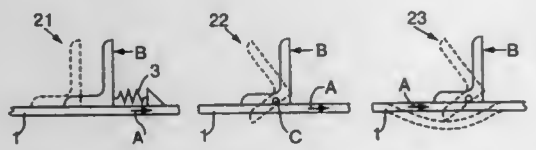
5,711,412

DEVICE FOR SERIAL TRANSPORT OF SHEET METAL BLANKS TOWARDS A PROCESSING STATION

Hanspeter Gysin, Zurich; Hanspeter Oehrli, Friedlisberg, and Armin Ineichen, Wohlen, all of Switzerland, assignors to Elpatronic AG, Zug, Switzerland
PCT No. PCT/CH95/00035, § 371 Date Nov. 6, 1995, § 102(e) Date Nov. 6, 1995, PCT Pub. No. WO95/24284, PCT Pub. Date Sep. 14, 1995
PCT Filed Feb. 16, 1995, Ser. No. 549,797
Claims priority, application Switzerland, Mar. 7, 1994, 660/94
Int. Cl.^{6} B65G *19/26*
U.S. Cl. 198—732 **7 Claims**



1. Device for serial transport of sheet metal blanks in a transport direction towards a processing station, comprising:

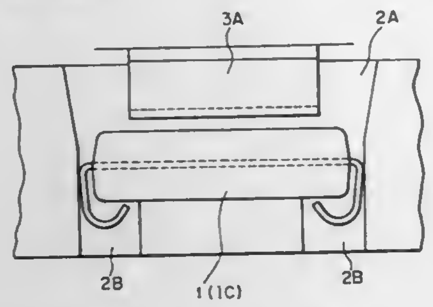
a transport means driven with a synchronized velocity profile, the transport means is a belt which is to at least a degree elastically deformable in a direction generally parallel to the transport direction and which is guided and driven at least partially parallel with the transport direction by means of driving pulleys and return pulleys; and

at least one transport element fixed to the belt so as to be capable of a damped shifting and/or rocking action with respect to the belt in the opposite direction to the transport direction, with absorption of energy.

5,711,413

FLAT TYPE IC CONVEYOR

Akio Nakamura; Tetsuya Okudaira, and Yoshihiro Goto, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1996, Ser. No. 761,796
Claims priority, application Japan, Dec. 22, 1995, 7-350577
Int. Cl.^{6} B65G *21/20*
U.S. Cl. 198—860.3 **2 Claims**



1. A conveyor assembly for holding packaged ICs, each IC having a generally flat package and a plurality of leads that project at an angle downward from a horizontal plane of the package, said assembly comprising:

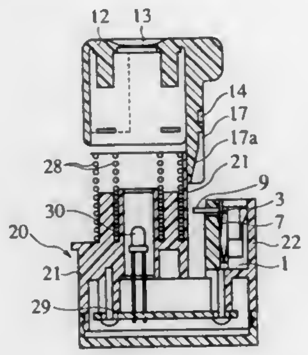
an IC conveyor tray having opposed top and bottom surfaces, recesses formed in said top surfaces for accommodating a plurality of individual ICs therein, through holes extending from said bottom surface to said recesses for receiving the leads and positioning pins extending upwardly from said top surface; and

a cover fitted over said top surface of said IC conveyor tray, said cover having holes in which said positioning pins are seated and provided with downwardly directed bosses positioned to extend into said recesses and to abut the IC packages to prevent movement of the ICs in said recesses.

5,711,414

PUSH SWITCH

Keizo Nishitani, and Daisuke Takanohashi, both of Susono, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jun. 4, 1996, Ser. No. 659,007
Claims priority, application Japan, Jun. 7, 1995, 7-140761
Int. Cl.^{6} H01H *13/56*
U.S. Cl. 200—524 **3 Claims**



1. A push switch comprising:

a latch assembly including a guide pin, a spring plate for energizing said guide pin, and a magazine in which said guide pin and said spring plate are disposed;

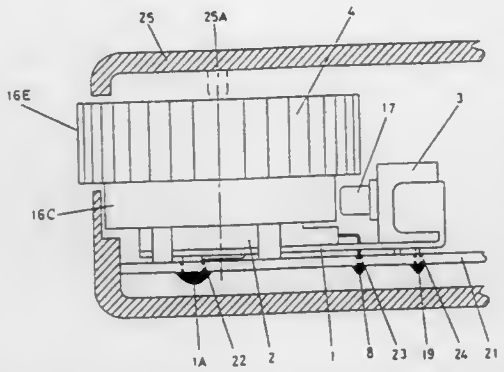
a housing on which said latch assembly is mounted; said housing assembly comprising a latch mount and a body which is formed separately from said latch mount, said latch assembly being mounted within said latch mount; and

a key-top including a cam, said key-top being adapted to be mounted on the body, such that when the key-top is mounted on said body, the cam on said key-top is placed in locking engagement with the guide pin of said latch assembly mounted within said latch mount, wherein said key-top is vertically movable with respect to the body and locked to said latch mount by the engagement between the cam and the guide pin, said key-top being adapted to turn a switch contact on and off by depression.

5,711,415

ROTARY ELECTRONIC COMPONENT WITH PUSH SWITCH

Tetsuya Fukuda, Tsuyama, and Tetsuji Ryu, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Japan
Filed Apr. 5, 1996, Ser. No. 628,809
Claims priority, application Japan, Apr. 5, 1995, 7-079242
Int. Cl.^{6} H01H *19/20;13/14*
U.S. Cl. 200—570 **3 Claims**



1. A rotary electronic component with a push switch comprising:

a rotary component portion having a rotary body horizontally rotatable in a fixed position;

a knob shaft for horizontally rotating the rotary body of the rotary component portion;

a control knob concentrically fitted around an outer periphery of the knob shaft and horizontally movable within a predetermined range;

a resilient element disposed between the knob shaft and an inner periphery of the control knob;

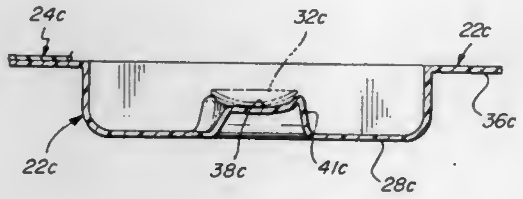
a push switch portion operated when the resilient element is compressed to push the control knob in a horizontal direction; and

a mounting base plate for retaining the rotary component portion and the push switch portion in a predetermined positional relationship.

5,711,416

DISPOSABLE CONTACT LENS STORAGE CONTAINER WITH CONCAVE STORAGE RECESS

Robert C. Bauman, 232 Goodhouse Rd., Litchfield, Conn. 06759
Filed Jun. 15, 1994, Ser. No. 260,088
Int. Cl.^{6} B65D *81/24*
U.S. Cl. 206—5.1 **5 Claims**



1. A disposable contact lens storage container for a single lens comprising:

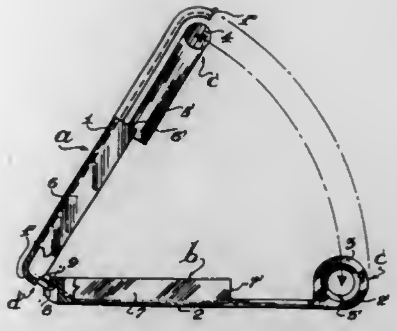
(a) an elongated receptacle member integrally formed of synthetic resin and having
  (i) a bottom wall with upper and lower surfaces;
  (ii) a sidewall extending upwardly from the periphery of said bottom wall and cooperating therewith to provide a single cavity opening at the upper end of said sidewall, said bottom wall having a portion extending upwardly from the plane of its juncture with said sidewall to provide a single pedestal with a concavely curved recess on the upper surface thereof configured and dimensioned to seat a contact lens therein, the radius of curvature of said concave recess being about 5.7 to 11.7 millimeters, said bottom wall outwardly of said pedestal lying in a common plane, and the juncture of said pedestal portion and the portion of said bottom wall thereabout being generally concavely arcuate; and
  (iii) an outwardly extending flange at the upper end of said sidewall; and

(b) a planar closure extending across said cavity and releasably adhered to said flange on said sidewall of said receptacle member.

5,711,417

CASE FOR GLASSES

Enrique Jesus Ramon Tilve, Gualeguaychu 2360, Capital Federal, Buenos Aires, Argentina, 1417
Filed Mar. 7, 1996, Ser. No. 612,281
Claims priority, application Argentina, Mar. 9, 1995, 331.289; Jun. 1, 1995, 332.257
Int. Cl.^{6} A45C *11/04*
U.S. Cl. 206—6 **7 Claims**



1. A case for glasses comprising:

a first box comprising a rectangular base having a first and second short edge and a first and second long edge, each said edge having a lateral wall associated with it, said lateral walls defining a first cavity;

a second box comprising a rectangular base having a first and second short edge and a first and second long edge, each said edge having a lateral wall associated with it, said lateral walls defining a second cavity, said second box being substantially the same size and shape as said first box;

said lateral walls associated with said first short edge in said first and second box being hingedly connected, said first and second cavities defining a receptacle for glasses;

said second box having a hole in said lateral wall associated with each of said first and second long edge near said second short edge;

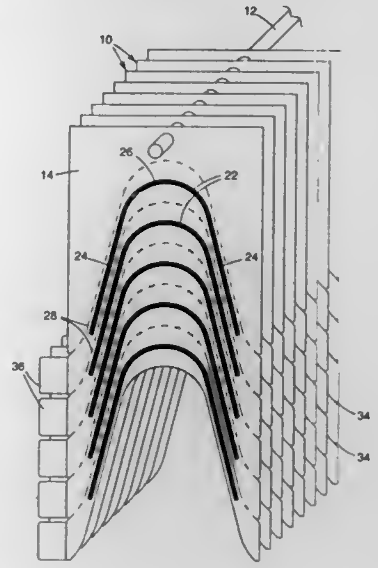
said first box having a lateral projection extending from the inner side of the lateral wall associated with each of said first and second long edge, each said lateral projection terminating in a cam with a variable thickness and comprising an inclined surface;

each said cam of said first box cooperating with said hole in the opposing lateral wall of said second box.

5,711,418

PACKAGED ORTHODONTIC ARCHWIRE ASSEMBLY

Russell A. Jordan, Rancho Cucamonga, Calif., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Mar. 29, 1996, Ser. No. 626,201
Int. Cl.^{6} A61B *19/02*
U.S. Cl. 206—63.5 **9 Claims**



1. A packaged orthodontic archwire assembly comprising:

a first sheet;

a second sheet extending over and releasably fixed to said first sheet; and

a plurality of orthodontic archwires received between said first sheet and said second sheet, each of said archwires having a

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generally U-shaped configuration and having a pair of spaced apart leg portions and a bight portion integrally interconnecting said leg portions, said archwires being spaced apart from each other and arranged in a nested array wherein a portion of one of said archwires is received within the U-shaped configuration of another of said archwires, and wherein at least one of said sheets includes one or more lines of weakness extending between adjacent pairs of said archwires for enabling detachment of one archwire from remaining archwires of said assembly when desired.

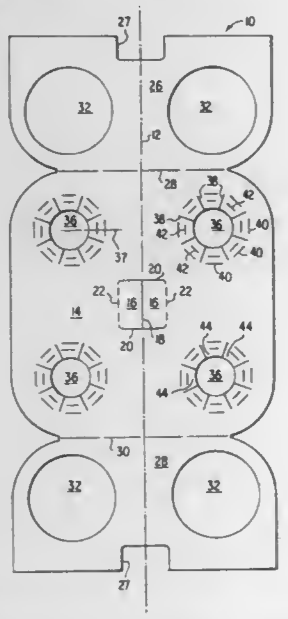
5,711,419
PAPERBOARD BOTTLE CARRIER

Jonathan T. Beales, Memphis, and Walter A. Krajci, Germantown, both of Tenn., assignors to International Paper, Purchase, N.Y.

Filed Aug. 17, 1994, Ser. No. 291,068

Int. Cl.^{6} B65D *71/00;75/00*

U.S. Cl. 206—148 **8 Claims**



1. A bottle carrier formed from a unitary paperboard panel, said panel having at least one bottle neck receiving opening, said opening having a plurality of cut lines extending through said panel and extending radially outwardly from said opening to thereby define a plurality of radially extending fingers, tips of said radially extending fingers terminating at said opening, each said radially extending finger having a base slit at its base or widest portion, each of said radially extending fingers having an intermediate slit about midway along its length, whereby a bottle can be engaged in said opening and wherein a bottle has an upper portion of greater diameter than the diameter of said opening but whose said upper portion diameter is less than the distance between generally pairwise opposite diametrical base slits, whereby a bottle can be readily removed from the carrier by fracture of several of said fingers at the region of said intermediate slits.

5,711,420
APPARATUS FOR DISPENSING A SUBSTANCE IN A LIQUID BEVERAGE

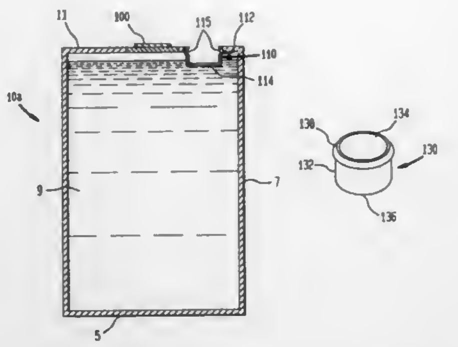
Robert E. Spring, New York, N.Y., assignor to Canning Concepts, Inc., Locust Valley, N.Y.

Filed Feb. 20, 1996, Ser. No. 603,979

Int. Cl.^{6} B65D *25/08*

U.S. Cl. 206—222 **6 Claims**

1. An apparatus for dispensing a substance in a liquid beverage comprising:



a container for containing a liquid beverage, the container including a body and a top defining an interior;

a well formed in the top comprising a breakable lower portion and an unbreakable side wall and having an open top; and

a dispenser containing a substance to be dispensed including an unbreakable top, an unbreakable side, and a breakable lower portion, the dispenser sized to fit in the well,

wherein the dispenser is fitted in and held by the well with the lower portion facing downward, so that when pressure is applied to the top of the dispenser, the lower portion of the dispenser and the lower portion of the well break open, thereby dispensing the substance in the beverage.

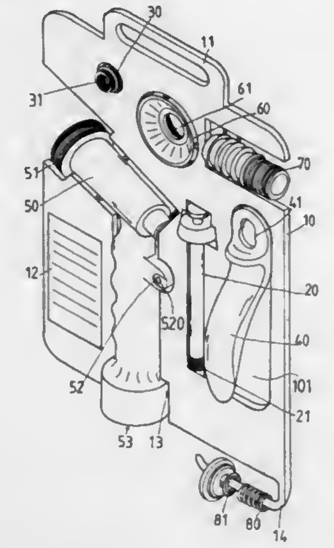
5,711,421
SPRAY GUN ASSEMBLY

Wen Li Guo, No. 10, Fang Dong Road, Wen Gin Tsuen, Fang Yuan Hsiang, Chang Hua Hsien, Taiwan

Filed Sep. 12, 1996, Ser. No. 713,011

Int. Cl.^{6} B65D *75/00*

U.S. Cl. 206—223 **4 Claims**



1. A spray gun assembly comprising:

a panel including a plurality of openings formed therein,

a plurality of elements engaged in said openings respectively, said elements including a gun body engaged in a first of said openings and coupled to said panel by at least one first stud, said gun body including an upper and front portion and including a rear and middle portion and including a bottom portion, said elements including a valve stem for engaging in said gun body, said valve stem including a rear end extended rearward beyond said gun body, said elements including a cap for engaging with said upper and front portion of said gun body, a knob for engaging with said rear end of said valve stem, a coupler for engaging with said bottom portion of said gun body, and a handle having a middle portion pivotally coupled to said rear and middle portion of said gun body at a pivot shaft, said handle including an upper portion having an orifice formed therein for engaging with said rear end of said valve stem, and

means for coupling said elements to said panel for allowing said elements and said panel to be displayed,

said elements being disengaged from said panel by braking said coupling means for allowing said elements to be assembled into said spray gun assembly.

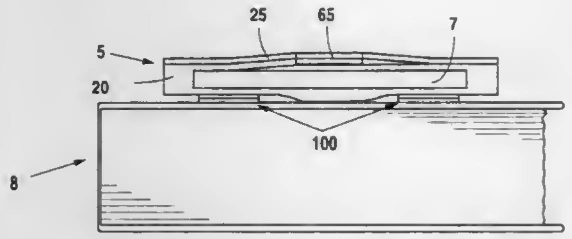
5,711,422
ATTACHABLE CASSETTE HOLDER

Cynthia Ann Simmons, 5725-94th, Lubbock, Tex. 79424

Filed Jun. 7, 1995, Ser. No. 477,355

Int. Cl.^{6} B65D *85/575*

U.S. Cl. 206—232 **2 Claims**



1. A cassette containing holder attached to a book comprising:

a holder (**5**) forming an enclosing pocket (**20**) from flexible fabric for receiving and restraining therein a cassette tape (**7**);

a cassette tape (**7**) contained within said pocket (**20**) and restrained therein by a flap (**25**), said flap (**25**) being connected to said pocket (**20**) by a releasable closing mechanism (**65**);

said holder (**5**) being releasably connected to an exterior of a book (**8**) by a coupling mechanism (**15**); and

said coupling mechanism (**15**) between said holder (**5**) and said book (**8**) being a hook and loop connector (**104**).

2. A cassette containing holder attached to a book comprising:

a holder (**5**) forming an enclosing pocket (**20**) from flexible fabric for receiving and restraining therein a cassette tape (**7**);

a cassette tape (**7**) contained within said pocket (**20**) and restrained therein by a flap (**25**), said flap (**25**) being connected to said pocket (**20**) by a releasable closing mechanism (**65**);

said holder (**5**) being releasably connected to an exterior of a book (**8**) by a coupling mechanism (**15**); and

said coupling mechanism (**15**) between said holder (**5**) and said book (**8**) being a pair (**100**) of elongated tape members (**92**) and (**92'**).

5,711,423
PACKAGE CONTAINER WITH WASTE DISPOSAL COMPARTMENT

Arthur G. Fuller, Jr., 886 Decatur Ave., Ventura, Calif. 93004

Continuation of Ser. No. 549,261, Oct. 27, 1995, abandoned. This application Feb. 14, 1997, Ser. No. 800,501

Int. Cl.^{6} B65D *85/10*

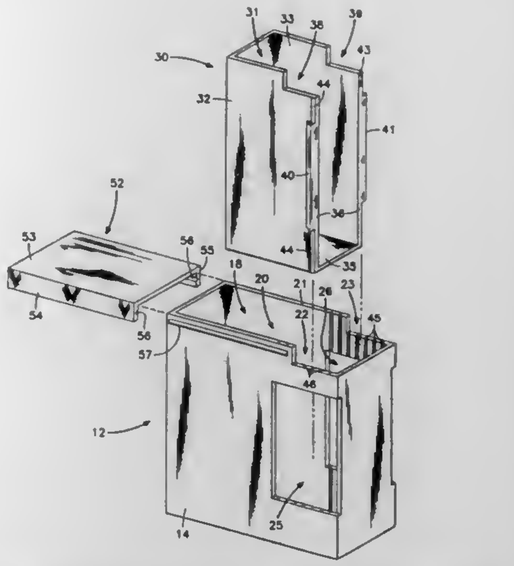
U.S. Cl. 206—246 **17 Claims**

1. A container for a collapsible package comprising:

a housing having an open top and an interior defined by opposing sidewalls interconnected with opposing end walls and a bottom wall;

a partition mounted within said housing having transport means for moving said partition to predetermined positions between said end walls, said partition dividing said interior into a waste compartment and a package receptacle area, said transport means comprising opposing side panels which are interconnected with said partition and a bottom panel to form a package sleeve that extends into said package receptacle area; and,

a movable cover overlying at least a potion of said top and enclosing said waste compartment.



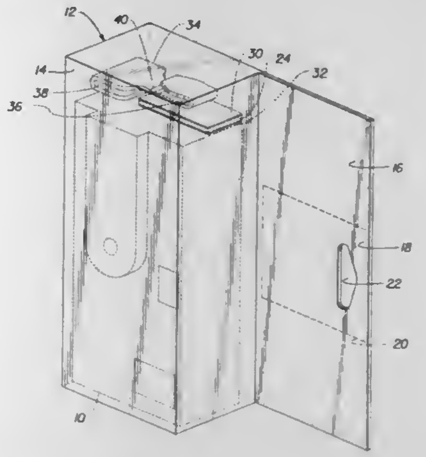
5,711,424
PACKAGED ONE-TIME-USE CAMERA AND ACCESSORY BELT CLIP

Ronald Herbert Kiesow, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 29, 1996, Ser. No. 697,745

Int. Cl.^{6} B65D *85/38*

U.S. Cl. 206—316.2 **4 Claims**



1. A packaged camera comprising a one-time-use camera and a display package containing said one-time-use camera, is characterized by:

a tear-away extension of said display package having a suspension opening for receiving a support to hang the package for display purposes;

attachment means for securing said tear-away extension to said one-time-use camera when the tear-away extension is torn away from said display package and the one-time-use camera is removed from the display package; and

a belt clip having a pair of opposite hook portions, one of which is configured to be received in the suspension opening of said tear-away extension and the other of which is configured to be attached to a person's belt to be able to carry said one-time-use camera hanging from the person's belt.

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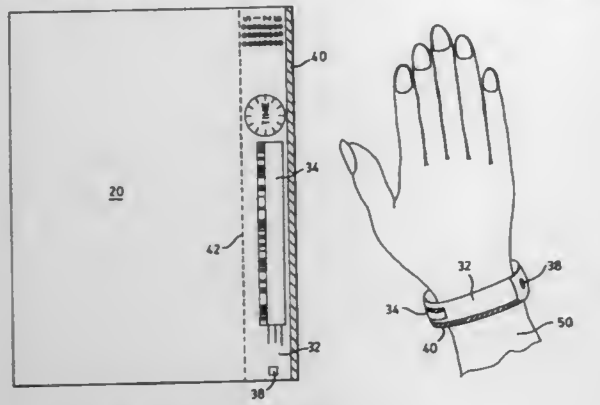
5,711,425
METHOD AND APPARATUS FOR INDICATING A DOSAGE OF MEDICINE

Patricia Louise Trimble-Gomez, 57 Cavendish Crescent, Brampton, Ontario, Canada, L6T 1Z3

Filed Aug. 13, 1996, Ser. No. 696,211

Int. Cl.⁶ B65D *77/00*

U.S. Cl. 206—570 **21 Claims**



1. A medical dosage kit comprising:
- a predetermined amount of a medicine; and
- a sheet of material having a description of the properties and preferred administration of a dosage of said medicine and having detachably attached thereto a strip, said strip comprising:
  - a long, thin body having ends;
  - means for forming a closed loop around a limb of a patient between said ends; and
  - means for indicating administration of a dosage of said medicine to said patient;

whereby the strip is detached from the sheet of material and affixed to the limb of a patient to whom said medicine has been administered, and provides information to subsequent attending medical personnel as to the time, size of dosage or properties of the administered medicine, to facilitate continuity of treatment of said patient.

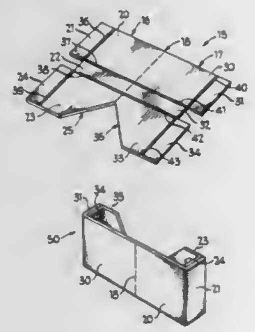
5,711,426
CORNER PROTECTOR APPARATUS

Wayne H. Kuhn, Palos Park, and Scott Imhoff, Arlington Heights, both of Ill., assignors to Stone Container Corporation, Chicago, Ill.

Filed Dec. 26, 1996, Ser. No. 772,881

Int. Cl.⁶ B65D *71/00*

U.S. Cl. 206—586 **22 Claims**



1. An apparatus for the facilitated protection of two or more corner regions of an article, wherein at least two of the two or more corner regions each includes a front surface, a back surface disposed substantially opposite to the front surface and at least two intersecting side surfaces between said front and back surfaces, the apparatus for the facilitated protection of two or more corner regions of an article comprising:
- a first front wall member;
- a first back wall member;
- a first pair of side wall members, each of which intersects the other,
- the first front, back and side wall members being operably disposed in spaced apart relation to one another, so as to define a corner receiving region,
- the first front, back and side wall members further defining a first corner protector member, for substantially covering at least a portion of the front, back and side surfaces, respectively of a first corner region of an article;
- a second front wall member;
- a second back wall member;
- a second pair of side wall members, each of which intersects the other,
- the second front, back and side wall members being operably disposed in spaced apart relation to one another, so as to define another corner receiving region,
- the second front, back and side wall members further defining a second corner protector member, for substantially covering at least a portion of the front, back and side surfaces, respectively, of a second corner region of an article;
- frangibility means for operably, yet separably connecting the first and second corner protector members to one another so as to enable their formation simultaneously, prior to deployment about respective first and second corner regions of an article.

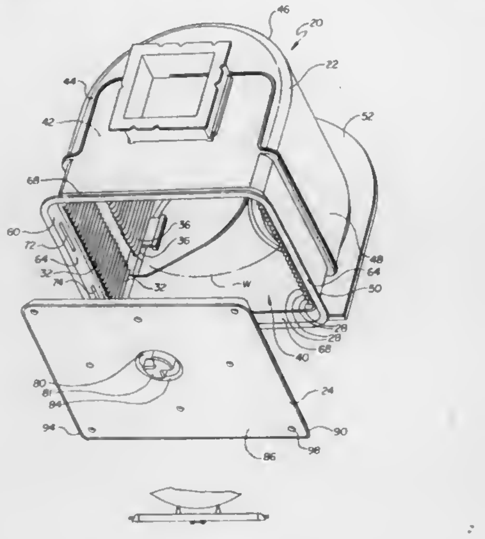
5,711,427
WAFER CARRIER WITH DOOR

David L. Nyseth, Plymouth, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Jul. 12, 1996, Ser. No. 678,885

Int. Cl.⁶ B65D *85/30*

U.S. Cl. 206—710 **9 Claims**



6. A wafer container comprising a container portion with a door receiving frame defining a door opening, the door receiving frame having at least one latching aperture, the container further comprising a door, the door comprising a latching portion extendable into said latching aperture, a wafer engaging arm extendable from said door to engage wafers in said container, a door mechanism for latching the door to the door receiving frame, the mechanism configured to sequentially first extend the latching portion and to then extend said wafer engaging arm.

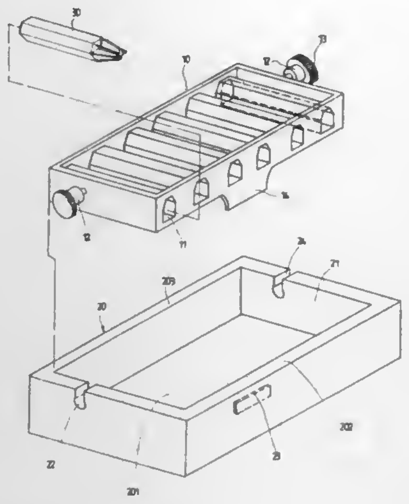
5,711,428
TOOL BOX

Chiu-Fu Ho, No. 5, 8-1 Alley, 44 Lane, 1 Sec., Hsin Jen Road, Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Dec. 13, 1996, Ser. No. 764,944

Int. Cl.⁶ B65D *85/20*

U.S. Cl. 206—738 **4 Claims**



1. A tool box comprising:
- a receiving member including a bottom, two side walls, a front wall and a rear wall wherein said two side walls, said front wall and said rear wall respectively extend from a periphery of said bottom, each of said two side walls having a hole and a slot respectively defined therethrough wherein each of said slots communicates with said hole corresponding thereto and accesses to an upper edge of said side wall corresponding thereto, and
- a receiver having a plurality of tubular recesses defined therein and each one of two side walls having a shaft extending laterally therefrom, said receiver received in said receiving member by rotatably inserting said shafts into said two holes via said slots.

5,711,429
GLASS SHIPPING RACK HAVING REMOVABLE FRONT AND/OR REAR GATES

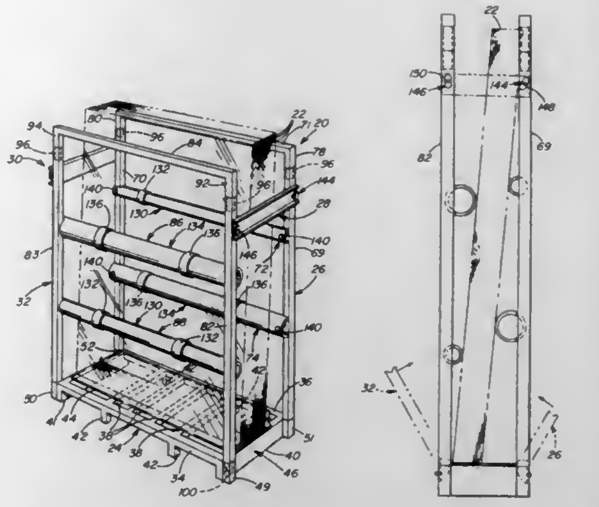
William J. Brown, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 27, 1995, Ser. No. 549,615

Int. Cl.⁶ A47F *5/00*

U.S. Cl. 211—41.14 **20 Claims**

1. In a shipping rack of the type having a base, and a securing means for securing articles to be shipped on the rack in position on the base, the improvement comprising:
- the base having at least one receiving member having a cavity;
- a two part retention arrangement, one part of the retention arrangement associated with the cavity; and
- the securing means including a gate, the gate having an elongated bottom portion; the bottom portion having a sloped surface, the bottom portion sized for insertion into the cavity, the other part of the retention arrangement mounted on the bottom portion of the gate to detachably secure the bottom portion in the cavity to limit linear vertical displacement of the gate relative to the base.



5,711,430
HANGING RAIL ASSEMBLY

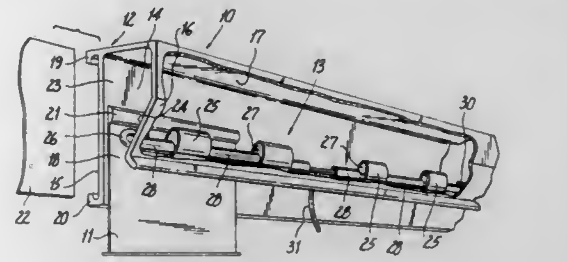
Robert Geoffrey Andersen, Camp Hill, and Robert Guilford Houston, Tarragindi, both of New Zealand, assignors to Grabtrak Pty Ltd, Brisbane, Australia

PCT No. PCT/AU92/00057, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/16289, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 17, 1992, Ser. No. 290,809

Int. Cl.⁶ A47F *7/16*

U.S. Cl. 211—45 **1 Claim**



1. An elongated hanging rail assembly of the type including a rail of selected length adapted to be mounted substantially horizontally in use, said rail having spaced front and rear downwardly converging substantially rigid walls defining a longitudinal recess with an open mouth at the bottom of said rail and a wedging assembly disposed in said recess between said walls so as to grip sheet material inserted into the mouth of said recess from below;
- characterized in that the wedging assembly comprises a series of alternating wedging pieces having oversized central apertures, spacer members interposed between said wedging pieces having central apertures smaller than the oversized aperture, and a longitudinal connecting rod passing loosely through the oversize apertures in the wedging pieces and through said spacer members therebetween whereby the wedging assembly has said wedging pieces spaced from one another along the connecting rod to a predetermined maximum overall length related to the length of the connecting rod and being urged by gravity towards their lowermost gripping positions; and
- further characterized in that a manual release handle is secured to the connecting rod, clear of said wedging pieces, and is so made and arranged as to extend downwards and loosely through the open mouth from the recess and usable for manual lifting of the connecting rod and wedging pieces thereon from below said mouth for releasing the gripped sheet material.

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5,711,431

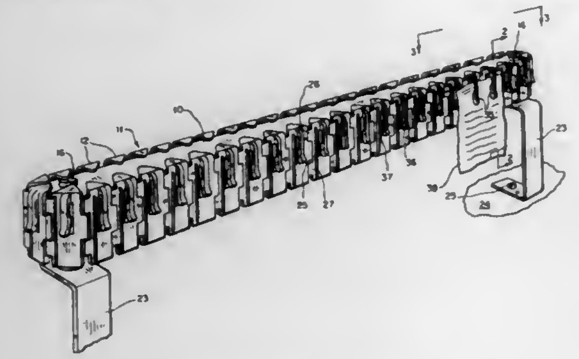
CLIP ORDER RACK

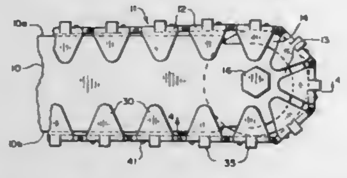
Cory A. Reichert, 1416 Ironwood Ave., Salt Lake City, Utah 84121

Filed May 17, 1996, Ser. No. 649,199

Int. Cl.^{6} A47F *5/00*

U.S. Cl. 211—45 **20 Claims**





1. A clip order rack for holding guest checks, comprising:

a loop support;

a flexible loop mounted on said loop support whereby said loop may be freely rotated as guided by said loop support, said loop having at least one straight section;

a plurality of clip members mounted on the loop, each clip member having a resilient clipping means to removably accept and hold guest checks; and

means for mounting said loop support to hold said loop in an operable position.

5,711,432

PILFER-RESISTANT PEG HOOK ASSEMBLY

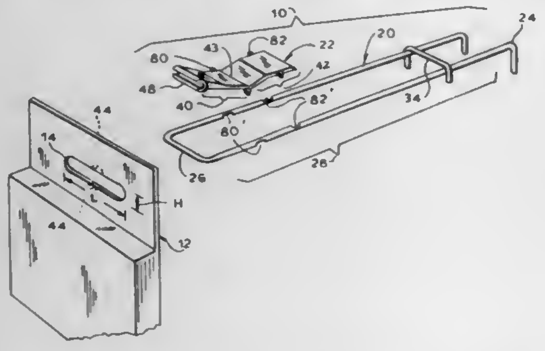
Arthur Stein, Whitestone, N.Y., and William C. Updegrave, Jackson, N.J., assignors to Display Technologies, Inc., Whitestone, N.Y.

Filed Mar. 15, 1996, Ser. No. 616,181

Int. Cl.^{6} F16M *13/00*

U.S. Cl. 211—57.1 **12 Claims**

1. A pilfer-resistant peg hook assembly for supporting a plurality



of articles incorporating defined camming slots and enabling only one article at a time to be removed, comprising:

(A) a peg hook having a pair of opposed ends and a body connecting the same, one of said hook ends being configured and dimensioned to maintain said hook body in a first plane when mounted on an appropriate surface and the other of said hook ends being a free end, said hook body being configured and dimensioned to be received in the slots of the articles and extending only in said first plane; and

(B) a flipper pivotably secured to said hook adjacent said free end and being movable between an enabling orientation enabling at least partial passage of an article along said hook body and onto said flipper as the article initially moves towards said free end, and a blocking orientation precluding passage of another article onto said flipper by the camming slot as the article moves towards said free, end, said flipper including a cammed slot being cammed into said blocking orientation as the article continues to pass over said flipper towards said free end.

5,711,433

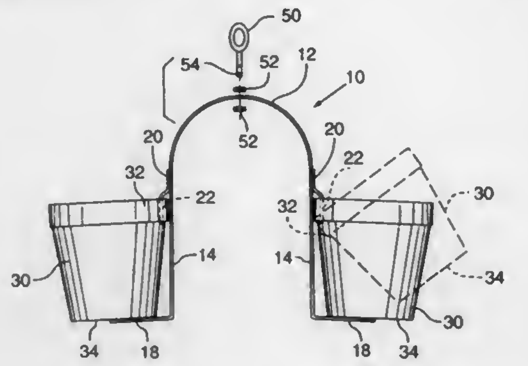
POTTED PLANT BRACKET

Carson Kelly Smith, 13959 SE. Briggs St., Oak Grove, Oreg. 97267

Filed Apr. 13, 1995, Ser. No. 422,138

Int. Cl.^{6} A47F *5/00*

U.S. Cl. 211—71 **6 Claims**



1. An arrangement of members, each supporting a pair of planting pots, comprising:

a plurality of formed members each having a crown, legs extending from the crown and a supporting base extending from each of the legs, each supporting base and leg configured to hold and receive a planting pot of said pair of planting pots with the pair of planting pots in spaced apart relation;

an aperture provided in the crown of each of the formed members, the formed members configured to enable the members to be interfit with the apertures of each in alignment;

a fastener; and

said formed members assembled together by said fastener fitted in the aligned apertures for supporting multiple pairs of planting pots.

5,711,434

AUXILIARY TOWEL RACK

Thomas F. Adams, 3961 E. River Dr., Ft. Myers, Fla. 33916

Filed Oct. 16, 1996, Ser. No. 732,032

Int. Cl.^{6} A47F *5/01*

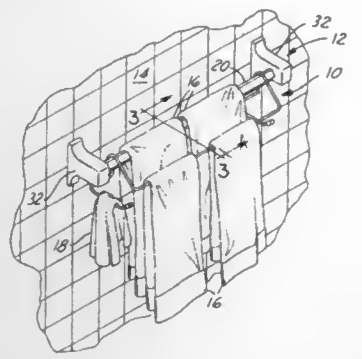
U.S. Cl. 211—86 **20 Claims**

1. An auxiliary towel rack for being used in connection with a conventional barred towel holder having a bar, wherein the conventional barred towel holder is mounted to a wall, said auxiliary towel rack comprising:

a single piece of rod, said rod having a plurality of portions comprising:

a bar portion having a first bar end and an opposite second bar end;

a pair of support portions connected respectively to said first and second bar ends, wherein said pair of support portions are formed by a bend of said rod in a first plane at each of said first and second bar ends, each support portion comprising:



a first section having a first end and an opposite second end, said first end of said first section adjoining one of said first and second bar ends;

a first curve formed in said rod at said second end of said first section, said first curve being formed in a second plane;

a second curve formed in said rod adjacent said first curve, said second curve being curved in a direction opposite to said first curve in said second plane;

a second section having a first end and an opposite second end, said first end of said second section adjoining said second curve; and

a third curve formed in said rod at said second end of said second section, said third curve being curved in a direction opposite to said second curve in said second plane.

5,711,435

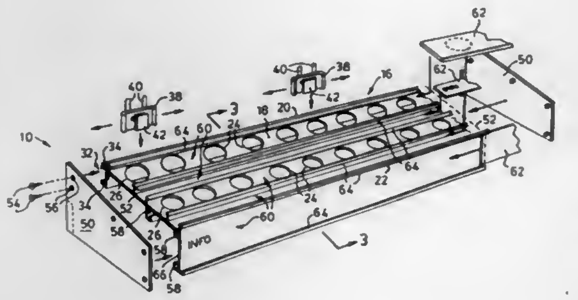
FAUCET DISPLAY UNIT AND METHOD OF FORMING SHELF FOR USE WITH SAME

Jim Morison, Oshawa, and Paul Whittington, Thornhill, both of Canada, assignors to Peerless Home Products Inc., Mississauga, Canada

Filed Apr. 14, 1995, Ser. No. 423,111

Int. Cl.^{6} A47F *5/08*

U.S. Cl. 211—90 **21 Claims**



1. A faucet display unit comprising:

a shelf having a display surface with first and second edges;

a plurality of apertures defined in said display surface for facilitating the attachment of a plurality of faucets to said shelf, each of said apertures being adapted to receive a portion of a faucet;

at least one clip adapted to engage an opening in a shelf support structure; and

an attachment track extending along said first edge of said shelf, said attachment track including a pair of opposing flanges adapted to slidably support said clip, said flanges having faces that are oriented to engage said clip to position said display surface in a downward slope from said first edge to said second edge relative to said support structure.

5,711,436

COMBINATION DRINKING GLASS AND WINE GLASS RACK

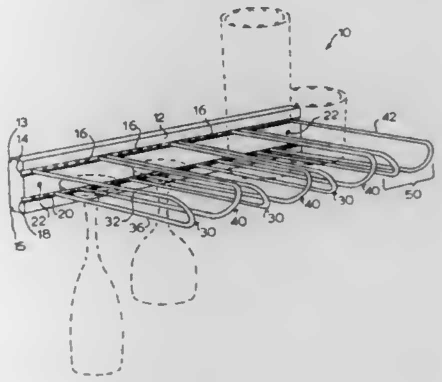
Jens Peter Moeller, Odensen; Henrik Holbaek, and Claus Jensen, both of Copenhagen, all of Denmark, assignors to Scanwood, Ryslinge, Denmark

Filed Jul. 12, 1995, Ser. No. 501,706

Claims priority, application Germany, Feb. 15, 1995, M 95 01 217.6

Int. Cl.^{6} A47F *5/00*

U.S. Cl. 211—94.5 **12 Claims**



1. A combination drinking glass and wine glass rack comprising:

(a) a support board having a top attachment row and a bottom attachment row;

(b) at least one pair of support arms, each support arm comprising an upper rod portion and a lower rod portion, and each pair of support arms having a downwardly angled support arm adjacent to an upwardly angled support arm, such that when the pair of support arms is attached to the top and bottom attachment rows of the support board, the lower rod portions of each pair of support arms is capable of supporting a plurality of drinking glass bases positioned upon the lower rod portions and a plurality of wine glass bases suspended from the lower rod portions, and the upper rod portions of each support arm stabilize the drinking glasses positioned upon the lower rod portions; and

(c) wherein said upper rod portion has an upper end and said lower rod portion has a lower end and the upper end of the upper rod portion of each support arm is attached to the top attachment row and the lower end of the lower rod portion of each support arm is attached to the bottom attachment row.

5,711,437

SWINGING FRAME CLOTHESLINE

Mark C. Flickinger, 1312 Canterbury La., Rockledge, Fla. 32955

Filed Aug. 30, 1996, Ser. No. 705,762

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 211—119.01 **13 Claims**

1. A swinging-frame clothesline comprising:

a frame that is sized, shaped and structured to support clotheslines between opposite sides of the frame;

the frame having an attachment side, a support side, a first frame side and a second frame side;

at least one pivotal attachment on the attachment side of the frame;

at least one support leg attached pivotally to at least one side of the frame proximate the support side of the frame;

at least one support leg being pivotal to a selectively upright attitude under the frame with the frame in a selectively horizontal attitude for use mode; and

at least one support leg being pivotal to an attitude selectively parallel to the frame with the frame in a selectively vertical attitude for non-use mode, wherein the at-least-one pivotal

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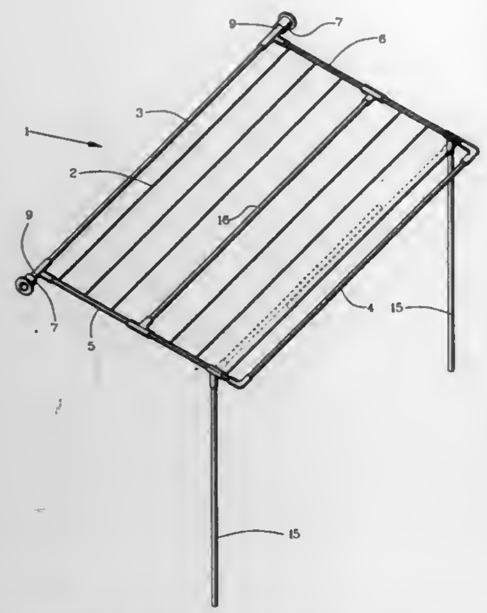
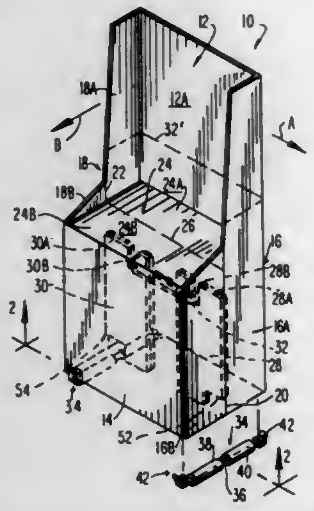


attachment on the attachment side of the frame has a pair of axle housings that are attachable to facing sides of a structure;
the attachment side of the frame has a matching pair of axle projections on outside edges of the frame; and
the matching pair of axle projections are positioned in rotational contact with inside peripheries of the axle housings.

5,711,438
FOLDABLE, WHEELED DISPLAY STAND

Michael J. Smith, Orangeburg, N.Y., assignor to Arrow Art Finishers, Inc., Bronx, N.Y.
Continuation of Ser. No. 292,583, Aug. 18, 1994, abandoned. This application Jul. 17, 1996, Ser. No. 680,706
Int. Cl.⁶ A47F *5/08*
U.S. Cl. 211—149 **36 Claims**



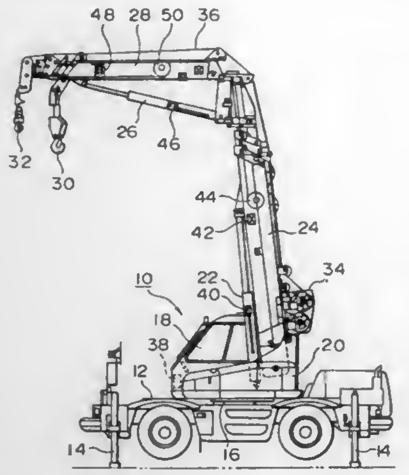
36. A combination of a pre-assembled wheeled assembly and an erect display stand, said combination comprising:
said stand having a pair of spaced-apart panels to and from which the wheeled assembly is attached and removed, respectively;
an elongated support extending along an axis between the panels;
at least one wheel journaled on the support; and
holder means on the support for attaching the wheeled assembly as a pre-assembled unit to the erect display stand, and for removing the wheeled assembly as a pre-assembled unit from the erect display stand, said holder means including a pair of end projections at opposite ends for the support and extending along the axis in opposite directions through the panels, and wherein said one wheel is mounted on the support between the end projections.

5,711,439
Patent Not Issued For This Number

5,711,440
SUSPENSION LOAD AND TIPPING MOMENT DETECTING APPARATUS FOR A MOBILE CRANE

Minoru Wada, Saitama, Japan, assignor to Komatsu Ltd., and Komatsu Mec Kabushiki Kaisha, both of Tokyo, Japan
PCT No. PCT/JP94/01875, § 371 Date May 7, 1996, § 102(e) Date May 7, 1996, PCT Pub. No. WO95/13241, PCT Pub. Date May 18, 1995
PCT Filed Nov. 8, 1994, Ser. No. 640,821
Claims priority, application Japan, Nov. 8, 1993, 5-302268
Int. Cl.⁶ B66C *15/00*
U.S. Cl. 212—278 **26 Claims**

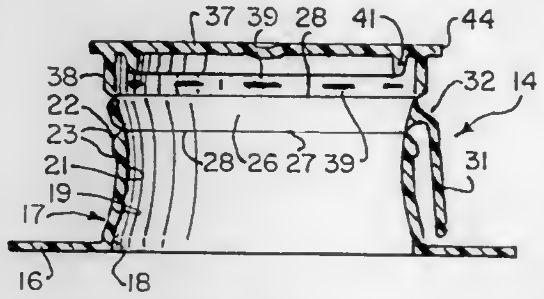
7. A mobile crane comprising:
a chassis,
a first boom having a first end and a second end, said first end being pivotally mounted to said chassis,
a first derricking cylinder connected to said first boom for swinging said second end of said first boom vertically with respect to said chassis,
a second boom having a first end and a second end, the first end of said second boom being pivotally connected to said second end of said first boom,
a second derricking cylinder connected between said first boom and said second boom for vertically swinging said second boom with respect to said first boom,
a first sensor for detecting a boom length of said first boom,
a second sensor for detecting a boom angle of said first boom,



a third sensor for detecting an axle weight on said first derricking cylinder,
a fourth sensor for detecting a boom length of said second boom,
a fifth sensor for detecting a boom angle of said second boom,
a sixth sensor for detecting an axle weight on said second derricking cylinder,
a controller for receiving signals from said first, second, and third sensors and calculating a first suspension load for said first boom based on the signals received from said first, second, and third sensors, for receiving signals from said fourth, fifth, and sixth sensors and calculating a second suspension load for said second boom based on the signals received from said fourth, fifth, and sixth sensors, for comparing the thus calculated first suspension load with the thus calculated second suspension load, and for outputting the larger of said first calculated suspension load and said second calculated suspension load as a determined suspension load.

5,711,441
ONE-PIECE FITMENT HAVING RECLOSURE CAP

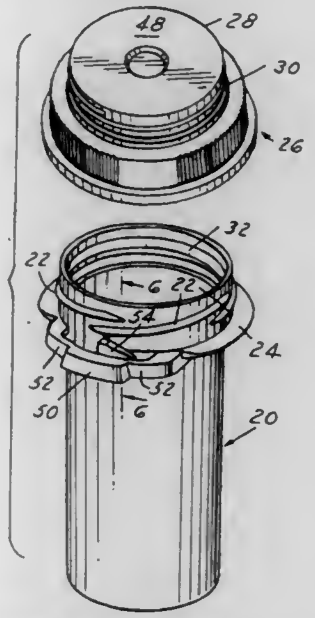
Brian M. Adams, Newark; Adam Green, San Mateo, and Jack L. Watts, Atherton, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.
Filed Sep. 4, 1996, Ser. No. 697,953
Int. Cl.⁶ B65D *17/40;1/02*
U.S. Cl. 215—48 **19 Claims**



1. A unitary, recloseable fitment comprising a spout having attachment means for securing said spout to a container, said spout having an exterior and an upper end having a external first diameter, first engaging means on said exterior of said spout, a tear band connected to an upper edge of said spout by a lower tear line, said tear band slanting upwardly-outwardly, a cap connected to an upper edge of said tear band by an upper tear line, said tear band being separable along said lower tear line from said spout and along said upper tear line from said cap, said cap having a top, a skirt depending from said top, said skirt having an interior second diameter, second engaging means on said interior of said skirt, said second diameter being slightly larger than said first diameter, said first and second engaging means cooperating to detachably hold said cap on said spout after said tear band has been separated from said spout and from said cap.

5,711,442
CHILD RESISTANT PACKAGE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois Prescription Products Inc., Toledo, Ohio
Filed Feb. 29, 1996, Ser. No. 608,877
Int. Cl.⁶ B65D *50/08*
U.S. Cl. 215—209 **10 Claims**



1. A child resistant package comprising
a plastic container having an open end,
multiple threads on the external surface of the container adjacent the upper end,
a plastic closure having a base wall and a first peripheral skirt,
said skirt having an inner surface formed with multiple threads corresponding in number to the multiple threads on the container for engaging the threads on the container,
a release element formed integrally on the exterior surface of the container below the threads,
said release element including an integral axial lug extending upwardly toward the open end of the container,
means mounting said release element on said container for radial and axial movement relative to said container,
said closure having a second skirt radially outwardly of said first skirt,
said second skirt having a plurality of circumferentially spaced stops on an inner surface of said second skirt of the closure below the threads corresponding in number to the threads on the closure and the number of threads on the container,
said lug on said release element normally extending upwardly for engagement with at least one of said stops such that when the release element is pressed radially inwardly and axially downwardly, the lug is disengaged from engagement with a stop and the closure can be removed by unthreading the closure from the container.

5,711,443
TAMPER-EVIDENT CONTAINER CLOSURE

Paul H. Bennett, 441 W. Allen Ave., San Dimas, Calif. 91773
Continuation of Ser. No. 157,730, Nov. 24, 1993, abandoned. This application Aug. 21, 1996, Ser. No. 697,272
Int. Cl.⁶ B65D *41/48*
U.S. Cl. 215—256 **42 Claims**

1. In combination:

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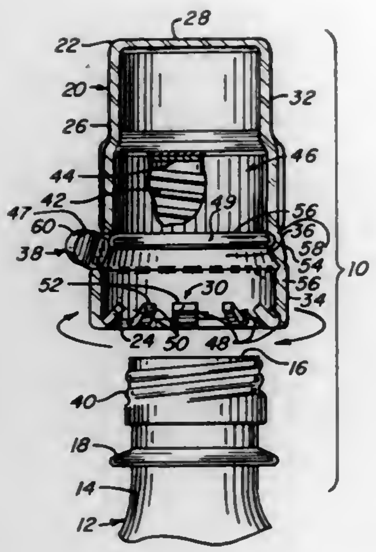


a container including an upper neck having an open upper end, and a circumferential shoulder about said neck below said upper end having a lower side,

an inner cap having internal screw threads threaded on and sealing the open upper end of said container neck,

a tamper-evident closure for said container comprising a tamper-evident outer cap positioned over said neck and said inner cap and including a circumferential side wall having upper and lower ends, an upper end wall joined to the upper end of said side wall and closing the upper end of the outer cap, an opening in the lower end of said outer cap circumferentially surrounded by the lower end of said side wall, and cap retaining means at the lower end of said side wall engagable with the lower side of said shoulder to prevent upward removal of said outer cap from said container neck, and wherein

said outer cap side wall includes a parting region extending circumferentially about said side wall between said ends of said side wall at which the outer cap may be parted into a lower cap portion which is fixed against upward removal from the container neck by said cap retaining means and an upper cap portion which is removable upwardly from the neck and from said inner cap, and junction means joining said cap portions along said parting region to which a force may be applied to part said cap along said region,

said lower cap portion contains windows spaced circumferentially about and opening through said side wall, each window having a lower end adjacent said lower end of said side wall,

said cap retaining means comprise resilient prongs joined to said side wall along the lower ends of said windows, respectively, and extending inwardly and upwardly from said side wall, and said prongs having inner ends engagable with the lower side of said container shoulder to prevent upward removal of said outer cap from said container neck and being resiliently flexible upwardly and outwardly toward the respective windows to permit downward passage of the prongs over said container shoulder during placement of said outer cap on the container neck, and

said caps have releasably engagable means which enable rotation of said inner cap by rotation of said outer cap and upward removal of said upper cap portion from said inner cap after parting of said outer cap along said parting region.

5,711,444

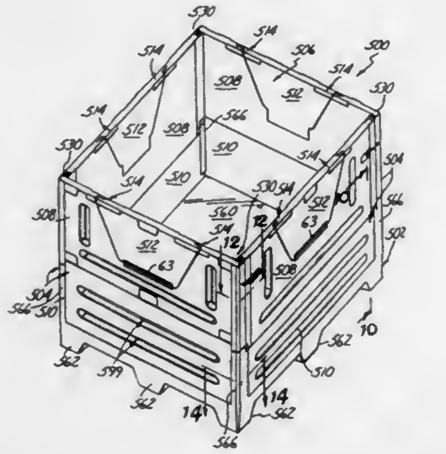
TRANSPORT CHAMBER

Patrick E. Meacham, Lakeville; Mark W. Wallace, Minneapolis; Carl Nyberg, Bloomington, all of Minn.; William W. Thompson, Midlothian, Va., and Miles Conrad Huffstutler, Liberty Hill, Tex., assignors to Temp Top Container Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 372,192, Jan. 13, 1995, Pat. No. 5,601,202, which is a continuation-in-part of Ser. No. 178,189, Jan. 6, 1994, Pat. No. 5,558,241. This application Aug. 12, 1996, Ser. No. 695,610

Int. Cl.^{6} P65D *6/116*

U.S. Cl. 220—6 **19 Claims**



1. A transport container comprising:

a base;

a plurality of side walls extending from the base, the side walls being adjacent to each other at edges to form a container having an inner cavity, each of the side walls being formed of a first wall panel and a second wall panel connected to the first wall panel by a hinge, adjacent first wall panels being selectively connectable and disconnectable to each other at edges of the side walls to allow the first wall panels to fold down relative to the second wall panels thereby shortening the transport container;

wherein at least one of the second wall panels is slidably connected to adjacent second wall panels by edge connectors such that the side wall with the slidably connected second wall panel may be slid in a direction essentially perpendicular to the base for access to the inner cavity, the edge connectors preventing the adjacent second wall panels from pulling away from the slidably connected second wall panel in other directions.

5,711,445

COLLAPSIBLE URINE CONTAINER

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

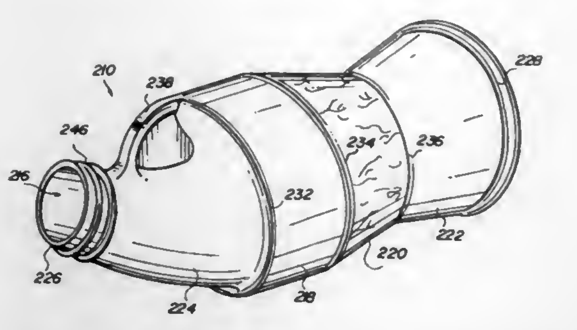
Continuation-in-part of Ser. No. 47,185, Apr. 16, 1993, Pat. No. 5,417,337, which is a continuation-in-part of Ser. No. 12,122, Feb. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 789,838, Nov. 12, 1991, Pat. No. 5,226,551. This application May 16, 1994, Ser. No. 243,108

Int. Cl.^{6} B65D *6/12*

U.S. Cl. 220—8 **16 Claims**

1. A reusable, collapsible urine container comprising:

a bottom wall and a relatively flexible, peripheral side wall extending upwardly from said bottom wall, said peripheral side wall including upper, intermediate and lower concentric portions and an uppermost non-concentric portion extending upwardly and angularly from said upper concentric portion, said intermediate concentric portion having a wall thickness less than said upper and lower concentric portions, said peripheral side wall movable between axially extended and collapsed positions, such that in said collapsed position, said lower concentric side wall portion is partially telescoped within said upper concentric side wall portion with said intermediate concentric portion reverse folded therebetween; said uppermost non-concentric portion formed with an annular rim defining an upper open end of the container, said rim formed with means for receiving a removable cap; and a handle integrally formed in said peripheral side wall; and wherein said intermediate concentric portion is tapered downwardly radially inwardly, and said lower concentric portion is tapered downwardly radially outwardly substantially to said bottom wall.



5,711,446

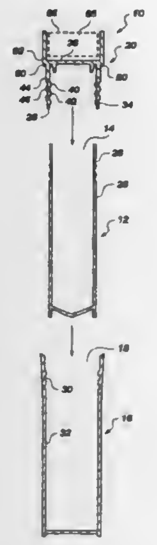
CRYOGENIC FREEZING VIAL

David H. Jeffs, Draper, and Stephen Mackert, Sandy, both of Utah, assignors to Sorenson BioScience, Inc., Salt Lake City, Utah

Filed Jan. 16, 1996, Ser. No. 585,627

Int. Cl.^{6} B65D *21/02*

U.S. Cl. 220—23.83 **13 Claims**



1. A vial comprising:

a hollow inner container having an outer side and an open end and being configured for receiving a biological sample therein through the open end, said hollow inner container defining a first volume therein;

a hollow outer container having an open end and being configured for receiving the inner container therein;

one-piece unitary interconnecting means removably attachable to both the inner and outer container for

(i) removably securing the inner container within the outer container in a fixed position such that the containers reside in a spaced-apart, substantially noncontacting orientation along the outer side of said inner container to thereby define a surrounding volume between said inner and outer containers which surrounds at least a portion of the inner container, and

(ii) substantially closing off the open ends of the inner and outer containers from communication with surrounding environment of the vial such that the inner container is also substantially closed off from communication with the surrounding volume;

wherein the surrounding volume defined between the inner and outer containers is less than the first volume defined within the inner container;

wherein the inner and outer containers are tubular, said inner container having threads formed upon an outer surface thereof and said outer container having threads formed upon an inner surface thereof, and wherein the one-piece unitary interconnecting means comprises a cap member having a tubular wall of single wall construction extending outwardly from a continuous capping surface to a terminal rim of said tubular wall, said tubular wall including an inner surface having threads which are screwably engageable with the threads of the inner container and an opposing outer surface having threads which are screwably engageable with the threads of the outer container, wherein the cap member is configured and dimensioned to be simultaneously positioned over the open ends of the inner and outer containers with the tubular wall disposed in simultaneous threaded engagement with said inner and outer containers such that the capping surface and the tubular wall cooperatively close off the open ends of the containers.

5,711,447

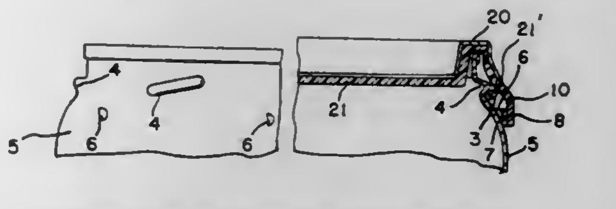
EASY-OPEN RESEALABLE CAN-END AND CLOSURE THEREFOR

George Plester, Brussels, Belgium, assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 313,886, Sep. 28, 1994, abandoned. This application Aug. 9, 1996, Ser. No. 695,366

Int. Cl.^{6} B65D *51/18*

U.S. Cl. 220—254 **7 Claims**



1. A resealable can end closure assembly comprising:

a cylindrical can body having an open end and a closure engaging finish extending around the exterior surface of the can body adjacent the open end;

a cylindrical closure having a depending peripheral skirt for operatively engaging said finish;

a set of first type spaced knuckles on said finish, said first type knuckles having respective inclined surfaces on undersides thereof;

a first plurality of inwardly projecting spaced fingers on said skirt for engaging the inclined underside surfaces on the set of first type spaced knuckles when the closure is tightly secured to the open end by the rotation of said skirt on the finish in a closing direction, said first plurality of fingers releasing from the knuckles in response to rotation of said closure in an opening direction;

a set of second type spaced knuckles disposed on the finish of the can below said set of first type knuckles;

said closure additionally including a pilfer-proof ring detachably secured to the bottom of said skirt by a frangible perforation, said pilfer-proof ring having an inwardly projecting second

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plurality of spaced fingers for engaging said set of second type knuckles for preventing removal of said ring from the can body when said closure is first secured to the open end of the can body; and

a relatively thin holding strap of flexible material connecting the pilfer-proof ring to the skirt and located within a rectangular aperture formed in the skirt so as to maintain a connection between the skirt and ring when the frangible perforation is broken.

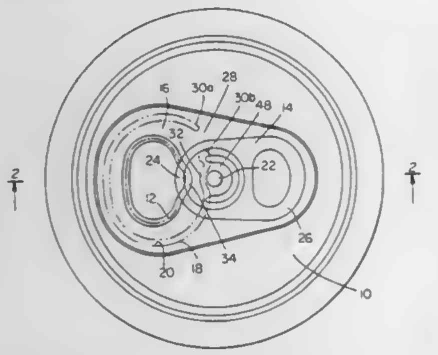
5,711,448
NON-DETACHABLE TAB CAN END WITH LARGE OVAL OPENING

Milton W. Clarke, III, Chesterfield, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 306,798, Sep. 15, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,289

Int. Cl.^{6} B65D *17/34*

U.S. Cl. 220—269 **12 Claims**



1. A metal easy-open can end with non-detachable means for making an opening therethrough suitable for pouring and drinking, the can end having

a circular end wall,

a rupturable score line in the end wall defining most of the periphery of a non-removable tear panel, while leaving between the tear panel and the remainder of the end wall an integral hinge whose length is substantially less than the maximum dimension of the tear panel, the score line extending away from one end of the hinge, around a bight where it is distant from the hinge, and back to the other end of the hinge, and the tear panel having its length lying on a diameter of the circular end wall,

a tab extending generally parallel and close to an underlying area of the end wall, a rear part of the tab being engageable for upward lifting, and a forward part of the tab terminating in a nose at its front end, and

a rivet located on said diameter and adjacent the score line, which rivet non-detachably connects the end wall to the tab and permits pivotal movement of the tab about an axis of rotation close to the rivet and generally parallel to the end wall when the rear part of the tab is lifted up from the end wall,

whereby, when the rear part of the tab is lifted, the forward part of the tab is adapted to press down on the tear panel, so as to cause relative vertical movement between the tear panel and the rivet, initial rupture of the score line close to the rivet, propagation of the rupture away from the hinge, around the bight, and back to the hinge, and swinging of the tear panel down about the hinge to an open position,

wherein the improvement comprises the tear panel, and hence the opening for pouring and drinking, which

(a) has substantially the shape of an oval,
(b) has its width, as measured perpendicular to said diameter, substantially greater than its length,
(c) has an area greater than 0.5 in^{2}, and
(d) extends substantially to the center of the circular end wall.

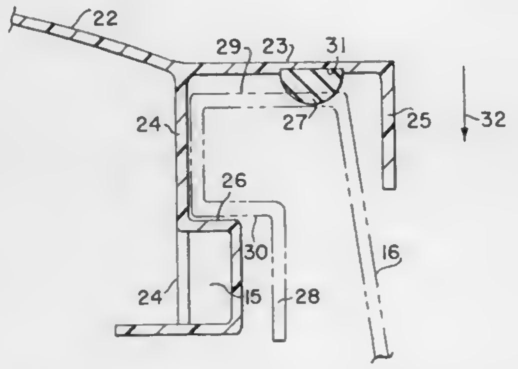
5,711,449
ENTRY ASSEMBLY

Robert W. Arn, Jacksonville, Fla., assignor to Petroleum Containment, Inc., Jacksonville, Fla.

Filed Dec. 11, 1995, Ser. No. 570,494

Int. Cl.^{6} B65D *4/06;90/10*

U.S. Cl. 220—293 **18 Claims**



1. A leakproof closure assembly for attachment to an underground vessel which comprises an enlarged opening ring for attachment to a vessel and an enlarged closing cover for sealing against said ring and preventing water egress into said vessel; said ring comprising a tapered cylindrical ring having a large diameter planar base end adapted to be attached to said vessel and a smaller diameter planar cover end adapted to receive a cover, said cover end of said base including at least three equally spaced and inwardly protruding locking lugs having an upper surface formed substantially co-planar with said small diameter planar cover end and a lower surface spaced therefrom and inclined at a small angle to said upper surface; said cover including a perimeter ring flange, a central window, and a domed structure joining said perimeter ring flange to said window, said perimeter ring flange having a first downwardly depending skirt from said perimeter ring flange spaced closely adjacent inwardly from said locking lugs of said opening ring, and a second downwardly depending skirt, spaced outwardly from said first skirt, said first skirt including at least three equally spaced and outwardly protruding locking lugs spaced downwardly from said ring flange and having an inclined upper surface to wedgingly mate with respective said lower inclined surfaces of said locking lugs on said opening ring, said locking lugs of said cover having lower surfaces substantially parallel to said upper surface of said cover end, said cover having an interior surface between said first and second skirts substantially parallel to said upper surface of said cover end, an elastic O-ring having a D-shaped cross-section affixed on its flat to said interior surface and being contacted and compressed by said smaller diameter planar cover end of said opening ring upon substantial wedging of all said locking lugs by rotation of said cover.

5,711,450
DOOR FOR CLOSING AN OPENING IN A PRESSURE VESSEL

Raymond Paul Reneau, 701 N. St. Marys, San Antnnio, Tex. 78205

Filed Mar. 15, 1996, Ser. No. 616,659

Int. Cl.^{6} B65D *45/23*

U.S. Cl. 220—319 **7 Claims**

1. A pressure chamber, comprising:

a pressure vessel having an opening with an inner surface and an adjacent inwardly facing bearing surface thereabout,

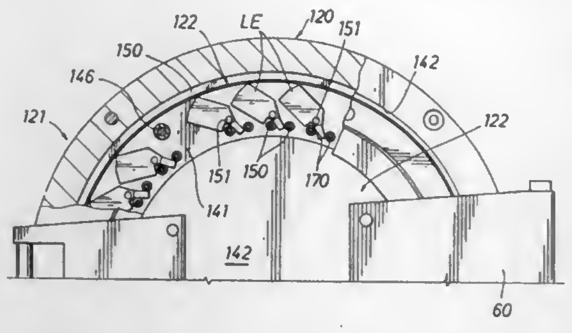
a door having an outer surface adapted to fit within the inner surface of the opening of the vessel,

means for releasably locking the door in closed position when so fitted, including

locking elements each mounted on the door for pivoting between locked position in which one side of each is opposite the bearing surface on the vessel, and thus held thereagainst by pressure in the vessel, and unlocked position removed from opposite said bearing surface so as to permit the door to be installed and/or removed from within the inner surface of the vessel,

a ring rotatably mounted on the door for moving the locking elements between locked and unlocked positions in response to rotation of the ring in opposite directions, and

means manipulatable from the outside of the vessel for so rotating the ring.



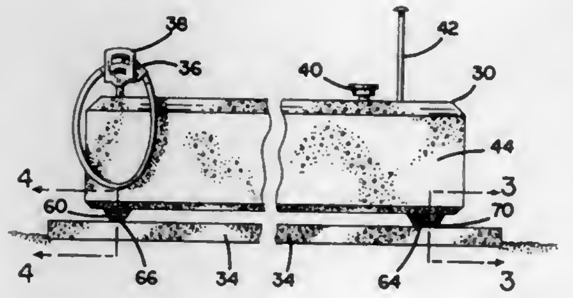
5,711,451
CONCRETE TANK SUPPORT SYSTEM

Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06492

Continuation of Ser. No. 511,196, Aug. 4, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 698,488

Int. Cl.^{6} B65D *90/14*

U.S. Cl. 220—636 **3 Claims**



1. A liquid storage tank having a length, a width, a first end and a second end, said tank comprising:

a cementitious outer shell,

a support system consisting of three support points, said three support points being:

a pair of support points mounted on said tank and consisting of a first support point and a second support point horizontally spaced from said first support point,

said pair of support points being at said first end of said tank, said first end of said tank being supported by said pair of support points, and

a third support point mounted on said tank,

said third support point being substantially less than the width of the tank and being spaced from said first support point and said second support point and being at said second end of said tank, said second end of said tank being supported by said third support point,

said first, second and third support points being below said tank and being rigidly mounted on said tank,

said tank having a bottom wall, said mounting of the support points being on said bottom wall,

said bottom wall of said tank comprising a bar attached to said bottom wall and extending below said bottom wall,

said third support point being on said bar, said bar extending lengthwise substantially the width of said tank.

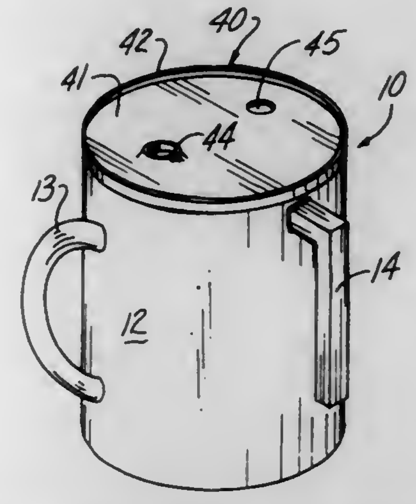
5,711,452
VALVE CONTROLLED RECEPTACLE COVER

Jeffrey D. Chaffin, 3255 S. Parker Rd., #2-302, Aurora, Colo. 80014

Continuation-in-part of Ser. No. 354,162, Dec. 8, 1994, Pat. No. 5,477,980. This application Dec. 22, 1995, Ser. No. 575,949

Int. Cl.^{6} B65D *3/02*

U.S. Cl. 220—715 **12 Claims**



1. A cover for a drink receptacle wherein the cover comprises:

a base unit provided with an inlet supply aperture in open fluid communication with a fluid supply chamber and a base vent aperture in open fluid communication with a vent chamber;

a lid unit operatively associated with the base unit and comprising a lid member provided with a raised mouthpiece and a lid vent aperture; wherein the raised mouthpiece is operatively connected to the fluid supply chamber, and the lid vent aperture is operatively connected to the vent chamber;

an actuator unit including a generally T-shaped actuator element slideably disposed within the base unit, wherein the cross of the T-shaped actuator element forms arms, wherein the arms of the actuator unit are provided with valve means for controlling the flow of fluid through the fluid supply chamber and the vent chamber; and

means for reciprocating the actuator element relative to the base unit for controlling the position of the valve means relative to the fluid supply chamber and the vent chamber.

5,711,453
CAP WITH DRAINING SPIKE FOR USE WITH HERMETICALLY SEALED DISPENSING CONTAINER

Gerhard H. Weiler, South Barrington, Ill., assignor to Automatic Liquid Packaging, Inc., Woodstock, Ill.

Filed Jun. 7, 1995, Ser. No. 476,090

Int. Cl.^{6} B67D *5/00*

U.S. Cl. 222—83 **10 Claims**

9. A cap suitable for providing access to a hermetically sealed container having an externally threaded throat member sealed by a pierceable membrane, the cap comprising:

a dome portion provided with a dispensing nozzle extending outwardly from the dome portion and a removable closure for the nozzle, the nozzle defining an inner passageway and an inner recess with a tapered lateral surface surrounding the passageway at the proximal end of the nozzle;

a skirt portion unitary with the dome portion and provided with internal threads for engagement with said externally threaded throat member; and

a draining spike comprising an elongated member having a generally cylindrical body portion that terminates at the distal end thereof into a piercing tip and a peripheral flange that includes a tapered lateral face, said spike depending inwardly

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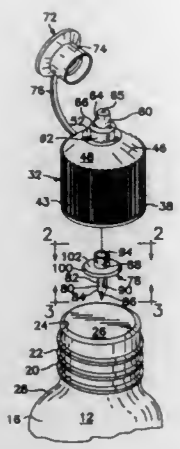


from said dome portion such that said cylindrical body portion and said peripheral flange are nested within the inner channel and recess respectively, and the tapered lateral face engages said tapered lateral surface, said piercing tip penetrating the membrane when the cap is threaded onto said throat member, said cylindrical body portion and said piercing tip together defining a draining passageway in fluid flow communication with said inner channel of said dispensing nozzle.

5,711,454

LAMINATED BOTTLE AND PUMP DEVICE THEREFOR

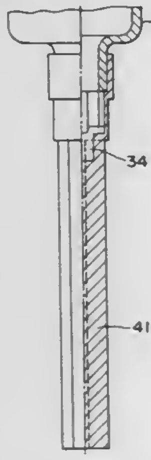
Tsutomu Kobayashi, and Akira Nishigami, both of Ibaraki, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 175,390, Feb. 1, 1994, Pat. No. 5,513,761. This application May 19, 1995, Ser. No. 445,034

Claims priority, application Japan, May 11, 1992, 4-117756; May 14, 1992, 4-122198; May 14, 1992, 4-122199; Sep. 4, 1992, 4-62421; Oct. 23, 1992, 4-74190; Apr. 6, 1993, 5-17182

Int. Cl.^{6} B65D *35/28*

U.S. Cl. 222—95 **4 Claims**



1. A pump device and container, said pump comprising a suction portion inserted into the container, an operable portion exposed to an outside of the container, and a bag provided surrounding said suction portion, said bag containing contents for being loaded into the container,

wherein said suction portion is open to a lower end of the pump and further comprises a rod extending toward a bottom of said bag, said rod having an I-beam cross-section with a centrally intersecting beam creating several fluid communication paths along said I-beam rod from said bottom of said bag to said pump, said suction portion further comprises a circular orifice coupled to the pump opened at a bottom end portion thereof, and a plurality of longitudinal grooves are formed around a circumferential surface of said suction portion, said orifice and grooves providing fluid communication paths between said rod and said pump.

5,711,455

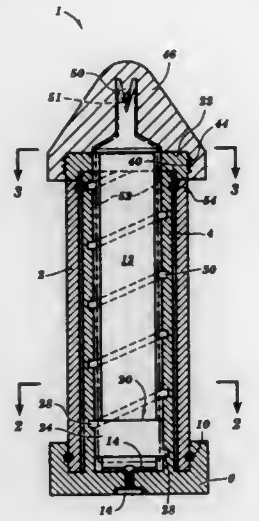
TUBE PRODUCT DISPENSER

Howard V. Elliott, Box 1708, Bethel, Ak. 99559

Filed Oct. 25, 1995, Ser. No. 548,203

Int. Cl.^{6} B65D *35/28*

U.S. Cl. 222—103 **10 Claims**



8. A dispensing device comprising:
a tubular outer housing;
a tubular inner housing;
a rotatable handle secured to said inner housing;
first and second elongated flexible bands coupled to one end of said outer housing;
a compressing means adapted to press together adjacent portions of said first and second bands;
means connected to the inner housing and to the compressing means for causing the compressing means to move in a direction parallel to a longitudinal axis of the inner housing when said handle is rotated wherein the means for causing the compressing means to move comprises a helically-oriented screw thread located on the inner housing and rotatable therewith, and wherein the compressing means includes at least one outwardly extending pin that is engaged to said screw thread and wherein when said handle is rotated, said at least one pin is forced by said screw thread to move in a direction parallel to a longitudinal axis of the inner housing.

5,711,456

ABOVE GROUND FUEL TRANSFER MODULE

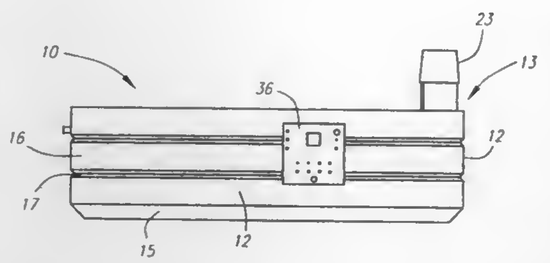
Billy O. Bryant, 6509 Yosemite Pl., Bakersfield, Calif. 93309

Filed Aug. 8, 1995, Ser. No. 512,666

Int. Cl.^{6} B67D *1/16*

U.S. Cl. 222—108 **9 Claims**

1. An above ground fuel transfer module, comprising:
a rectangular support frame having an outer perimeter, said frame including vertical side walls around the perimeter and a bottom forming a containment vessel, with portions of said vertical side walls recessed from a maximum horizontal extent of the perimeter of the support frame for forming a recessed compartment outside of said containment vessel opening outwardly toward the perimeter, at least one fuel line connectable to an external fuel tank, said fuel line extending from outside said support frame through said vertical side walls of said support frame, and means for dispensing fuel mounted in said recessed compartment within said frame perimeter and connected to said fuel line within said containment vessel.



5,711,457

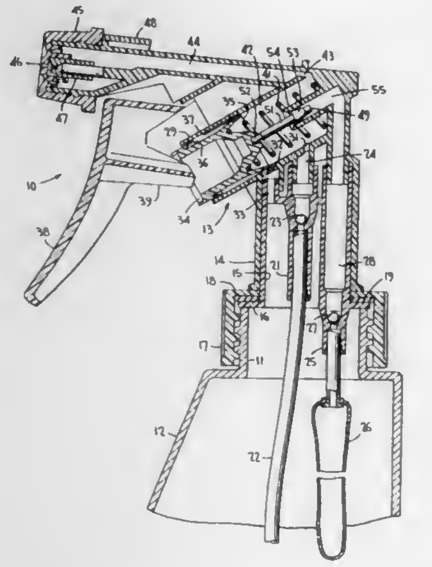
TRIGGER SPRAYER FOR DISPENSING LIQUIDS COMBINED FROM SEPARATE COMPARTMENTS

Linn Wanbaugh, Lee's Summit, and Phillip J. DiMaggio, Kansas City, both of Mo., assignors to Calmar Inc., City of Industry, Calif.

Filed Oct. 10, 1996, Ser. No. 728,793

Int. Cl.^{6} B67D *5/52*

U.S. Cl. 222—136 **7 Claims**



1. A manually actuated liquid pump dispenser for dispensing combined first and second fluids separately stored in respective first and second fluid compartments, comprising:
a pump body having pump means in fluid communication with said fluid compartments for simultaneously suctioning fluid therefrom and for combining the fluids prior to discharging;
said pump means comprising a pair of axially aligned, interconnected pistons of relatively larger and smaller diameter reciprocable in unison within relatively larger and smaller diameter cylinders for therewith defining first and second variable volume pump chambers;
said smaller diameter piston having means for valving one of said fluids from said second chamber to be combined with the other of said fluids in said one chamber during each compression stroke of said pistons; and
actuation means on said pump body for actuating said pistons as a unit against the force of a piston return spring for dispensing said fluids as combined from said one chamber during each said compression stroke.

5,711,458

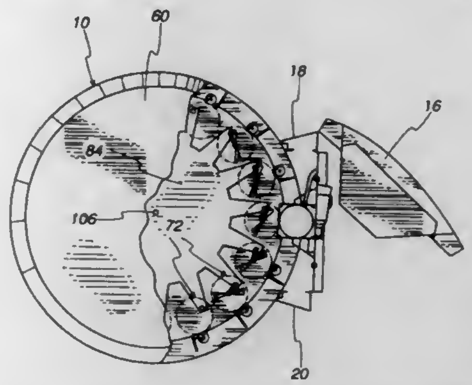
PAINT DISPENSING APPARATUS

Michiel Jacobus Johannes Langeveld, Zoetermeer, and Johannes Hermanus Nicholaas Post, Sassenheim, both of Netherlands, assignors to Fluid Management, Inc., Wheeling, Ill.

Filed Jan. 22, 1996, Ser. No. 589,732

Int. Cl.^{6} B67D *5/60*

U.S. Cl. 222—144 **29 Claims**



1. Dispensing apparatus for dispensing a plurality of pulverulent materials, comprising:
a plurality of canisters for storing materials to be dispensed;
a dispensing station whereat the materials are dispensed;
a plurality of metering pumps, associated with respective ones of said plurality of canisters for receiving materials therefrom, the metering pumps including pump operators for dispensing preselected amount of materials withdrawn from the canisters;
a movable platform for supporting the plurality of canisters and for presenting preselected ones of the plurality of canisters to the dispensing station;
a frame supporting the platform;
a door at the dispensing station, hingedly supported by the frame;
pump actuator means carried on the door, for engaging the pump operators and for actuating the pump operators to selectively withdraw and dispense preselected amounts of materials from the canisters.

5,711,459

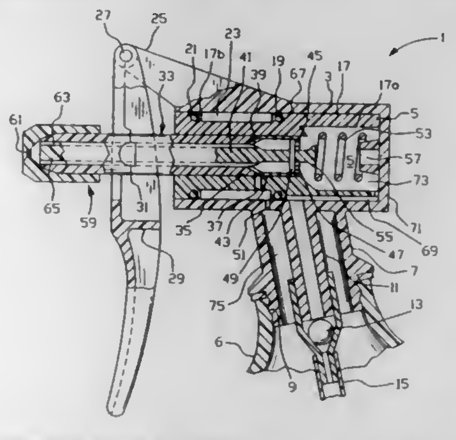
DOUBLE ACTION TRIGGER SPRAYER

Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Continuation-in-part of Ser. No. 511,917, Aug. 7, 1995, Pat. No. 5,622,287. This application Mar. 25, 1996, Ser. No. 623,894

Int. Cl.^{6} B67D *5/40*

U.S. Cl. 222—318 **19 Claims**



1. A continuous action trigger sprayer for spraying liquid material therefrom, which comprises:

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- a) a housing having means for connection to a container and having a liquid chamber aligned with an operation cylinder;
- b) a pumping element located in said operation cylinder and being driven to reciprocate in horizontal forward and rearward strokes to dispense liquid from said liquid chamber, said pumping element having a predetermined shape, volume and displacement and having a first position and a second position within said operation cylinder, said first position resulting from forward movement and establishing a minimum portion of volume of said pumping element within said liquid chamber and permitting a predetermined maximum available volume within said liquid chamber for liquid material, said second position resulting from rearward movement and establishing a maximum portion of volume of said pumping element within said liquid chamber and permitting a predetermined minimum available volume within said liquid chamber for liquid material due to volume displacement by said pumping element, and said pumping element including thereon a valve seat, a one way valve and a pumping rod such that said valve seat, said one way valve and said pumping rod move together with said pumping element when said pumping element is moved, said one way valve permitting liquid material to pass therethrough in a relative direction toward a spray nozzle, but not toward said liquid chamber, both said valve seat and said one way valve being located on a rearward portion of said pumping element such that said one way valve does not contact the wall of said operation cylinder, said spray nozzle being located on said housing and being connected to a liquid conducting means which allows liquid to flow from said pumping element to said spray nozzle, said pumping rod being located on a forward portion of said pumping element; and
- c) a relief valve connected to a trigger and having a seat with an opening therethrough and a relief passage to bleed liquid back to the container and to allow atmospheric air to be drawn in through said spray nozzle at the end of the rearward movement of said pumping element whereby said spray nozzle is cleared of liquid, said relief valve seat cooperating with said pumping element to close said opening through said seat when said pumping element is in its forward position, said trigger being located on an upper surface of said body and having a first position and a second position corresponding to said pumping element first position and second position;

such that when said trigger is reciprocated to prime and when said trigger and therefore said pumping element is moved from said first position to said second position, liquid material passes through said one way valve and seat and at least a portion thereof passes successively through said liquid conducting means and said spray nozzle, and when said trigger and therefore said pumping element is then returned to said first position, liquid material is sucked upwardly from said container and liquid material in the area forward the closed valve exits through said liquid conduction means and said spray nozzle, thereby creating a continuous action spray on forward and rearward strokes of said trigger.

5,711,460
TRIGGER TYPE LIQUID DISCHARGE DEVICE

Tadao Saito, and Shigeru Hayakawa, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02203, § 371 Date Jun. 25, 1996, § 102(e) Date Jun. 25, 1996, PCT Pub. No. WO96/13334, PCT Pub. Date May 9, 1996

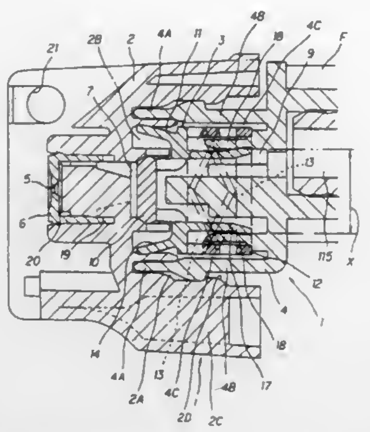
PCT Filed Oct. 26, 1995, Ser. No. 666,431

Claims priority, application Japan, Oct. 26, 1994, 6-285923

Int. Cl.^{6} B67D *5/40*

U.S. Cl. 222—380 **15 Claims**

3. A trigger type liquid discharge device comprising a container, a pump unit having a cylinder and a piston, a discharge pipe (F) having a discharge aperture (5), and a trigger (**102**) for reciprocating the piston, wherein liquid drawn up from the container is



discharged through the discharge aperture by movement of the piston to a stroke end, characterized in that

- a liquid guide (**3**) is arranged in a liquid flow path (**7**) disposed upstream relative to the discharge aperture (**5**), said liquid guide (**3**) comprising a valve body (**10**) for closing the liquid flow path (**7**), a pressure bearing sleeve (**11**) formed integrally with the valve body (**10**), an anchor member (**12**) to be secured to the discharge pipe (F), and a spring member (**13**) for coupling said integrally formed valve body (**10**) and the pressure bearing sleeve (**11**) with the anchoring member (**12**),
- said pressure bearing sleeve (**11**) has a pressure bearing surface (**14**) facing the upstream side of the liquid flow path (**7**) for bearing the liquid pressure,
- an area of said pressure bearing surface (**14**) is so selected that a force generated by a proper liquid discharge pressure that is applied to said pressure bearing surface (**14**) is greater than sum of a resilient force of the spring member (**13**) and a force applied to the valve body (**10**) and directed to the downstream side of the liquid flow path (**7**),
- an inner peripheral wall (**31**) of the cylinder (**23**) is provided with a plurality of short and shallow grooves (**32**) at a portion adjacent to a bottom wall (**29**) of the cylinder (**23**), said short and shallow grooves (**32**) running longitudinally,
- the inner peripheral wall (**31**) of the cylinder (**23**) is provided with an air intake port (**123**) communicating with an inside of the container,
- the piston (**24**) is formed with a pair of annular skirts (**35**, **37**) held in close contact with the inner peripheral wall (**31**) of the cylinder (**23**), and
- a gap separating said pair of annular skirts is so selected that, when one of the annular skirts (**35**) rides on the short and shallow grooves (**32**) of the cylinder, the other of the annular skirts (**37**) is brought into close contact with inner peripheral wall of the cylinder at a position close to an open edge of the cylinder than the air intake port (**123**).

5,711,461
LIQUID DISPENSER

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

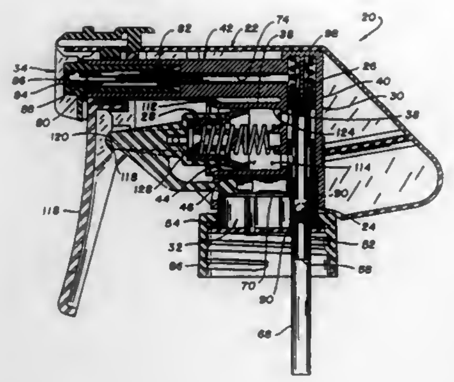
Continuation of Ser. No. 534,720, Sep. 27, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 744,223

Int. Cl.^{6} B67D *5/42*

U.S. Cl. 222—383.1 **31 Claims**

30. A trigger sprayer comprising:

- a dispenser body having a generally cylindric inner surface, a pump chamber defined at least in part by the cylindric inner surface, an intake port adapted for fluid communication with a source of liquid, an intake liquid flow path providing fluid communication between the intake port and pump chamber, a discharge port, and a discharge liquid flow path providing fluid communication between the pump chamber and discharge port;



- a first check valve in the intake liquid flow path configured for permitting fluid flow from the intake port to the pump chamber and for checking fluid flow from the pump chamber to the intake port;
- a pump piston having a head at its inner end slidable within the pump chamber configured for sealing engagement with the cylindric inner surface of the dispenser body all around the head of the piston to seal against leakage of fluid between the cylindric inner surface of the dispenser body and the head of the piston, the head of the piston and pump chamber defining a variable volume fluid receiving cavity, the pump piston being reciprocally slidable in the pump chamber generally along an axis X between a first position in which the fluid receiving cavity has a first volume V_1 and a second position in which the fluid receiving cavity has a .second volume V_2 smaller than the first volume V_1;
- a second check valve in the discharge liquid flow path moveable between a closed position for blocking fluid flow between the pump chamber and discharge port and an open position for permitting fluid to flow from the pump chamber through the discharge liquid flow path and out the discharge port, said second check valve being spaced laterally from said axis X;
- a trigger operatively connected to the pump body for pivotal movement of the trigger relative to the pump body between first and second pivot positions, the trigger also being operatively connected to the pump piston in a manner such that pivotal movement of the trigger between its first and second positions causes reciprocating movement of the pump piston between its first and second positions;
- a vent passageway defined at least in part by both the dispenser body and pump piston for venting air from the fluid receiving cavity, the dispenser body and pump piston being shaped and configured for opening the vent passageway when the pump piston is in its second position and for blocking the vent passageway when the pump piston is in its first position;
- the dispenser body further comprising a portion engageable with the head of the pump piston when the pump piston is in its second position, the head of the pump piston and said portion of the dispenser body being configured such that engagement of the head of the pump piston with said portion of the dispenser body causes deformation of one of the head of the pump piston and the dispenser body to open the vent passageway for venting air from the fluid receiving cavity;
- wherein movement of the pump piston from its first position to its second position when air is in the fluid receiving cavity increases pressure within the fluid receiving cavity to force the air through the vent passageway and thereby prime the pump, movement of the pump piston from its second position to its first position after air has been evacuated from the fluid receiving cavity creates a vacuum pressure in the fluid receiving cavity to draw liquid from said source of liquid through the first check valve and into the fluid receiving cavity, and movement of the pump piston from its first position toward its second position when the fluid receiving cavity is filled with liquid forces the liquid through the second check valve and through the discharge port.

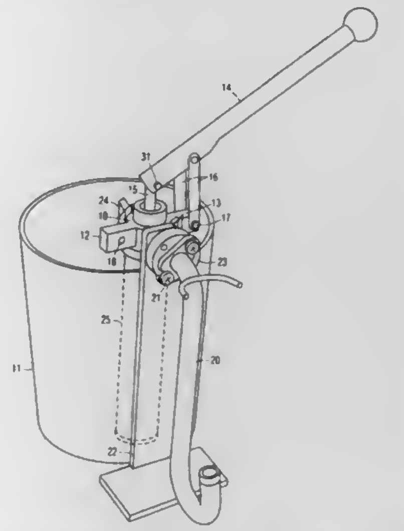
5,711,462
DRYWALL TOOL FILLING PUMP

Dave Hard, 423 Wilson La., Windsor, Calif. 95492

Filed May 24, 1996, Ser. No. 653,487

Int. Cl.^{6} B67D *5/40*

U.S. Cl. 222—385 - **10 Claims**



1. A drywall tool filling pump adaptable for either right-handed use or left-handed use, comprising:

- a pump cylinder adapted to be positioned vertically inside a bucket of drywall mud;
- a pump head attached to a top end of said pump cylinder, said pump head having left and right sides comprising radially opposite positions about an axis thereof;
- a plunger shaft extending slidably and coaxially out of said pump head;
- an output port means attached to said pump head and adapted to be connected to a drywall tool;
- a vertical mounting bracket having an upper end connected to said pump head intermediate said left and right sides, said mounting bracket being adapted to be positioned outside said bucket;
- a lever having a proximal end pivotally attached to an upper end of said plunger shaft, said lever being selectively positionable on either said left side or said right side; and
- a connecting bar having an upper end hingeably attached to an intermediate portion of said lever, and a lower end selectively positionable on said pump head on either said left side or said right, so that when said lever and said connecting bar are positioned on said right side, said lever is operable by the right hand of a worker, and when said lever and said connecting bar are positioned on said left side, said lever is operable by the left hand of the worker.

5,711,463
DISTRIBUTOR FOR DISTRIBUTING A SMALL AMOUNT OF PARTICLES

Han-kuei Chen, and Han-wey Chen, both of No. 863, Chienhsing Rd., North Dist., Taichung, Taiwan

Filed Oct. 7, 1996, Ser. No. 725,827

Int. Cl.^{6} G01F *11/26*

U.S. Cl. 222—456 **5 Claims**

1. A distributor mounted to a container and comprising:

- a cap having a first hole defined centrally therein and a first tubular member extending from said cap, said first tubular member enclosing said first hole, said cap mounted to said container and communicating with an interior of said container, and
- a mounting member being a tubular member and having a top [illegible] disposed to one end thereof, a second tubular member extending downwardly from an under side of said top board

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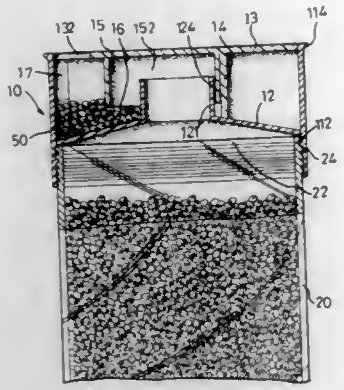
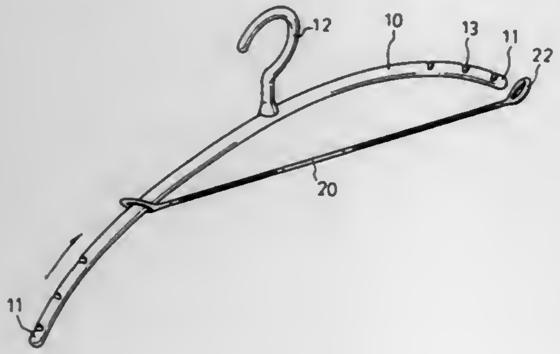


and said cap connected to the other end of said mounting member, said first tubular member extending into said second tubular member with a first space defined between said top board and a distal periphery of said first tubular member, a gap defined between a distal periphery of said second tubular member and an upper side of said cap, a c-shaped skirt having two clistal ends extending downwardly from said under side of said top board and both end sides of said c-shaped skirt integrally connected to an inner periphery of said mounting member, a distal periphery of said c-shaped skirt contacting said upper side of said cap, said second tubular member tangentially connected to an inner periphery of said c-shaped skirt, said top board having an outlet defined therein which communicates with a second space enclosed by said second tubular member, said c-shaped skirt and said inner periphery of said mounting member.

5,711,464
LENGTH-ADJUSTABLE CLOTHES HANGER

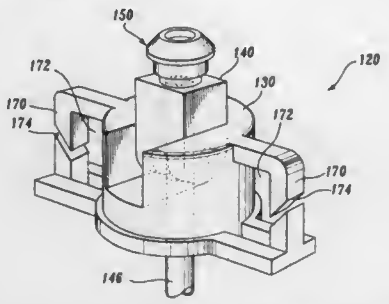
Raymood Huang, No. 493, Ta-Yu Rd., Tao-Yuan City, Taiwan
Filed Oct. 15, 1996, Ser. No. 731,308
Int. Cl.^{6} A47G *25/40;25/14*
U.S. Cl. 223—94 **10 Claims**



1. A length-adjustable clothes hanger comprising:
- a flexible arm having opposite end portions and a plurality of first engaging members which are formed adjacent to each of said end portions;
- a hook connected to an intermediate portion of said flexible arm; and
- an elongated restraining member having two ends, each of said ends having a second engaging member, respective ones of said second engaging members being connectable to varying ones of said plurality of first engaging members formed adjacent said end portions wherein the distance between said end portions may be varied by flexure of the arm with the engaging members.

5,711,465
BOTTLE CARRYING DEVICE HAVING A PIVOTABLE SPOUT

Diana Pittarelli, 16406 Briar Patch Pl., Miami Lakes, Fla. 33014, and Michael J. Langieri, Jr., Longmeadow, Mass., assignors to Diana Pittarelli, Miami Lakes, Fla.
Continuation-in-part of Ser. No. 474,066, Jun. 7, 1995, Pat. No. 5,577,647. This application Nov. 26, 1996, Ser. No. 758,206
Int. Cl.^{6} A45F *5/00*
U.S. Cl. 224—148.6 **11 Claims**

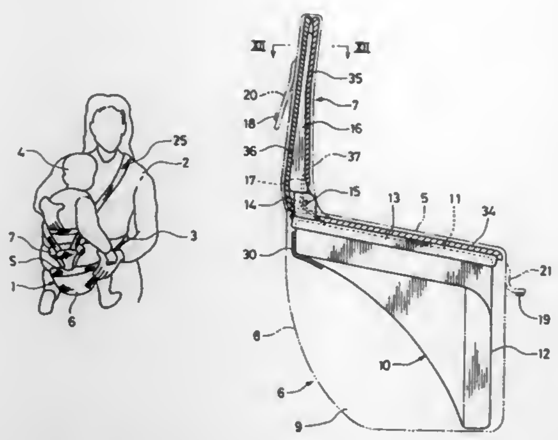


1. A bottle carrying device having a pivotable spout for carrying a conventional bottle from a flexible extension member, wherein the bottle includes an externally threaded end, the device comprising:
- (a) a main body portion including a first end and a second end, the first end having a substantially cylindrical recess formed therein, the recess including internal threads adapted to threadably receive the externally threaded end of the bottle, the second end having a passage formed therein, the passage connected in fluid communication with the recess;
- (b) a spout pivotally connected to the second end of the main body portion, and connected in fluid communication with the passage, the spout including a cap slidable thereon from a first position, to a second position, a path of fluid communication being open through the spout when the cap is in the first position, and the path of fluid communication through the spout being closed when the cap is in the second position, wherein the spout includes members extending outwardly in opposite directions from the spout along a common axis perpendicular to the path of fluid communication to pivotally connect the spout to the main body portion; and
- (c) at least one wing connected to the main body portion, the wing having an aperture formed therethrough for receiving the flexible extension member.

5,711,466
BABY HOLDER

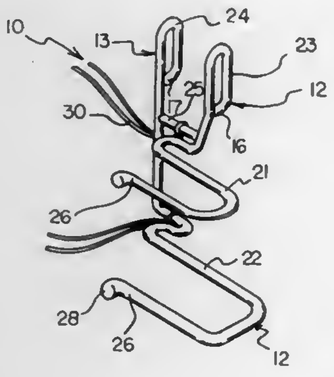
Sachiyo Kataoka, and Yukio Kakimoto, both of Osaka , Japan, assignors to Aprica Kassai Kabushikikaisha, Osaka, Japan
Filed Aug. 27, 1996, Ser. No. 703,737
Claims priority, application Japan, Sep. 11, 1995, 7-232151; Sep. 11, 1995, 7-232152
Int. Cl.^{6} A47D *13/02*
U.S. Cl. 224—159 **21 Claims**

15. A baby holder comprising:
- a waist strap adapted to be worn around a waist of a person,
- a support defining a seat surface adapted to receive thereon buttocks of a baby, mounted on said waist strap and positioned to extend from an abdomen of the person, and
- a pad wall mounted on said support to be extendable upright from said seat surface,
- wherein said pad wall and said seat surface of said support each respectively comprise therein, at least at an area of a surface adapted to come in contact with the baby, a first cushion member, a second cushion member and a third cushion member in a stacked arrangement with said first cushion member closest to said surface adapted to come in contact with the baby, wherein said second cushion member has a larger elastic coefficient than does said first cushion member and said third cushion member has a larger elastic coefficient than does said second cushion member.



5,711,467
VERTICAL BOW HOLDER DEVICE

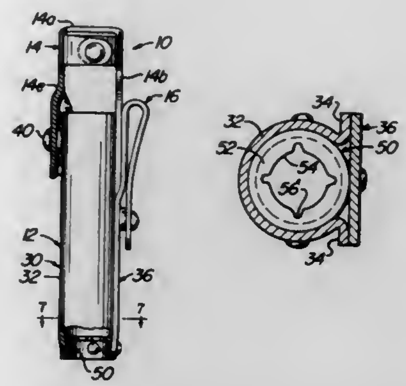
Ben Seabron Brown, Sr., 236 Angel Farm Dr., Baldwin, Ga. 30511
Filed Jun. 20, 1996, Ser. No. 666,208
Int. Cl.^{6} F41B *5/00*
U.S. Cl. 224—248 **7 Claims**



1. A vertical bow holder device for removably mounting a hunting bow on a belt of a wearer, comprising:
- a first bow support rod and a second bow support rod,
- wherein said first bow support rod forms an upper bow support for removably receiving an upper portion of a bow and wherein said second bow support rod forms a lower bow portion for removably receiving a lower portion of a bow, said lower bow support being substantially aligned with said upper bow support such that a bow is supported thereby in a substantially vertical orientation,
- wherein each said bow support rod has a belt attachment portion, the belt attachment portion of one said bow support rod being spaced from the attachment portion of the other said bow support rod to thereby resist swinging of said bow support rods and a bow held thereby with respect to a belt on which said attachment portions are attached, and each said belt attachment portion forming a loop for substantially completely surrounding a belt passing therethrough to resist dislodgment of said bow support rods from a belt.

5,711,468
BATON HOLDER FLANGE

Sharon L. Shoemaker, 714 W. Cienega Ave., San Dimas, Calif. 91773
Filed Nov. 24, 1995, Ser. No. 562,420
Int. Cl.^{6} A45F *5/00*
U.S. Cl. 224—251 **8 Claims**



1. A holder for a telescoping police baton having telescoping sections including an outer section and an inner section extendable beyond one end of said outer section, said holder comprising:
- a generally tubular holder body having normally open upper and lower ends,
- a radially inwardly extending flange disposed within said lower open end of the holder and defining an opening,
- said holder body being adapted to receive the baton endwise in a housed position within said holder body, wherein said outer baton section seats on said flange while the other end of said outer baton section extends above said open end of the holder body for manual grasping for removing the baton upwardly from the holder,
- said flange has defined therein a plurality of spaced apart notches, said notches extending a limited distance radially outwardly from said flange opening to define deformable flange edge portions between said notches,
- said inner baton section being receivable by the flange in a retracted position of the inner section within the outer baton section,
- whereby said inner baton section is urgable through said opening defined by said flange upon exertion of appreciable force on the baton with its inner baton section extended to effect deformation of said ring flange edge portions between notches.

5,711,469
PORTABLE PHONE POUCH, MOUNTING AND USAGE SYSTEM

Alfred E. Gormley, Stratford, Conn., and John T. Pavol, Plainsboro, N.J., assignors to Cutting Engineering Inc., Trumbull, Conn.
Filed Aug. 5, 1996, Ser. No. 692,204
Int. Cl.^{6} A45F *3/00;* **B60R** *7/05*
U.S. Cl. 224—675 **7 Claims**

1. A kit for holding a device, the kit comprising:
- a pouch configured to surround and contain a device, said pouch having an opening at an upper end thereof, a closure strap attached thereto for closing said opening, a loop fastener mounting strap having a first end attached to said pouch and second end having releasable attachment means thereon for selective releasable attachment to said pouch wherein said loop fastener mounting strap being configured for attachment to a support, and a first attachment strip attached to said mounting strap, said closure strap includes a first end secured to said pouch adjacent said opening and a second end having releasable engagement means thereon for selective releasable attachment to said mounting strap adjacent said opening;

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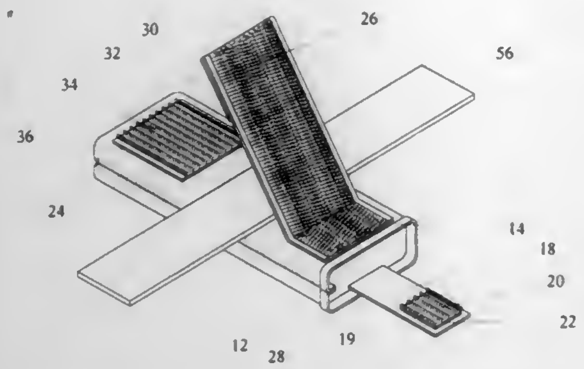


an expandable, loop configured to circumscribe and be secured about a vehicle sun visor, said loop having a second attachment strip secured thereto;

such that, in use, said pouch is selectively attached to one of a support and a vehicle sun visor, wherein said loop fastener mounting strap provides retention about the support, and said first and second attachment strips being releasably engaged with each other to provide retention to the visor.

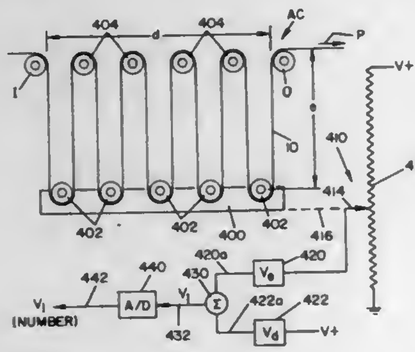
5,711,470
APPARATUS AND METHOD FOR ADJUSTING THE LATERAL POSITION OF A MOVING STRIP

Gary J. Thompson, Akron, Ohio, assignor to The North American Manufacturing Company, Cleveland, Ohio

Filed Dec. 1, 1994, Ser. No. 347,854

Int. Cl.^{6} B65H *23/18;20/24;* **B23Q** *16/00*

U.S. Cl. 226—4 **32 Claims**



1. Apparatus for guiding a strip traveling along a path past a first location on said path and then past a second location on said path, said apparatus including means for providing first and second position signals respectively indicative of an actual position of said strip at said first and second locations, means for providing first and second guide point signals respectively indicative of a desired position for said strip at said first and second locations, means providing first and second error signals respectively indicative of the difference between said actual and desired positions for said strip at said first and second locations, first and second actuator means respectively at said first and second locations and displaceable respectively in response to said first and second error signals for displacing said strip from said actual position toward said desired position respectively at said first and second locations, first and second means for respectively determining the extent of displacement of said first and second actuator means in response to said first and second error signals and respectively providing first and second correction signals respectively indicative of the extent of displacement of said first and second actuator means, means for comparing said first and second correction signals and providing a control signal indicative of the difference between the extents of displacement of said first and second actuator means, and means responsive to said control signal for adjusting said first guide point signal for balancing the extents of displacement of said first and second actuator means.

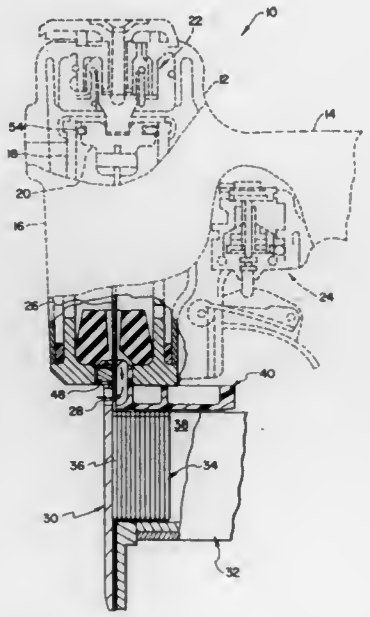
5,711,471
MAGNETIC BIASED DRIVING ELEMENT FOR A FASTENER DRIVING TOOL

Brian M. White, Riverside, R.I., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Mar. 19, 1996, Ser. No. 617,695

Int. Cl.^{6} B25C *1/04*

U.S. Cl. 227—113 **7 Claims**



1. A fastener driving tool comprising:

a portable housing defining a fastener drive track;

a cylindrical chamber disposed within said housing;

a magazine assembly carried by the housing for receiving a supply of fasteners and for feeding successive fasteners in a feeding direction into the drive track;

a drive piston mounted for movement within said cylindrical chamber;

an elongated ferrous fastener driving element operatively connected with said drive piston and constructed and arranged to be moved through the drive track during repetitive fastener driving cycles, each of which fastener driving cycles includes a fastener drive stroke in one direction in which a fastener within the drive track is engaged by the driving element and moved outwardly of the drive track into a work piece, and a return stroke;

an actuating mechanism carried by the housing and being constructed and arranged to initiate movement of the drive piston and fastener driving element connected therewith through the fastener drive stroke; and

a magnet mounted adjacent the drive track and being operatively associated with the fastener driving element so as to continuously bias the fastener driving element in the feeding direction of the successive fasteners such that during the drive stroke, the fastener driving element will engage a leading fastener of the successive fasteners without contacting an adjacent fastener of the supply.

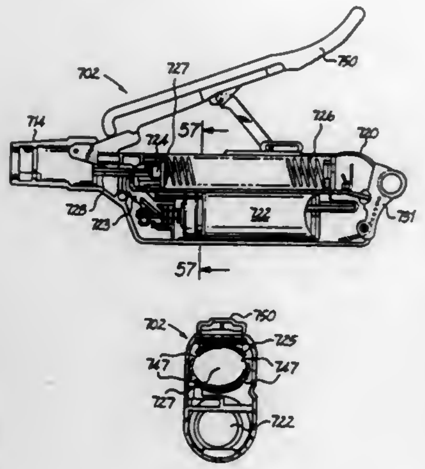
5,711,472
SELF CONTAINED GAS POWERED SURGICAL APPARATUS

Graham W. Bryan, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 24,533, Mar. 1, 1993, Pat. No. 5,312,023, which is a continuation-in-part of Ser. No. 949,385, Sep. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 915,425, Jul. 17, 1992, which is a continuation-in-part of Ser. No. 781,012, Oct. 18, 1991, abandoned. This application May 16, 1994, Ser. No. 242,798

Int. Cl.^{6} A61B *17/068*

U.S. Cl. 227—175.1 **4 Claims**



1. In a surgical apparatus of the type having a handle assembly, a body portion extending from the handle assembly, a tool assembly having a longitudinal axis and supported at the distal end of the body portion, and a pneumatic system located on a proximal end of the apparatus, the pneumatic system including a piston with a piston head portion disposed in a drive cylinder and adapted for application of pneumatic force thereto, the improvement wherein said piston head portion has an elliptical configuration and is positioned within said drive cylinder which has opposed proximal and distal end portions and a complementary operative elliptical transverse cross-sectional configuration, the drive cylinder having a longitudinal axis substantially parallel to the longitudinal axis of the tool assembly wherein the pistol head portion is pneumatically actuated to translate from the distal end portion of the drive cylinder away from the tool assembly and towards the proximal end portion of the drive cylinder and is spring biased towards the distal end portion of the drive cylinder.

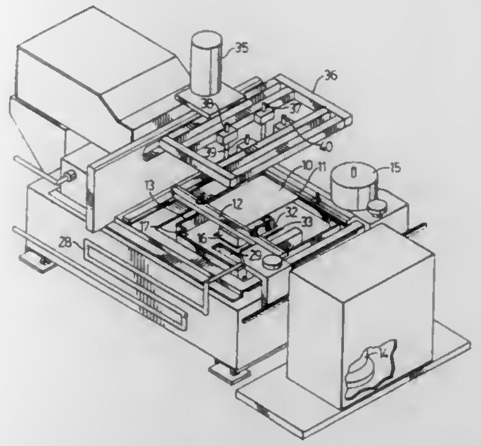
5,711,473
INERT ATMOSPHERE SOLDERING APPARATUS

William Sund, 8 Amos Crescent, Downsview, Ontario, Canada, M3H 3X9

Filed Dec. 22, 1995, Ser. No. 577,308

Int. Cl.^{6} B23K *1/08;* **H05K** *3/34*

U.S. Cl. 228—180.1 **8 Claims**



1. A process for dip spot soldering of terminals which project below the bottom surface of a device which also includes heat sensitive components on the same surface by immersion of said terminals in liquid solder contained in cups arranged to correspond to the location of said terminals comprising:

exposing said device to a flow of hot inert gas emitted from orifices around the periphery of said cups until virtually all volatile fluids in the vicinity of said terminals are evaporated and the terminals heated to almost soldering temperature;

lowering said device to the touch the surface of the liquid solder in said cups thus immersing said terminals in liquid solder and retaining the device there until the terminals are properly wetted by the solder;

raising said device gradually from the surface of said liquid solder until the terminals are above the surface of the solder while continuing to expose the terminals to the flow of hot inert gas;

terminating the flow of hot inert gas and permitting the solder on said terminals to solidify.

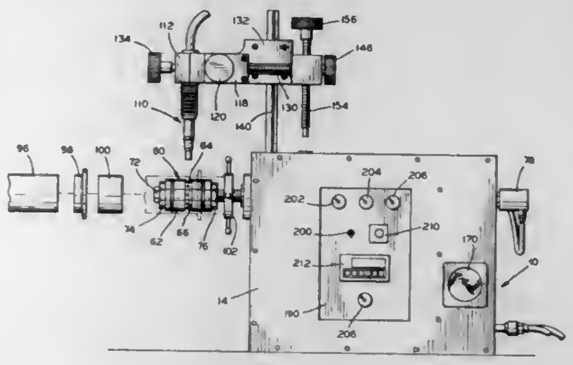
5,711,474
METHOD AND APPARATUS FOR WELDING TUBULAR MEMBERS

Jon C. Hummel, 210 W. Front St., Perrysburg, Ohio 43551

Filed Dec. 14, 1995, Ser. No. 572,112

Int. Cl.^{6} B23K *37/053*

U.S. Cl. 228—212 **5 Claims**



1. A process for welding two tubular members in butting relation, including the steps of

a) disposing the ends of the tubular members in butting relation;

b) forming an annular weld zone adjacent the inner surfaces of the tubular members in the region of the butting ends of the tubular members by an inner mandrel having outwardly extending gripping members defining the annular weld zone;

c) delivering a purge gas to the zone and causing the purge gas to flow in the zone along an annular helical path adjacent the inner surfaces of the tubular members;

d) positioning a welding torch adjacent the outer surface of the tubular members at the butting ends thereof; and

e) effecting relative movement between the torch and the tubular members to weld the butting ends of the tubular members together in a purge gas atmosphere.

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5,711,475

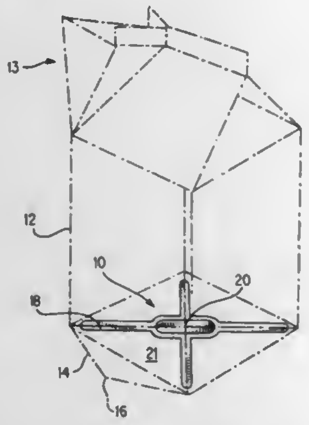
CONTAINER FIXANT APPLICATOR AND METHOD FOR PRODUCTION AND APPLICATION THEREFOR

Richard A. Tedford, Jr., Wallkill, N.Y., assignor to International Paper Company, Tuxedo Park, N.Y.

Filed Jan. 25, 1996, Ser. No. 591,815

Int. Cl.^{6} B65D *5/40;5/56*

U.S. Cl. 229—3.1 **6 Claims**



1. A container fixant applicator comprising a wafer having a reservoir, said reservoir having a caulk retained therein, wherein said wafer being configured to compliment a target fixing zone and having at least three legs which discourage voidance of said fixant applicator from a container.

5,711,476

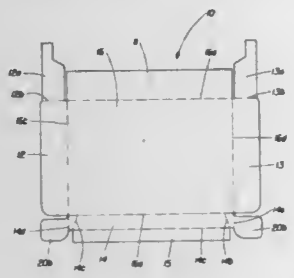
CARTON FOR GRANULAR MATERIALS

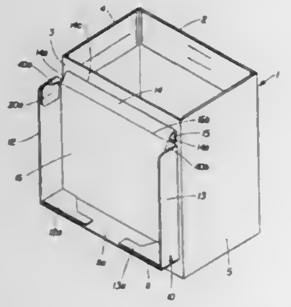
Kanna Ueda Fujimoto (Nee: Fujimoto), and Yukio Nanno, both of Kobe, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 15, 1996, Ser. No. 680,471

Int. Cl.^{6} B65D *5/475;5/66*

U.S. Cl. 229—125.08 **8 Claims**





1. A carton for containing granular materials, comprising:

a box having front, back and side panels to form an opening; and

a lid attached to an upper portion of said back panel for closing said opening; wherein said lid comprises:

(a) a top panel for covering said opening upon closure of said lid;

(b) front and side flaps extending from the respective edges of said top panel for covering the respective upper portions of said front and side panels upon closure of said lid;

(c) an adhesion flap adhering to said back panel; and

(d) a back flap attached to said top panel and said adhesion flap, wherein a cutting line which is extending toward said top panel is formed at least in said back flap.

5,711,477

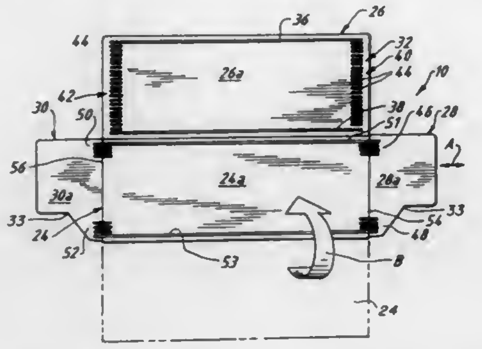
REVERSE FOLD SIFT PROOF CARTON HAVING AN ADHESIVE PATTERN THEREON

Paul M. Jenkins, Yorba Linda, Calif., assignor to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 273,206, Jul. 11, 1994. This application Dec. 4, 1995, Ser. No. 566,522

Int. Cl.^{6} B65D *5/06*

U.S. Cl. 229—136 **13 Claims**



1. A carton having a pattern of adhesive provided thereon for forming a reverse folded sift proof carton, comprising:

a carton having a pair of opposite sides, a pair of opposite ends, and at least an open top including a first inside major flap, a second outside major flap, and a pair of opposed minor flaps, wherein each one of said flaps is pivotably connected to a respective one of said opposite sides and said opposite ends of said carton so as to be foldable inwardly with respect to said open top of said carton and thereby close off said open top of said carton;

a first adhesive provided upon opposite sides and opposite ends of an inside surface portion of said second outside major flap of said carton such that said first adhesive extends substantially continuously about the entire periphery of said inside surface portion of said second outside major flap of said carton;

a second adhesive provided upon peripheral areas of an outside surface portion of said first inside major flap of said carton such that said second adhesive is disposed upon opposite ends of said outside surface portion of said first inside major flap of said carton as well as substantially the entire extent of opposite sides of said outside surface portion of said first inside major flap of said carton wherein said extent of said opposite sides of said outside surface portion of said first inside major flap is substantially coextensive with said opposite sides of said inside surface portion of said second outside major flap of said carton; and

a third adhesive provided upon peripheral areas of inside surface portions of said pair of minor flaps;

a portion of said second adhesive provided upon said outside surface portion of said first inside major flap and a portion of said third adhesive provided upon said inside surface portions of said pair of minor flaps together defining integral adhesive beads which extend across first and second gaps defined between said first inside major flap and said pair of minor flaps when said first inside major flap is folded inwardly over said open top of said carton and said pair of minor flaps are disposed in open, unfolded positions; and

said first adhesive provided upon said opposite sides of said inside surface portion of said second outside major flap and said second adhesive provided upon said opposite sides of said outside surface of said first inside major flap cooperate together so that upon engagement of said inside surfaces of said pair of minor flaps with said outside surface of said first inside major flap, and upon engagement of said inside surface of said second outside major flap with outside surfaces of said pair of minor flaps and with said outside surface of said first inside major flap, when said pair of minor flaps and said second outside major flap are folded inwardly over said folded first inside major flap, a peripheral seal, defined between said second and third adhesives of said outside surface portion of said first inside major flap and said inside surfaces portions of said pair of minor flaps, said first adhesive upon said opposite ends of said inside surface of said second outside major flap and said outside surfaces of said pair of minor flaps, and said first adhesive and second adhesive extending along said opposite sides of said outside surface portion of said first inside major flap and said inside surface portion of said second outside major flaps, extends about the entire periphery of said top of said carton such that said carton is rendered sift proof.

5,711,478

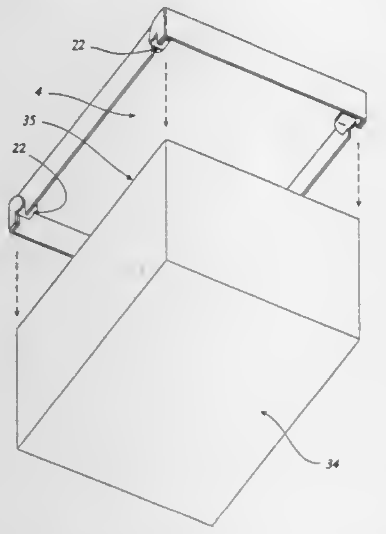
PAPERBOARD TOP CLOSURE FOR A CONTAINER

John Turecek, Markham, Canada, assignor to Coleman Containers Limited, Etobicoke, Canada

Filed Feb. 23, 1996, Ser. No. 605,949

Int. Cl.^{6} B65D *5/30*

U.S. Cl. 229—195 **19 Claims**



1. A container closure, comprising a sheet of paperboard folded to present:

a central panel;

at least three side panels depending from said central panel;

at least a first of said side panels having a corner flap;

a second of said side panels, having a notch; said first side panel and said second side panel meeting to form a corner;

said corner flap folded about said corner to lie against said second side panel;

said corner flap having a friction stop folded about said corner flap to engage said notch;

said friction stop extending through said notch;

said friction stop being displaceable toward said second side panel when said container closure is telescoped on a container.

5,711,479

BOXLIKE PACKAGE WITH CLOSABLE DISPENSING OPENING

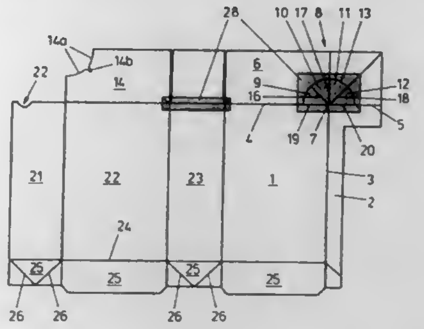
Johannes Fredericus Spronk, Lelystad-Haven, Netherlands, assignor to Crystal B.V., Almere, Netherlands

Continuation of Ser. No. 538,625, Oct. 4, 1995, abandoned. This application Jul. 2, 1996, Ser. No. 695,704

Claims priority, application Netherlands, Oct. 4, 1994, 9401637

Int. Cl.^{6} B65D *5/74*

U.S. Cl. 229—218 **20 Claims**



1. A package which is produced from a single blank through folding and adhesion, in which a first side panel and second side panel adjoin each other through a side corner edge, the first and second side panels each adjoining a top wall by a first and a second upper edge, respectively, said first and second upper edges and the side corner edge intersecting in a corner point, the package having an interior, wherein a reclosable dispensing opening provision is provided at the corner point, the dispensing opening provision having an unopened conditioned, an opened condition, and a reclosed condition, the dispensing opening provision comprising two spout surfaces which comprise a first and a second, and a third and a fourth segment, wherein, in the unopened condition of the dispensing opening provision, the first and the second segment form part of the top wall and are connected therewith via separation lines, while the third and the fourth segment are situated proximal to the interior; wherein, for forming a dispensing opening in the top wall and thereby placing the dispensing opening provision in the opened condition, the separation lines are breakable, so that the first and the second segment can be swung clear of the top wall and situated in a plane which also contains the first side panel, while the third and the fourth segment are situated in a plane which contains the second side panel; wherein, in the reclosed condition of the dispensing opening provision, the first and the fourth segment are situated in a plane which also contains said top wall, while the second and the third segment are in abutment, the top wall comprising an anti push-through panel proximal to the interior, the anti push-through panel partly reducing the dispensing opening through anti push-through portions, so that the first and the fourth segment cannot be pushed into the interior during reclosure of the dispensing opening, the top wall comprising a lock edge which, in the unopened condition, is opposite the separation line from the second segment, wherein the distance from the lock edge to the corner point is slightly smaller than the distance from the corner point to a boundary edge of the fourth segment remote from the corner point, so that, in the reclosed condition, the boundary edge of the fourth segment is clicked under the lock edge and therefixed between a portion of the anti push-through panel and the lock edge.

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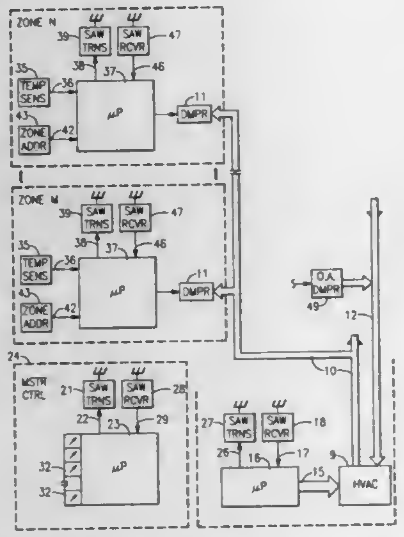
5,711,480
LOW-COST WIRELESS HVAC SYSTEMS

Bruce E. Zepke, Glastonbury; Merrill R. Lucia, Chaplin; Charles R. Winston, Jr., Glastonbury; Earl D. Hasselmark, Barkhamsted, and Taeyoung Park, Shelton, all of Conn., assignors to Carrier Corporation, Farmington, Conn.

Filed Oct. 15, 1996, Ser. No. 731,633
Int. Cl.⁶ G05D *23/00;* **H04Q** *7/00*
U.S. Cl. 236—51 **31 Claims**



1. A building having a plurality of HVAC zones, each zone including an air conditioning and/or heating and ventilating (HVAC) system comprising a plurality of components including:

HVAC apparatus for conditioning and moving air within the corresponding zone in response to condition demand manifestations signals;

setpoint means for providing a manifestation of desired value of a characteristic of air which affects indoor air quality in said corresponding zone;

sensor means responsive to said characteristic of air for providing a manifestation of the actual value of said characteristic in said corresponding zone;

demand means for generating a condition demand indication signal in response to said manifestation of actual value as a function of said manifestation of desired value and for providing an HVAC condition demand manifestation corresponding to said condition demand indicating signal; and each zone further comprising:

a low power, SAW-stabilized, narrow band, AM transmitter at one of said components for transmitting a corresponding one of said manifestations; and

a SAW-stabilized, narrow band, AM receiver at another one of said components for receiving said corresponding one of said manifestations.

5,711,481
PROCESS AND APPARATUS FOR CREATING FOG FOR SPECIAL EFFECTS

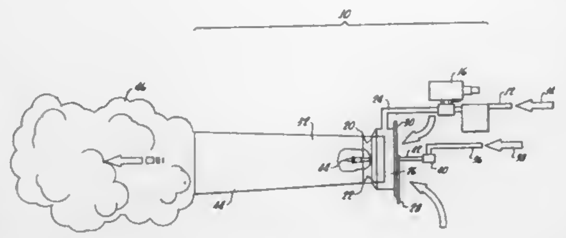
Robert A. MacDonald, Camarillo, and Aidan Bradley, Thousand Oaks, both of Calif., assignors to Spectra F/X, Inc., Calif.

Filed Dec. 29, 1995, Ser. No. 578,199
Int. Cl.⁶ A01G *15/00;* **E01H** *13/00;* **F02M** *25/10*
U.S. Cl. 239—2.1 **7 Claims**

1. A process for creating special effects fog comprising:

a. injecting steam toward an open end of a chamber;

b. directing the steam such that the steam entrains ambient air and pulls the air into the chamber, and the steam and air mixing to form a humid air stream traveling toward the open end of the chamber;

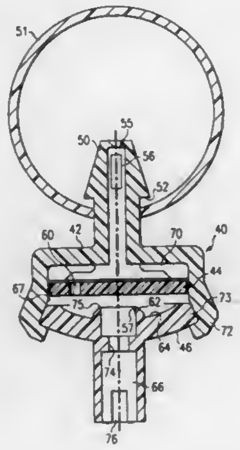


c. injecting a cryogenic fluid into the humid air stream to mix with and cool the humid air stream.

5,711,482
RESILIENT DISK DRIP IRRIGATION DEVICES

Michael Yu, 1270 Shakespeare Dr., Concord, Calif. 94521

Continuation-in-part of Ser. No. 238,063, May 3, 1995, abandoned. This application Aug. 22, 1995, Ser. No. 517,915
Int. Cl.⁶ B05B *15/00;17/04*
U.S. Cl. 239—11 **11 Claims**



1. A method for drip irrigation comprising the steps of:

installing an inlet of a drip irrigation device into an irrigation hose, said inlet defining an intake passageway;

initiating a flush cycle by providing a surge of water in said irrigation hose, generally from starting the irrigation pump, entering said intake passageway and a chamber housing a floating resilient disk being supported by an outer support ring, said disk having an intake side and a discharge side;

permitting the water to flow through at least one off-center opening defined in said floating resilient disk and flushing debris accumulated in said drip irrigation device out through a discharge passageway;

increasing water pressure at said intake side of said disk to a first predetermined range and pushing said floating resilient disk to deflect and butt up against a discharge sealing ring positioned in said chamber at an entrance of said discharge passageway;

continuing to permit water to flow through said at least one off-center opening in said disk and attaining a discharge side water pressure at the wet surface area instantly equalizing with the intake side water pressure;

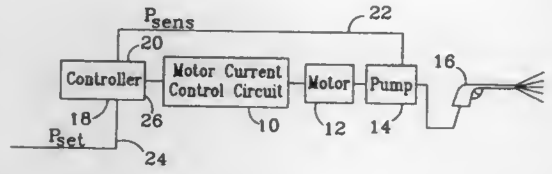
permitting said floating and resilient disk to harvest the energy stored in its deflected form and the increased water pressure at said discharge side and suddenly rebound away from said discharge sealing ring and substantially back to its neutral position and opening said discharge passageway to atmospheric pressure; and

again permitting said disk to deflect and be pushed against said discharge sealing ring by incoming water, causing a continuous oscillating motion in said disk thereby loosening any accumulated debris lodged in said device and flushing the debris out through said discharge passageway.

5,711,483
LIQUID SPRAYING SYSTEM CONTROLLER INCLUDING GOVERNOR FOR REDUCED OVERSHOOT

Lyman V. Hays, Westlake Village, Calif., assignor to Durotech Co., Moorpark, Calif.

Filed Jan. 24, 1996, Ser. No. 590,914
Int. Cl.⁶ B67D *5/08*
U.S. Cl. 239—71 **15 Claims**



1. A variable governor for a liquid pump motor controller, comprising:

a pressure selection input port for accepting a pressure setting signal which reflects a desired pressure setting,

a variable gain amplifier connected to receive said signal and to produce an amplified output signal in response to said pressure setting signal,

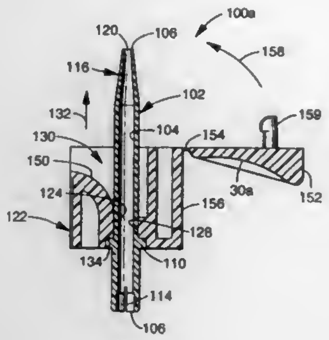
a gain control circuit which causes the gain of said amplifier to be greater for pressure settings above a predetermined threshold level than for pressure settings below said threshold level, and

an output port that is connectable to provide an output signal from said variable gain amplifier to a liquid pump motor to control the speed of the motor.

5,711,484
DISPENSING TUBE FOR DIRECTING THE DISPENSING OF FLUIDS

Russell E. Blette, Hastings; John C. Ruta, White Bear Lake; W. Bruce Sandison, St. Louis Park, and William W. Stevenson, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 260,527, Jun. 16, 1994, Pat. No. 5,480,095, which is a continuation-in-part of Ser. No. 121,270, Sep. 14, 1993, abandoned. This application Nov. 22, 1995, Ser. No. 562,227
Int. Cl.⁶ B65D *83/14*
U.S. Cl. 239—104 **33 Claims**



1. A dispensing tube engageable with an actuator body for directing the dispensing of fluids, comprising:

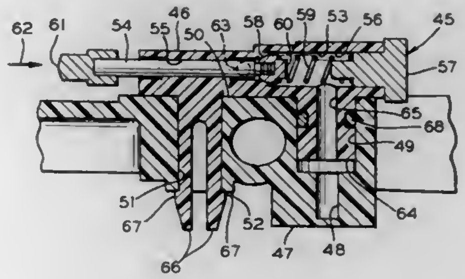
a dispensing tube capable of being deflected by the actuator body when engaged therewith to define a passageway smoothly extending through the actuator body in a smooth curvilinear manner from an inlet end to an outlet end for conveying the fluid from the inlet end to the outlet end thereof while attenuating accumulation of solidified material from the fluid within the passageway and on an external surface of the dispensing tube proximate the outlet end, and

fluid deflection means integrally formed in the dispensing tube in smooth fluid communication with the passageway for directing the dispensing of a fluid while attenuating the accumulation of solidified material from the fluid on the fluid deflection means.

5,711,485
PNEUMATIC TRIGGER VALVE FOR SPRAY GUN

Roger D. Wheeler, Holland, Ohio, assignor to Ransburg Corporation, Indianapolis, Ind.

Filed Nov. 27, 1995, Ser. No. 565,298
Int. Cl.⁶ B05B *1/28;9/00;* **F16K** *51/00;* **F16L** *39/00*
U.S. Cl. 239—105 **8 Claims**



1. A trigger operated pneumatic valve for a spray gun having a pneumatic actuator which turns on the spray gun when said trigger operated pneumatic valve is opened to vent pressurized air from the spray gun, said pneumatic valve comprising a valve housing, means for releasably attaching said valve housing to a spray gun to control the venting of pressurized air from such spray gun, a normally closed vent valve mounted in said valve housing to move between closed and open positions, means urging said vent valve to said closed position, means for moving said vent valve to said open position, and wherein said vent valve is adapted for venting pressurized air from an attached spray gun when said vent valve is in said open position.

5,711,486
POP-UP SPRINKLER UNIT WITH PRESSURE RESPONSIVE EXTENDABLE AND RETRACTABLE SEAL

Mike Clark, San Marcos; Roger Wilby, Fallbrook, and Kyle Capen, Temecula, all of Calif., assignors to Hunter Industries, Inc., San Marcos, Calif.

Filed Jan. 31, 1996, Ser. No. 594,726
Int. Cl.⁶ B05B *15/10*
U.S. Cl. 239—205 **19 Claims**

1. A pop-up sprinkler unit for mounting beneath the surface of the soil of an earth formation, comprising:

an elongated outer housing member having a cylindrical through bore extending from an inlet for connecting to a source of pressurized water to an outlet end for receiving a retractable housing;

an elongated inner housing having an inner end and an outer end with a nozzle mounted on said outer end thereof reciprocally mounted in said bore and movable between a retracted position within said bore and an extended position wherein said outer end and said nozzle is extended from said outlet end of said bore, and said inner housing responsive to said pressurized water for extending to said extended position from said bore;

spring means for normally biasing said inner housing to said retracted position; and

pressure responsive seal means disposed between said inner housing and said outer housing, said seal means having a base portion mounting said seal means to one of said inner and said outer housings, and said seal means including an annular lip extending toward said retracted position of said inner housing.

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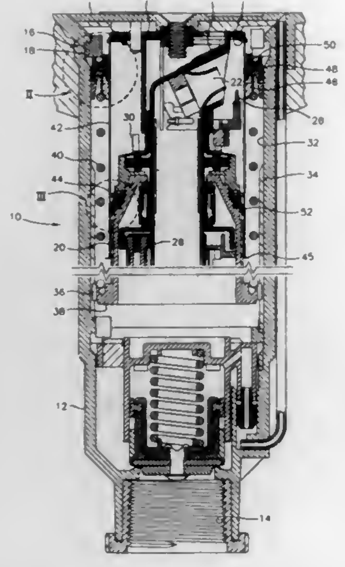
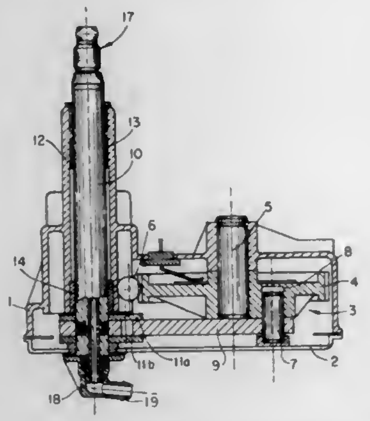


and said lip being normally retracted from a surface of the other of said inner and said outer housing, and responsive to a predetermined minimum water pressure to extend into sealing engagement with the other of said inner and said outer housings.

5,711,487
MOTOR VEHICLE SCREEN WASHING APPARATUS FOR SCREEN WASHING LIQUID DELIVERY

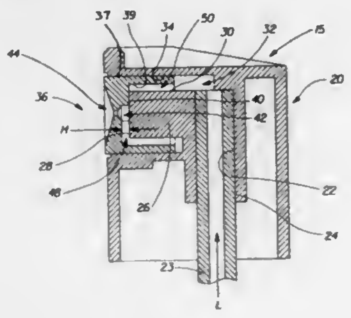
Stéphane Hommelet, Chatellerault, France, assignor to Valeo Systemes D'Essuyage, La Verriere, France
Filed Jul. 10, 1995, Ser. No. 500,443
Claims priority, application France, Jul. 13, 1994, 94 08833
Int. Cl.⁶ B05B *1/10*
U.S. Cl. 239—284.1 **7 Claims**

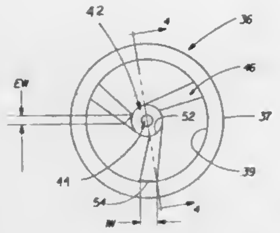


1. A screen washing apparatus for screen washing liquid delivery comprising a motorized reduction gear unit having a casing, a shaft carried by the casing and defining a duct through the shaft, a driving element in the casing, means coupling the driving element to the shaft for alternating rotary movement of the shaft, the shaft having an end portion, a tubular connector for delivery of the screen washing liquid, the tubular connector having a bore, and the end portion of the shaft extending sealingly into the tubular connector, wherein the end portion of the shaft and the tubular connector together define mating coupling means which couple the tubular connector and the shaft together, whereby the tubular connector performs the same alternating rotary motion as the shaft, the end portion of the shaft having a terminal portion received in the bore of the tubular connector, the terminal portion being spherical to deform the bore radially outwardly, the end portion of the shaft having a knurled surface, the knurled surface being received in the bore of the tubular connector to couple the shaft and the tubular connector together in rotation, wherein the tubular connector has a tubular first portion for receiving the knurled surface end portion of the shaft and a tubular second portion for receiving the spherical terminal portion of the shaft, the knurled surface portion being spaced from the terminal portion of the shaft.

5,711,488
HIGH PRESSURE SWIRL ATOMIZER

Mark T. Lund, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 13, 1995, Ser. No. 543,006
Int. Cl.⁶ B05B *1/34*
U.S. Cl. 239—333 **13 Claims**





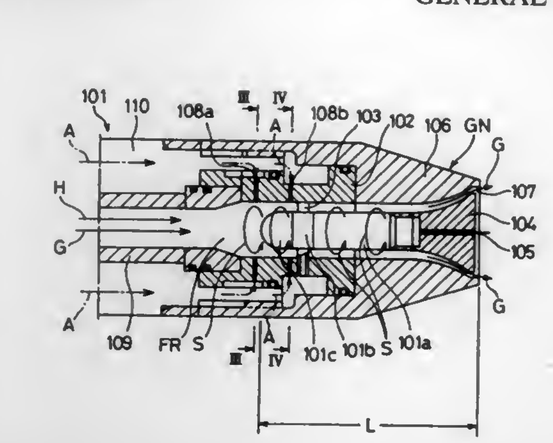
1. An atomizing nozzle for dispensing a liquid from a container in the form of a spray of liquid particles, the atomizing nozzle comprising:

- a supply structure for transporting a liquid under manually generated pressure from a container;
- a plurality of generally radial vanes;
- a swirl chamber in fluid communication with the plurality of vanes and having a chamber diameter;
- a discharge orifice in fluid communication and generally concentric with the swirl chamber and having an orifice diameter;
- the swirl chamber diameter being in a range of between about 1.3 mm and about 2.0 mm; and the plurality of vanes generally decreasing in cross-sectional area toward the swirl chamber, each vane having an individual vane exit area being in a range of between about 0.06 mm^2 and about 0.12 mm^2.

5,711,489
ELECTROSTATIC POWDER COATING METHOD AND APPARATUS

Kenzo Yanagida; Masahiro Yamamoto; Mituyosi Kumata, all of Tokyo; Koichi Tsutsui, and Shannon Libke, both of Osaka-fu, all of Japan, assignors to Nihon Parkerizing Co., Ltd., Tokyo, Japan
Filed Aug. 16, 1995, Ser. No. 515,976
Claims priority, application Japan, Aug. 18, 1994, 6-194430; Aug. 18, 1994, 6-194431
Int. Cl.⁶ B05B *5/00*
U.S. Cl. 239—697 **10 Claims**

7. An electrostatic powder coating apparatus comprising a spray gun and a powder supply unit, wherein said apparatus is adapted to

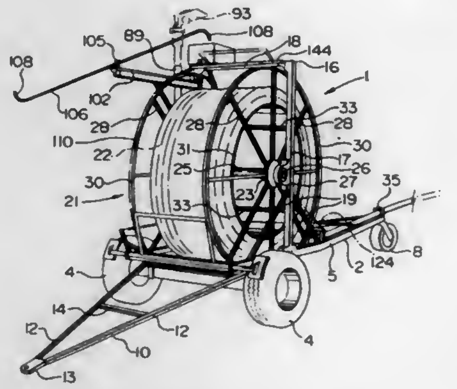


form a coating film by spraying electrostatically charged powder toward a surface of an electrically grounded product to be coated, and wherein said apparatus further comprises:

- a powder flow passage defined between an inner surface of an outer cylinder having a nozzle tip of said spray gun, said nozzle tip having an inner surface that gradually widens towards a nozzle opening, and an outer surface of a diffuser, said diffuser being located within said inner surface of said nozzle tip and said diffuser gradually widening toward said nozzle opening at a slightly greater rate than said gradual widening of said inner surface of said nozzle tip so that said powder flow passage gradually narrows towards said nozzle opening.

5,711,490
AUTOMATIC SPRINKLER

William Hansinger, Westbridge, Canada, assignor to Hansinger Irrigation Systems Ltd.
Filed Nov. 1, 1995, Ser. No. 551,488
Int. Cl.⁶ B05B *3/18*
U.S. Cl. 239—745 **10 Claims**

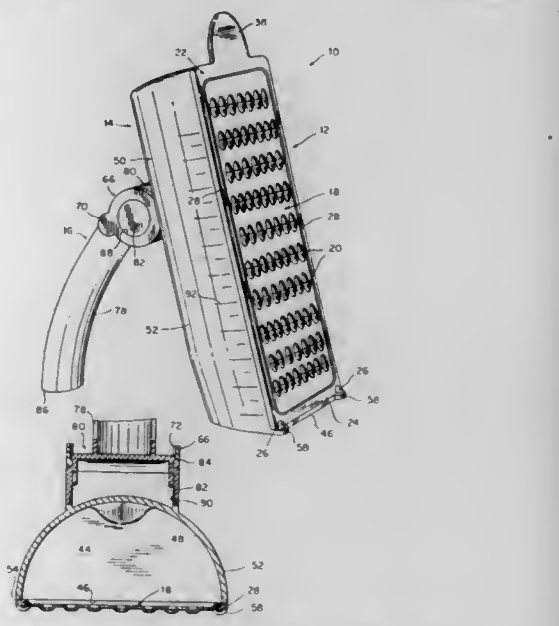


1. A mobile sprinkler for use with a hose in fluid communication with a source of water under pressure comprising:

- (a) frame means;
- (b) first wheel means supporting a rear end of said frame means for movement along the ground;
- (c) second, caster wheel means supporting a front end of said frame means;
- (d) reel means rotatable on said frame means for receiving a hose;
- (e) drive means on said frame means for rotating said reel means, said drive means including:
  - (i) first, hollow, horizontal shaft means carrying said reel means and rotatable around a horizontal axis on said frame means in fluid communication with the hose,
  - (ii) vertical tube means extending upwardly from one end of said first shaft means perpendicular thereto for receiving water from the hose,
  - (iii) valve means in said tube means for adjusting the amount of water bled from the hose to said tube means,
  - (iv) second horizontal shaft means on a top end of said tube means for receiving water from said tube means;
  - (v) nozzle means on an outer free end of said second horizontal shaft means perpendicular to said second horizontal shaft means, and
  - (vi) first sprocket and chain means connecting said second horizontal shaft means and said one end of said first horizontal shaft means to said reel means, whereby when water under pressure is bled from the hose and expelled from said nozzle means, said second horizontal shaft means is rotated, and rotational force is transferred through said first gear means to first horizontal shaft means said reel means causing rotation of said reel means;
- (f) hose guide means on said front end of said frame means above said second wheel means for slidably receiving the hose, whereby after the hose has been unreeled to define a path of travel, and said reel means has been actuated by said drive means to wind the hose onto said reel means, said hose guide means steers said second wheel means to cause the apparatus to move along said path of travel traced by the hose; and
- (g) first automatic drive shutoff means including
  - (i) indicator means on the hose;
  - (ii) first sensor means on said frame means for determining the presence of said indicator means,
  - (iii) first valve shutoff means for actuation by said first sensor means to stop the flow of water to said drive means when the hose is wound onto the reel means.

5,711,491
FOOD GRATER

Nicholas J. Molo, Aldinga Beach, Australia, assignor to Dart Industries Inc., Orlando, Fla.
Filed Dec. 19, 1995, Ser. No. 564,029
Int. Cl.⁶ A47J *43/25*
U.S. Cl. 241—95 **17 Claims**



1. A food grater including an elongate body, a grater blade and a handle for said body; said body including a base panel having a periphery, a wall fixed to and extending upward from said base panel about a major portion of said periphery, said wall having an upper edge remote from said base panel, said wall having laterally spaced parallel side edges, said side edges extending from said base panel to said wall upper edge; said grater blade being removably positioned between and engaged with said side edges and extending upward from said base panel, wherein said grater blade,

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base panel and wall define a receptacle for the collection of grated food inward of said grater blade; said handle being engaged with said wall in spaced relation above said base panel and in opposed relation to said grater blade, said handle extending from said wall and terminating in a free outer end.

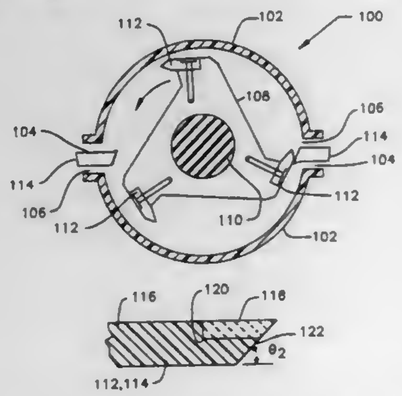
5,711,492
COMPOSITE MACHINE ELEMENTS FROM FIBER REINFORCED POLYMERS AND ADVANCED WEAR CERAMICS

George Andre Cheladze, Hillside, N.J., assignor to T.P.L. Products, Inc., Morristown, N.J.

Filed Jul. 8, 1994, Ser. No. 273,006

Int. Cl.^{6} B02C *18/18*

U.S. Cl. 241—220 **30 Claims**



15. An apparatus for cutting plastic material, said apparatus comprising a housing; a rotor rotatably mounted within said housing; at least one first cutting device attached to said rotor for rotation therewith, said first cutting device comprising a rigid support of polymer material and a cutting blade of ceramic material having a body supporting portion and a cutting edge portion, said body supporting portion secured to said support; and at least one second cutting device supported within said housing opposing said first cutting device, said second cutting device comprising a rigid support of polymer material and a cutting blade of ceramic material having a body supporting portion and a cutting edge portion, said body supporting portion secured to said support, said cutting edge portion of said first cutting device spaced from said cutting edge portion of said second cutting device to provide a cutting zone therebetween.

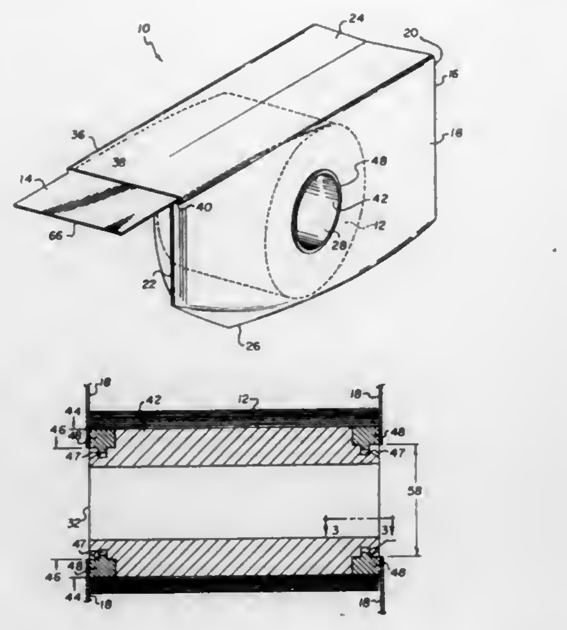
5,711,493
METHOD AND APPARATUS FOR STORING AND DISPENSING A ROLL OF PHOTOGRAPHIC WEB

Clark E. Harris; Paul J. Szwejbka, both of Fairport, and Michael Leroy Koelsch, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 387,663, Feb. 13, 1995, abandoned. This application Oct. 7, 1996, Ser. No. 723,447

Int. Cl.^{6} B65H *75/00;* B65D *85/66;* G03B *17/26*

U.S. Cl. 242—588.5 **12 Claims**



1. A flexible enclosure for storing and dispensing a roll of photosensitive web material for use in cooperating apparatus, said enclosure comprising:

- a) a flexible opaque bag configured to enclose the roll, said bag including first and second opposite sidewalls extending between opposing rearward and forward portions and between opposing upper and lower portions, each of said sidewalls having an inner surface and a centrally disposed aperture therein, said apertures having colinear axes, said rearward portion defining a closable opening through which the roll can pass into said bag, said bag further including a shallow neck portion projecting forwardly from said forward portion to a distal end thereof defining an exit slot through which the strip of web material can pass;
- b) a one-piece hollow cylindrical core having a first mating means near a first end thereof; and
- c) a first one-piece ring non-rotatably secured to the inner surface of the first of said opposite sidewalls in concentric relationship with said centrally disposed aperture in said first sidewall, said first ring having first receiving means adapted to receive and rotatably mate with said first mating means on said core to form a lock against the passage of light between said first ring and said core.

5,711,494
AERO-HYDROGLIDER

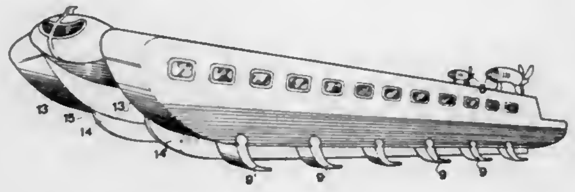
Manuel Munoz Saiz, San Emilio No. 16, 1-3, 28017-Madrid, Spain

Filed Jan. 31, 1995, Ser. No. 381,233

Claims priority, application Spain, Sep. 29, 1994, 9402042; Nov. 25, 1994, 9402429

Int. Cl.^{6} B64C *35/00*

U.S. Cl. 244—12.1 **18 Claims**



1. An aero-hydroglider comprising a vessel in the form of a catamaran having two essentially flat hulls of aerodynamic profile having an essentially flat base, said essentially flat base of said essentially flat hull containing a set of at least three longitudinally spaced, flexible fins extending downwardly and rearwardly form each of said hulls, each of said flexible fins having relatively thick inner ends whose cross-sections reduce outwards toward relatively thin outer ends, engine means constructed an arranged relative to said vessel to generate a forward movement of said vessel, each of said fins being fixed to said vessel at its relatively thick inner end and inclined toward the end opposite said forward movement of said vessel, and means on the upper part of said vessel constructed and arranged to provide air flow propulsion relative to said vessel.

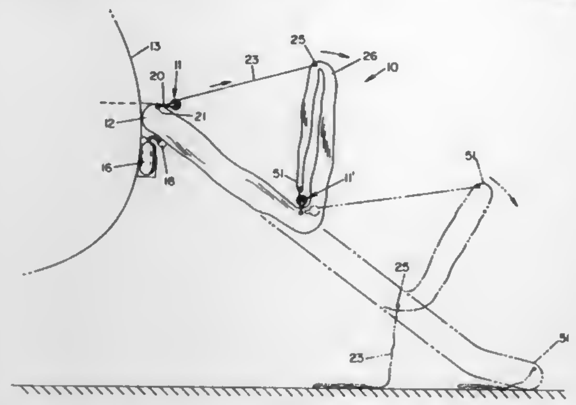
5,711,495
DEPLOYMENT CONTROL FOR INFLATABLE ESCAPE SLIDE

Leibert K. Danielson, Scottsdale, Ariz., assignor to The B.F.Goodrich Company, Akron, Ohio

Filed Jan. 2, 1996, Ser. No. 581,954

Int. Cl.^{6} B64D *25/00*

U.S. Cl. 244—137.2 **19 Claims**



1. In an inflatable escape slide having an inboard end and an outboard portion, said slide having a panel member supported by a plurality of inflatable tubes to provide a sliding surface from an elevated egress, inflation means operative upon actuation to provide pressurized fluid to said tubes to inflate said tubes to form an extended slide, a restraint control device interconnecting said inboard end and said outboard portion of said escape slide, and said control device operative upon pressurization of said tubes by said inflation means to deploy said outboard portion relative to said inboard end at a continuously controlled rate from the initial pressurization of said tubes to the deployment for a length of said slide that extends from said inboard end to said outboard portion.

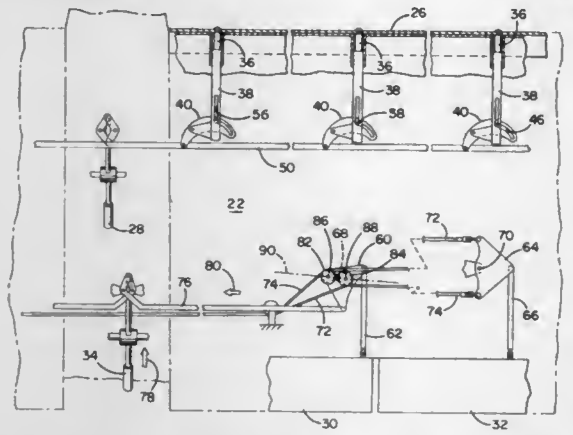
5,711,496
STOL AIRCRAFT AND WING SLAT ACTUATING MECHANISM FOR SAME

Steve R. Nusbaum, 10419 VanderKarr Rd., Hebron, Ill. 60034

Filed Jun. 30, 1995, Ser. No. 497,725

Int. Cl.^{6} B64C *3/50*

U.S. Cl. 244—214 **4 Claims**



1. A control system for extending wing slats disposed along the leading edge of an aircraft wing, comprising:

- a slat positioning system having
- a guide member disposed adjacent a leading edge of the aircraft wing and comprising an outer tube having an axially extending slot,
- a support member for supporting the wing slat and engaging said guide member for slidable movement relative to said guide member and comprising an inner tube telescopically received in said outer tube,
- a slat bellcrank adjacent said guide member and movable around a pivot, said slat bellcrank including an arcuate slot,
- a pin coupled to said support member and engaging said slots; and
- a pilot actuated control linkage coupled to said slat bellcrank for moving said slat bellcrank around said pivot, said arcuate slot and said pin thereby urging said support member axially relative to said guide member to extend the wing slat in response to rotation of said slat bellcrank in one direction and to retract the wing slat in response to rotation of said bellcrank in the opposite direction.

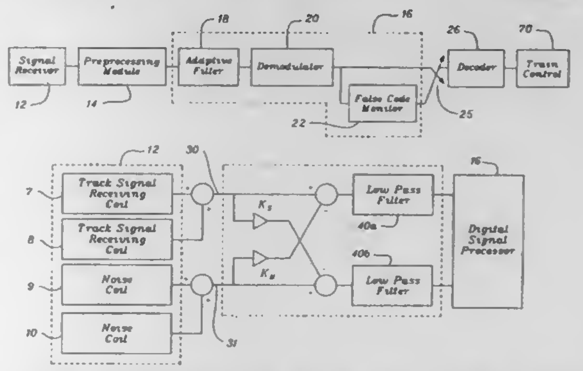
5,711,497
CAB SIGNALING APPARATUS AND METHOD

Nikos Andrianos; Joseph Profeta, both of Allegheny; Joseph P. Elm, Butler; Theo C. Giras, Allegheny, and Christopher S. Detka, Beaver, all of Pa., assignors to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Dec. 15, 1995, Ser. No. 573,463

Int. Cl.^{6} B60L *21/00*

U.S. Cl. 246—34 B **55 Claims**



1. A cab signal apparatus for use on board a railway vehicle propelled on a set of spaced rails by a traction motor and such propelled vehicle including a first input device generating a first output signal with a primary cab signal component and a secondary noise component and a second input device generating a second output signal with a secondary cab signal component and a primary noise component, such cab signal apparatus comprising:

- a. an adaptive filter connected to receive such signals from such first input device and such second input device;
- b. said adaptive filter receiving such first output signal and such second output signal and operating to cancel such secondary noise component from such first output signal; and
- c. a demodulator connected to said adaptive filter for receiving such first output signal and retrieving a code signal from such primary cab signal component thereof, and such code signal including cab signal aspects for assisting with the operation of such railway vehicle.

5,711,498
FLEXIBLE-BAG SUPPORT FRAME WITH BAG CLOSER/COVER

Roy P. Wittlinger, and Claire E. Wittlinger, both of 945 N. Old State Rd., Delaware, Ohio 43015

Filed May 13, 1996, Ser. No. 645,429

Int. Cl.^{6} A63B *55/04*

U.S. Cl. 248—97 **2 Claims**

1. A fame for suspending a flexible bag of the type having handles, said frame comprising:

- a) a first, second and third vertical rod, having upper and lower ends and positioned in a triangular fashion;
- b) a first set of three horizontal rods, each rod secured at the corresponding upper ends of two of said vertical rods, such that said first set of horizontal rods defines a triangular top rim;

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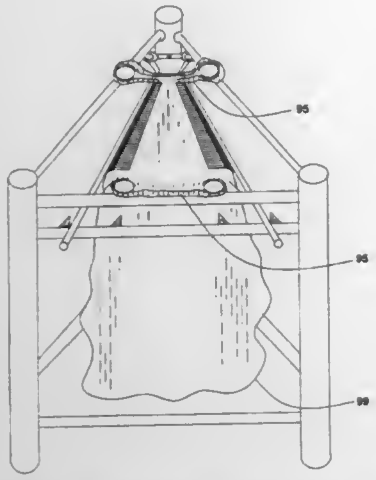
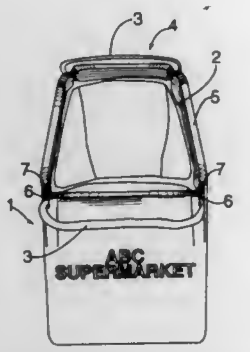


c) a second set of three horizontal rods, each rod secured at the corresponding lower ends of two of said vertical rods, such that said second set of horizontal rods defines a triangular base;
d) a plurality of anchors attached at spaced locations to said first set of horizontal rods for receiving and securing the handle of the bag; wherein

the bag is suspended between the triangular top rim and base.

5,711,499
PLASTIC SHOPPING BAG RECYCLING WASTEBASKET

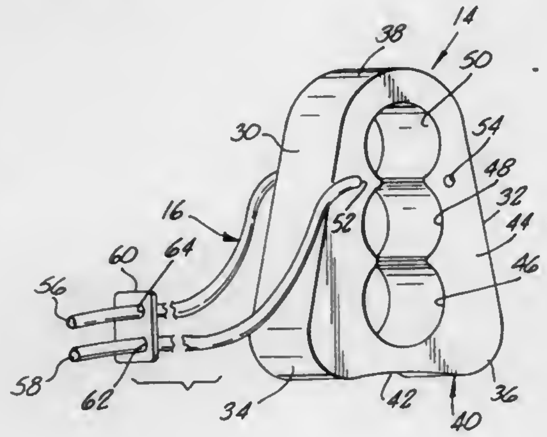
Michael G. Sectish, 769 11th Ave., Paterson, N.J. 07514
Filed Dec. 4, 1995, Ser. No. 566,695
Int. Cl.^{6} B65D *90/04*
U.S. Cl. 248—97 **4 Claims**



1. A plastic shopping bag recycling wastebasket comprising:
a plastic shopping bag having a pair of plastic handles;
a rectangular wastebasket having predetermined rectangular dimensions, a predetermined height dimension and an open top having a rim therearound, said rim having a bulb-like configuration:
four longitudinal, rectangular slots, each of said four longitudinal, rectangular slots being disposed centrally in a different corner of said rectangular wastebasket to receive said pair of plastic handles after said plastic shopping bag is inserted into said rectangular wastebasket with said pair of plastic handles being loosely disposed externally of said rectangular wastebasket when received in said four longitudinal, rectangular slots, said four longitudinal, rectangular slots and said pair of plastic handles cooperating to enable pulling on said pair of plastic handles outwardly to draw taut walls of said plastic shopping bag to provide a given orientation for said plastic shopping bag within said rectangular wastebasket to properly receive waste, said plastic shopping bag being maintained in said given orientation by only said four longitudinal, rectangular slots each having a predetermined width to enable gripping said pair of plastic handles when said given orientation is achieved, said given orientation including an open, rigid, upright condition with said walls of said plastic shopping bag being closely adjacent inner walls of said rectangular wastebasket and abutting a bottom of said rectangular wastebasket; and
four concave cavities extending downward from said rim, at least each of said four concave cavities having an extension of said rim thereon, each of said four concave cavities being disposed symmetrically in a different corner of said rectangular wastebasket, the associated one of said four longitudinal, rectangular slots being disposed centrally of and at a bottom of an associated one of said four concave cavities, said four concave cavities assisting in said pair of plastic handles engaging said four longitudinal, rectangular slots.

5,711,500
BABY BOTTLE HOLDER

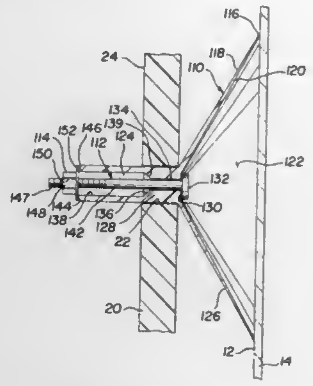
Victor De Los Santos, 533 Mountain Crest Dr., Duarte, Calif. 91010
Filed Aug. 16, 1995, Ser. No. 515,908
Int. Cl.^{6} A47D *15/00*
U.S. Cl. 248—102 **10 Claims**



1. A baby bottle holder to be used by a person feeding a baby wherein said holder and bottle do not require the use of the hands of said person, said holder comprising:
a generally triangular shaped body member of a solid resilient plastic foam having a common thickness and having a horizontal bottom wall for resting upon the chest of the baby and a pair of inwardly biased opposed side walls extending upwardly and inwardly from the bottom wall and linked together remote from said bottom wall, and one of said side walls being adapted for resting upon the chest of said person;
bottle adjusting frictional retaining means within said body member and including at least two circular vertically aligned cutouts passing through said thickness and said cutouts being interconnected whereby a bottle may be inserted within one of said circular cutouts and shifted vertically from one cutout to another without removing said bottle from the holder for frictionally positioning the bottle therein to a desired elevation best suited for contact with the mouth of the baby;
strap means associated with said body member to retain said one side wall against said person;
and retention means on said strap means for adjusting said strap means whereby said body member will rest against said person and also against said baby.

5,711,501
SUCTION CUP ATTACHMENT ASSEMBLY

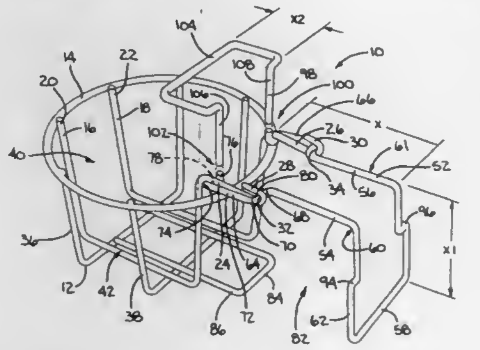
Paul Belokin; Martin P. Belokin, both of 7801 I-35 North, Denton, Tex. 76202, and Norman P. Belokin, 3341 Evers Pkwy., Denton, Tex. 76207
Division of Ser. No. 572,655, Dec. 14, 1995, Pat. No. 5,381,900, which is a continuation-in-part of Ser. No. 510,814, Aug. 3, 1995, abandoned. This application Nov. 7, 1996, Ser. No. 744,467
Int. Cl.^{6} F16B *47/00*
U.S. Cl. 248—205.9 **17 Claims**



1. A suction cup assembly comprising:
(a) a cup body having a radially deformable neck, a deformable arcuate flange with a concave inner surface, and a bore extending through the neck to the concave inner surface of said cup body;
(b) a valve having a valve surface and a stem portion which extends through the bore; and
(c) a retainer on the stem portion which exerts axial force on the radially deformable neck to selectively urge the valve surface of said valve in sealing relation with the concave inner surface around the bore and deform the neck radially.

5,711,502
ARTICLE HANGER

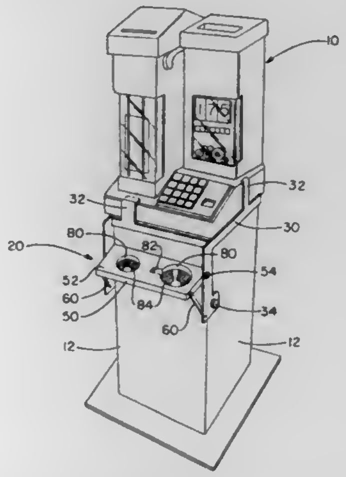
Seymour Emalfarb, 1585 Saunders Rd., River Woods, Ill., and Bradley S. Emalfarb, 26529 N. Hwy. 83, Mundelein, Ill. 60060
Filed Aug. 21, 1995, Ser. No. 517,574
Int. Cl.^{6} A47H *1/16*
U.S. Cl. 248—302 **19 Claims**



1. An article hanger comprising:
a frame defining a support for an article,
said support facing upwardly with the article hanger in a display orientation; and
first means for connecting the frame to an upright support,
said first means comprising a bracket and second means cooperating between the bracket and frame for selectively placing the frame and bracket in a) a first relative position wherein the frame and bracket cooperatively define a U shape with a first width for straddling an upright support to maintain the article hanger in the display orientation and b) a second relative position wherein the frame and bracket cooperatively define a U shape with a second width for straddling an upright support to maintain the article hanger in the display orientation,
wherein the first and second widths are different,
wherein the first means comprises means for allowing the frame and bracket to be maintained in each of the first and second relative positions without the use of separate fasteners.

5,711,503
CUP HOLDER FOR USE ON A TRANSIT BUS

Eugene Mitchell, Sr., 888 Hammel St., Akron, Ohio 44306
Filed Sep. 14, 1995, Ser. No. 527,857
Int. Cl.^{6} A47K *1/08*
U.S. Cl. 248—311.2 **8 Claims**



1. A cup holder for use on a transit bus having a fare collection box, said cup holder comprising:
an attachment member for engaging said transit bus fare collection box;
a shelf member connected to said attachment member to provide a substantially horizontal surface for retaining a beverage container wherein said shelf member is pivotally connected to said attachment member such that said shelf member may be positioned in at least a storage position and an operative position;
a support member connected to said attachment member and selectively engageable with said shelf member when said shelf member is in said operative position.

5,711,504
HINGED SEISMIC FOUNDATION PIER

Matt Cusimano, 267 Aptos Beach Dr., Aptos, Calif. 95003
Filed May 20, 1996, Ser. No. 650,183
Int. Cl.^{6} F16M *13/00*
U.S. Cl. 248—354.3 **7 Claims**

1. A foundation pier semi-permanently secured to a support beam of a movable dwelling for supporting the dwelling and for resisting temporarily increased environmental forces applied to the dwelling and to the pier, the pier comprising:
a base having an opening disposed therethrough;
an upstanding support member affixed to the base;
means for adjusting the height of the pier, the adjusting means including a shaft adjustably retained in the support member and an elongated channel member, the channel member having a first end affixed to the shaft for adjusting the height of the channel and clamp means disposed about the support member for securing the channel to the support member to retain the pier at different predetermined heights and for

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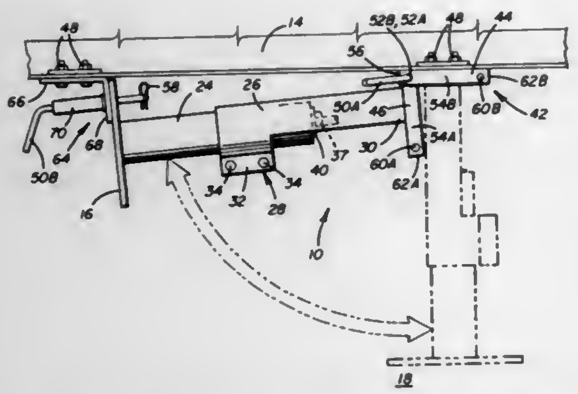


resisting temporarily increased environmental forces applied to the dwelling and to the pier;

coupling means for securing the pier to the support beam, the coupling means including an upper bracket member secured to the support beam and a lower bracket member affixed to the first end of the channel member, the coupling means including hinge means for pivotably coupling the bracket members together to enable pivoting of the pier relative to the support beam;

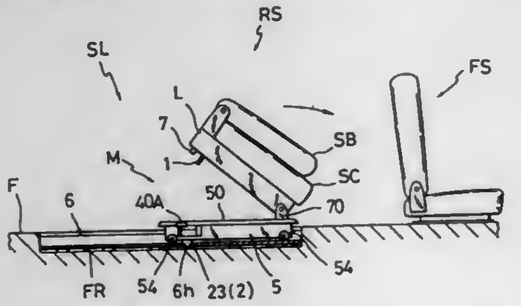
retaining means for retaining the pier above a ground surface while transporting the dwelling, the retaining means including a retaining plate with an aperture and extending obtusely away from the support beam and attached thereto, the adjustment means being adjusted for increasing the height of the pier, such that the base frictionally engages the retaining plate to retain the pier above the ground surface while transporting the dwelling, and the adjusting means being adjusted for decreasing the height of the pier to release the base from the retaining plate, enabling pivoting of the pier away from the support beam to the ground surface at an installation site for installing the dwelling at the site; and

a coupling member dimensioned to extend through the aperture of the retaining plate and the opening through the pier base, such that when the base is frictionally engaged by the retaining plate and the aperture and opening are aligned, the coupling member resides in the aperture and opening to detachably couple the base to the plate for preventing inadvertent movement therebetween while transporting the dwelling, the coupling member removed from the aperture and opening to pivot the pier away from the support beam to the ground at the installation site for installing the dwelling.

5,711,505
SLIDE RAIL DEVICE FOR JUMP SEAT

Akira Nemoto, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1996, Ser. No. 722,989
Int. Cl.^{6} B60N *2/30;* **F16M** *13/00*
U.S. Cl. 248—424 **17 Claims**



1. A slide rail device for a jump seat, in which the jump seat may be jumped up and rotated from the slide rail device to an inverted upstanding state at a storage area in an automobile, said slide rail device comprising:

a lower rail means fixed in a floor of an automobile;

an upper rail means slidably fitted in said lower rail means, on which upper rail member, a seat cushion of said jump seat is pivotally mounted at one end portion thereof, wherein said jump seat may be adjusted in position, via said upper and lower rail means, in a fore-and-aft direction of said automobile; and

a locking mechanism for locking and unlocking said jump seat to and from said upper rail means, said locking mechanism including:

a female engagement means provided at another end portion of said seat cushion of said jump seat;

a lock means having a male engagement portion, said lock means being so rotatable within said lower rail means as to project and withdraw said male engagement portion from and into said lower rail means;

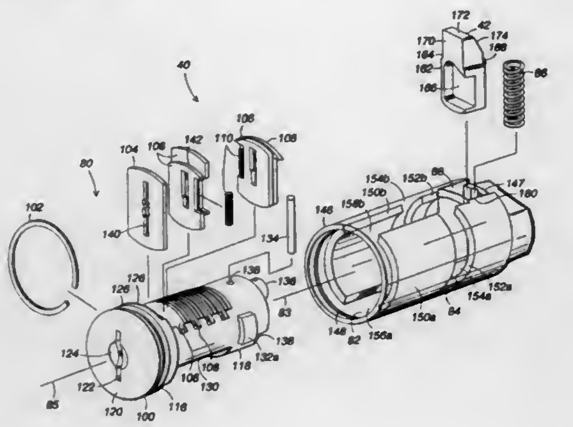
an actuator means which is so operatively connected with said lock means within said lower rail means that the actuator means normally retains said lock means at an unlocked position where said male engagement portion of said lock means is withdrawn in said lower rail means and disengaged from said female engagement means, and further, the actuator means, when pushed by said female engagement means, causes said lock means to rotate towards a locked position where said male engagement portion of said lock means projects from said upper rail means and engages said female engagement means; and

a lever means movably provided at said upper rail means, said lever means being operatively engaged with said lock means, wherein operation of said lever means permits said lock means to be rotated towards one of said unlocked and locked positions.

5,711,506
CYLINDER LOCK WITH GUIDE DEFLECTION AND FORTIFIED WING SYSTEMS

Woodrow C. Stillwagon, Atlanta, Ga., assignor to Star Lock Systems, Inc., Hilliard, Ohio

Continuation of Ser. No. 183,074, Jan. 18, 1994, abandoned.
This application Aug. 20, 1996, Ser. No. 700,056
Int. Cl.^{6} B60R *25/02*
U.S. Cl. 70—208 **56 Claims**



1. A cylinder lock comprising:

a hollow housing including

a housing front,

a housing rear,

an elongated, generally cylindrical housing wall, said housing wall defining

an axial housing cavity generally encircled by said housing wall, and

a cylindrical axis extending through said housing cavity in an axial direction defined from said housing front to said housing rear, and

a plurality of housing shoulders extending from said housing wall;

a core assembly disposed within said housing cavity and rotatable about said axis relative to said housing, said core assembly including, at least,

a generally cylindrical, exterior core wall, and

a plurality of core protrusions each extending radially outward from said core wall defining a radial height and extending axially along said core wall defining an axial length,

wherein said plurality of core protrusions abut said plurality of housing shoulders in a manner that seeks to preclude withdrawal of said core assembly from said housing,

wherein said core wall includes a plurality of support surfaces, wherein each support surface of said plurality of support surfaces extends axially along said exterior core wall rearward from a corresponding core protrusion of said plurality of core protrusions to buttress said plurality of core protrusions; and

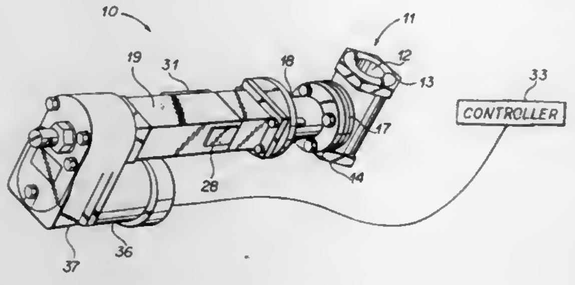
wherein the combined axial length of each said support surface and said corresponding core protrusion is at least three times the radial height of said corresponding core protrusion; and

a lock bolt cooperating with said core assembly and movable in response to rotation of said core assembly about said axis.

5,711,507
AUTOMATIC CALIBRATING ELECTRICALLY CONTROLLED DIAPHRAGM VALVE ACTUATORS AND METHODS FOR THEIR CALIBRATION

Mark D. Berget, Onalaska, and Dennis L. Manthei, West Salem, both of Wis., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 315,710, Sep. 30, 1994, Pat. No. 5,518,015.
This application Oct. 3, 1995, Ser. No. 538,785
Int. Cl.^{6} F16K *31/04*
U.S. Cl. 251—129.04 **13 Claims**



1. An electrically operated diaphragm valve, comprising:

a stepper motor;

controller means electrically connected to said motor;

a valve actuator to be moved by said motor;

a diaphragm disposed at one end of said actuator and in communication with a conductive chamber of said valve;

an outer casing adapted to house said actuator;

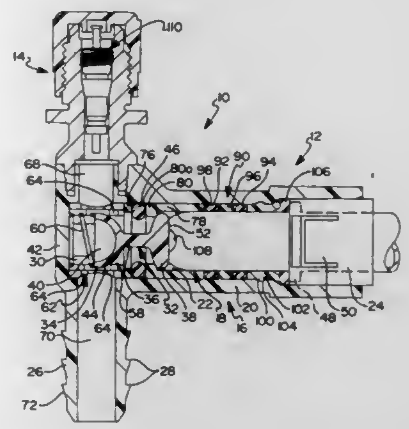
reference position indicator means for generating a calibration signal indicative of when said actuator is in reference position and for applying said calibration signal to said controller; and

said controller means for calibrating said valve actuator based on said reference position indicator means so as to eliminate error in the calibration process caused by fall back.

5,711,508
QUICK CONNECT FLUID COUPLING EQUIPPED WITH CHECK VALVE AND SERVICE VALVE

Mitchell H. Schreiber, Rochester Hills; Joseph S. Quaranta, Oxford; Thomas E. Grooters, Rochester Hills; George Szabo, Ortonville, and Richard H. Krentz, Clarkston, all of Mich., assignors to ITT Automotive, Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 483,671
Int. Cl.^{6} F16L *37/28*
U.S. Cl. 251—149.6 **15 Claims**



1. A combination quick disconnect and valve mechanism, comprising:

a housing including an auxiliary passage of a first generally cylindrically elongated body portion having a conduit-receiving adapter at an inlet end, an auxiliary valve for accessing said fluid pressure at an auxiliary passage outlet end, said housing further including

a primary passage having a second generally cylindrically elongated body portion connecting to said through passage of said auxiliary passage at a 90° angle in a T-shape arrangement having a primary outlet end wherein said primary outlet end includes a female portion of a quick connector means, wherein said female quick connector means is adapted for receiving a male portion of a quick connector

a primary valve member positioned at an intersection of said auxiliary passage and said primary passage said valve member adapted for axial displacement along the axis of said primary passage from a closed position wherein said primary valve member closes said passage to an open position wherein open communication is established between said conduit-receiving adapter at said inlet end and said primary outlet end, wherein said primary valve member is adapted to receive said male portion of said quick connector in response to a disengagement or an engagement of said male portion of said quick connector in said primary outlet end,

a generally annular seal means positioned within said primary passage axially juxtaposed to a first substantially rigid seat defined by said housing and a second substantially rigid seat defined by said primary valve member, and

an auxiliary valve member positioned at the outlet end of said auxiliary passage disposed for axial displacement along the axis of said auxiliary passage wherein said auxiliary valve member is maneuverable within said auxiliary passage from a closed position wherein said auxiliary valve member closes said passage, to an open position wherein fluid communication is established between said conduit-receiving adapter at said inlet end and said auxiliary passage outlet end in response to a disengagement or an engagement of a pressure detecting head, respectively.

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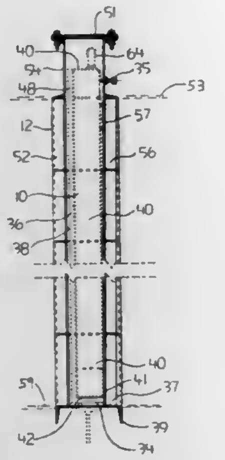
5,711,509
ISOLATION GATE AND FRAME ASSEMBLY

James Yates, Edmonton, Canada, assignor to Eltec Inc., Edmonton, Canada

Filed Jul. 1, 1996, Ser. No. 674,012

Int. Cl.^{6} F16K *3/12*

U.S. Cl. 251—175 **16 Claims**



1. An isolation gate and frame assembly for a duct carrying harmful material, the isolation gate and frame assembly comprising:
- a fluid impervious sealing gate having a periphery comprising a top edge, first and second side edges and a bottom edge, and having a sealing face side;
- an inflatable seal extending around the periphery of the sealing gate, the inflatable seal extending around the sealing face side adjacent the top edge and first and second side edges and extending along the bottom edge;
- a frame for sealingly receiving the fluid impervious sealing gate; and
- means operatively connected to the fluid impervious sealing gate for moving the gate between a closed position and an open position.

5,711,510
PIPELINE VALVE APPARATUS

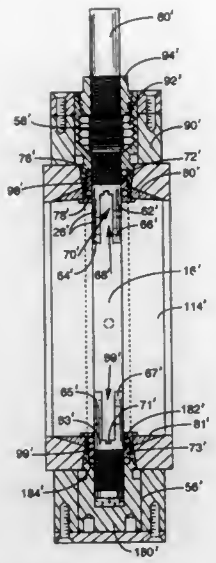
Gary M. Stary, 636 Thorn Hollow Dr., Coraopolis, Pa. 15108

Continuation-in-part of Ser. No. 342,281, Nov. 18, 1994, Pat. No. 5,553,830, which is a division of Ser. No. 194,821, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 12,991, Feb. 3, 1993, abandoned, which is a division of Ser. No. 924,098, Aug. 3, 1992, Pat. No. 5,203,539, which is a division of Ser. No. 809,720, Dec. 17, 1991, Pat. No. 5,160,118. This application Jun. 7, 1995, Ser. No. 472,342

Int. Cl.^{6} F16K *1/22*

U.S. Cl. 251—214 **13 Claims**

1. Apparatus for preventing a pressure medium in a valve body from escaping around a valve shaft rotatably supported in an opening provided in the valve body comprising:
- a stuffing box retained in the valve body opening, said stuffing box having a bore for rotatably receiving and supporting a portion of said valve shaft therein;
- at least one resilient packing ring receivable in said bore of said stuffing box;
- at least one annular shaft groove in the portion of the shaft received in said bore of said stuffing box for receiving at least one said resilient packing ring therein; and
- a packing follower movably received on the shaft, said packing follower being movably attachable to said stuffing box such that said packing follower can be selectively axially advanced on the shaft to exert a force on each said packing ring to cause it to enter at least one annular shaft groove in the shaft and sealingly engage said bore in said stuffing box to achieve a substantially fluid-tight seal between the shaft and said stuffing box.



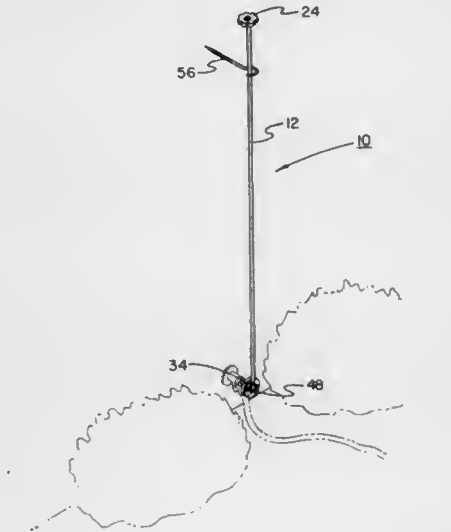
5,711,511
GARDEN HOSE VALVE SPINDLE EXTENDER

R. Bruce Cynar, 10023 St. Clairs Retreat, Fort Wayne, Ind. 46825

Filed Feb. 8, 1995, Ser. No. 385,456

Int. Cl.^{6} F16K *31/60*

U.S. Cl. 251—293 **3 Claims**



1. A garden hose valve spindle extender for enabling a user to open and close a valve without having to bend down comprising, in combination:
- an elongated rod having a first end, a second end, and an intermediate extent therebetween, the first end having a threaded aperture formed therein;
- a circular knob having a centrally disposed aperture formed therethrough, the circular knob secured to the first end of the elongated rod by a threaded nut and washer through the threaded aperture of the first end;
- an attachment plate having a pair of apertures formed therethrough, the attachment plate having a fitting extending outwardly therefrom, the attachment plate securable to an existing water spigot by a pair of nuts and bolts through the pair of apertures of the attachment plate;
- a universal joint having an upper portion and a lower portion, the upper portion secured to the second end of the elongated rod, the lower portion being coupled to the fitting extending outwardly from the attachment plate;
- a securement hook secured to a house upwardly from the existing water spigot, the securement hook being adapted to secure to the intermediate extent of the elongated rod to support the rod when not in use.

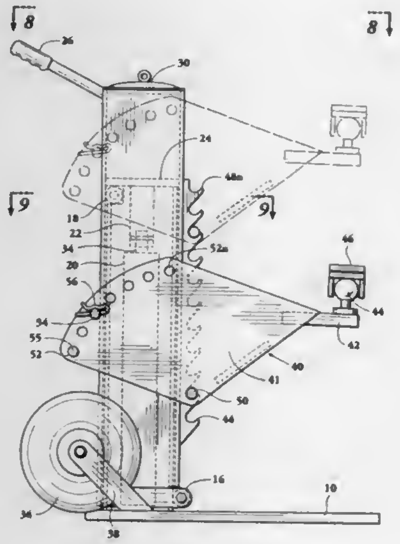
5,711,512
LIFTING JACK

Leonard S. Kauffman, Langley, Okla., assignor to Malcom P. Hammond, Tulsa, Okla., a part interest

Filed Sep. 9, 1996, Ser. No. 706,735

Int. Cl.^{6} B60P *1/00*

U.S. Cl. 254—2 B **12 Claims**



1. A jack assembly comprising:
- a base;
- an outer housing having a front and rear side;
- a height adjusting unit having;
  - (i) a first vertical series of support catches supported by the front side of said outer housing;
  - (ii) a second vertical series of support catches supported by the front side of said outer housing and spaced from a first series;
  - (iii) a first support arm having a front and a rear side with a first series of height adjusting holes along said rear side;
  - (iv) a second support arm having a front and a rear side with a second series of height adjusting holes in said rear side;
  - (v) a catch positioning support rod connecting said first and second support arms and of a size to fit into support catches of said first and second support catches series;
  - (vi) a hole selection rod extending between said first and second support arms and positionable into said series of holes;
  - (vii) a lift pad supported from said support arms; means to lift said outer housing with respect to said base.

5,711,513
HYDRAULIC ANTIVIBRATION SUPPORT SLEEVES

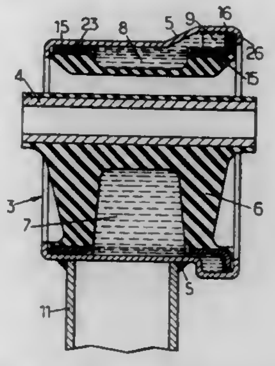
Jean-Pierre Bretaudeau, Chateaudun; Paul Schwartz, Chateudun, and Daniel Le Guillant, Conie-Molitard, all of France, assignors to Hutchinson, Paris, France

Filed Jan. 2, 1996, Ser. No. 582,067

Claims priority, application France, Jan. 4, 1995, 95 00041

Int. Cl.^{6} F16F *7/00*

U.S. Cl. 267—140.12 **4 Claims**



1. A hydraulic antivibration support sleeve comprising:
- inner and an outer tubular rigid strength members with said outer strength member surrounding said inner strength member having a longitudinal axis, the strength members being united by an elastomer body shaped so as to co-operate therewith to form at least two diametrically opposite sealed cavities communicating with each other via a narrow channel, said cavities and said channel being completely filled with a damping liquid, a portion of the elastomer body that delimits at least one of the cavities having an axial section that is generally U-shaped or V-shaped and that is outwardly open in a radial direction, and the narrow channel that interconnects the two cavities extending along an arc of a circle centered on the longitudinal axis of the strength members and disposed adjacent an axial end of the outer strength member,
- wherein the outer strength member is constituted by an integral portion of a rigid arm suitable for connecting the sleeve to a rigid structure that is offset from said sleeve, and
- wherein said sleeve includes a rigid cage which is coated with an elastomer constituting an elastomer body, said cage comprising a cylindrical side wall which is fitted into the outer strength member in sealing contact therewith, said cage further comprising a flange which extends radially outwardly from said cylindrical side wall at an axial end thereof, the narrow channel having a cross section delimited by four sides which are defined respectively by said flange, by a portion of the cylindrical side wall of the cage which extends from said flange, by an internal surface of the outer strength member which is adjacent to said flange, and by an internal step formed in said outer strength member, and
- and wherein the connections between the cavities and the narrow channel are provided via openings formed through the cylindrical side wall of the cage.

5,711,514
SHOCK ABSORBER FOR A BICYCLE

Fu-Chung Lu, Kaohsiung Hsien, Taiwan, assignor to Kai Fa Industry Co., Ltd., Kaohsiung Hsien, Taiwan

Filed Dec. 5, 1995, Ser. No. 567,285

Int. Cl.^{6} F16F *9/43;9/14*

U.S. Cl. 267—221 **1 Claim**

1. A bicycle shock absorber, comprising:
- a cylinder body having first and second ends and confining a sealed space therein, said second end of said cylinder body being provided with a connector that has an axis transverse to a longitudinal axis of said cylinder body, said second end of said cylinder body being formed with a vent hole that extends through said connector and has an axis parallel to the longi-

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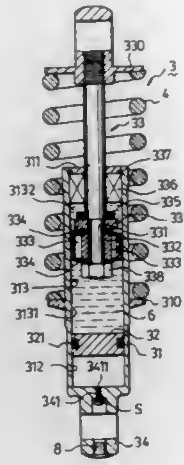


tudinal axis of said cylinder body, said second end of said cylinder body having a plug for sealing said vent hole;

a valve member disposed movably in said cylinder body, said valve member dividing said sealed space of said cylinder body into an air chamber which contains high pressure gas and which is adjacent to said second end of said cylinder body, and a fluid chamber which is filled with hydraulic fluid and which is adjacent to said first end of said cylinder body, said vent hole permitting access to said air chamber, said plug being used to seal said vent hole after the high pressure gas has been introduced into said air chamber;

a piston shaft having a connecting section which extends into said fluid chamber of said cylinder body;

a piston retained on said connecting section of said piston shaft and formed with a plurality of axially extending fluid holes therethrough; and

a restoring member disposed outside said cylinder body and associated operably with said piston shaft and said cylinder body so as to bias said piston shaft outwardly of said cylinder body.

5,711,515
WORKPIECE SUPPORT FOR VISE

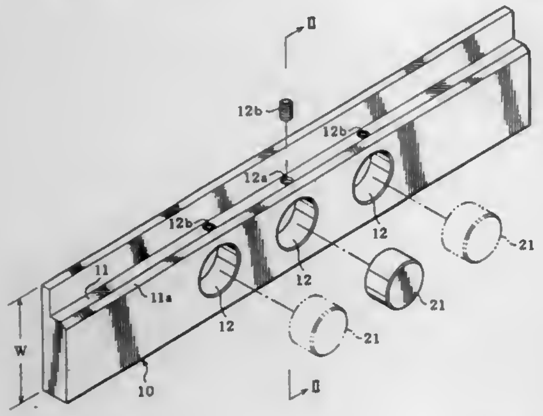
Akira Nishimura, Kanazawa, Japan, assignor to Kabushiki Kaisha Nishimura Jig, Kanazawa, Japan

Filed Jul. 9, 1996, Ser. No. 677,198

Claims priority, application Japan, Feb. 5, 1996, 8-019093

Int. Cl.^{6} B25B *1/24*

U.S. Cl. 269—276 **4 Claims**



1. A workpiece support for a vise, the workpiece support comprises:

a rectangular support plate with a plurality of through holes formed thereon, the plurality of through holes extending in a thickness direction of the rectangular support plate; and

a plurality of magnets detachably fitted into the plurality of through holes for attaching the rectangular support plate to a jaw plate of the vise when the magnets are fitted into the through holes, and the magnets are of one-side attracting type.

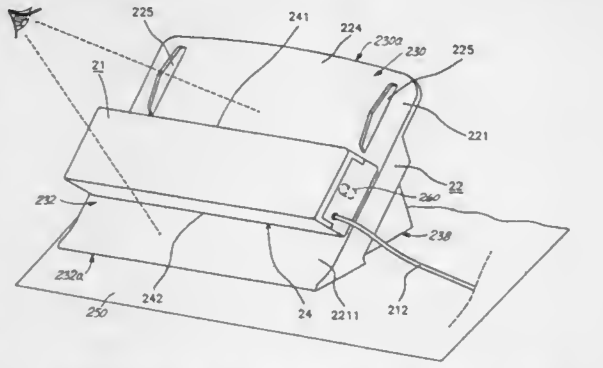
5,711,516
SHEET FEEDER HAVING SLOPING SHEET SUPPORT SIDE FOR USE WITH DETACHABLE IMAGE SCANNER

Ampere Pan, Taipei Hsien, Taiwan, assignor to Storm Technology Inc., Mountain View, Calif.

Filed Jul. 5, 1995, Ser. No. 498,539

Int. Cl.^{6} B65H *5/22*

U.S. Cl. 271—3.14 **7 Claims**



1. A sheet feeder for use with a detachable image scanner, the sheet feeder comprising:

a base portion for supporting the sheet feeder on a horizontal support surface,

a sloping support side, extending between an opposite input end and an output end thereof, along which a sheet to be scanned by such image scanner slides as such sheet moves in sequence over an input zone, past such image scanner and over an output zone, where the zones are on the sloping support side, the sloping support side being located on an opposite side of the sheet feeder from the base portion and oriented so that the sloping support side faces upward and slopes relative to such support surface on which the base portion is supported to facilitate ease of access by a user to both the input zone and output zone of the sloping support side, and

a mounting for detachably connecting the image scanner to the sheet feeder, transverse thereto, between the input end and output end to enable such sheet to pass between such image scanner and the sheet feeder as such sheet slides from the input zone to the output zone,

the output zone of the sloping support side, over which such sheet slides after passing such connected image scanner extending to the output end of the sloping support side, said output end being positioned on the sheet feeder at a location adjacent to such support surface when the sheet feeder is supported thereon by the base portion, the output zone of the sloping support side comprising a concave curved portion at the output end and the output end being open to thereby provide ease of movement for such sheet sliding from the output zone passed the output end onto such support surface.

5,711,517
SHEET MEDIA HANDLING SYSTEM

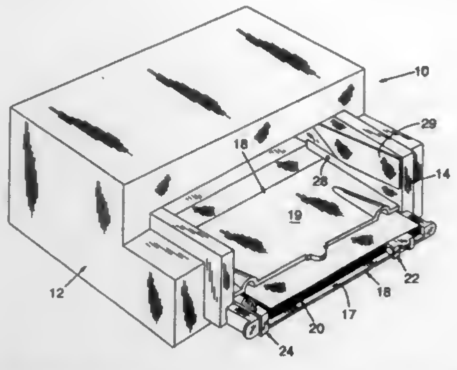
Kieran B. Kelly, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 7, 1996, Ser. No. 612,142

Int. Cl.^{6} B65H *5/22*

U.S. Cl. 271—4.01 **13 Claims**

1. A sheet media handling system for use in a sheet processor having a chassis with vertically-stacked input and output ports, said handling system comprising:



a lower support structure configured to support sheets for delivery to the input port, said lower support structure including an elongate drawer configured for translation between a fully-closed drawer position and a fully-open drawer position said drawer including a primary tab; and

an upper support structure configured to support sheets expelled from the output port, said upper support structure overlying said lower support structure and including a door configured to between a fully-closed door position and a fully-open door position, whereby sheets within said of said lower support structure are substantially fully exposed when said drawer is in said drawer position and said door is in said fully-open door position;

an overcenter mechanism operatively mounted on the chassis said overcenter mechanism including a lever with first and second guide pins, each configured to traverse corresponding first and second guide paths, said first guide path extending transverse to a path of drawer translation and said second guide path extending generally along a path of drawer of drawer translation said overcenter mechanism further including a spring configure to engage said lever to urge said first guide pin along said first guide path toward said second guide path, said second guide pin thus being urged in a closing direction along said second guide path when said second guide pin is on one side of said first guide path and in an opening direction along said second guide path when said second guide pin is on an opposite side of said first guide path, said lever being configured to urge said drawer toward said fully-closed drawer position when said second guide pin moves in said direction and to urge said drawer toward a fully-open position when said second guide pin moves in said opening direction;

said lower support structure thus being configured for access by translation of said drawer, by pivot said door, or by a combination of drawer translation and door pivot.

5,711,518
BLANK FEED UNIT

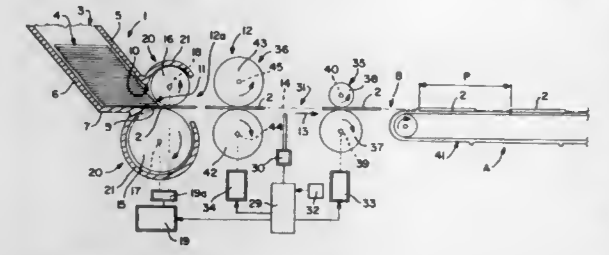
Antonio Portaro, Milan; Fabio Sassi, Imola, and Maurizio Andraghetti, Bologna, all of Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Jun. 2, 1995, Ser. No. 458,512

Claims priority, application Italy, Jun. 7, 1994, BO94A0267

Int. Cl.^{6} B65H *5/00*

U.S. Cl. 271—10.03 **10 Claims**



1. A blank feed unit comprising:

a store (**3**) for housing a stack (**4**) of blanks (**2**) and having an outlet (**11**); an

a feed assembly (**12**) for successively extracting the blanks (**2**) from said outlet (**11**) and feeding said blanks (**2**) in a given direction (**13**) and along a given path (**14**); the feed assembly (**12**) including an extracting assembly (**12*a***), the extracting assembly including a conveyor roller (**15**) substantially tangent to said path (**14**) and to the store (**3**) at said outlet (**11**); and

braking means (**16**) on the opposite side of said path (**14**) in relation to said conveyor roller (**15**) and substantially tangent to the path, said braking means including a pressure roller (**16**) at said outlet (**11**) and drive means (**19**) for rotating said conveyor roller (**15**) and said pressure roller (**16**) in opposite directions, wherein the conveyor roller (**15**) has a surface speed greater than that of the pressure roller (**16**).

5,711,519
DEVICE FOR FEEDING FLAT MATERIAL

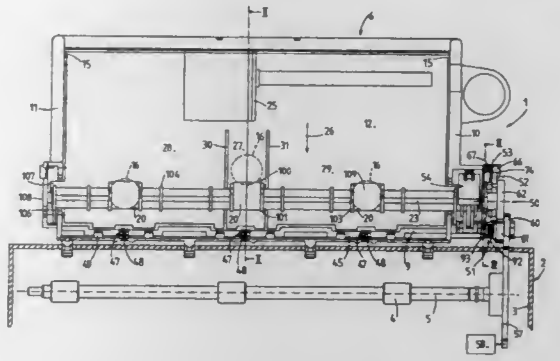
Giuseppe Bortolotti, Yverdon-Les Bains, Switzerland, assignor to OCD S.A., Yverdon-Les Bains, Switzerland

Filed May 10, 1996, Ser. No. 644,102

Claims priority, application Switzerland, Jul. 10, 1995, 2000/95

Int. Cl.^{6} B65H *3/06*

U.S. Cl. 271—116 **19 Claims**



4. In a device for feeding flat material (**14**) to a machine (**2**) using this flat material, comprising a supply chamber (**6**) with a bottom (**8**) in which a stack (**14**) of said flat material is disposed on a movable support plate (**12**) and from which the flat material is withdrawn one by one and fed into said machine (**2**), lateral drive rolls (**20**) and at least one intermediate drive roll (**20**) arranged on a drive shaft (**23**) so as to displace the top flat material from the stack to feed it into the machine (**2**), the device moreover comprising at least one retaining member (**48**) adapted to retain the flat material disposed in the stack below the top flat material, and at least one resilient element (**16**) to urge the movable support plate (**12**) in the direction of the drive rolls (**20**); the improvement wherein the support plate (**12**) is subdivided, at least in its portions situated opposite the drive rolls (**20**), into three portions (**27**, **28**, **29**) adapted to be resiliently displaced relative to each other, each of these portions being urged by a resilient element (**16**) against a drive roll.

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5,711,520

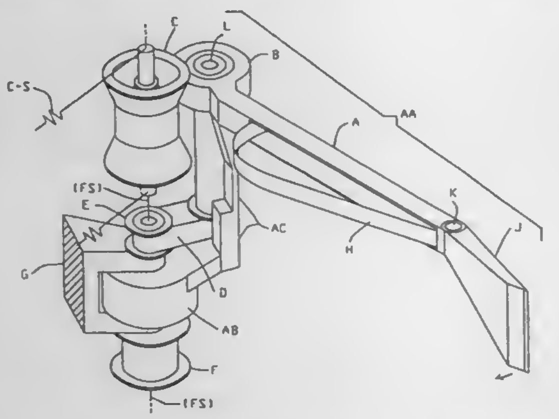
DOCUMENT STACKING

Sammy C. Hutson, 6540 Heritage, West Bloomfield, Mich. 48322

Division of Ser. No. 451,801, May 26, 1995, Pat. No. 5,522,589, which is a division of Ser. No. 212,093, Mar. 10, 1994, Pat. No. 5,419,545. This application May 30, 1996, Ser. No. 655,505

Int. Cl.^{6} B65H *31/36*

U.S. Cl. 271—222 **20 Claims**



1. In a method of stacking documents in an arrangement for transporting checks at a prescribed nominal speed along a given transport track, with one or several storage-pockets and associated diverter means disposed there-along, one for each storage-pocket, the steps therewith of:

providing injecting-reaction-guide means for each said storage pocket, and arranging each said guide means to drive a so-diverted document into its pocket and to include inject roll means to accelerate and drive the check faster than said nominal speed; coupling arm assembly means to cooperate with each said guide means and said roll means and to include arm means adapted to guide a so-injected document toward its position in the stack in said pocket; said roll means and arm assembly means being arranged to direct said arm means away from its stack each time a document is entering under the action of the said speed differential, and to later return said arm means toward its said stack.

5,711,521

CONVEYING APPARATUS FOR PRINTED PRODUCTS

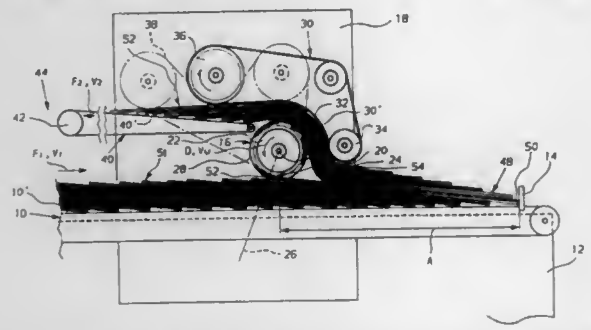
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jul. 26, 1996, Ser. No. 687,652

Claims priority, application Switzerland, Jul. 27, 1995, 02 206/95-6

Int. Cl.^{6} B65H *3/52*

U.S. Cl. 271—225 **10 Claims**



1. A conveying apparatus for folded printed products that include a leading edge and a border region that is remote from said leading edge, said conveying apparatus includes a feed conveyor for conveying the printed products, leading edge first, in an imbricated formation against a stop, a removal conveyor, and a directing member, said directing member is arranged at a distance (A) upstream with respect to said stop and functions to direct said border region of the printed product to the removal conveyor, wherein:

the printed products arrive in an imbricated formation in which each printed product rests on the following printed product;

the removal conveyor and the directing member are independent of each other and are each arranged above said feed conveyor;

the distance (A) between said stop and a point on said directing member is shortened, at approximately the same time that the leading edge of an arriving printed product abuts said stop, from a magnitude which corresponds at least to the dimension of the printed products measured in the conveying direction to a magnitude which is smaller than said dimension; and

as a result of the distance (A) being shortened, said directing member engages the lower surface of the border region of the printed product that is butting against said stop.

5,711,522

GAME LAUNCHING MECHANISM

Christopher C. Wiggs, and Christopher Joseph Crabtree Taylor, both of London, England, assignors to Origin Products Limited, London, England

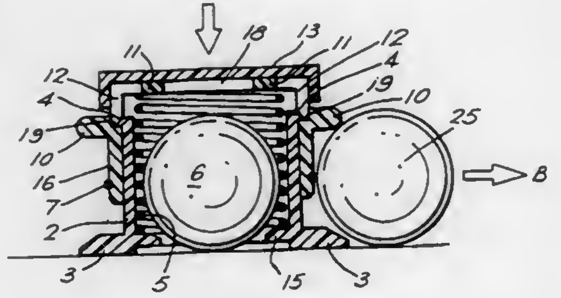
PCT No. PCT/GB94/00098, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO94/16787, PCT Pub. Date Apr. 8, 1994

PCT Filed Jan. 19, 1994, Ser. No. 428,063

Claims priority, application United Kingdom, Jan. 21, 1993, 93011821

Int. Cl.^{6} A63F *7/24*

U.S. Cl. 273—129 S **24 Claims**



1. A projectile launching mechanism comprising a central core, an impeller mounted on said core for coaxial movement, said impeller being axially depressible, a striker on said impeller and projectile attachment means operable to releasably attach indefinitely a projectile to the launching mechanism, wherein when the impeller is axially depressed, and a projectile is attached to the launching mechanism, the striker hits the projectile from above at a location offset from its vertical centre line whereby the projectile is launched radially outwardly from the core.

5,711,523

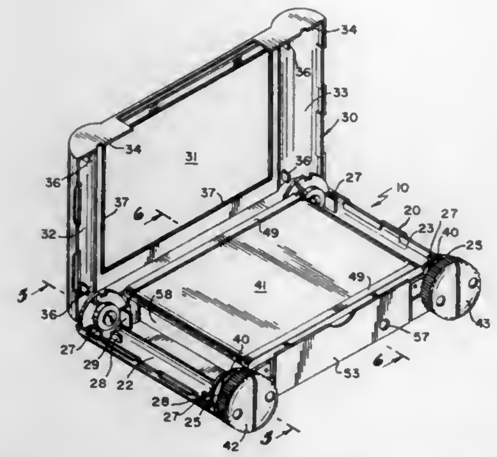
PUZZLE GAME APPARATUS

Herbert M. Sternberg, William Island, and Leonard S. Traub, Hollywood, both of Fla., assignors to Herbko International, Inc., Hallandale, Fla.

Filed Oct. 31, 1995, Ser. No. 551,199

Int. Cl.^{6} A63F *9/08*

U.S. Cl. 273—153 R **18 Claims**



1. Portable game holder apparatus constituting a component of a portable game playing assembly, which assembly, when fully assembled, contains said holder apparatus, a writable game sheet, and a pair of identical rollers on which said game sheet is partially wound during play and between which said game sheet is movable during play; said pair of rollers consisting of a supply roller, on which said game sheet is initially fully wound, and a take-up roller to which said game sheet is transferred as games thereon are played; said holder apparatus constituting a reusable portion of said game playing assembly and said game sheet and rollers constituting discardable and replaceable portions of said game playing assembly; said game sheet containing a collection of multiple pre-printed games to be played by a user of said game playing assembly; said game playing assembly, when fully assembled, being useful for displaying portions of a said game sheet containing individual games to be played by a said user of said game playing assembly; said user using said assembly to view a said displayed portion of said game sheet, to write upon the respective viewed portion using said holder apparatus to provide backing support for the respective viewed portion permitting writing thereon, and thereafter to incrementally move said game sheet between said supply and take-up rollers to display another portion of said sheet containing a new game to be played; said game holder apparatus comprising:

separable base and cover components forming an enclosure for removably holding a said pair of supply and take-up rollers and a said game sheet to be transported between said pair of rollers; said cover containing a viewing window dimensioned to frame an area filled by a single game in a said collection of games pre-printed on said sheet, said cover and base comprising elements forming:

first and second holding compartments formed to respectively receive and hold said supply and take-up rollers of a said pair of rollers, and a said game sheet initially wound on said supply roller of said pair of rollers; and

said base containing a flat solidly formed platen extending between said first and second holding compartments; said platen spanning the space framed by said cover viewing window, said platen forming a supporting structure for enabling a said game player to write upon a portion of a said sheet appearing in said viewing window when a said pair of rollers and portions of the respective sheet are held in said first and second compartments; and thereby enabling said game player to solve a puzzle game currently framed in said cover window; and

said platen further containing upraised guide ridges for maintaining a said game sheet in alignment with said rollers in said first and second holding compartments while the respective sheet is being moved between said rollers in said compartments.

5,711,524

GAME

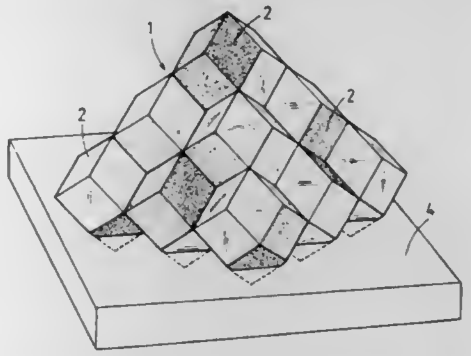
Jean Bauer, and Jean-Philippe Lebet, both of Canton of Neuchâtel, Switzerland, assignors to Trigam S.A., Switzerland

Filed Oct. 10, 1996, Ser. No. 728,830

Claims priority, application Switzerland, Oct. 19, 1995, 2966/95

Int. Cl.^{6} A63F *9/12*

U.S. Cl. 273—157 R **7 Claims**



1. A game comprising, a plurality of elementary polyhedrons, the faces of said elementary polyhedrons being of at least two different kinds, each face kind having a visually distinctive characteristic, at least two bases having a plurality of cavities for receiving said elementary polyhedrons to be partially engaged therein with one of the apexes of the elementary polyhedrons turned downwardly, the cavities being arranged to permit construction on each of the bases of a pile of said elementary polyhedrons in successive layers in which the number of elementary polyhedrons decreases towards the top of the pile, the pile of said polyhedrons forming a composed polyhedron in which the relative position of the faces of the elementary polyhedrons forms a selected configuration corresponding to at least two game rules, said elementary polyhedrons being regular rhombic dodecahedrons, the cavities in one of said bases being square shaped for a first game rule and the cavities in the other of said bases being triangular shaped for a second game rule.

5,711,525

METHOD OF PLAYING A WAGERING GAME WITH BUILT IN PROBABILTY VARIATIONS

John G. Breeding, Eden Prairie, Minn., assignor to Shuffle Master, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 602,704, Feb. 16, 1996, abandoned. This application Jan. 2, 1997, Ser. No. 778,115

Int. Cl.^{6} A63F *1/00*

U.S. Cl. 273—292 **33 Claims**

1. A method of playing a wagering game using a deck of cards having a predetermined rank, comprising the steps of:

(a) a player placing a first wager to participate in a base game;
(b) a dealer dealing cards;
(c) the dealer intentionally displaying at least one card from the deck and discarding that card;
(d) the player placing a second optional wager after viewing the discarded card to simultaneously participate in a second wagering game;
(e) completing play of the base game; and
(f) resolving the player's first and second wagers, based upon said players hand, resolution of the first wager being accomplished according to the standard rules of the base game while

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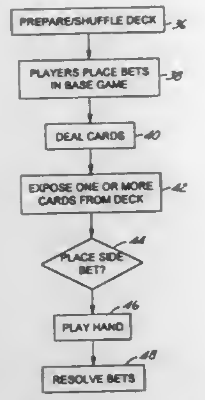
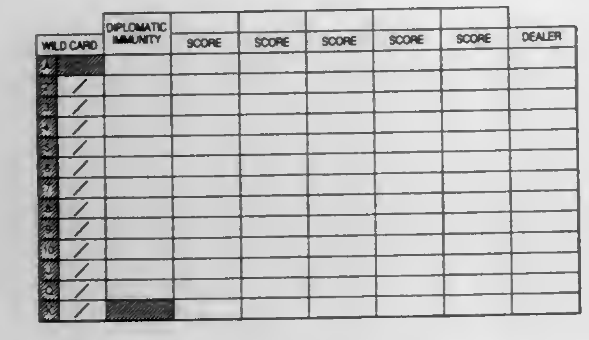


resolution of the second wager being accomplished according to a payout scheme.

5,711,526
CARD GAME PLAYING METHOD

Ron Van Hollebeke, 3226 Rocky Point Dr., Bremerton, Wash. 98312

Filed Sep. 29, 1995, Ser. No. 536,285
Int. Cl.^{6} A63F *1/00*
U.S. Cl. 273—303 **5 Claims**

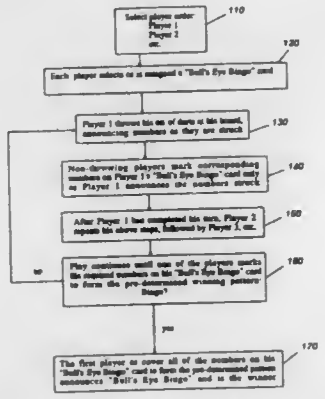


1. A method of playing a card game, comprising the steps of:
dealing from a single standard deck of 52 playing cards with no jokers used a first set of two to five player hands, one hand to each player respectively, each hand consisting of seven cards to each player and one hand of eight cards to the dealer;
determining a wild card as being the first card type listed in a predetermined sequential list of card types;
allowing each player in turn beginning with the dealer playing first to attempt to lay down a matched set or sequence of cards from their hand or discard a single card face up in a discard pile;
allowing a player whose turn is up, at their option, to pick up and immediately play a card from the discard pile;
allowing a player whose turn is up, at their option, to pick up a wild card and replace it with a non-wild card after a preceding player has laid down that wild card with a plurality of other cards corresponding in point value to said non-wild card and where the player whose turn is up has the option to hold or play the wild card after they pick it up;
calculating a respective point count total for each of the players with cards left in their hand after one of the players lays down all of their cards face up in matched sets or sequences during a particular hand;
dealing a subsequent set of player hands to each of said players after said calculating step;
changing the wild card determination to a proceeding card type in said sequential list upon each respective subsequent dealing of player hands to each of said players;
replacing the wild card determination of said changing step with a player's choice of the wild card for a particular hand dealing when that player is at least 50 points and less than 100 points behind the other players in the game; and
declaring a winner as being the player with the lowest total point count number;
wherein each player's respective point count total for any particular hand is calculated by assigning a predetermined point value to each remaining card in each player's hand and summing the point values for all of each player's respective remaining cards in that hand.

5,711,527
PROJECTILE GAME AND METHOD OF GAME PLAYING

Todd M. Phalin, and Karen J. Phalin, both of 1426 Austin Rd., Janesville, Wis. 53545

Filed Mar. 18, 1997, Ser. No. 820,011
Int. Cl.^{6} A63F *67/00*
U.S. Cl. 273—317.1 **19 Claims**



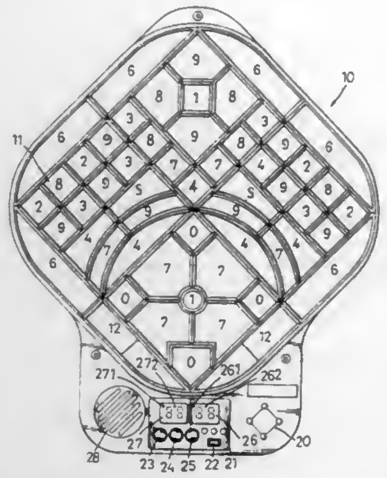
1. A method of playing a game comprising:
(a) providing a target, the target having defined thereon a plurality of discrete, identified regions; a plurality of game cards, the game cards having defined thereon a plurality of discrete, identified regions, some or all of which correspond to the plurality of regions on the target; and at least one projectile and means for marking the game cards; and then
(b) providing to each player one or more game cards;
(c) establishing an order of play from amongst the players; and
(d) selecting a pattern to be formed on the players' game cards in order to win the game; then
(e) throwing the projectile at least once toward the target by the first player in the order of play and marking on only that player's game card the region on the target struck by the projectile which matches the region on that player's game card; and then
(f) repeating step (e) throughout the order of play, whereby patterns are formed on the players' game cards, until one player has formed the pattern selected in step (d), thereby determining the winner of the game.

5,711,528
BASEBALL DART BOARD

Francis Pan, No. 7, Tatun 15th St., Taichung, Taiwan, Taiwan

Filed Jul. 24, 1996, Ser. No. 686,111
Int. Cl.^{6} F41J *5/02*
U.S. Cl. 273—371 **4 Claims**

1. A dart board with a baseball game effect comprising:
a target composed of a plurality of target areas, said plurality of targets area being configured as a baseball field and grouped into three regions which are absolute batter's box, absolute and undetermined area, respectively;

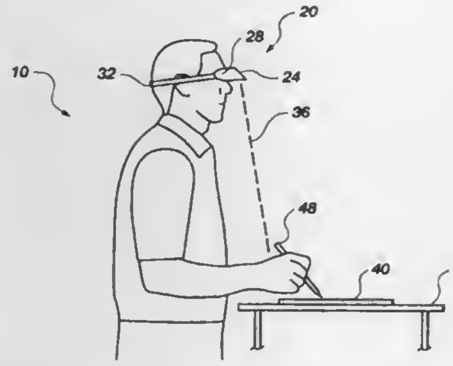


a control panel disposed below the target; and
a control circuit provided within the target.

5,711,529
MIRROR GAME

Brent B. Nielsen, 2547 W. 11275 South; Lynn S. Nielsen, 1948 W. 11585 South, both of South Jordan, and Lester T. Nielsen, 11852 S. Shady Acres Court, Riverton, all of Utah 84095

Filed Dec. 7, 1995, Ser. No. 568,652
Int. Cl.^{6} A63F *9/06*
U.S. Cl. 273—441 **11 Claims**

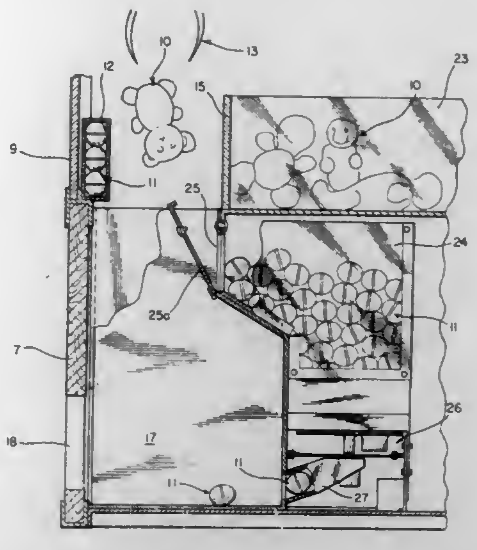


1. A novelty game for one or more players comprising:
a playing surface having a maze disposed thereon;
a moving device for moving through the maze;
a head piece attachable to a player so that the head piece is suspended from the player's head;
a mirror disposed in the head piece to alter a visual image of the maze viewed by the player in the mirror;
the head piece having an upper wall, a lower wall and side walls for limiting the ability of the player to see items not altered by the mirror; and
a flange member extending upwardly from the lower wall to limit the ability of the player to observe the playing surface to that image viewed in the mirror.

5,711,530
VEND EVERY TIME SKILL CRANE

Michael W. Lewis, 28132 Via Rueda, San Juan Capistrano, Calif. 92675

Filed Oct. 29, 1996, Ser. No. 741,403
Int. Cl.^{6} A63F *9/00*
U.S. Cl. 273—448 **6 Claims**

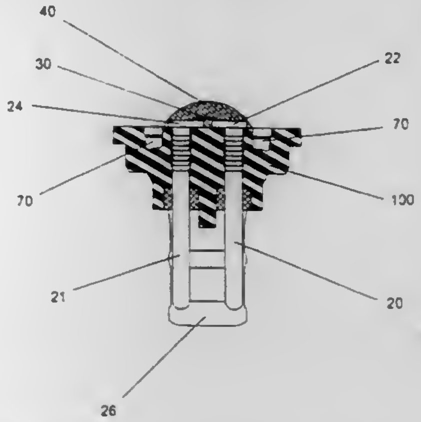


1. A vend every time skill crane comprising a cabinet having a front wall, a first hopper in said cabinet, a plurality of prizes contained in said first hopper, a second hopper in said cabinet, a plurality of vendable prizes contained in said second hopper, an opening in said front wall of said cabinet, an outlet chute in said cabinet communicating said opening with said first and second hoppers, a claw assembly mounted in said cabinet for grasping a main prize from said first hopper, a manipulator on the front wall of said cabinet operatively connected to said claw assembly, a discharge assistant positioned below the second hopper and adapted to dispense said vendable prizes from the second hopper into the cabinet chute, and money receiving mechanisms in the front wall of said cabinet, said mechanisms being adapted to be operatively connected to an electrical circuit for energizing the claw mechanism and the discharge assistant, whereby each time money is inserted into the mechanisms a vendable prize is dispensed from the second hopper and the manipulation and claw mechanism are energized for play opportunities from the first hopper within a predetermined time.

5,711,531
ELECTRICAL INITIATOR SEAL

Mark Lucas Avory, Foster City; William David Fahey, Cupertino, and Stewart Shannon Fields, Redwood City, all of Calif., assignors to Quantic Industries, Inc., San Carlos, Calif.

Division of Ser. No. 140,650, Oct. 20, 1993. This application Jun. 7, 1995, Ser. No. 478,641
Int. Cl.^{6} F42B *5/30*
U.S. Cl. 277—12 **6 Claims**



1. A gas tight seal, comprising:
an elastic header for an automotive electrical initiator;
a pin traversing and engaging the elastic header such that the elastic header establishes and maintains a sealing force

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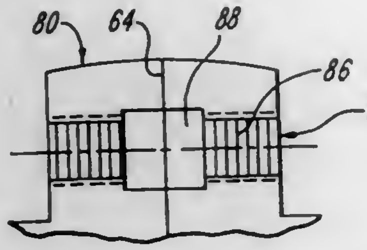
between the header and the pin to form a reliable environmental seal capable of withstanding an automotive environment.

5,711,532
SECURING AND CENTERING DEVICES FOR A SPLIT MECHANICAL SEAL

Marlen S. Clark, Newburyport, Mass., and Henri V. Azibert, Windham, N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.
Filed Dec. 16, 1993, Ser. No. 168,874
Int. Cl.^{6} F16J *15/40*
U.S. Cl. 277—38 **9 Claims**



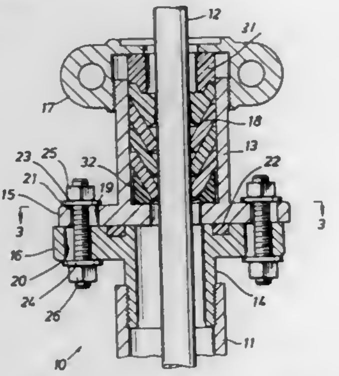
1. A split mechanical seal for mounting to a housing containing a rotating shaft, said mechanical seal comprising

at least two arcuate gland segments, each said segment having an inner surface and a pair of axially extending sealing faces, and having means forming a fastener-receiving aperture for receiving a fastener, said aperture formed substantially through each said seal face of said gland segment at circumferentially aligned locations, and

each said aperture having a tapped portion axially spaced from said segment sealing face and having a first diameter, and a clearance portion opening onto said segment sealing face having a second diameter, said diameter of said clearance portion being larger than said diameter of said tapped portion, such that when said gland segments are assembled the corresponding ones of said fastener-receiving apertures formed on each seal face of each said gland segment are disposed opposite each other such that said clearance portions open onto each other.

5,711,533
OILFIELD STUFFING BOX WITH POLISHED ROD ALIGNMENT

Lawrence F. Angelo, Conroe, and H. Milton Hoff, Tomball, both of Tex., assignors to J.M. Huber Corporation, Tomball, Tex.
Filed Dec. 27, 1995, Ser. No. 579,328
Int. Cl.^{6} F16J *15/00*
U.S. Cl. 277—105 **16 Claims**



1. An axially extending stuffing box adapted to receive an axially extending polished rod, said polished rod being moveable through said stuffing box and through a well head component to power a subsurface pump in a well, the stuffing box comprising:

a sealing material carried within a stuffing box section to seal with said polished rod as said rod moves through said stuffing box;

a first flange mounting connected to said stuffing box section for mounting said stuffing box section on said well head component;

a second flange mounting threadably connected to said well head component and in planar engagement with said first flange mounting by bolted engagement with the first flange mounting;

a plurality of circumferentially spaced first bolt holes in said first flange mounting;

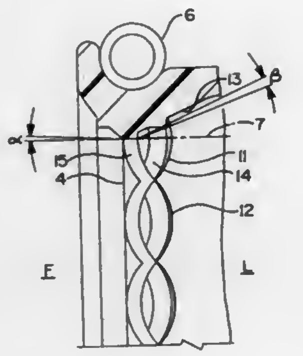
a plurality of circumfemntially spaced second bolt holes in said second flange mounting; and

a plurality of bolts each received within a respective one of said first and second bolt holes; and

each of said first and second bolt holes having a diameter which is at least 30% greater than the diameter of a respective one of the plurality of bolts, whereby said first and second flange mountings may be positioned and secured by said plurality of bolts at different lateral positions on said well head component to adjust the axis of said stuffing box relative to the axis of said well head component.

5,711,534
ANNULAR SHAFT SEAL HAVING AN ELASTIC SEALING LIP

Jesus Bengoa, Durango/Vizcaya, Spain, and Gerd Upper, Hoisdorf, Germany, assignors to Dichtungstechnik G. Bruss GmbH & Co. KG, Hoisdorf/Hamberg, Germany
Filed Dec. 6, 1995, Ser. No. 569,330
Claims priority, application Germany, Dec. 6, 1994, 44 43 422.7
Int. Cl.^{6} F16J *15/32*
U.S. Cl. 277—134 **6 Claims**

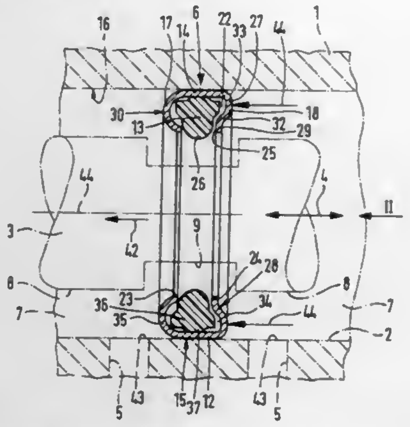


1. An annular shaft seal, comprising:

a sealing lip comprising an air side surface, a liquid side surface, and an annular sealing edge located between said air side surface and said liquid side surface; and a twist element provided on said air side surface, said twist element comprising at least two sinusoidal axially and radially extending twist ribs shifted in phase and each disposed tangentially around said sealing edge on sad air side surface.

5,711,535
VALVE SPOOL SEAL WITH ONE-PIECE HOUSING RING HAVING AN ARCUATE SIDE WALL AND A STEPPED SIDE WALL

Kurt Stoll, Esslingen, and Thomas Müller, Filderstadt, both of Germany, assignors to Festo KG, Esslingen, Germany
Filed Jan. 29, 1997, Ser. No. 789,788
Claims priority, application Germany, Feb. 2, 1996, 196 03 719.0
Int. Cl.^{6} F16J *15/32*
U.S. Cl. 277—182 **8 Claims**



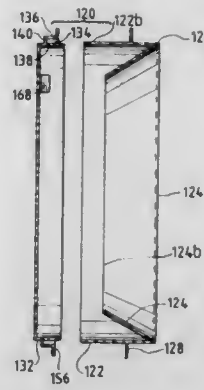
1. An annular sealing unit for use on an axially movable valve spool to produce a sealing action between the spool and the valve housing of a multiway valve, comprising a single-piece housing ring, which comprises a radially externally arranged cylindrical holding wall serving for a press-fit attachment to the housing and first and second spaced apart annular side walls extending from the housing wall and projecting radially inward, the walls of the housing ring delimiting between them an annular space which opens radially inward at a peripherally extending annular opening, in which space at least one annular, elastically yielding sealing element is anchored, said element having a sealing portion adapted for cooperating with the valve spool and extending radially inward through the annular opening, wherein the one first side wall of the housing ring has, as seen in section, an arcuate form with a curved portion axially bulging out away from the other, second side wall, the second side wall, as seen in section, has a stepped form and possesses a straight outer side wall section being directed essentially radially inward from and adjoining the holding wall, and furthermore an inner side wall section adjoining the first wall section via a step, said inner wall section being offset toward the first side wall and also extending radially inward, the portion, which lies between the outer side section of the second side wall and the arcuate portion, opposite to same, of the first arcuate side wall, of the annular space forming an anchoring portion for the sealing element, the width of this anchoring portion being larger than the width of the annular opening, which to the side is delimited by the inner side section of the second side wall and the terminal portion, opposite to same, of the arcuate first side wall.

5,711,536
SEAL COMPONENT FOR USE IN ON-SITE POURED CONCRETE OR PLASTIC TANK OR BOX COMPONENTS OF FLUID DISTRIBUTION SYSTEMS

Theodore W. Meyers, Berrington, Ill., assignor to Tuf-Tite, Inc., Wauconda, Ill.
Continuation-in-part of Ser. No. 241,019, May 11, 1994, Pat. No. 5,624,123. This application Sep. 11, 1996, Ser. No. 712,160
Int. Cl.^{6} F16J *15/10*
U.S. Cl. 277—207 A **42 Claims**

1. A seal component for use in poured concrete or plastic tank or box components of a fluid distribution system, said seal component comprising:

a cylindrical wall member having inner and outer surfaces and front and back ends;



a radially-extending anchor flange disposed on said outer surface of said cylindrical wall member;

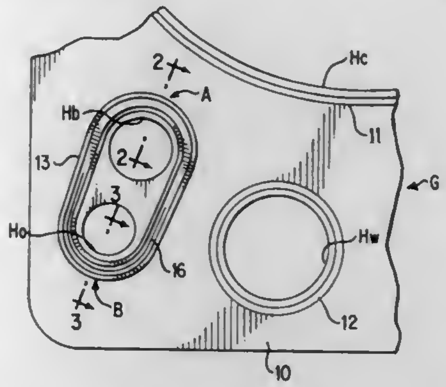
an angled wiper blade having a first end connected to said front end of said cylindrical wall member and having a second free end, said second free end of said wiper blade having a smaller diameter than a diameter of said first end;

a generally circular backplate which extends across and seals the back end of said cylindrical wall member; and

connecting means for removably connecting said backplate to the back end of said cylindrical wall member, wherein said connecting means comprises a generally U-shaped annular groove disposed on said backplate and being defined by an inner first cylindrical portion, an outer second cylindrical portion spaced apart from said first cylindrical portion, and a radially-extending intermediate portion, said U-shaped groove being in shape to receive an annular edge of said back end of said cylindrical wall member.

5,711,537
METAL GASKET WITH A BEAD SURROUNDING BOLT AND OIL HOLES

Susumu Inamura, Utsunomiya, and Yoshio Miyaoh, Tokyo, both of Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan
Filed Dec. 13, 1996, Ser. No. 764,225
Int. Cl.^{6} F16J *15/08*
U.S. Cl. 277—235 B **6 Claims**



1. A metal gasket for an internal combustion engine, comprising:

a metal plate for constituting the metal gasket including an outer periphery for defining the metal gasket, at least one cylinder bore, a first bolt hole, a plurality of second bolt holes, said first and second bolt holes surrounding cylinder bore, and an oil hole situated adjacent to the first bolt hole and situated between the first bolt hole and the outer periphery, and

a bead integrally formed with the metal plate and surrounding only the first bolt hole and the oil hole, said bead being formed of two side walls and a center portion between the two side walls, and having a first portion close to the first bolt hole and a second portion close to the oil hole, the width of the

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center portion at the first portion being smaller than that at the second portion and a standing angle of the side walls relative to the metal plate other than the bead at the first portion being smaller than that at the second portion.

5,711,538
CHUCKING TOOL WITH AN EXPANSION SLEEVE

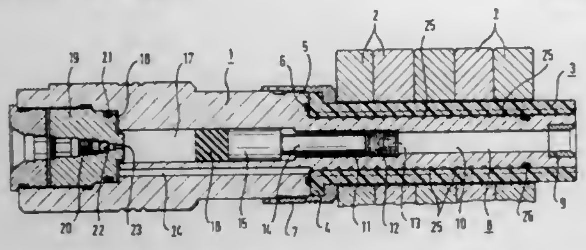
Thomas Retzbach, Bönnigheim, and Gerhard Michler, Ilsfeld, both of Germany, assignors to Fritz Schunk GmbH Fabrik fur Spann-Und Greifwerkzeuge, Lauffen A.N., Germany

Filed Aug. 23, 1996, Ser. No. 702,251

Claims priority, application Germany, Aug. 24, 1995, 195 31 211.2

Int. Cl.^{6} B23B *31/40*

U.S. Cl. 279—2.08 **12 Claims**



1. A chucking tool for precise non-positive chucking of a part such as a workpiece or a tool shank, said chucking tool comprising:
- a base body having an operative wall;
- a machineable expansion sleeve detachably mounted to part of said base body, said expansion sleeve having an operative portion which is elastically deformable in the radial direction;
- axially spaced sealing means providing a pressure space between said operative portion of said expansion sleeve and said operative wall of said base body; and
- means for introducing a hydraulic medium into said pressure space and draining it out;
- said expansion sleeve being made of a thick-walled thermoplastic material having a high creep-rupture strength, said expansion sleeve material capable of being machined to a desired diameter after being affixed on said base body.

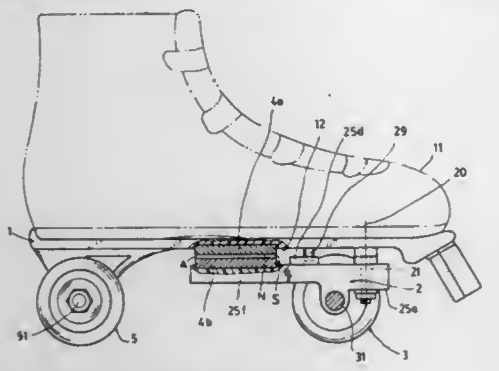
5,711,539
MAGNETICALLY-RESTORED STEERABLE ROLLER SKATE

Kuo-Tai Tang, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan

Filed Apr. 29, 1996, Ser. No. 639,761

Int. Cl.^{6} A63C *1/00*

U.S. Cl. 280—11.27 **4 Claims**



1. A steerable roller skate comprising:
a sole member having a longitudinal axis defined at a central portion thereof and having a pair of rear wheels transversely rotatably secured to a rear bottom portion of said sole member, a steering means having a steering base steerably secured to a front bottom portion of said sole member, a pair of front wheels transversely rotatably secured to the steering base of said steering means by a front axle, a first magnet secured to a central bottom portion of said sole member, and a second magnet secured on said steering base normally positioned under said first magnet, said first and second magnets having opposite magnetic polarities thereof for a mutual magnetic attraction between said first and second magnets for normally restoring the steering base and the front wheels to allow said front axle to be projectivety perpendicular to said longitudinal axis of said sole member for a normal straightforward skating of said roller skate.

5,711,540
ROLLER CARRIAGE HAVING SWINGABLE WHEELS

Erik Markvard Grubbe Nesting, Middelfart, Denmark, assignor to R. D. Impex ApS, Middelfart, Denmark

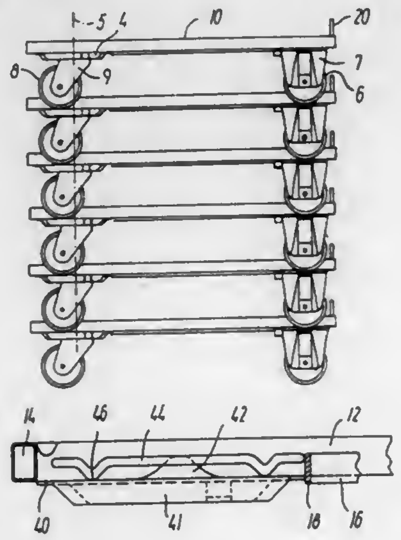
PCT No. PCT/DK93/00432, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/14668, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 21, 1993, Ser. No. 464,786

Claims priority, application Denmark, Dec. 22, 1992, 1537/92

Int. Cl.^{6} B62B *3/16*

U.S. Cl. 280—33.998 **6 Claims**



1. A roller carriage comprising:
- a carriage bottom below which a plurality of wheels are mounted, at least one of said wheels being a swivel castor wheel rotatable about a substantially vertical swivel axis;
- retention means positioned above said swivel caster wheel for retaining an overlaying swivel castor wheel of a similar overlaying roller carriage with the swivel axes being vertically aligned, said retention means being constructed as a substantially horizontal, circular guide track upon which the overlaying swivel caster wheel is supported, the retention means including:
  - an outer engagement member arranged at least partly around an outer edge of the guide track;
  - a central inner engagement member, a rolling movement of said overlaying swivel castor wheel being restricted by said outer and inner engagement members when said caster wheel rests upon said guide track;
  - wherein said outer and inner engagement members each have an engagement surface for restricting the rolling movement of the overlaying swivel castor wheel to the guide track, each of said engagement surfaces having a curvature with an axis of rotation coaxial with said vertical swivel axis and are located at a higher level than a lowest point of said overlaying swivel castor wheel when the overlaying swivel castor wheel rests upon said guide track.

5,711,541
STABILIZATION APPARATUS

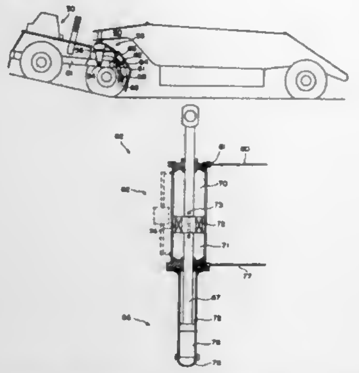
Andrew John Middlin, Bellbowrie, and Keith Larsen, Birkdale, both of Australia, assignors to Hastings Deering (Australia) Limited, Archerfield, and Vipac Engineers & Scientists Limited, Toowong, both of Australia

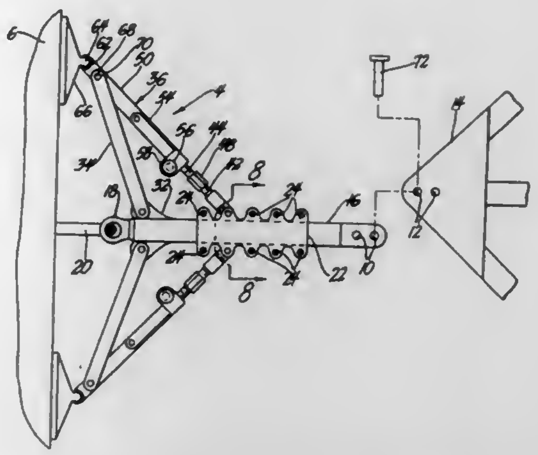
Continuation-in-part of Ser. No. 987,628, Dec. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 715,478, Jun. 14, 1991, abandoned. This application Jun. 8, 1995, Ser. No. 488,720

Claims priority, application Australia, Jun. 15, 1990, PK 0668

Int. Cl.^{6} B60D *1/32*

U.S. Cl. 280—455.1 **9 Claims**





8. In an articulated vehicle comprising a prime mover joined to a trailer by an articulating connection having a longitudinal pivot assembly, said longitudinal pivot assembly providing pivotal movement about a longitudinal roll pivot and a transverse load equalizing pivot, a stabilization apparatus comprising:
- a first cylinder pivot on the longitudinal pivot assembly spaced from the transverse load equalizing pivot;
- a second cylinder pivot on the prime mover and spaced from the transverse load equalizing pivot;
- a double acting hydraulic cylinder assembly extending between and mounted to said first and second cylinder pivots, said double acting hydraulic cylinder assembly having a ram shaft assembly comprising a ram piston having a pair of sides and supported by a ram shaft within a cylinder body, said ram shaft extending to one of said cylinder pivots and said cylinder body extending to the other of said cylinder pivots;
- opposed fluid chambers formed within the cylinder body at opposite sides of the ram piston;
- fluid flow control means for controlling the flow of fluid to and from said fluid chambers for attenuating a pitching movement of the prime mover and including a ram piston bypass passage and a pressure relief valve communicating with the opposed fluid chambers; and
- preload means adapted to maintain the double acting hydraulic cylinder assembly in one of a state of tension and compression between said first and second cylinder pivots.

5,711,542
TRAILER HITCH ADAPTER

Donald H. Kendall, Lapeer County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1996, Ser. No. 613,735

Int. Cl.^{6} B60D *1/54;1/30*

U.S. Cl. 280—491.4 **7 Claims**

1. A hitch adapter for connecting one vehicle to another vehicle, comprising:
- a beam;
- means to connect the adapter to the one vehicle;
- means to connect the adapter to the other vehicle;
- first threaded members pivoted to the beam;
- first complimentary members threaded to the first threaded members;
- second complimentary members threaded oppositely from the first complimentary members and fixed relative to the first complimentary members;
- second threaded members engaging the second complimentary members;
- arm segments having hinge connections to the second threaded members;
- brace arms hinged to the beam and to the arm segments;
- means on the arm segments for limiting swing of the arm segments about the hinge connections;
- means for holding the second threaded members stationary against the limiting means.

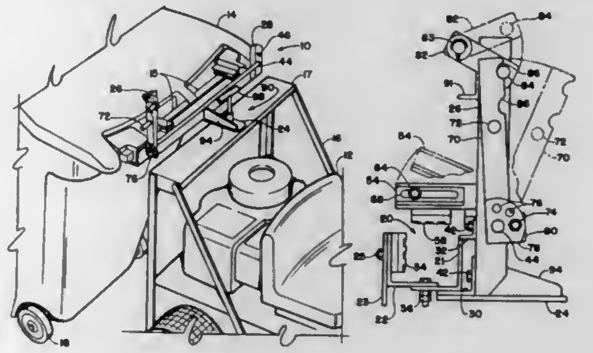
5,711,543
TRAILER ATTACHMENT APPARATUS

Jacque Stokes, 22561 Blue Teal Dr., Canyon Lakes, Calif. 92587

Filed Feb. 1, 1996, Ser. No. 595,392

Int. Cl.^{6} B60D *1/00*

U.S. Cl. 280—504 **16 Claims**



1. Apparatus for connecting a wheeled container to a vehicle which comprises:
- a channel member having a first open side for receiving a wheeled container handle;
- said channel member has first and second opposite vertical walls, a horizontal base portion and said first open side and comprises an elongated angle section forming the first vertical wall and a part of said horizontal base portion and at least one angular bracket forming the second vertical wall and a part of said horizontal base portion;
- connection means between said elongated angle section and said at least one angular bracket for adjusting distance between said first and second vertical walls;
- attachment means secured to said channel member for releasably attaching said channel member to a vehicle;
- pivotable closure means movable between a first position closing said first open side for securing a wheeled container

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handle within said channel and a second position uncovering said open side for entrance and removal of a wheeled container handle;

adjustment means for adjusting the size and configuration of said channel wherein said adjustment means includes a slot in one part of said horizontal base portion and generally transverse to said elongated angle section and a hole in another part of said horizontal base portion alignable with said slot and fastener means extending through said hole and said slot; and

locking means for releasably locking said pivotable closure means in said first position.

5,711,544
AXLE SUSPENSION FOR RIGID AXLES IN VEHICLES

Reinhard Buhl, Bohmte, Germany, assignor to Lemförder Metallwaren AG, Stemwede-Dielingen, Germany

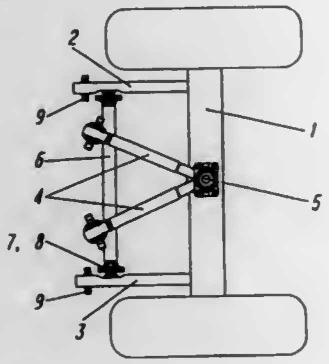
PCT No. PCT/EP96/02365, § 371 Date Jan. 17, 1997, § 102(e) Date Jan. 17, 1997, PCT Pub. No. WO97/00177, PCT Pub. Date Jan. 3, 1997

PCT Filed May 31, 1996, Ser. No. 776,287

Claims priority, application Germany, Jun. 16, 1995, 195 21 875.2

Int. Cl.⁶ B60G *9/02*

U.S. Cl. 280—688 **8 Claims**



1. An axle suspension for rigid axles in vehicles, comprising:

longitudinal control arms which extend generally in the longitudinal direction of the vehicle and a the vehicle axle vertically movably to the vehicle body, said longitudinal control arms each being connected to the vehicle by an articulation and being connected to the vehicle axle by an articulation and each being arranged on each side of the vehicle approximately at the same level;

a triangle pull rod articulated to the vehicle axle and to the vehicle body centrally and laterally offset, said triangle pull rod being at a different level from said longitudinal control arms;

a stabilizer bar including a torsion spring bar counteracting lateral tilting movements by torsional stresses, said stabilizer bar being arranged directly between said longitudinal control arms, said stabilizer bar including ends which are connected to said longitudinal control arms in the manner of a universal joint, but rotating in unison.

5,711,545
AIR BAG SYSTEM

Mark Webner, Hoesbach, Germany, assignor to AlliedSignal Deutschland GmbH, Raunheim, Germany

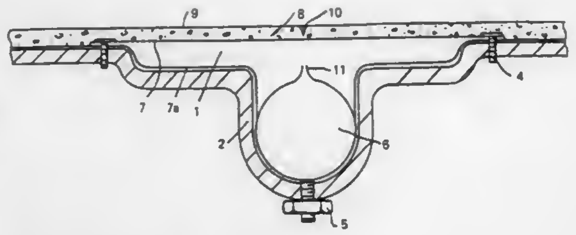
Filed May 31, 1996, Ser. No. 656,623

Claims priority, application United Kingdom, Jun. 2, 1995, 95 11 137

Int. Cl.⁶ B60R *21/16*

U.S. Cl. 280—728.3 **20 Claims**

1. An air bag system for use as a vehicle safety restraint comprising:



a folded air bag:

a vehicle part having an opening therein,

means for securing the air bag to the vehicle part adjacent to the opening,

means for inflating the air bag,

a deployment door means, formed as a component of the vehicle part, for providing a tearable covering about the opening comprising:

a) a pliable flexible thin non-structural protective layer over a portion of the air bag in the vicinity of the opening,

b) a layer of foam covering the protective layer, and

c) a layer of skin adjacent to and covering the foam layer,

wherein the skin is of a material and finish consistent with the decorative finish to the vehicle part to which the air bag is attached and the skin has a line of weakness adapted to sever when subjected to a predetermined pressure, to release the inflating air bag, through the split thus formed, through the protective layer and the foam and skin layers, wherein the foam and skin layers are continuous with foam and skin layers on the vehicle part to which the air bag is attached.

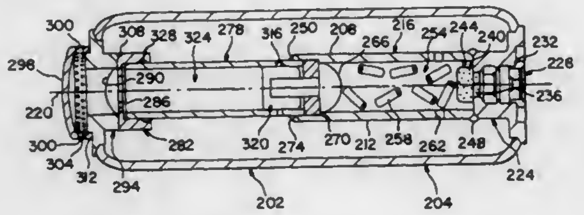
5,711,546
HYBRID INFLATOR WITH COAXIAL CHAMBER

Brian K. Hamilton, Littleton, and Brent A. Parks, Englewood, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Continuation-in-part of Ser. No. 389,297, Feb. 16, 1995, Pat. No. 5,553,889, which is a continuation-in-part of Ser. No. 328,657, Oct. 25, 1994, Pat. No. 5,616,883, which is a continuation-in-part of Ser. No. 210,668, Mar. 18, 1994, Pat. No. 5,602,361. This application Sep. 11, 1995, Ser. No. 518,926

Int. Cl.⁶ B60R *21/26*

U.S. Cl. 280—736 **30 Claims**



1. A hybrid inflator for an inflatable safety system comprising an air/safety bag, said inflator comprising:

an inflator housing which contains a pressurized medium;

a first housing which is interconnected with said inflator housing, disposed within said inflator housing, and radially spaced from said inflator housing, wherein a first chamber is disposed within said first housing, wherein at least a portion of a third chamber is defined by a space between said first housing and said inflator housing, wherein said pressurized medium is contained within at least said third chamber, and wherein said first housing comprises at least one first port to fluidly interconnect said first and third chambers;

a propellant contained within said first chamber;

a propellant ignition assembly adjacent a first end of said first housing;

a second housing which extends from a second end of said first housing opposite said first end of said first housing and which is disposed within said inflator housing;

a main closure disk in fluid communication with a second chamber of said second housing, said second housing including at least one second port which fluidly interconnects said second chamber and said third chamber, wherein said second housing is spaced from said inflator housing whereby said third chamber is further defined by a space between said second housing and said inflator housing; and

at least one outlet port which is fluidly communicable with said third chamber only by rupturing said main closure disk;

wherein at least a portion of a flow out of said inflator is from said first chamber within said first housing, into said third chamber, into said second chamber of said second housing, through said main closure disk after a rupturing of said main closure disk, and through said at least one outlet port.

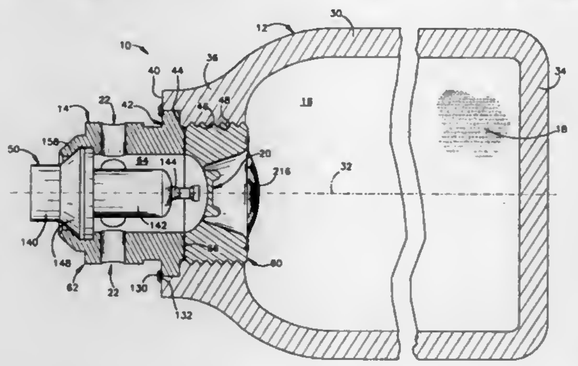
5,711,547
PRESSURE VESSEL WITH TWO-PART CLOSURE STRUCTURE

Jack L. Blumenthal, Los Angeles, Calif., and Paul T. Saccone, Rochester Hills, Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Apr. 8, 1996, Ser. No. 629,350

Int. Cl.⁶ B60R *21/26*

U.S. Cl. 280—737 **38 Claims**



1. Apparatus comprising:

a tank closure having first and second parts which are friction welded to each other, said first part of said tank closure being formed of steel and including a rupturable closure wall, said second part of said tank closure being formed of material comprised at least substantially of aluminum and defining a fluid flow conduit communicating said rupturable closure wall with an outlet opening.

5,711,548
METHOD AND MEANS FOR PROVIDING A PERSONAL MEMORY CALENDAR CONVERTIBLE TO A PERMANENT MEMORY BOOK

Judith Hendler, and Geoffrey Cathers, both of 1018 S. Stanley Ave., Los Angeles, Calif. 90019

Filed May 9, 1996, Ser. No. 647,061

Int. Cl.⁶ B42D *15/00*

U.S. Cl. 283—67 **8 Claims**

1. A method of creating a personal memory book comprising;

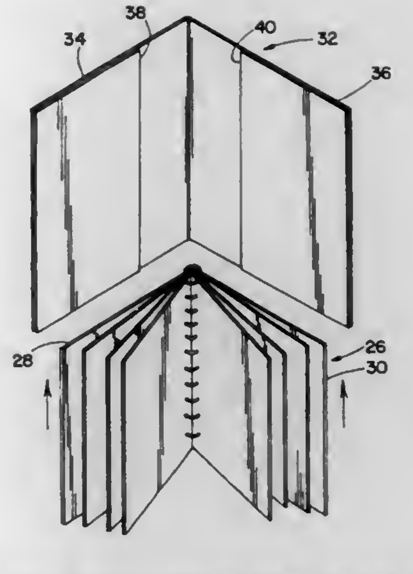
providing a calendar having a page for each month, each of said pages having a blank personal display portion and a monthly calendar portion,

providing a set of selected items of graphic material and designating one of said selected items of graphic material for each of the said blank personal display portions;

printing on each of said blank personal display portions the item of graphic material designated for it;

binding said pages at an edge of each of said pages adjacent said personal display portion;

removing from said pages said monthly calendar portions to provide a remaining collection comprising said personal display portions being bound together;



retaining said collection of personal display portions in a binder.

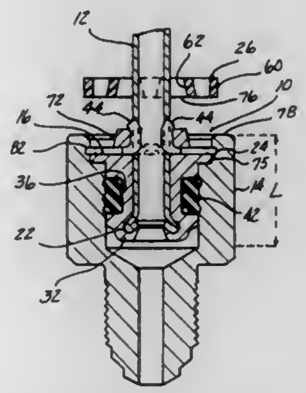
5,711,549
HIGH PRESSURE QUICK CONNECT FOR USE IN AUTOMOTIVE BRAKE SYSTEM APPLICATION

Bruce A. Beans, Waterford, Mich., assignor to ITT Automotive, Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 475,945

Int. Cl.⁶ F16L *35/00*

U.S. Cl. 285—93 **18 Claims**



1. A quick connector for high pressure fluids comprising:

a male connector portion including,

a tube having a flared end, said flared end having an end most portion upturned into said tube; and

a tube retaining means defining a male fitting body having a central aperture for receiving said tube, said male fitting body having a cylindrical lower portion formed over the flared end of said tube to provide a secure attachment to said tube, wherein said male connector portion further includes a latching means for expanding outwardly when in a released position and compressing radially inwardly when in a clasped position.

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5,711,550

CONNECTING DEVICE FOR PIPELINES

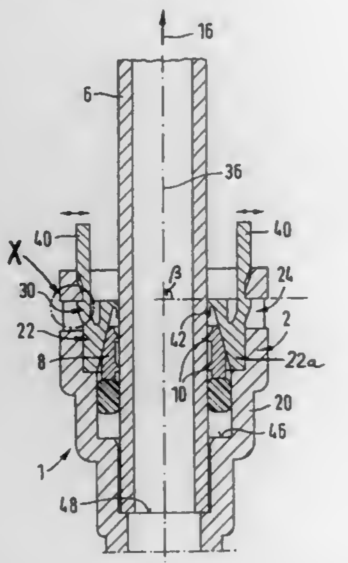
Josef Brandt, Wipperfürth, Germany, assignor to Armaturenfabrik Hermann Voss GmbH & Co., Wipperfurth, Germany

Filed Mar. 21, 1996, Ser. No. 620,082

Claims priority, application Germany, Mar. 21, 1995, 195 10 193.6

Int. Cl.^{6} F16L *17/02*

U.S. Cl. 285—101 **5 Claims**



1. Connection device (**1**) for the rapid and releasable connection of a synthetic pipeline (**6**), comprising in combination:

a housing portion (**2**) with at least one opening (**4**) for inserting the pipeline (**6**);

the housing portion (**2**) having a base portion (**20**) and an insertion portion (**22**) selectively separable from the base portion, the insertion portion defining a perimeter surrounding a pipeline inserted into the opening;

a clamping ring (**8**) within the opening (**4**) of the housing portion and having an outer cone (**12**) operatively associated with an inner cone (**14**) of the insertion portion (**22**) for securing the clamping ring to the pipeline;

the insertion portion (**22**) including means for selectively connecting the insertion portion to the base portion (**2**) via a positive snap connection (**24**), whereby the insertion portion is releasably connected with the base portion so as to selectively release the pipeline with the clamping ring secured thereto from the base portion; and

the insertion portion (**22**) having an inner sealing lip (**42**) extending along the perimeter for a sealing fit on an outer peripheral surface of the pipeline (**6**) received in the opening.

5,711,551

HOSE COUPLING DEVICE

Takeshi Miyazaki; Takumi Narita, and Hidekazu Miyazaki, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Inozawa, Japan

Division of Ser. No. 96,262, Jul. 26, 1993, Pat. No. 5,542,713.

This application May 6, 1996, Ser. No. 642,189

Claims priority, application Japan, Jul. 28, 1992, 4-201555; Jul. 28, 1992, 4-201556

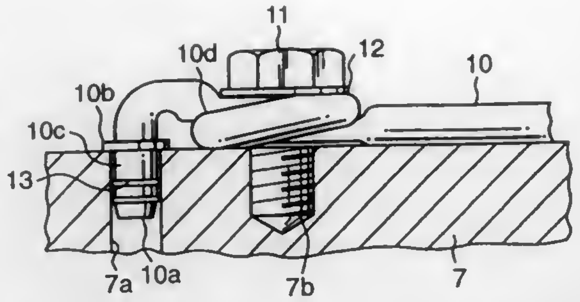
Int. Cl.^{6} F16L *3/04*

U.S. Cl. 285—136.1 **7 Claims**

1. A pipe coupling device comprising:

a pipe providing an extension of a hose, a mating part having a pipe connecting hole, said pipe having a sleeve portion formed at one end thereof for insertion in said pipe connecting hole, a bent portion provided in said pipe adjacent to said sleeve portion, and fixing means spaced from said sleeve portion to positionally fix said sleeve portion to said mating part,

wherein said bent portion comprises an annular coiled portion formed at a predetermined distance from said sleeve portion.



5,711,552

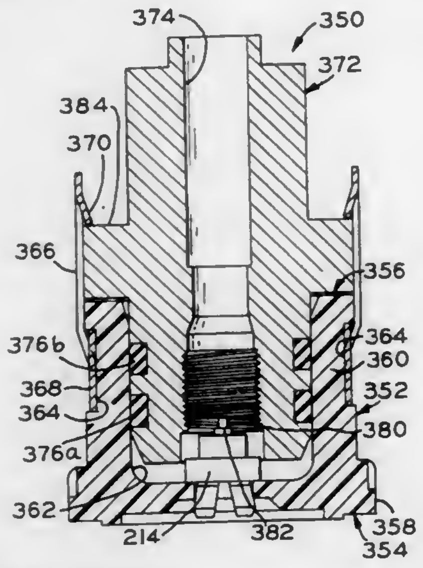
COUPLING

Ronald Lee Hogue, and Kenneth Ray Renkes, both of Morrison, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1995, Ser. No. 416,965

Int. Cl.^{6} F16L *39/00*

U.S. Cl. 285—319 **17 Claims**



1. A coupling, comprising:

a nut member including a first axial end having an opening therein, a second axial end, a housing extending between said first and second axial ends, an annular notch in said housing at a location intermediate said first axial end and said second axial end;

a retaining clip engaged to said nut member at said annular notch, said retaining clip extending beyond the second axial end of said nut member and having angularly offset portions formed at one end thereof;

a mating member including a nut engaging end configured for insertion within said nut member, said mating member having a shoulder which, when said mating member is inserted within said nut member, is engaged by said offset portion of said retaining clip for maintaining engagement between said nut member and said mating member, said mating member further comprising a second end and a channel extending from and between said nut engaging end to said second end, and internal threads at a periphery of said channel adjacent said nut engaging end, said channel located to be in flow communication with said opening in said nut member when said mating member is inserted within said nut member and engaged to said retaining clip; and

a valve depression member located within said nut member opening and configured to extend into said mating member channel when said mating member is inserted within said nut member and engaged to said retaining clip.

5,711,553

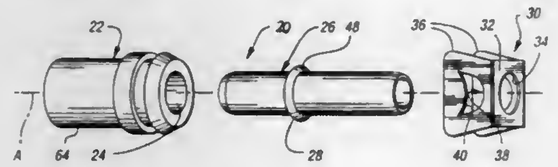
QUICK CONNECT FLUID COUPLING

Harvey S. Bonser, Redford, Mich., assignor to STMC-LLC, Farmington, Mich.

Filed Sep. 4, 1996, Ser. No. 708,336

Int. Cl.^{6} F16L *39/00*

U.S. Cl. 285—319 **15 Claims**



1. In a quick connect fluid coupling including a female connector member having a central passage and also including a tube member that has an annular flange and is received by the passage of the female connector member in fluid communication therewith, the invention comprising:

an attachment clip having a central portion including an opening for receiving one of the members and having a plurality of flat attachment legs extending from the central portion in a spaced relationship to each other, each leg having a window including an attachment edge located within the plane of the flat shape thereof, and each attachment edge having opposite ends and an intermediate portion that extends between the ends thereof and that projects from the ends thereof toward the central portion; and

the female connector member and the annular flange of the tube member each having an associated attachment surface, the attachment surface of one of the members being engaged by the central portion of the attachment clip, the attachment surface of the other member having an inner portion that is engaged by the intermediate portions of the attachment edges of the windows in the legs of the attachment clip to secure the female connector member and the tube member to each other, and the attachment surface of said other member having an outer portion that is located outwardly from the inner portion thereof and farther from the central portion of the attachment clip than its inner portion.

5,711,554

ENCLOSURE SAFETY LATCH

David C. Brown, Chicago; Michael C. Thuma, Des Plaines, and Craig S. Scherer, Wilmette, all of Ill., assignors to BRK Brands, Inc., Aurora, Ill.

Filed May 21, 1996, Ser. No. 651,832

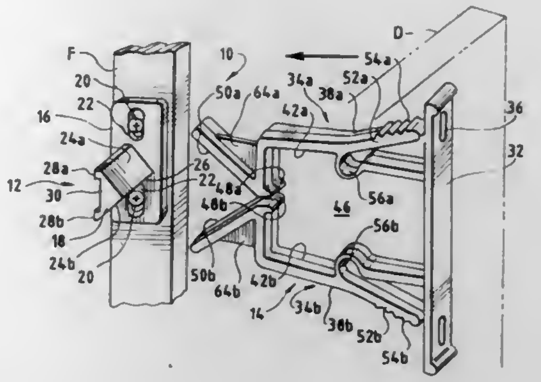
Int. Cl.^{6} E05C *19/06*

U.S. Cl. 292—19 **13 Claims**

1. A safety latch for latching a door of an enclosure to the enclosure, comprising:

a receiving member having a base portion for mounting to a fixed surface of the enclosure, and a receiving post extending from said base portion, said receiving post having first and second diverging surfaces;

a latching member engageable with said receiving post, said latching member having a base portion for mounting to the door, and having first and second generally symmetrical, spaced apart, biased latching elements, said latching elements extending from one end connected to said base portion to a second end and being biased toward one another, and configured for independent locking engagement with said receiving post when said receiving post is inserted into said latching member, each of said latching elements including a releasing member extending therefrom and operably connected thereto for releasing said latching element from locking engagement with said receiving post.



5,711,555

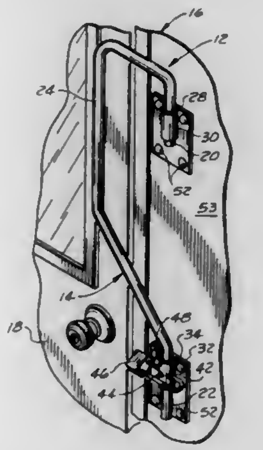
COMBINATION GRAB BAR AND DOOR LOCK

Melvin Leedy, 11771 S. Helen Dr., Yuma, Ariz. 85367-6622

Filed Sep. 7, 1995, Ser. No. 525,363

Int. Cl.^{6} E05C *3/04*

U.S. Cl. 292—202 **5 Claims**



1. In a grab bar system of the type wherein a grab bar is mounted outside a recreational vehicle and adjacent an outward-opening door, the improvement comprising, in combination:

a. a grab bar, lying essentially in a vertical plane, for assisting entry to said recreational vehicle when said grab bar is in a first position in a plane essentially perpendicular to the plane of said door when said door is in a closed position,
   i. said grab bar having a longest horizontal dimension longer than the distance from said door to the location where said grab bar is mounted;

b. mounting means for mounting said grab bar on said recreational vehicle in such manner as to permit pivoting of said grab bar about a vertical axis next to said recreational vehicle; and

c. locking means structured and arranged for
   i. locking said grab bar, for assisting entry to said recreational vehicle, into said first position essentially perpendicular to said plane of said door when said door is in a closed position, and
   ii. locking said grab bar, for barring opening of said door, into a second position adjacent to an outside portion of said door and essentially parallel to said plane of said door when said door is in a closed position;

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d. wherein said grab bar comprises a handle portion having an upper and a lower cylindrical end portion, each said cylindrical end portion being vertical and pointed downward.

5,711,556
LOCK ASSEMBLY

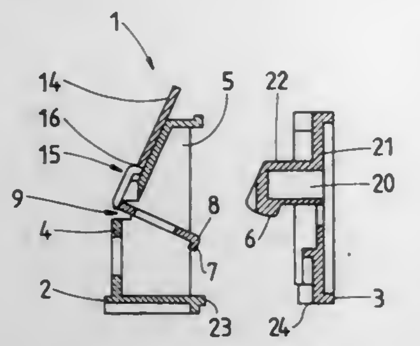
Allan R. Masters, Balgowlah, Australia, assignor to RMD Press Co., Pty., Ltd., Sunshine, Australia

Filed Feb. 14, 1996, Ser. No. 601,501

Claims priority, application Australia, Feb. 14, 1995, PN1126/95

Int. Cl.^{6} E05C *19/16*

U.S. Cl. 292—251.5 **23 Claims**



1. A lock assembly comprising first and second components adapted to be releasably engaged, the first component including a body defining a cavity open at an open side thereof and an element having a latch portion within the cavity and movable between an unlocked and a locked position, and the second component including keeper means with a downwardly depending boss for interlocking with the latch portion under relative movement between the first and second components, the boss of the keeper means arranged for being entered in a generally horizontal direction into the cavity from said open side to a position above the latch portion, to thereby lock the components together, wherein the element is adapted for magnetic attraction to the keeper means, magnetic means being provided in the keeper means for producing said magnetic attraction such that location of the latch portion adjacent the keeper means results in the latch portion moving upwardly into locking engagement with said boss of the keeper means, the arrangement of the element being such that, in the absence of the magnetic attraction, the latch portion is held in the unlocked position by gravity.

5,711,557
DOOR STOP

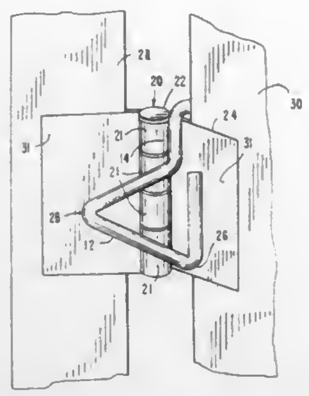
Louis Nicolosi, 1 Westchester Ave., Jericho, N.Y. 11753

Filed Dec. 12, 1996, Ser. No. 764,250

Int. Cl.^{6} E05C *19/18*

U.S. Cl. 292—288 **4 Claims**

1. A lightweight door stop for mounting on a door hinge comprising:
- (a) a single section of wire rod formed and shaped to provide:
  - (i) an inverted, U-shaped support having first and second downwardly-depending legs joined by a trough section, and said support being aligned in a plane; and
  - (ii) a substantially planar base fixed to an end of said first leg of said support, a bottom of said base being aligned in a plane substantially perpendicular to said plane of said support;
- (b) said base having at least three sides and a center opening adapted to receive a gloved finger or carrying means, an end of one of said sides being connected to said end of said first leg of said support;



- (c) said support being adapted to mount on a hinge plate of the door hinge to maintain the door in an open position;
- (d) whereby said support provides for secure mounting of the door stop on various hinges regardless of the configuration of the hinge pin thereof, and whereby means can be directed through said opening for convenient carrying, and the door stop can be gripped through said opening for rapid mounting and removal.

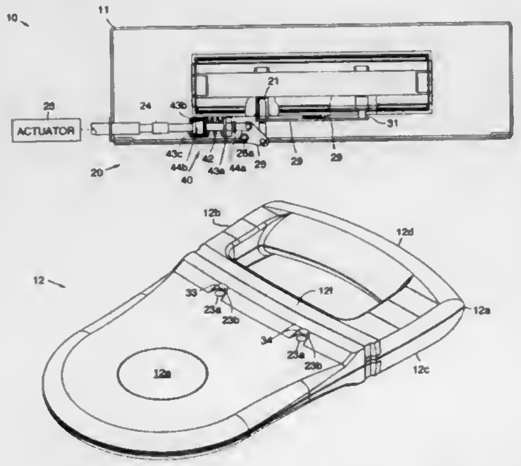
5,711,558
CHARGER LOCKING MECHANISM

George R. Woody, Redondo Beach, Calif., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 26, 1996, Ser. No. 703,277

Int. Cl.^{6} E05B *63/20*

U.S. Cl. 292—335 **5 Claims**



1. A locking charger mechanism for an electric vehicle, comprising:
- a charger port adapted to be mounted on the vehicle and having a slot formed in an exterior wall thereof;
- a charger paddle having a charge coupling portion which is inserted into the slot of said charger port in either of two opposite orientations about a central axis of insertion prior to charging, said charge coupling portion having a pair of openings extending therethrough and a pair of raised stop areas adjacent said openings, and
- a locking mechanism mounted on said charger port including a cable, a rotatable link coupled to a first end of the cable, an actuator coupled to a second end of the cable for moving the cable to thereby move the rotatable link and a first pin oriented perpendicular to said slot and coupled to the rotatable link for movement into an armed position adjacent said slot in response to rotation of the rotatable link by the actuator; and
- a spring loaded release mechanism including a second pin oriented perpendicular to said slot and coupled to a lever mechanism adapted to engage the first pin to prevent said first pin from moving into said slot prior to insertion of said charge coupling portion into said slot, said second pin engaging one of said raised stop areas upon insertion of said charge coupling portion to disengage said lever mechanism from said first pin, permitting said first pin to slide into one of said openings to lock said charger paddle in said charger port;

wherein said openings and raised stop areas are positioned symmetrically about said central axis so that said locking and release mechanisms are effective to lock said charger paddle in said charger port in either of said two opposite orientations of said charge coupling portion.

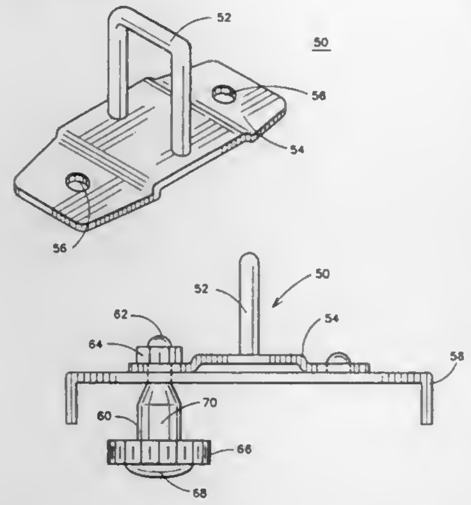
5,711,559
AUTOMOBILE TRUNK LID RELEASE

Roland L. Davis, 2024 Tournament Dr., Apopka, Fla. 32712

Continuation-in-part of Ser. No. 227,967, Apr. 15, 1994, Pat. No. 5,462,320. This application Oct. 31, 1995, Ser. No. 551,069

Int. Cl.^{6} E05B *15/02*

U.S. Cl. 292—340 **4 Claims**



1. A safety release mechanism for releasing a trunk lid of an automobile from within a trunk thereof, the trunk lid including a latch for engaging a staple adapted for mounting on a standard inside the trunk of the automobile, the improvement comprising a single threaded attachment means for coupling the staple to the standard, the attachment means having an enlarged handle positioned for grasping by a person's hand from within the trunk for rotating the attachment means to release the staple from the standard.

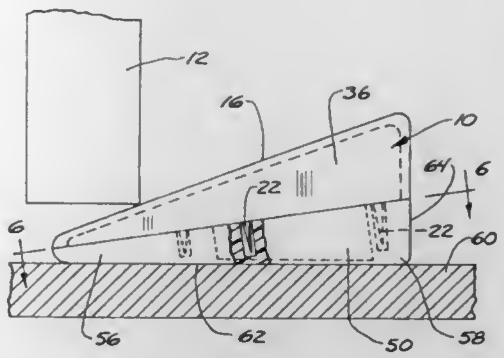
5,711,560
DOOR SECURITY WEDGE

Elnar Gilbertson, 7239 Upton Ave. South, Richfield, Minn. 55423

Filed Jul. 18, 1996, Ser. No. 684,288

Int. Cl.^{6} E05C *17/54*

U.S. Cl. 292—343 **8 Claims**



1. A wedge including a main body molded unitarily from a plastic and having an upper wall having an inclined upper surface extending along a longitudinal length from a lower end portion to a raised portion having a height at a base end, the height of said base end being selected to exceed a selected spacing between a door and floor covering over which the door moves and the lower end portion having a height less than the selected spacing, the wedge having a base wall at the base end, a pair of spaced side walls extending longitudinally from the lower end portion to the base end and forming a hollow interior with the base wall, at least one longitudinally extending brace wall positioned between the side walls to support the upper wall in the hollow interior, and a cross wall extending between and molded to the side walls, and brace wall, downwardly facing edges of the base wall, brace wall, and cross wall lying on a support plane;

and a plurality of grip retainers extending downwardly from the downwardly facing edge of the base wall and a separate grip retainer extending from each of the edges of the side walls and the brace wall, said grip retainers being of a size to engage a floor covering surface to retain the wedge from moving in a longitudinal direction.

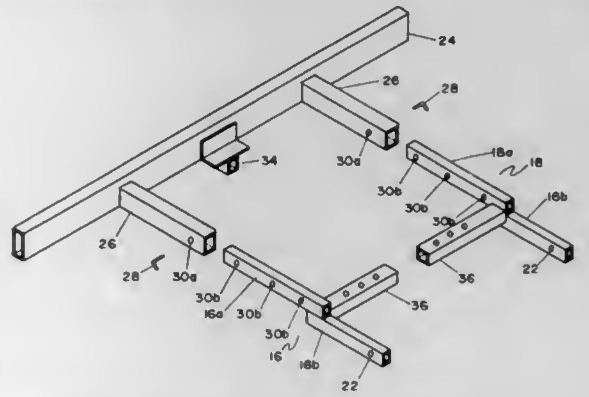
5,711,561
BUMPER MOUNTABLE CAMPER STAND

Richard L. Boysen, 7620 Keddleston Road, Vernon, British Columbia, Canada, V1B 3N7

Filed Apr. 9, 1996, Ser. No. 629,569

Int. Cl.^{6} B60R *19/48*

U.S. Cl. 293—116 **3 Claims**



1. A bumper mountable camper stand comprising:
- a pair of base members, each of said base members having first and second feet members extending longitudinally in opposite relation from each other along a longitudinal axis, and having a pillar member extending perpendicularly from said feet members thereof;
- a cross member extending along a lateral axis and having a pair of tube members extending perpendicularly therefrom;
- first means for releasable mounting said first feet members of each of said pair of said base members in sliding engagement to a mounting member rigidly mounted to, or as part of, a frame of a vehicle:
- second means for releasable mounting said tube members in sliding engagement to said second feet members of each of said pair of said base members; and
- third means for releasable mounting said tube members in sliding engagement to said pillar members of each of said pair of said base members;
- wherein said bumper mountable camper stand has a first configuration for mounting said cross member as a bumper of the vehicle when said tube members are released from said pillar members, wherein said first releasable mounting means releasably mounts said first feet members to said mounting

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member so that said base members are in horizontal attitudes wherein said pillar members are in horizontal opposed facing relation, and wherein said second releasable mounting means releasably mounts said tube members to said second feet members

so that said cross member is in a horizontal attitude to be said vehicle bumper;

and wherein said bumper mountable camper stand has a second configuration forming a support for resting placement of a camper thereon when said first feet members are released from said mounting member and said tube members are released from said second feet members, wherein said pair of base members are each rotated 90 degrees from said horizontal attitudes thereof about said longitudinal axes so as to rotate said pillar members to vertical attitudes, and wherein said cross member is rotated 90 degrees from said horizontal attitude thereof about said lateral axis so as to rotate said tube members downwardly into a generally vertical orientation for said third releasable mounting means to releasably mount said tube members to said pillar members.

5,711,562
BUMPER ASSEMBLY FOR VEHICLES

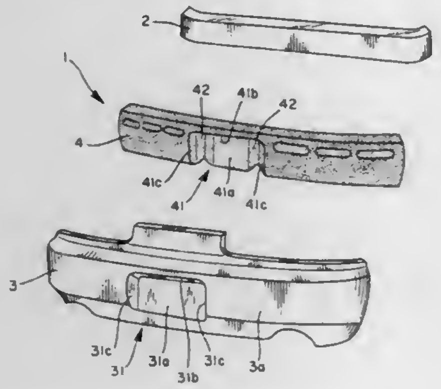
Haruhiko Terada, Oobu; Shinichi Haneda, Anjyo; Kenji Ono, Toyota; Kunio Ohashi, Toyota, and Koji Saeki, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, and Toyota Jidosha Kabushiki Kaisha, both of Japan

Filed Aug. 14, 1996, Ser. No. 699,699

Claims priority, application Japan, Aug. 24, 1995, 7-215658

Int. Cl.⁶ B60R *19/22*

U.S. Cl. 293—120 **4 Claims**



1. A bumper assembly for a vehicle comprising:

a reinforcement adapted to be fixed to a vehicle's body;

an energy absorber secured to the reinforcement for absorbing a shock in collision; and

a bumper cover for covering the energy absorber and serving as a trim;

the energy absorber having a recess which is composed of a bottom surface, side surfaces and cavities, the cavities formed on the bottom surface;

the bumper cover having a concave portion for a license plate which is composed of a bottom wall facing to the bottom surface of the recess of the energy absorber and side walls facing to the side surfaces of the recess of the energy absorber to provide spaces defined by the cavities of the energy absorber and the bottom wall of the concave portion, said side walls being deformable into the spaces.

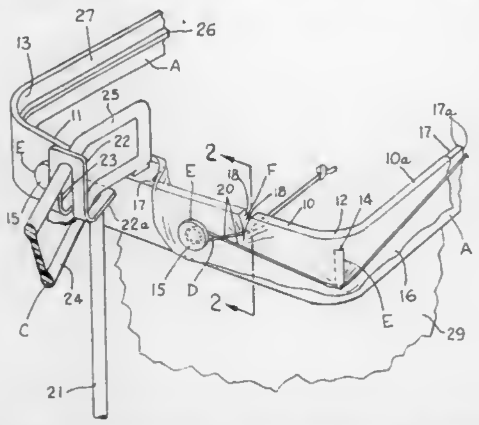
5,711,563
BAGGING APPARATUS AND METHOD

James R. Sapp, 7 Ivy Trail, Greenville, S.C. 29615

Filed Nov. 7, 1995, Ser. No. 551,772

Int. Cl.⁶ B65B *67/12;* B65F *1/06*

U.S. Cl. 294—1.1 **13 Claims**



1. A molded plastic hand carried apparatus for maintaining a plastic bag in open position to receive leaves, trash and the like comprising:

a pair of opposed arms extending outwardly and down;

said arms presenting a substantially flat outer surface affording a skirt about which an open edge of the plastic bag may be disposed with the bag being in open configuration to receive leaves, trash and the like;

an arcuate upper free end portion of said arms holding the bag open between spaced free ends of said arms;

a handle carried at a juncture of said arms extending rearwardly and upwardly therefrom avoiding interference with the flat surface about which an open edge of a plastic bag may be disposed;

an elastic cord held adjacent each said spaced free end of each arm;

guide means carried by said arms for positioning and securing said cord about an open edge of said plastic bag adjacent said flat outer surface releasably fastening said bag about said arms in open position for reception of leaves, trash and the like;

an open slot carried by said arms for receiving said elastic cord after passing about said guide means wedging a marginal portion of said plastic bag into said open slot; and

said elastic cord assuming a reduced cross-section when tensioned so as to wedge said marginal portion of said bag into said open slot, a portion of said elastic cord extending beyond said slot returning to its former larger cross-section upon being released so as to trap said bag in wedged position;

whereby said plastic bag presents a substantially fully opened end portion to facilitate reception of leaves, trash and the like through an opening defined by said arms.

5,711,564
LITTER SCOOP

Terry A. Campbell, 1695 Pearson Avenue, Prince George, British Columbia, Canada, V2L 4K7

Filed Jan. 16, 1997, Ser. No. 784,903

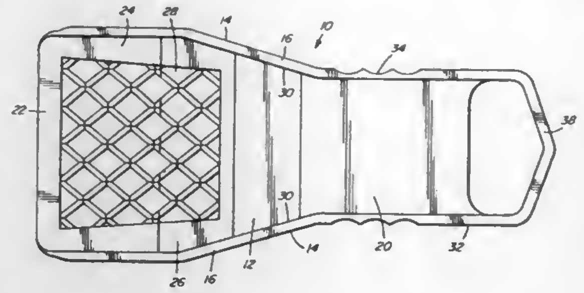
Int. Cl.⁶ A01K *29/00;* E01H *1/12*

U.S. Cl. 294—1.3 **6 Claims**

1. A scoop apparatus for removing animal faeces from litter particles in a litter box comprising:

a. an open channel shaped scoop member having side walls with substantially in line top edges, the side walls having bottom edges joined to a base;

b. an entry lip at one end of said scoop member in line with the top edges of the side walls leading to a substantially flat receiving portion sloped down to the base of the scoop member;



c. a plurality of diamond shaped sifting openings in the receiving portion for sifting out litter particles; and,

d. the scoop member having a handle portion adjacent the receiving portion with a width less than the receiving portion and an exit at the end of the scoop member opposite the entry lip and adapted to have a disposable bag attached thereto.

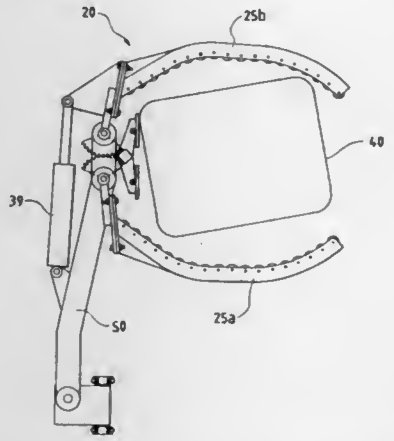
5,711,565
UNIVERSAL ENGAGING MECHANISM FOR COLLECTION CONTAINERS

Fred T. Smith; Fred P. Smith, both of Alpine, and Kevin McAllister, Orem, all of Utah, assignors to Galion Solid Waste Equipment, Inc., Galion, Ohio

Filed Dec. 5, 1995, Ser. No. 568,599

Int. Cl.⁶ B65F *3/04;* B66C *1/44*

U.S. Cl. 294—88 **15 Claims**



1. A universal handling mechanism for engaging containers of different sizes and shapes, the mechanism being movable to facilitate the handling of the containers, comprising:

at least first and second elongate, opposing arms rotatably mounted to a base for movement between a closed position in which the container is engaged by the arms and an open position in which the container is released from engagement by the arms, wherein a distal portion of the first arm is inclined upwardly and a distal portion of the second arm is inclined downwardly;

a retainer located adjacent the base, and between the base and the container;

the arms being adapted when moving toward the closed position to urge the container in a transverse direction toward the base until the container is in a fully engaged position in which it abuts the retainer; and

the retainer and the arms being configured to inhibit longitudinal movement of the container relative to the retainer and the arms, and to also inhibit container sway, during movement of the mechanism and handling of the container.

5,711,566
CONTAINER WITH EXPANDABLE SIDE WALLS

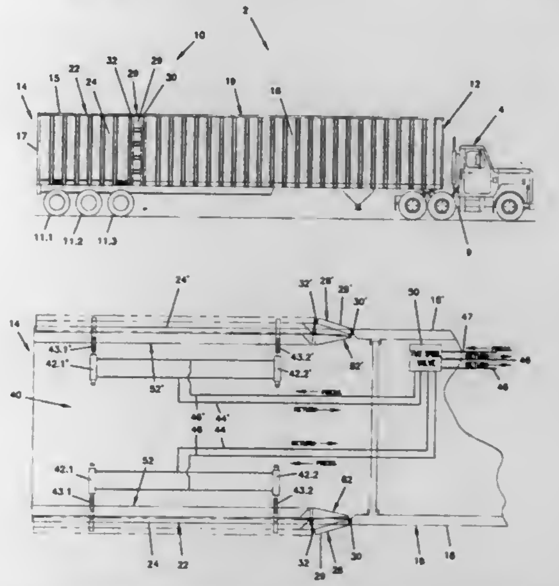
Jerome R. Lesmeister, Morris; David K. Evink, Hancock; Larry A. Krenz, Wheaton; James E. Lesmeister, and Shawn L. Kellen, both of Morris, all of Minn., assignors to Brothers Industries, Inc., Morris, Minn.

Continuation of Ser. No. 428,568, Apr. 25, 1995, abandoned.

This application Mar. 17, 1997, Ser. No. 818,906

Int. Cl.⁶ B62D *33/027*

U.S. Cl. 296—26 **27 Claims**



1. A container for receiving commodities from a loading apparatus, said container attachable to a tractor for transporting the commodities, said container having a vertical side, said container comprising:

a container floor defining a floor plane;

a non-movable front portion extending upwardly from said floor and having a rearward end;

two vertical side walls extending upwardly from said floor, each of said side walls having a forward end, at least one of the vertical side walls movable relative to said floor between an expanded position and a retracted position, said movable vertical side wall being substantially perpendicular to said floor plane when said movable vertical side wall is in said expanded position;

at least one connector mechanism pivotally attached to said movable vertical side wall and pivotally attached to said rearward end of said non-movable front portion, said at least one connector mechanism including a vertical member extending upwardly from said floor, said movable vertical side wall and said vertical member together forming at least a portion of said vertical side of said container; and

a controller for controlling the movement of said movable vertical side wall between said retracted position and said expanded position.

5,711,567
ARRANGEMENT FOR CONNECTING THE DASHBOARD AND THE CENTER CONSOLE

Michael Sinner, Rottenburg; Ulrich Nienhaus, Nagold; Heinz Koukal, and Juegen Koerber, both of Sindelfingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jun. 24, 1996, Ser. No. 669,607

Int. Cl.⁶ B60R *7/00*

U.S. Cl. 296—37.8 **6 Claims**

1. An arrangement for connecting a dashboard and a center console comprising:

a dashboard;

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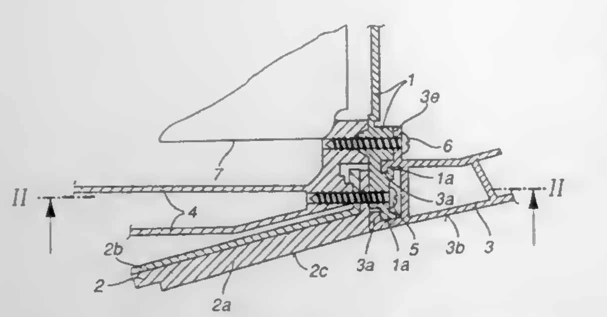


at least one connection element which is detachably mounted on the dashboard said connection element having connection element dovetail guides arranged to extend longitudinally in a downwardly widening manner along a rearwardly facing side of the dashboard; and

a center console having console dovetail guides arranged on a forwardly facing side, said console dovetail guides being configured to engage respective of said connection element dovetail guides in a form-locking manner.

5,711,568

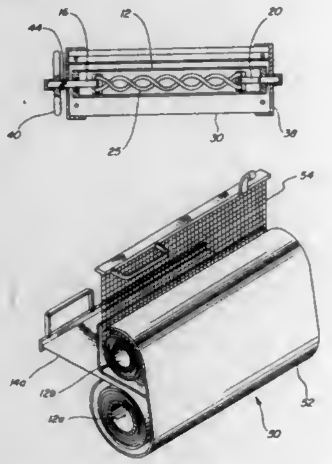
RETRACTABLE CARGO COVER

D.W. Diem, 180 Newport Center Dr., #180, Newport Beach, Calif. 92660, and Roberto Anama, 26 Mesa Ridge Dr., Pomona, Calif. 91766

Filed Feb. 5, 1996, Ser. No. 596,939

Int. Cl.^{6} B60R *5/04*

U.S. Cl. 296—37.16 **5 Claims**



1. A retractable cover for a cargo area of a vehicle defined by three side walls and a passenger seat, the retractable cover including:

a roller formed from an elongate hollow cylinder, said roller having first and second ends;

a flexible cover being wound around an exterior surface of the roller, a first end of the flexible cover being anchored to the roller, a second end of the flexible cover being deployable in a longitudinal direction to unwind the flexible cover across the cargo area;

a fixed rod having first and second ends, said first end of said fixed rod being fixedly connected to the vehicle at approximately a height of a top of the passenger seat, said first end of the roller being rotatably connected to a middle portion of the fixed rod;

a rotating rod having first and second ends, said first end of said rotating rod being rotatably connected to the vehicle at approximately the height of the top of the passenger seat, the second end of the roller being fixedly connected to the middle portion of the rotating rod; and

a bungee cord disposed inside the roller, the bungee cord being fixedly connected to the second ends of the fixed and rotating rods.

5,711,569

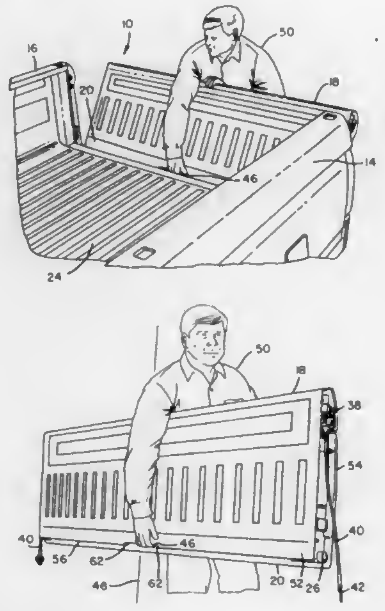
TAILGATE HAVING A CARRYING HANDLE

Brent R. Sovoda, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1995, Ser. No. 566,625

Int. Cl.^{6} B62D *33/03;33/033*

U.S. Cl. 296—57.1 **20 Claims**



1. A tailgate assembly for a pick-up type truck vehicle, comprising:

a tailgate assembly comprising an inner panel, an outer panel, and a bottom panel interconnecting said inner and outer panels;

means provided upon opposite lateral sides of said tailgate assembly within the vicinity of said bottom panel for defining a pivot axis about which said tailgate assembly is pivotable between a vertical closed position and a horizontal open position, and for cooperating with corresponding means provided upon said truck vehicle by which said tailgate assembly may be installed upon said truck vehicle and removed from said truck vehicle when said means of said tailgate assembly is releasably engaged with and disengaged from said corresponding means of said truck vehicle, respectively, as a result of said tailgate assembly being pivotally disposed at a predetermined angular position, between said vertical closed and horizontal open positions, with respect to said truck vehicle; and

handle means defined within the vicinity of said bottom panel of said tailgate assembly and along a centerline thereof intermediate said opposite lateral sides of said tailgate assembly for permitting a person to grasp said tailgate, remove said tailgate from said truck vehicle when said tailgate assembly is disposed at said predetermined angular position with respect to said truck vehicle, and to carry said tailgate assembly away from said truck vehicle in a balanced mode.

5,711,570

TELESCOPIC GLARESHADE FOR AUTOMOBILES

Sheng-Fen Wu, No.224, Wu-Fong N. Rd., and Yu-Chuan Lin, no.37, Fu-Sn St.3,, both of Chia-Yi City, Taiwan

Filed Mar. 21, 1997, Ser. No. 822,456

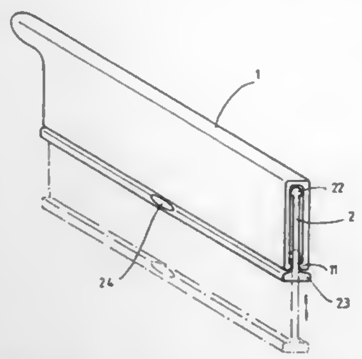
Int. Cl.^{6} B60J *3/02*

U.S. Cl. 296—97.8 **2 Claims**

1. A telescopic glareshade fixable in a vehicle for stopping glaring sunbeams from annoying a driver, comprising:

a rectangular hollow outer shelter;

an inner shade board telescopically housed in said outer shelter;



said outer shelter having a bottom opening extending the full length longitudinally for insertion of said inner shade board;

at said opening a pair of parallel hooked stop protrusions being disposed at each longitudinal rim of said opening;

said stop protrusions being provided with smoothly rounded surfaces;

said inner shade board having a longitudinal bulged top end having a mushroom shaped cross section at the top side and a longitudinal stop flange disposed at the bottom side thereof;

a through hole being disposed at the center of said stop flange for easy holding of said inner shade board;

said bulged top end having a rounded surface so as to be easily pushed into said bottom opening of said outer shelter against said smoothly rounded surfaces of said stop protrusions in assembly;

said bulged top end having hooked portions which can be in limiting engagement with said stop protrusions so as to prevent said inner shade board from disengagement from said outer shelter when said telescopic inner shade board is being pulled to extend to its full length;

said bulged top end being in tight frictional contact with inner walls of said outer shelter and said hooked stop protrusions being clamped against said outer walls of said inner shade board so that said inner shade board is retainable in position when the inner shade board is telescopically adjusted.

5,711,571

OUTER SUPPORT FOR BRACKET AUTOMOBILE SUN VISORS

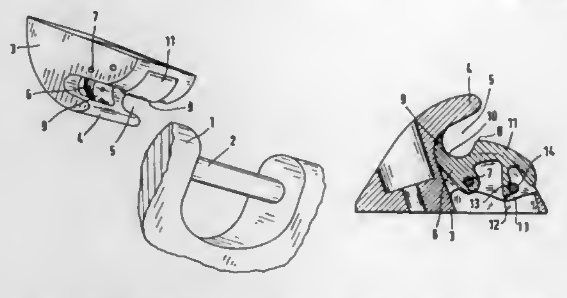
Xavier Renahy, Conflans/Lanterne; Patrick Storck, Echenoz la Meline; Jean Pascal Henneguet, Chemin Variguey, and Philippe Vilquin, Luxeuil les Bains, all of France, assignors to Becker Group Europe GmbH, Wuppertal, Germany

Filed Feb. 3, 1994, Ser. No. 190,908

Claims priority, application Germany, Feb. 3, 1993, 43 02 919.1

Int. Cl.^{6} B60J *3/00*

U.S. Cl. 296—97.13 **10 Claims**



1. An outer support bracket for an outer support shaft of a vehicle sun visor, the bracket comprising:

a mounting member fastenable to a surface of a body of a vehicle, the mounting member including an arm which projects out of the mounting member for defining one side of an introduction slot for receiving the shaft in the mounting member;

a locking element pivotably supported in the mounting member and pivotable between an unlocking position wherein the locking member frees the outer support shaft for introduction into and removal from the introduction slot, and a locking position wherein the locking element retains the outer support shaft in the introduction slot;

a locking projection defined in the locking element at a location which cooperates with the arm of the mounting member for defining the introduction slot for the support shaft; the locking projection being so positioned on the locking element that with the locking element in the locking position, the locking projection and the mounting member arm prevent the outer support shaft from being removed from the introduction slot and so that with the locking element in the unlocking position, the locking projection does not block the insertion of the outer support shaft into and removal of the outer support shaft from the introduction slot;

an unlocking handle connected with the locking element for being operated manually for moving the locking element between locking and unlocking positions; and

detent means engageable with the locking element for holding the locking element in the locking position wherein the detent means comprises an engageable element on one of the mounting member and the locking element and a detent element on the other of the mounting member and the locking element, the detent element having two engageable locations thereon for engaging the engageable element for holding the locking element in the locking position and the unlocking position, respectively.

5,711,572

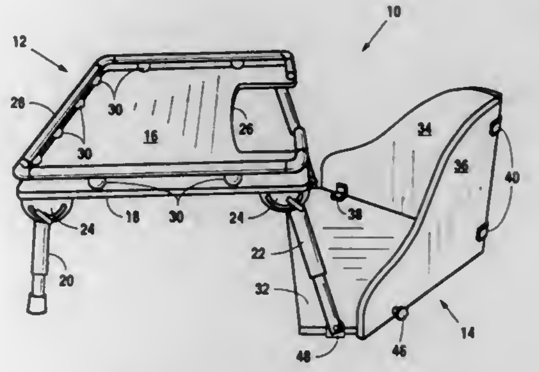
FOLDABLE TABLE AND SEAT ASSEMBLY

Shaukat A. Khan, San Antonio, Tex., assignor to Bonair Rehabilitation Services, Inc., San Antonio, Tex.

Filed Jul. 18, 1996, Ser. No. 685,192

Int. Cl.^{6} A47B *3/14;83/02*

U.S. Cl. 297—140 **8 Claims**



1. A foldable table and seat assembly, comprising:

a table having a top surface, a bottom surface, and a plurality of legs each of which are pivotally attached to the bottom surface of the table and moveable between a folded position at which said leg is disposed at a position substantially parallel with said bottom surface and an operable position at which said leg extends outwardly from said bottom surface; and

a seat pivotally attached to at least one of the legs of said table and moveable from a folded position at which said seat is disposed adjacent said table and an operable position at which said seat is spaced from the bottom surface of said table, said seat having a planar bottom panel and two planar at least one of which is foldably attached to said bottom panel, each of said side panels being movable between a folded position at which side panel is disposed in parallel relationship with said bottom panel and an operable position at which said side panel is substantially orthogonally disposed with respect to said bottom panel and the other side panel, a first one of said

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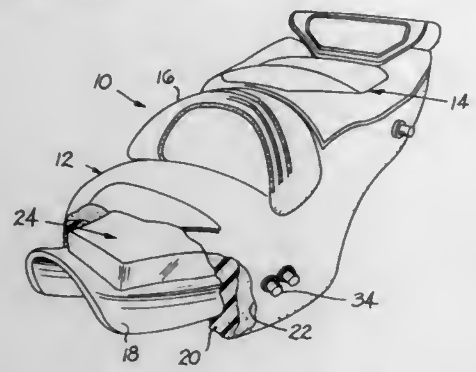
side panels being attached to said bottom panel by a hinge connection and a second one of said side panels being attached to said first side panel by a hinge connection and having an opening extending through said second side panel at a predetermined position, and a means for maintaining said bottom panel and said side panels at said operable position wherein said means includes a threaded pin fixedly attached to said bottom panel and extending outwardly therefrom in coplanar relationship with said bottom panel at a position aligned with said opening through said second side panel when said second side panel is positioned at said operable position, and a threaded nut adapted to threadably engage said threaded pin.

5,711,573

SELECTIVELY DEFORMABLE SEAT

Jerry Daniels, and Michael E. Simonson, both of Ooltewah, Tenn., assignors to Ooltewah Manufacturing, Inc., Ooltewah, Tenn.

Filed Mar. 13, 1996, Ser. No. 615,615
Int. Cl.^{6} B62J *1/26*
U.S. Cl. 297—199 **8 Claims**



1. A seat including a base having an upper surface, a cushion disposed on the base, and filler material disposed on the cushion and the remainder of the upper surface of the base, and a covering disposed over the seat to enclose the base, the cushion and the filler material and defining the exterior surfaces of the seat, said cushion comprising: a resilient multi-cellular foam material capable of holding air within the cellular structure, an air impermeable bladder disposed about said foam material encasing and sealing said foam material within said bladder, a valve including a conduit extending through said bladder in sealed relationship therewith and terminating within said foam material, said valve including an operator disposed externally of said covering for opening and closing communication between said conduit and ambient air external of said seat, whereby air selectively may be expelled from said foam material through said conduit when said foam material is compressed and deformed and air may reenter deformed foam material when compression is relieved.

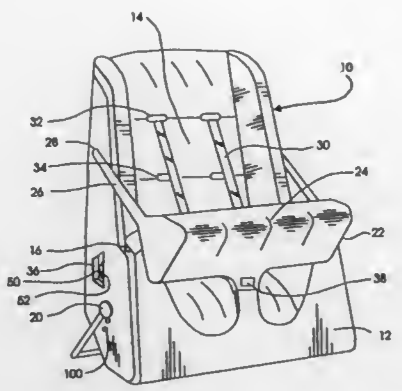
5,711,574

AIR BAG-EQUIPPED CHILD'S VEHICLE SEAT AND ALARM/ARMING SYSTEM THEREFORE

F. Michael Barnes, Dunnellon, Fla., assignor to New Lenox Industries, Inc., Dunnellon, Fla.

Continuation of Ser. No. 276,179, Jul. 15, 1994, which is a continuation-in-part of Ser. No. 92,725, Jul. 16, 1993, abandoned. This application Nov. 28, 1995, Ser. No. 566,566
Int. Cl.^{6} B60N *2/42*
U.S. Cl. 297—216.11 **20 Claims**

1. A child safety and restraint system of a type adapted to be attached in a vehicle to a vehicle seat by fastening of a vehicular seat belt system thereto, said child safety and restraint system comprising:



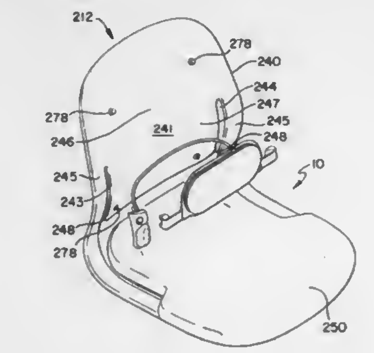
a seat structure having a harness releasably secured to said seat structure;
a first sensing device mounted to said seat structure, said first sensing device being activated when it senses a presence of a child positioned within said seat structure;
a second sensing device mounted to said seat structure, said second sensing device being activated when it senses that said seat structure is secured to said vehicle seat by locking engagement of said vehicular seat belt system;
a third sensing device mounted to said seat structure, said third sensing device being activated when said harness is secured to said seat structure; and
a device for emitting a first audible indication after said first, second, and third sensing devices have been activated.

5,711,575

OFFICE CHAIR AND ADJUSTABLE LUMBAR SUPPORT THEREFOR

R. Scott Hand, Holland, Mich.; Robert W. Pekar, Florence, Mass., and Jeffrey A. Weber, Minneapolis, Minn., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Jun. 6, 1996, Ser. No. 660,760
Int. Cl.^{6} A47C *7/46*
U.S. Cl. 297—284.6 **42 Claims**



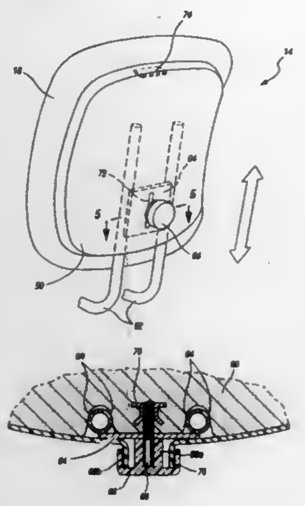
1. An office chair having an adjustable support, comprising:
a seat;
a back shell having a front face and substantially vertical side edge portions;
an air inflatable bladder assembly positioned on said front face, said bladder assembly including an inflatable bladder and a pair of mounting devices extending laterally outward therefrom for attachment to the side edge portions of said shell;
an actuator assembly for selectively admitting and venting air under pressure to and from said bladder, said actuator assembly including a hose in fluid flow communication with a pump device and the bladder, said pump device being accessible to an occupant of the chair;
a cushion covering said back shell and bladder assembly, said cushion adapted to deform in response to actuation of the bladder to provide an adjustable support for the region of the back of a user sitting in the chair; and
said cushion includes an inner shell that conforms generally to said back shell, said inner shell having an outer surface and an inner surface, said inner shell being formed from a rigid material and having a bladder assembly receiving opening formed therein, a cushion having front and back surfaces, said back surface of said cushion secured to the outer surface of said inner shell and interconnecting mechanisms on said back shell and said inner shell for mounting said inner shell on said front face of said back shell.

5,711,576

BACK HEIGHT ADJUSTMENT MECHANISM FOR A CHAIR

Ogden R. Olson, Muscatine, and Loren M. Simmons, Wabello, both of Iowa, assignors to HON INDUSTRIES Inc., Muscatine, Iowa

Division of Ser. No. 375,645, Jan. 20, 1995, Pat. No. 5,542,743. This application May 15, 1996, Ser. No. 647,866
Int. Cl.^{6} B60N *2/22*
U.S. Cl. 297—353 **4 Claims**



1. An adjustable height back for a chair comprising:
a unitary molded back support member defining a main body member of a back of a chair
a frame for connecting the back support member to the seat of a chair, the frame including a pair of parallel spaced tubular members connected by a plate, said plate being provided with a vertical slot;
a pair of channels formed in the back support member, the channels having wedge-shaped side walls and being dimensioned and configured to slidingly receive the tubular members; and
a bolt extending through said slot and into a threaded recess of the back support member;
wherein tightening of said bolt urges the tubular members into engagement with the side walls of the channels to clamp the tubular members directly to the back support member.

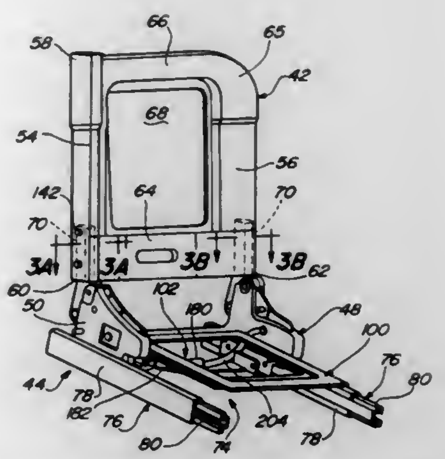
5,711,577

PIVOT ASSEMBLY FOR A STRUCTURED VEHICLE SEAT

John F. Whalen, Macomb, Mich., assignor to Fisher Dynamics Corporation, St. Clair Shores, Mich.

Filed Dec. 1, 1995, Ser. No. 565,987
Int. Cl.^{6} B60N *2/12*
U.S. Cl. 297—361.1 **17 Claims**

1. A structured vehicle seat, comprising:
a lower seat structure;



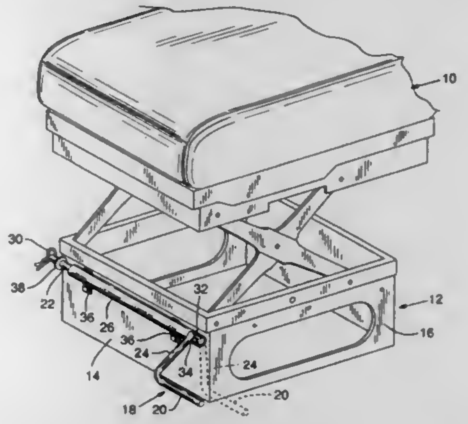
a seatback frame defining an upwardly extending channel;
a safety belt restraint system mounted to and carried by the structured vehicle seat; and
a pivot assembly interconnecting said seatback frame to said lower seat structure, said pivot assembly including a rotatable connector member having a seatback mounting portion fixedly interconnected to the seatback frame and a seat mounting portion pivotally interconnected to the lower seat structure, said seatback mounting portion of said pivot assembly extending within said upwardly extending channel;
said seatback mounting portion of said rotatable connector member includes a pair of spaced apertures which align with a pair of correspondingly spaced apertures in said seatback frame for receiving a pair of fasteners to interconnect said seatback mounting portion and said seatback frame; and
whereby said pivot assembly is operative for interconnecting said seatback frame to said lower seat structure such that the seatback frame is selectively adjustable to a plurality of angular positions.

5,711,578

VEHICLE FOOTREST

Loren E. Wagener, 252 E. Queen, Albany, Oreg. 97321

Filed Aug. 26, 1996, Ser. No. 703,055
Int. Cl.^{6} A47C *7/50*
U.S. Cl. 297—423.3 **7 Claims**



1. In combination with a seat structure having a seat mounted vertically above an underlying fixed supporting base secured to an underlying support and provided with a front side and opposite lateral sides, a footrest comprising:
a) a single tubular sheath secured to the outer side of one of said front and opposite lateral sides of the fixed base,
b) a single angled bar having a footrest segment and a support segment, the support segment being mounted in the single sheath for movement of the footrest segment between an

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extended position projecting forwardly of the base and elevated above said underlying support and a retracted position closely adjacent the front side of the base, and

d) releasable interlocking means for securing the angled bar and sheath together releasably in the extended position of the footrest segment.

5,711,579

LOCKING ARRANGEMENT FOR A HEAD RESTRAINT

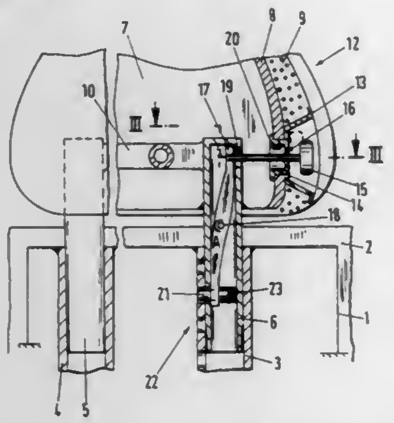
Björn Albrecht, Braunschweig, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

Filed Jun. 28, 1996, Ser. No. 672,537

Claims priority, application Germany, Jun. 28, 1995, 195 23 358.1

Int. Cl.^{6} A47C *7/36*

U.S. Cl. 297—410 **19 Claims**



1. A locking arrangement for a head restraint supported in a vehicle seat comprising a seat frame, a latching array affixed to the seat frame, a head restraint having at least one retaining bar, a blocking element in the retaining bar which can be positioned in a latching manner at various heights with respect to the latching array, and a force-transmitting element within the retaining bar arranged to be acted upon at one end by an operating element associated therewith and operatively connected at another end to the blocking element, thereby causing the blocking element to be engaged with or released from the latching array upon operation of the operating element so as to permit adjustment of the position of the bead restraint.

5,711,580

EXTENDIBLE AND ELEVATING FOOTREST FOR WHEELCHAIR

Hugh Walter Barclay, Kingston, and David Millard Christy, Godfrey, both of Canada, assignors to Advanced Mobility Systems Corporation, Kingston, Canada

Filed Sep. 13, 1996, Ser. No. 713,695

Int. Cl.^{6} A47C *7/50*

U.S. Cl. 297—423.33 **18 Claims**

1. A wheelchair footrest structure for attachment to the frame of a wheelchair, said structure comprising:

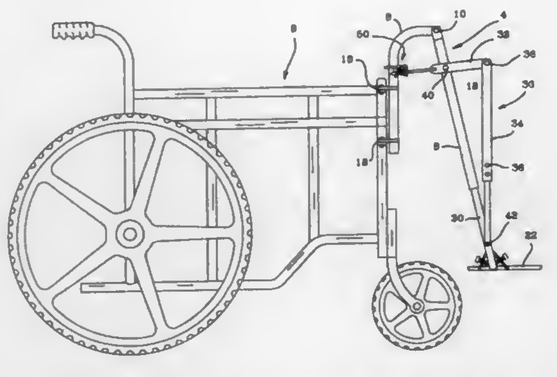
a) an elongate leg structure comprising upper and lower coaxial legs slideably disposed relative to each other;

b) a footrest attached to the lower end of said leg structure;

c) a support attached to the leg structure and hinged to the wheelchair frame at a hinge to pivotally engage the leg structure to the wheelchair frame to permit the leg structure to swing in a generally vertical plane;

d) a folding link comprised of first and second arms, said first arm being pivotally engaged to said upper leg at a first pivot point intermediate the ends of said arm and said leg, respectively, and adapted to pivot in a generally vertical plane, said second arm being pivotally engaged at its lower end to said lower leg at a second pivot point, such that the distance between said first and second pivot points extends as the footrest support structure is elevated; and

e) lock means attached to said support and adapted to releasably engage said first arm, to permit said first arm to slide freely through said lock in a first direction but not in a second direction until actuation of the lock.



5,711,581

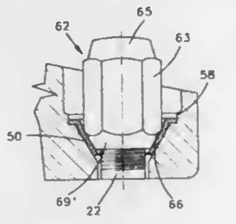
WHEEL OPENING INSERTS AND LUG NUT ASSEMBLIES THEREOF FOR MOUNTING VEHICLE WHEELS

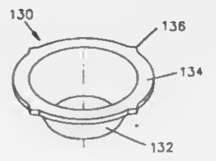
Mark J. Plumer, 980 Amalfi Dr., Pacific Palisades, Calif. 90272

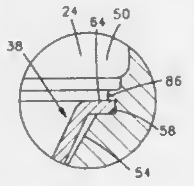
Continuation-in-part of Ser. No. 187,203, Jan. 27, 1994, Pat. No. 5,542,753. This application Jul. 31, 1996, Ser. No. 690,584

Int. Cl.^{6} B60B *3/16*

U.S. Cl. 301—35.62 **57 Claims**







1. An insert for use in stud-receiving openings of metal vehicle wheels and which openings each have a seat at an outer end thereof and a diametrically enlarged shoulder-forming wall surrounding the seat, said insert comprising:

a) a continuous circularly shaped body section adapted for fitted disposition in the seat of a stud-receiving opening of a non-ferrous vehicle wheel;

b) said body section terminating in a circular upper opening distal to the vehicle wheel and having an arcuate upwardly opening lug nut receiving cavity and an arcuate lower opening proximate to the wheel without any skirt connected to the body section and sized to allow a stud to extend therethrough;

c) said lug nut receiving cavity being sized to accommodate a locking head associated with a stud extending through the stud-receiving opening and allowing the head to bear against an interior surface of said lug nut receiving cavity of said body section; and

d) a circular ring flange at the upper opening extending around the upper opening and radially outwardly from an exterior surface of said body section to engage the diametrically enlarged shoulder-forming wall surrounding the lug nut receiving cavity to retentively hold the insert in the stud-receiving opening, said circular ring flange constituting the primary effective locking means for locking the insert in the stud-receiving opening.

5,711,582

PRESSURE CONTROL DEVICE WHEREIN SHUT-OFF VALVES ARE OPENED AND CLOSED IN TIMED RELATION WITH SUCTION AND DELIVERY STROKES OF RECIPROCATING PUMP DEVICE

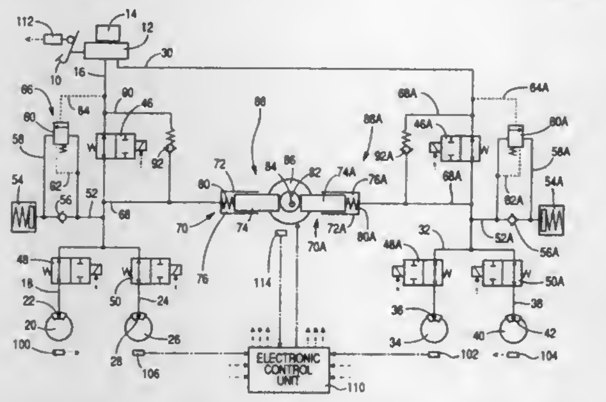
Shin Koike, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 16, 1996, Ser. No. 648,723

Claims priority, application Japan, May 19, 1995, 7-121456

Int. Cl.^{6} B60T *8/48*

U.S. Cl. 303—11 **15 Claims**



1. A hydraulic braking pressure control device wherein a master cylinder and a wheel brake cylinder for braking a vehicle wheel are connected by a fluid passage, said device being comprising:

a first shut-off valve provided in said fluid passage;

a second shut-off valve provided in a portion of said fluid passage between said first shut-off valve and said wheel brake cylinder;

a reciprocating pump device including a housing, a pump piston which is reciprocatingly movable in said housing and which cooperates with said housing to define a variable-volume chamber connected to a portion of said fluid passage between said first and second shut-off valves, and a pump piston drive device for reciprocating said pump piston, said pump drive device including an electric motor as a drive source; and

synchronizing means for opening and closing said first and second shut-off valves in timed relationship with suction and delivery strokes of said pump piston for suction and delivery of a brake fluid into and from said variable-volume chamber.

5,711,583

MAGNETIC CONTROL VALVE FOR A SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEM FOR MOTOR VEHICLES

Alexander Bareiss, and Michael Krauter, both of Charleston, S.C., assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 22, 1996, Ser. No. 701,434

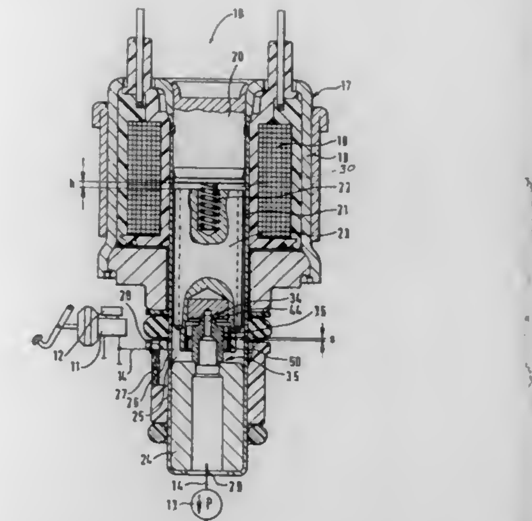
Claims priority, application Germany, Aug. 23, 1995, 195 31 010.1

Int. Cl.^{6} B60T *8/36*

U.S. Cl. 303—119.2 **5 Claims**

1. A magnetic control valve (**10**), for disposition in an intake line (**14**), that extends between a master cylinder (**11**) and an intake side of a pump (**13**), of a slip-controlled hydraulic brake system for motor vehicles comprising:

an armature (**23**) that is longitudinally movable toward a pole core (**20**) counter to a force of a restoring spring (**22**) by an electromagnet (**17**);



the armature (**23**) directly opens an auxiliary valve (**34**), which comprises an auxiliary closing piece (**38**) and an auxiliary valve seat (**39**) of a small sealing diameter;

the armature (**23**) indirectly actuates a main valve (**35**), which has a main closing piece (**42**) and a main valve seat (**43**) of large sealing diameter;

the auxiliary valve (**34**) and the main valve (**35**) are disposed in a valve chamber (**25**), which communicates unthrottled with the inflow side (**28**) of the magnetic valve (**10**);

the auxiliary valve (**34**) and the main valve (**35**) have a common closing body (**36**) which is movable with a limited stroke relative to the armature (**23**) in an armature bore (**49**) and whose stroke (s) is smaller than the armature working stroke (h);

the auxiliary valve (**34**) communicates with the outflow side (**29**) of the magnetic valve (**10**) by means of a conduit (**44**) passing through the closing body (**36**) and the main valve (**35**) communicates directly with the outflow side (**29**) of the magnetic valve (**10**);

a disk (**40**) that has the auxiliary valve seat (**39**) and a stroke-limiting stop ring (**50**) are press-fitted into the bore (**49**) of the armature (**23**).

5,711,584

HYDRAULIC BRAKE APPARATUS FOR PREVENTING SHORTAGE OF BRAKE FLUID IN A MASTER CYLINDER DUE TO FAILURE OF A HIGH PRESSURE SOURCE

Fumiaki Kawabata, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-Ken, Japan

Filed Sep. 26, 1996, Ser. No. 721,155

Claims priority, application Japan, Oct. 9, 1995, 7-261810

Int. Cl.^{6} B60T *13/12;13/68*

U.S. Cl. 303—122.12 **10 Claims**

1. A hydraulic brake apparatus generating a wheel cylinder pressure provided to a wheel cylinder by a high pressure brake fluid provided by a high pressure brake fluid source, the wheel cylinder pressure being controlled in response to a master cylinder pressure generated by a master cylinder, said hydraulic brake apparatus comprising:

a fluid pressure control valve having a spool movable in response to the master cylinder pressure put on one side thereof so as to connect one of said high pressure brake fluid source and a low pressure brake fluid source to said wheel cylinder so that the wheel cylinder pressure is controlled in response to the master cylinder pressure;

a low pressure source passage connecting said low pressure brake fluid source to said fluid pressure control valve so as to supply a low pressure brake fluid to said fluid pressure control valve; and

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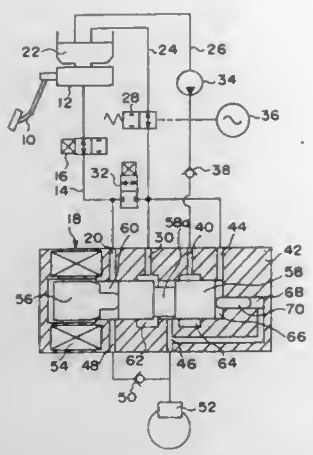


a low pressure source passage control valve for closing said low pressure source passage in the absence of the high pressure brake fluid being provided to said fluid pressure control valve.

5,711,585

WHEEL BRAKE PRESSURE CONTROLLING SYSTEM IN WHICH VEHICLE OPERATING CONDITIONS ARE CALCULATED TO ALTER WHEEL BRAKE PRESSURE

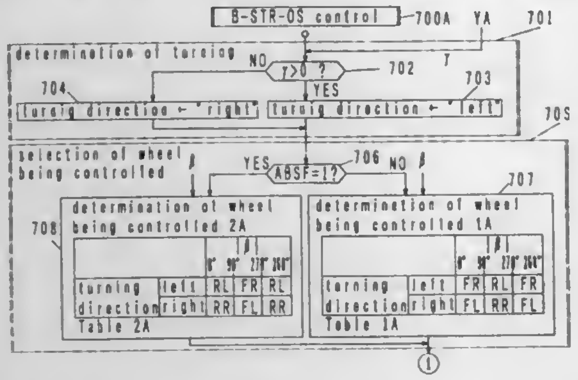
Kenji Tozu, Yokkaichi; Norio Yamazaki, Kariya; Jun Mibara, Toyoake; Takayukl Itoh, Nagoya; Yoshiharu Nisbizawa, Nagoya; Seiichi Kojima, Handa, and Hiromu Kuromitsu, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 27, 1995, Ser. No. 562,809

Claims priority, application Japan, Nov. 28, 1994, 6-292705; Apr. 10, 1995, 7-084052; May 29, 1995, 7-130196

Int. Cl.^{6} B60T *8/04;8/60*

U.S. Cl. 303—146 **8 Claims**



1. A wheel brake pressure controlling system for a vehicle including a first source of pressure for generating a primary pressure corresponding to an operating force resulting from a driver's operation, a second source of pressure for generating a secondary pressure independently from a driver's operation, a brake pressure operating means for selectively supplying one of the primary and the secondary pressure to a plurality of wheel brakes of the vehicle, information processing means for estimating a turning of a vehicle and for judging whether or not the estimated turning of the vehicle lies in an over-steer or an under-steer region and whenever the turning of the vehicle is in an over-steer or under-steer region, for determining at least one wheel brake of the plurality of wheel brakes whose pressure is to be intensified, and output means for supplying the secondary pressure through the brake pressure operating means to the wheel brake which has been determined to have its pressure intensified;

wherein the information processing means judges whether or not a turning of the vehicle lies in a reference region which is located outside the over- or under-steer region, drives the second source of pressure in order to generate the secondary pressure whenever the turning of the vehicle lies in the reference region, determines at least one wheel brake of the plurality of wheel brakes whose pressure is to be intensified, and automatically intensifies the pressure of the wheel brake.

5,711,586

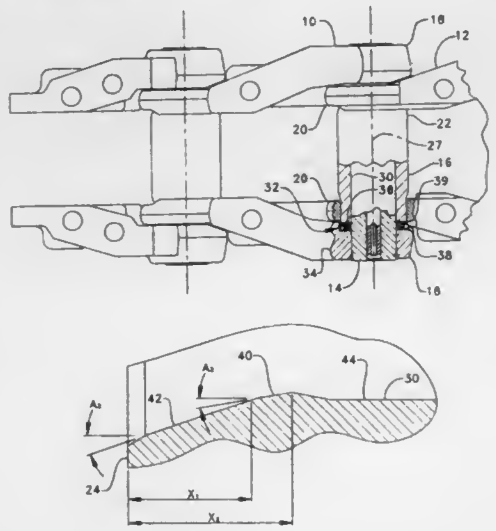
TRACK BUSHING ASSEMBLY AND METHOD

Peter W. Anderton; Lawrence J. Cobb; Joseph D. Groves, all of Peoria, and Dennis R. Shookman, Washington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 3, 1996, Ser. No. 657,253

Int. Cl.^{6} B62D *55/21*

U.S. Cl. 305—201 **9 Claims**



1. A track assembly for use with a track-type machine, comprising:

a first track link having first opposing end portions;

a track bushing having ends mounted in said first opposing end portions and extending therebetween, said track bushing including an inner peripheral surface defining a longitudinal bore having a longitudinal axis and extending through said track bushing between said ends;

a second track link having second opposing end portions;

a track pin mounted in said second opposing end portions and extending therebetween, said track pin being disposed in said longitudinal bore of said track bushing for articulating motion;

said inner peripheral surface defining first and second load bearing portions at each of said ends;

each of said first load bearing portions being a first conical surface having a first angle relative to said longitudinal axis and each of said second load bearing portions being a second conical surface having a second angle relative to said longitudinal axis;

each of said first conical surfaces tapering radially inward from each of said ends at said first angle and each of said second conical surfaces tapering radially inward from each of said first conical surfaces at said second angle, said second angle being less than said first angle.

5,711,587

COVER MOUNTING STRUCTURE FOR SHELF ASSEMBLY

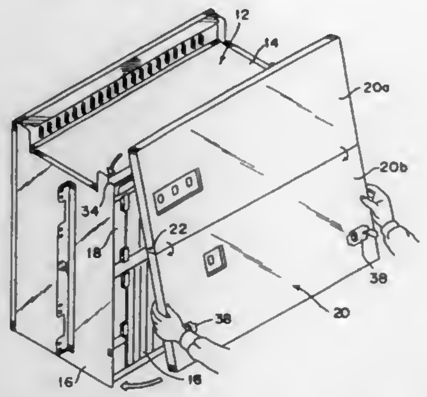
Tetsuya Takahashi; Hisao Hayashi; Shigeru Amagasa; Takashi Sato; Hiroshi Yamaji; Tsutomu Takahashi; Tomoyuki Hongoh, all of Kanagawa, and Koichi Namimatsu, Fukuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 6, 1995, Ser. No. 568,383

Claims priority, application Japan, Mar. 20, 1995, 7-060703

Int. Cl.^{6} A47B *47/00*

U.S. Cl. 312—265.6 **9 Claims**



1. A cover mounting structure of a shelf assembly comprising:

a shelf having a pair on side plates and a plurality of electronic circuit packages mounted in said shelf;

a cover having a front plate, a pair of side plates bent from said front plate at a substantially right angle thereto, and a top plate bent from said front plate at a predetermined angle thereto;

a pair of shafts fixed in the vicinity of upper ends of said side plates of said cover so as to project inside of said cover;

a pair of recesses formed at upper ends of said side plates of said shelf, for receiving said shafts;

a pair of guiding slant surfaces formed at front edges of said upper ends of said side plates of said shelf, for guiding reception of said shafts into said recesses;

wherein said shafts are engaged with said recesses to thereby mount said cover on said shelf assembly; and

locking means for removably locking said cover to said side plates of said shelf;

wherein said cover is divided into at least a first segment and a second segment along a horizontal division line, and said first and second segments are connected by connecting means so as to be bendable inwardly.

5,711,588

BACKLIT KEYPAD ASSEMBLY

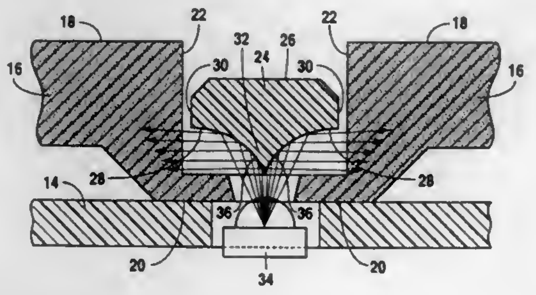
Charles A. Rudisill, Apex, N.C., assignor to Ericsson, Inc., Research Triangle Park, N.C.

Filed Sep. 30, 1996, Ser. No. 723,765

Int. Cl.^{6} H04M *1/22*

U.S. Cl. 362—30 **8 Claims**

1. A keypad assembly, comprising:



a substrate;

a plurality of keys formed of a translucent material and arranged in a planar array over said substrate in parallel relationship therewith, each of said keys having a plurality of side surfaces disposed substantially perpendicular to said substrate;

a cover disposed over predefined portions of each of said plurality of keys and having an upper surface, a lower surface, and a plurality of apertures defined by transverse walls extending from said upper surface to said lower surface, each of said apertures being disposed in surrounding relationship about a respective one of said keys with the transverse walls of each of said surrounding apertures being disposed adjacent a respective side surface of said surrounded key, and at least one embossment extending downwardly from said lower surface of the cover at a position adjacent at least two of said apertures and having at least reflective surface disposed at an angle sufficient to reflect light from a source perpendicular to said substrate to preselected side surfaces of said at least two adjacently positioned keys, said at least one curved reflective surface and at least a portion of the lower surface of the cover having a coating of a light-reflecting, radio-frequency shielding material disposed thereon;

at least one source of light mounted on said substrate and adapted to emit light in a direction substantially perpendicular to said substrate, said source of light being positioned immediately below a corresponding at least one multifaced embossment extending outwardly from the lower surface of said cover.

5,711,589

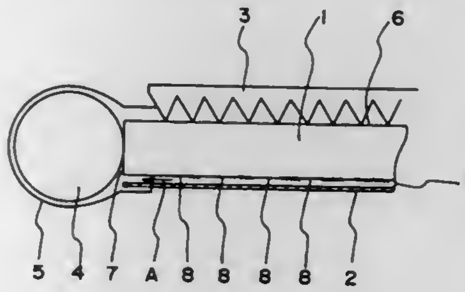
PLANE LIGHT SOURCE UNIT

Makoto Oe, and Issei Chiba, both of Kawasaki, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 79,820, Jun. 22, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 630,467

Int. Cl.^{6} F21V *7/04*

U.S. Cl. 362—31 **4 Claims**



1. A plane light source unit, comprising:

a transparent light guide having a side end surface as a light incident surface, a surface perpendicular to the light incident surface as a light emitting surface, and a light reflecting layer provided on an opposite surface to the light emitting surface; and

a second element having a large number of prism units provided on the light emitting surface of the transparent light guide which receives light emitted from the transparent light guide and at least either one of surfaces provided on each of said prism units providing a total reflection of the light emitted from the transparent light guide whereby each of said prism units emits the light in a predetermined direction;

wherein at least one of the light emitting surface and the opposite surface of the transparent light guide has a directional light emitting function which emits incident light from the light incident surface of the transparent light guide as a directional light having an angle of 60°–70° with respect to a line perpendicular to the light incident surface of the transparent light guide and has a regulation function which makes a luminance of the light through the light emitting surface uniform over a whole surface thereof;

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the transparent light guide having roughened surface with the directional light emitting function opposite to the light emitting surface, the roughened surface having flat areas which form a surface of total reflection so that the ratio of the flat areas to the total area increases as the distance from the light incident surface decreases, so that the transparent light guide regulates the luminance of the light to be uniform over the entire light emitting surface.

5,711,590
HEADLIGHT HAVING VARIABLE LIGHT DISTRIBUTION

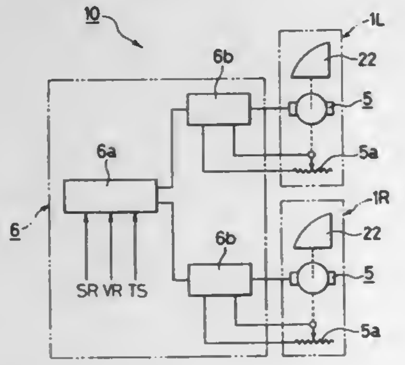
Shinichiro Gotoh, Wako; Toshiaki Aoki, Yokohama; Takashi Futami, and Masahito Okamoto, both of Kawasaki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, and Stanley Electric Co., Ltd., both of Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,300

Claims priority, application Japan, Dec. 29, 1994, 6-338822

Int. Cl.^{6} B60Q *1/12*

U.S. Cl. 362—43 **7 Claims**



1. A headlight having variable light distribution, said headlight comprising:

a reflector;
a light source having an optical axis; and
means for detecting data indicative of
  a swerving motion of an automobile from a steering angle defined by the angle of rotation of a steering wheel;
  an indicator drive signal representing an intended change in direction; and
  the velocity of the automobile and for regulating an illumination pattern reflected from said reflector as a function of said detected data, wherein said reflector is divided into upper and lower sections along a horizontal line located above the optical axis of the light source, of which the lower section operates as a fixed light distribution reflector and of which the upper section operates as a movable light distribution reflector rotatable around a vertical rotary axis substantially intersecting the optical axis of said light source.

5,711,591
BOAT ALERTING SYSTEM

James Jordan, 9877 Simpson Ave., Quinton, Ala. 35130-8100

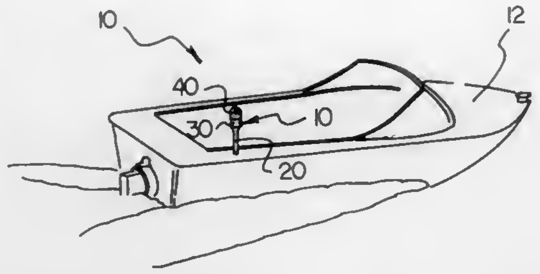
Filed Sep. 27, 1996, Ser. No. 720,049

Int. Cl.^{6} B60Q *1/02*

U.S. Cl. 362—61 **3 Claims**

1. A Boat Alerting System comprising:

a hollow aluminum shaft removably secured to a boat;
a waterproof electronics housing secured to an end of the hollow aluminum shaft opposite of the boat;
a transparent light housing secured to the waterproof electronics housing opposite of the hollow aluminum shaft;



a lighting means secured within the waterproof electronics housing and the transparent light housing;
at least three female electrical connections connected electronically to the lighting means, the female electrical connections mating with corresponding male electrical connections which are electronically connected to a boat's electrical system, wherein the lighting means includes:
  an electronic inverter electronically connecting to a manually switched power source of the boat's electrical system, through a first one of the female electrical connections and corresponding male electrical connection wherein the electronic inverter produces a pulsating electrical current;
  a diode electronically connected between the electronic inverter and a ground of the boat's electrical system through a second one of the female electrical connections and corresponding male electrical connection;
  a xenon flash tube electronically connected to the electronic inverter for producing the strobing lights, said xenon flash tube being substantially centrally positioned within the transparent light housing;
  at least two incandescent bulbs electronically connected in series with a constant power source of the boat's electrical system and the ground of the boat's electrical system through a third one of the female electrical connections and the second one of the female electrical connections and corresponding male electrical connections.

5,711,592
LAMPLIGHT DEVICE FOR VEHICLE

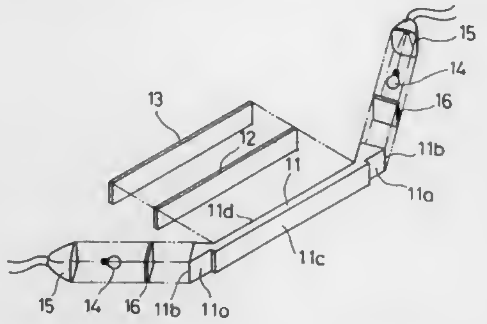
Yoshihiko Hotta, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1995, Ser. No. 542,452

Claims priority, application Japan, Oct. 25, 1994, 6-283991

Int. Cl.^{6} B60Q *1/30*

U.S. Cl. 362—80 **20 Claims**



1. A lamplight device for a vehicle comprising:

a reflection type optical member installed on a light-impervious, exterior surface of a vehicular body and adapted to reflect light of a specific wave length;
a light projecting means for projecting light of said specific wave length; and
a light guiding means for guiding the light projected from said light projecting means to an outer surface of said reflection type optical member.

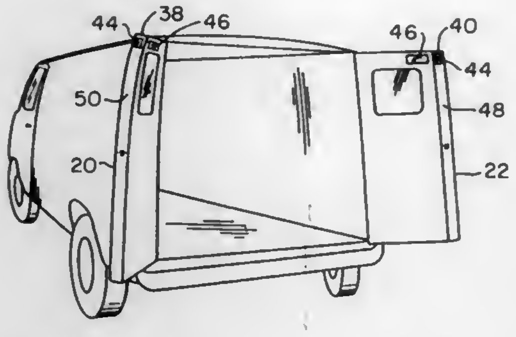
5,711,593
REAR VAN DOOR TRIAD LIGHTS

Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570

Filed Dec. 2, 1996, Ser. No. 758,677

Int. Cl.^{6} B60Q *1/26*

U.S. Cl. 362—80 **1 Claim**



1. Improvements for providing a safe environment for loading and unloading out of the rear of a van of a type having a body with right and left pivotally hinged doors and tail lights displayed to an oncoming motorist located outwardly of a hinge axis of said right and left doors illuminated by a battery of said van, wherein said tail lights are obscured to said oncoming motorist when said right and left doors are in an open condition, said improvements comprising an additional battery-operated cooperating two door-supported light means having an operative position strategically located as a pair in said cooperating relation with each other in side-by-side position centrally of a top edge of said left and right doors, wherein one of said light means is at a centrally located corner of said left door and the other of said light means is at a centrally located corner of said right door such that in a closed condition of said left and right doors said strategic locations of said light means present a light display supplementing the light display of said tail lights, and each said light means having two lens means at right angles to each other on said supporting door operatively effective for the transmission of light therethrough, whereby also in an open condition of a door to an extent which obscures from view a tail light there is presented a triad light display presented to an oncoming motorist.

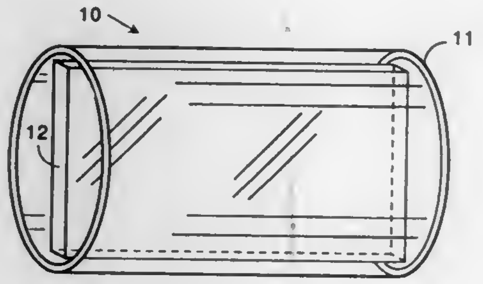
5,711,594
TUBULAR EL LAMP

William E. Hay, Gilbert, Ariz., assignor to Durel Corporation, Chandler, Ariz.

Filed Nov. 22, 1994, Ser. No. 343,320

Int. Cl.^{6} G01D *11/28;* **F21S** *3/00;* **H05B** *33/00*

U.S. Cl. 362—84 **15 Claims**



1. An electroluminescent lamp comprising:

a translucent tube having a length between two ends; and
a strip of electroluminescent material extending along said length, wherein said tube has an inside diameter and said strip is wider than said inside diameter and said strip is convex.

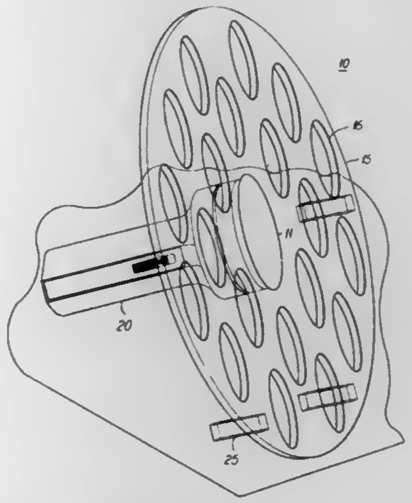
5,711,595
ILLUMINATED SERVING TRAY

James Robert Gerbe, 183 Lillian Rd., Nesconset, N.Y. 11767

Filed Aug. 23, 1995, Ser. No. 518,208

Int. Cl.^{6} F21V *9/00*

U.S. Cl. 362—84 **23 Claims**



1. An illuminated hand-held serving tray, comprising: a hand-held tray, having a plurality of openings, and formed of a light permeable photo-luminescent material; and at least one light source connected to a first surface of said tray for uniform light dispersion; reflective material on at least a portion of a second surface of said tray, said reflective material being placed directly opposite and over said light source to reflect escaping light back into said tray, so that when said at least one light source shines on said tray said reflective material reflects the light from said light source throughout the light-permeable, photoluminescent material of said tray so as to illuminate said tray throughout.

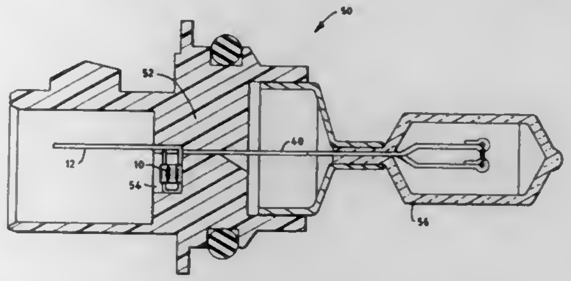
5,711,596
MECHANICAL ELECTRICAL CONNECTOR FOR AN ELECTRIC LAMP

John B. Hoover, Canterbury, and Daniel D. Devir, South Sutton, both of N.H., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Aug. 28, 1995, Ser. No. 520,152

Int. Cl.^{6} H01R *33/00*

U.S. Cl. 362—226 **5 Claims**



1. A mechanical and electrical connector for an electric lamp lead with a diameter comprising:

a contact arm, a clamp base coupled at a substantial angle to the contact arm thereby forming a joint line between the contact arm and the clamp base, and a clamp arm coupled to the clamp base with the clamp arm having a contact point on an end away from the joint with the clamp base, the clamp base and the clamp arm having lengths differing by not more than the lead diameter, with the contact point being positioned close to the contact arm, the clamp base further having a formed lead hole to receive a lamp lead, so that the lamp lead may be extended through the lead hole and between contact

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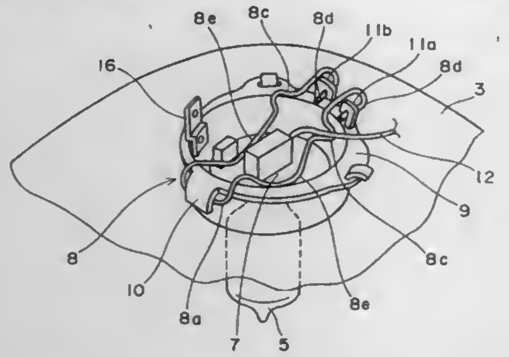
arm and the clamp arm, and securely pinched between the contact arm and the contact point of the clamp arm.

5,711,597
LAMP BULB SECURING STRUCTURE

Masayoshi Unno, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1996, Ser. No. 659,241
Claims priority, application Japan, Jun. 21, 1995, 7-178258
Int. Cl.^{6} H01R *33/00*
U.S. Cl. 362—226 **19 Claims**



10. A set spring having a resilient force for securing a lamp bulb to a bulb mounting member having a first hook member and a second hook member, the set spring being formed of a wire and comprising:

an intermediate part hooking on said first hook member of said bulb mounting member;

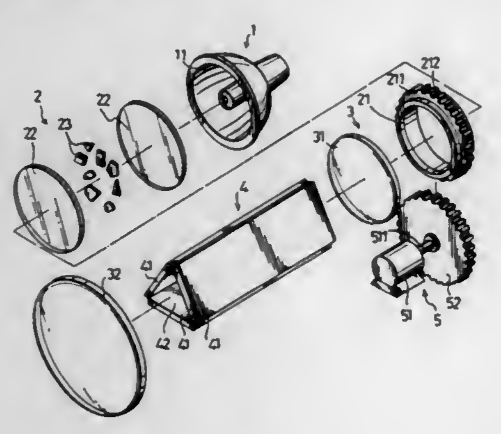
a tip end part constituted by a distal end of said wire, which is bent inward to form a curved peak part with said distal end extending toward an inside of said bulb mounting member, said peak part hooking on said hook member of said bulb mounting member;

a depressing part disposed between said intermediate part and said tip end part, said depressing part urging the lamp bulb against said bulb mounting member; and

an operation part disposed between said intermediate part and said tip end part, wherein during installation, a user presses against said operation part to laterally displace said peak part so as to engage said peak part with said second hook member.

5,711,598
LAMP DEVICE FOR PRODUCING A KALEIDOSCOPIC LIGHT OUTPUT

I-Fu Tseng, Hsien, Taiwan, assignor to George Weng, Taiwan
Filed Feb. 6, 1996, Ser. No. 596,054
Int. Cl.^{6} F21V *9/00*
U.S. Cl. 362—284 **3 Claims**



1. A lamp device comprising:

a light emitting unit for emitting a light beam;

a light filtering unit having a glass-holding frame extending around said light beam, a pair of flat glasses fixed opposedly to said glass-holding frame to define a space between said flat glasses, a damping fluid received in said space, and a plurality of colored glass fragments dispersed in said damping fluid, said light filtering unit being positioned adjacent said light emitting unit so that said light beam from said light emitting unit can pass through said flat glasses and said colored glass fragments of said light filtering unit;

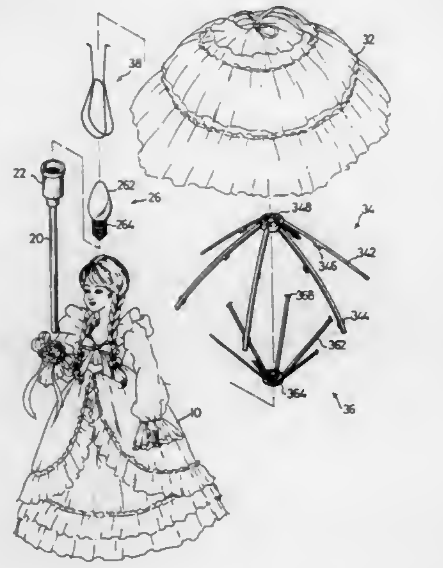
means for rotating said light filtering unit while maintaining said glass holding frame of said light filtering unit in said light beam, said glass-holding frame of said light filtering unit engaging said rotating means;

first and second focusing lenses spaced opposedly from one another, said first focusing lens being positioned adjacent said light filtering unit; and

a total internal reflection unit mounted between said first and second focusing lenses so that said light beam from said light filtering unit can be emitted through said first focusing lens, reflected in said total internal reflection unit, and emitted out by said second focusing lens, thereby producing a kaleidoscopic light output.

5,711,599
LAMPSHADE

Chih-chen Teng, 4th Fl., No. 41, Lane 286, Sec. 1, Chienkwo S. Rd., Taipei, Taiwan
Filed Nov. 29, 1995, Ser. No. 563,967
Int. Cl.^{6} F21V *1/06*
U.S. Cl. 362—352 **12 Claims**



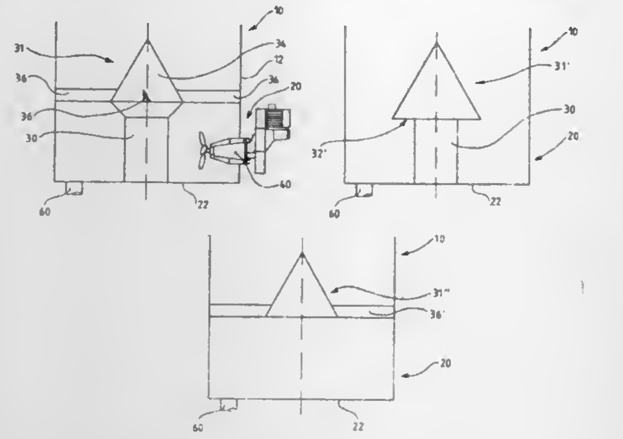
1. A lampshade, comprising:

a foldable frame having a foldable upper frame: and a foldable lower frame pivotably connected with the upper frame;

a shade being attached on the upper frame; and a resilient mounting fitting detachably fitted on the frame, having an upper portion engaged with the frame and a lower portion adapted to be engaged with an incandescent bulb of a lamp.

5,711,600
HIGH CONSISTENCY PULP TOWER WITH A PARTING MEMBER AND THE INTRODUCTION OF DILUTION LIQUID

Olavi Toukonummi, Hajala, Finland, assignor to Ahlstrom Machinery Corporation, Noormarkku, Finland
Filed Jun. 7, 1995, Ser. No. 475,997
Claims priority, application Finland, Jun. 9, 1994, 942709
Int. Cl.^{6} B01F *5/04;* **D21C** *7/08*
U.S. Cl. 366—171.1 **34 Claims**



1. A high consistency pulp tower comprising:

a tower having a side wall, bottom, generally vertical axis, and bottom portion above said bottom;

means for diluting high consistency pulp in said bottom portion, defining a dilution zone;

pulp discharge means from said dilution zone;

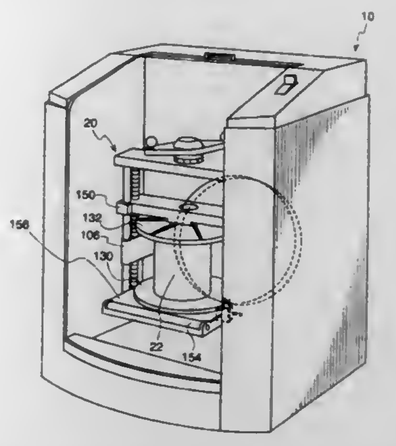
a parting member comprising a cone, cone frustum, pyramid, or pyramid frustum, extending upwardly from its base, disposed in said bottom portion above said diluting means and pulp discharge means, said parting member constructed so as to define a first cross-sectional flow area between said parting member and said side wall which is smaller than a second cross-sectional flow area below said parting member, in said dilution zone; and

a pillar disposed in said bottom portion, said pillar having a lower end supported at least in part by said tower bottom, and said pillar having an upper end connected to said parting member, said pillar at least in part supporting said parting member; and

wherein the ratio of the area between said base of said cone, cone frustum, pyramid, or pyramid frustum and said side wall, to the area between said lower end of said pillar and said side wall, is between 0.5–0.95.

5,711,601
MIXING APPARATUS FOR PULVERULENT MATERIALS

Edward George Thomas, Schaumburg; William Albert Miller, Buffalo Grove, and Margaret Mary Lowan, West Chicago, all of Ill., assignors to Fluid Management, Inc., Wheeling, Ill.
Filed Jun. 21, 1996, Ser. No. 670,184
Int. Cl.^{6} B01F *11/00*
U.S. Cl. 366—209 **18 Claims**



1. Mixing apparatus for pulverulent materials, comprising:

a pair of opposed pressure plates;

first frame means for mounting the pressure plates for movement toward and away from each other, between clamped and unclamped positions, into and out of clamping engagement with a container disposed between the pressure plates, respectively;

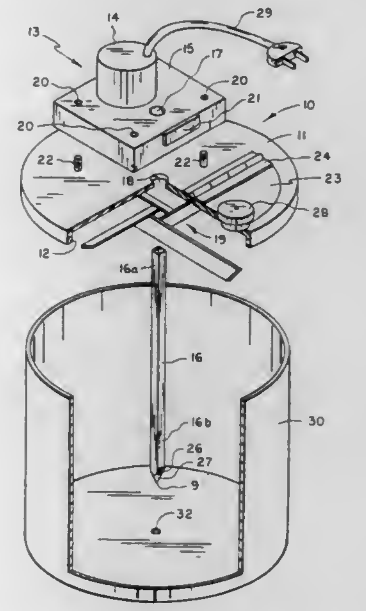
second frame means for mounting the pressure plates for a mixing motion which mixes the contents of the container;

clamp drive means mounted on the first frame means for moving at least one of the pressure plates between the clamped and unclamped positions, the clamp drive means including a crank arm, means for rotatably mounting the crank arm to the first frame means, and at least one manually graspable handle means mounted on the crank arm for movement between locked and unlocked positions; and

lock means carried by the first frame means for locking the crank arm against rotation in a first direction and for unlocking the crank arm when the crank arm is moved in a direction opposite to the first direction, the lock means comprising ratchet gear means carried by the first frame means and pawl means carried by the crank arm, the pawl means including a lever arm pivotally mounted to the crank arm and a pawl member pivotally mounted to the crank arm, with one of the crank arm and the pawl member carrying a pin and the other of the crank arm and the pawl member defining an aperture for receiving the pin, so that as the lever arm is pivoted, the pawl member is disengaged from the ratchet gear means.

5,711,602
MOTORIZED STIRRING MECHANISM FOR A POT

Wesley Rohring, 4158 E. Lake Rd., Wilson, N.Y. 14172, and John A. Cecala, 6 Tanglewood Dr., East, Orchard Park, N.Y. 14127
Filed Mar. 14, 1997, Ser. No. 818,323
Int. Cl.^{6} B01F *7/20;* **A47J** *43/044*
U.S. Cl. 366—251 **7 Claims**



1. A motorized stirring mechanism for a pot, comprising:

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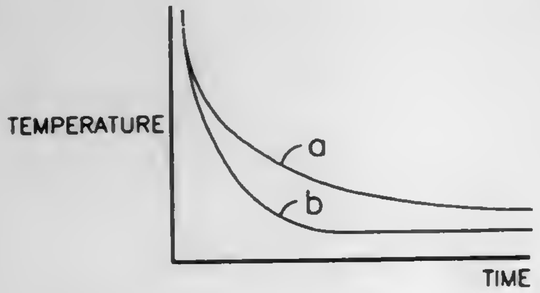
a round disc-like pot cover having a flange extending downwardly from an outer edge thereof and also having an aperture in the center of said cover;
a combination motor-gearbox operatively arranged to be temporarily secured to said cover, said motor-gearbox having an aperture therein which aligns with said cover aperture when said motor-gearbox is secured to said cover;
a shaft operatively arranged to pass through said apertures, said shaft operatively arranged to lockingly engage gears of said motor-gearbox when positioned within said motor-gearbox aperture; and
an impeller operatively arranged to slidingly engage said shaft longitudinally and lockingly engage said shaft rotationally such that said impeller rotates in unison with said shaft.

5,711,603
NONDESTRUCTIVE TESTING: TRANSIENT DEPTH THERMOGRAPHY

Harry I. Ringermacher, Bloomfield; Raymond J. Archacki, Jr., Wethersfield, and William A. Veronesi, Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 30, 1996, Ser. No. 739,572
Int. Cl.^{6} G01N *25/72*
U.S. Cl. 374—5 **14 Claims**



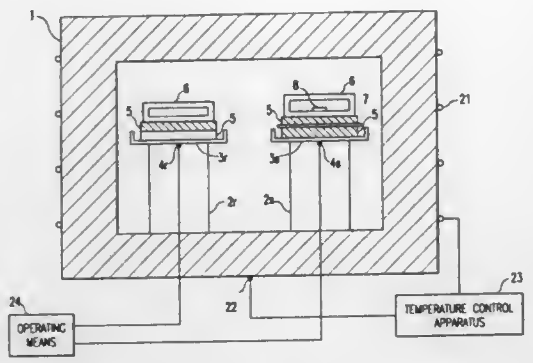
1. A method for detecting flaws in an object having a surface, said surface divided into an array of resolution elements, comprising the steps of:
a. heating the surface of the object;
b. recording a plurality of thermal images of each resolution element on said heated surface over a period of time, wherein each of said recorded resolution elements corresponds to a pixel;
c. determining individual pixel intensity for each of said pixels in each of said thermal images;
d. determining mean pixel intensity for each thermal image;
e. obtaining pixel contrast for each of said pixels in each of said thermal images subtracting said mean pixel intensity from said individual pixel's intensity; and
d. determining depth of the flaw within the object based upon said pixel contrast.

5,711,604
METHOD FOR MEASURING THE COEFFICIENT OF HEAT CONDUCTIVITY OF A SAMPLE

Nobutaka Nakamura, Chiba, Japan, assignor to Seiko Instruments Inc., Chiba, Japan

Continuation-in-part of Ser. No. 355,720, Dec. 14, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,548
Claims priority, application Japan, Dec. 14, 1993, 5-313671
Int. Cl.^{6} G01N *25/18;25/00*
U.S. Cl. 374—44 **6 Claims**

1. A method for measuring the coefficient of thermal conductivity of a solid sample martial having a known thickness and having a thermal resistance, said method comprising:

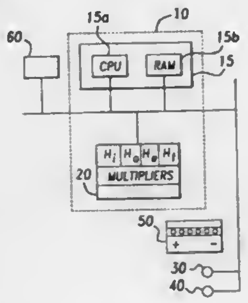


heating a meltable calibration sample having good thermal conductivity to its melting temperature in a sample station of a thermal analyzer by raising the temperature of the analyzer at a controlled rate and causing heat to flow to the calibration sample through a path having a thermal resistance, said heating step being performed one time with the solid sample material interposed in the path so that heat flows through the path and through the solid sample material, and one time with the solid sample material removed so that heat flows only through the path;
deriving thermal analysis curves each representing a relation between heat flow to the calibration sample and the controlled rate at which the analyzer temperature is raised, over a temperature range which contains the melting temperature of the calibration sample during respective performances of the heating step; and
determining the coefficient of thermal conductivity of the solid sample material based on the solid sample material thickness and a characteristic of the thermal analysis curves at the melting temperature of the calibration sample.

5,711,605
METHOD AND APPARATUS FOR PREDICTING BATTERY TEMPERATURE

Michael T. Reher, Grafton; Ronald L. Piontkowski, Brookfield; John J. Weier, Milwaukee, and Bradley N. Koeppel, Watertown, all of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Mar. 12, 1996, Ser. No. 613,592
Int. Cl.^{6} G01R *19/00;* G01K *1/08*
U.S. Cl. 374—141 **24 Claims**



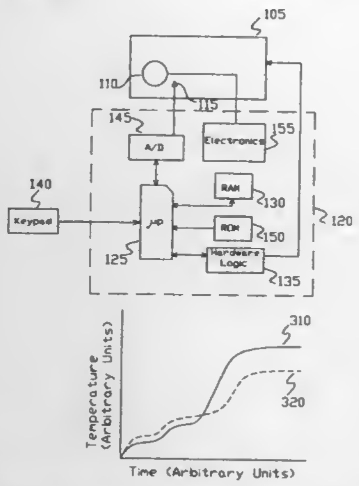
1. A microprocessor-implemented method of predicting a temperature of a battery having a plurality of cells, said method comprising the steps of:
(a) determining heat transfer coefficients for said battery, a first of said heat transfer coefficients being representative of heat transfer between the cells of said battery;
(b) storing said heat transfer coefficients in a memory segment;
(c) retrieving said heat transfer coefficients from said memory segment;
(d) measuring the current air temperature surrounding the battery; and

(e) approximating individual cell temperatures based on said current air temperature and heat transfer coefficients.

5,711,606
DIAGNOSTIC SYSTEM FOR A COOKING APPLIANCE

Bernard G. Koether, Tequesta, Fla., assignor to Technology Licensing Corporation, Tequesta, Fla.

Filed Oct. 27, 1995, Ser. No. 549,098
Int. Cl.^{6} G01K *3/00;* A23L *1/18*
U.S. Cl. 374—149 **32 Claims**

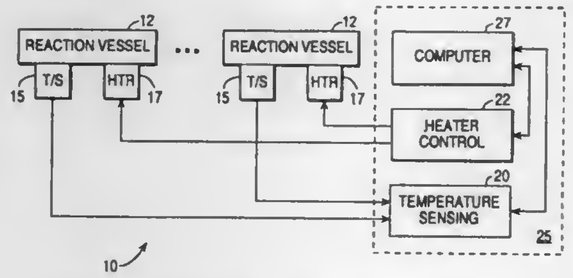


1. A diagnostic system for a cooking appliance having a heating element, said diagnostic system comprising:
a thermal probe to measure the temperature at or near said heating element;
means responsive to said thermal probe for acquiring the thermal profile of the cooking appliance over a predetermined time period; and
means for comparing said acquired thermal profile with known thermal profiles of the cooking appliance; and
means for identifying a malfunction in the cooking appliance based on the comparison between said acquired and known thermal profiles of the cooking appliance.

5,711,607
TEMPERATURE MEASUREMENT TECHNIQUE WITH AUTOMATIC VERIFICATION OF CONTACT BETWEEN PROBE AND OBJECT

Daniel Bernstein, Redwood City, Calif., assignor to Argonaut Technologies, Inc., San Carlos, Calif.

Filed Dec. 4, 1995, Ser. No. 566,525
Int. Cl.^{6} G01K *7/00*
U.S. Cl. 374—179 **19 Claims**

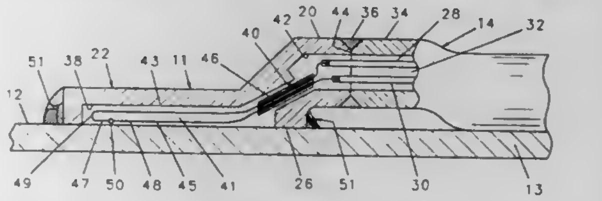


1. A method of determining temperature in a vessel having an electrically non-conductive exterior surface, the method comprising the steps of:
providing an electrically conductive layer in intimate thermal contact with an exterior surface portion of the vessel;
providing first and second wires made of dissimilar metals, each wire having proximal and distal ends;
contacting the conductive layer at first and second spatially distinct locations with first and second probes formed at the respective distal ends of the first and second wires, the first and second probes defining an open circuit prior to said step of contacting the conductive layer, a portion of the conductive layer between the first and second spatially distinct locations, when contacted by the probes, providing an electrical path between the first and second probes and further being incorporated into a thermocouple circuit;
measuring a voltage between the proximal ends of the first, and second wires; and
converting the voltage, so measured, into a temperature.

5,711,608
THERMOCOUPLE ASSEMBLIES

Philip F. Finney, 425 E. Washington, Villa Park, Ill. 60181

Continuation-in-part of Ser. No. 134,645, Oct. 12, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 304,141
Int. Cl.^{6} G01K *1/08;* H01L *35/02*
U.S. Cl. 374—208 **23 Claims**



1. A temperature sensing device for use in monitoring the temperature of a surface comprising in combination:
a metal head piece having an attachment portion and an elongate mounting portion with a distal end,
said attachment portion for attachment to a cable having a plurality of insulated wires surrounded by a metal sheath,
said mounting portion having a recess therein,
a thermocouple junction mounted in said recess near said distal end of said mounting portion at a position which is the least influenced by the fin effect,
said head piece having a hole through said attachment portion, said hole in communication with said recess,
a plurality of leads extending through said hole and connected to said thermocouple junction,
an insulating material around said leads and said thermocouple junction insulating said leads from each other and insulating said leads from said head piece, and
said elongate mounting portion having a cross-sectional area which is less than a cross-sectional area of a cable to which said attachment portion is to be attached.

5,711,609
CHILD RESISTANT PACKAAGE

Steven H. Simonsen, Neenah, Wis., assignor to Reynolds Consumer Product, Inc., Appleton, Wis.

Continuation of Ser. No. 565,132, Jan. 11, 1996, abandoned. This application Mar. 20, 1997, Ser. No. 821,606
Int. Cl.^{6} B65D *33/16*
U.S. Cl. 383—63 **6 Claims**

1. A method of opening and reclosing a reclosable package, comprising the steps of:
supplying said package with first and second opposing films, a first closure profile, and a second closure profile, said first and second closure profiles being attached to inner surfaces of said respective first and second films, said first closure profile having a first closure element and a first lower lateral flange extending downward from said first closure element, said second closure profile having a second closure element and a

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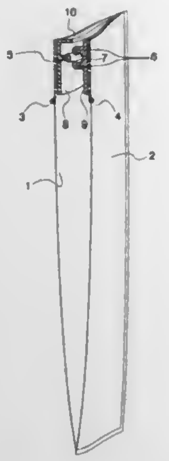
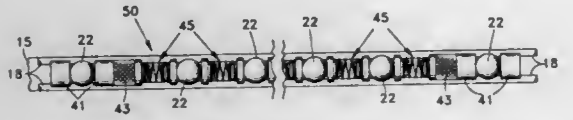


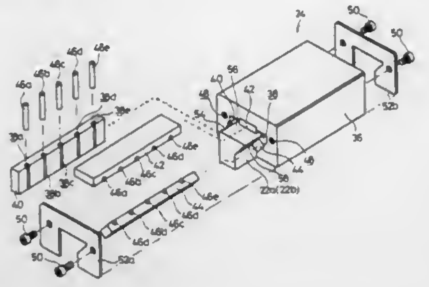
second lower lateral flange extending downward from said second closure element, said first and second closure elements being releasably engaged with each other, said first and second closure profiles being free of respective graspable upper flanges extending upward from said respective first and second closure elements, said first and second profiles being incapable of manual disengagement from above said profiles;
grasping said first and second films below said first and second closure elements;
pulling said first and second films in opposite directions with a force in the range of approximately 0.75 pounds per square inch to 8 pounds per square inch to disengage the first and second closure profiles to thereby open said package without damage to said profiles; and
pressing said profiles together with sufficient force to reengage said first and second closure elements and thereby reclose said package.

5,711,610
BEARING ASSEMBLY FOR LINEAR BEARING SLIDE
Howard C. Deck, Henrietta, N.Y., assignor to Optical Gaging Products, Inc., Rochester, N.Y.
Filed Feb. 21, 1997, Ser. No. 804,720
Int. Cl.^{6} F16C *29/04*
U.S. Cl. 384—49 **12 Claims**



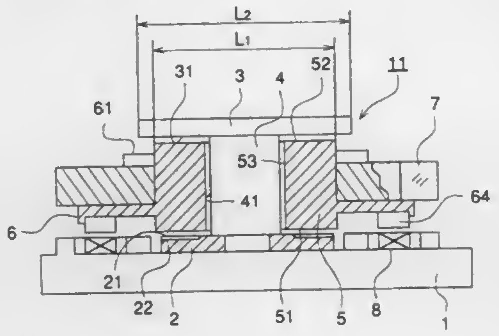
1. In a linear bearing slide assembly of the type including a slide member mounted for linear movement on an elongate support member, said members having thereon confronting bearing surfaces forming therebetween at least one elongate bearing raceway, an improved bearing assembly in said raceway, comprising
- a pair of spaced end members mounted in said raceway for movement longitudinally thereof upon movement of said slide member relative to said support member,
- a plurality of spaced bearings mounted in said raceway between said end members for rolling engagement with said confronting bearing surfaces and for movement independently of each other upon said movement of said slide member relative to said base member, and
- a plurality of spaced, resiliently compressive devices slidably mounted in said raceway in alternation with at least certain of said spaced bearings, and operative to establish a minimum distance separating adjacent ones of said certain bearings upon movement of said slide member on said support member.

5,711,611
GUIDE MECHANISM
Shigekazu Nagai; Masahiko Someya, and Hiroyuki Shiomi, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 10, 1996, Ser. No. 661,112
Int. Cl.^{6} F16C *29/04*
U.S. Cl. 384—50 **11 Claims**



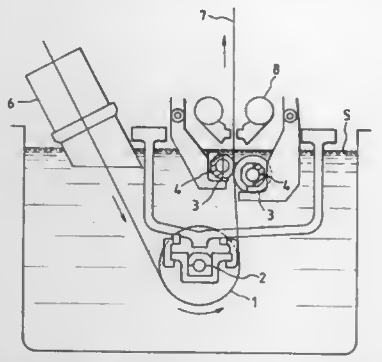
1. A guide mechanism comprising:
a linear guide rail;
a guide block displaceable along said linear guide rail;
a roller carrier plate interposed between said linear guide rail and said guide block, said carrier plate having a plurality of recesses defined in one side surface thereof; and
a plurality of rollers complementarily fitted into said recesses and held in rolling contact with a side surface of said linear guide rail.

5,711,612
DYNAMIC PRESSURE BEARING
Masao Itoh; Toyotsugu Itoh, and Yoshio Iwamura, all of Hachioji, Japan, assignors to Konica Corporation, Japan
Filed Oct. 6, 1995, Ser. No. 540,080
Claims priority, application Japan, Oct. 14, 1994, 6-249730
Int. Cl.^{6} F16C *17/10*
U.S. Cl. 384—107 **7 Claims**



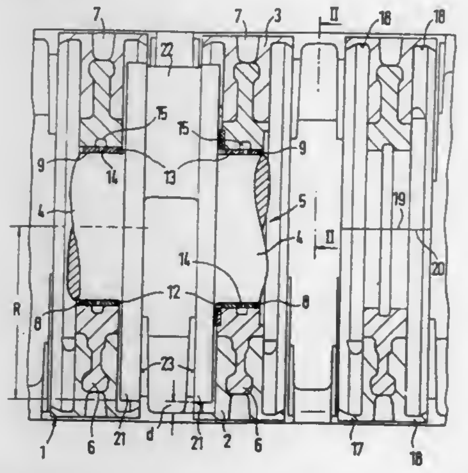
1. A dynamic pressure bearing comprising
a rotator having a vertical rotation axis;
a radial bearing having a radial bearing surface supporting said vertical rotation axis;
a first thrust bearing having a first bearing surface, a first part of said rotator riding on said first bearing surface so that said first bearing surface supports said rotator;
a dynamic pressure-generating groove on at least one of said first bearing surface and said first part of said rotator whereby a first dynamic pressure is generated between said first bearing surface and said first part when said rotator is rotated and floated upward by said first dynamic pressure;
a second thrust bearing having a second bearing surface, a second part of said rotator located beneath said second bearing surface, both of said second bearing surface and said second part having no dynamic pressure-generating grooves and having smoothed surfaces.

5,711,613
SLIDE STRUCTURE AND CONTINUOUS HOT DIPPING APPARATUS HAVING SLIDE STRUCTURE
Takahiko Ookouchi; Tamihito Kawahigashi, both of Hitachinaka; Hitoshi Okoshi, Hitachi; Yoshitaka Nakayama, Hitachioota; Junji Sakai, Minori-machi, and Mitsuo Nakagawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 7, 1995, Ser. No. 418,423
Claims priority, application Japan, Apr. 8, 1994, 6-070415
Int. Cl.^{6} F16C *33/02*
U.S. Cl. 384—283 **18 Claims**



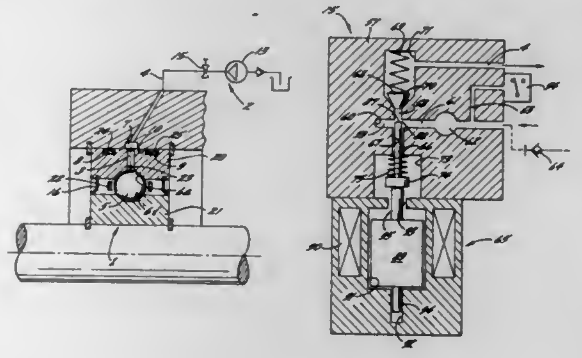
1. A slide structure comprising a roll bearing unit having a roll shaft and a roll bearing, wherein
- a whole circumference of a sliding portion of said roll shaft is made of a sintered ceramics body; and
- a sliding surface of said roll bearing is formed by a combination of a cermet body as a partial member and a reinforcing graphite member as a base member for supporting said cermet body such that both said cermet body and said reinforcing graphite member form portions of said sliding surface of said roll bearing.

5,711,614
CRANKSHAFT BEARING OF A MULTICYLINDER INTERNAL COMBUSTION ENGINE
Johannes Wuest, Weissach-Flacht; Dieter Nowak, Weilheim; Herbert Ampferer, Sachsenheim, and Michael Muddemann, Weissach, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Oct. 7, 1996, Ser. No. 725,815
Claims priority, application Germany, Oct. 6, 1995, 19537192.5
Int. Cl.^{6} F02F *7/00;* **F16C** *9/02*
U.S. Cl. 384—429 **28 Claims**



1. A crankshaft bearing for a multicylinder internal combustion engine having an upper bearing part and a lower bearing part, as well as upper and lower bearing brackets connected therewith, and with lubricating oil feeds that terminate in bearing surfaces of said upper and lower bearing brackets, wherein at least one oil groove is formed on lateral surfaces of said bearing brackets so as to at least partially surround said bearing brackets, said at least one oil groove having its opening facing radially inward,
wherein said at least one oil groove has a drain arranged at a bottom in an installed position.

5,711,615
ANTIFRICTION BEARING
Albert Stitz, Kurten; Wolfgang Hahmann, Kempen, and Franz Peter Salz, Remscheid, all of Germany, assignors to Barmag AG, Remscheid, Germany
PCT No. PCT/EP94/00845, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/21932, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 17, 1994, Ser. No. 325,298
Claims priority, application Germany, Mar. 18, 1993, 43 08 640.3; Apr. 28, 1993, 43 13 869.1; Nov. 24, 1993, 43 39 943.6; Nov. 24, 1993, 43 39 942.8; Nov. 24, 1993, 43 39 940.1; Feb. 11, 1994, 44 04 301.5; Mar. 8, 1994, 44 07 647.9
Int. Cl.^{6} F16C *33/66*
U.S. Cl. 384—473 **8 Claims**



1. A bearing assembly comprising
an antifriction bearing comprising
- (a) an inner bearing ring and an outer bearing ring mounted in a concentric arrangement so as to define opposing inner and outer races on the inner and outer rings respectively,
- (b) a plurality of rolling elements mounted between the inner and outer races,
- (c) a duct extending through at least one of the inner and outer rings and terminating at an outlet opening which communicates with the associated race, and

a pump for metering a lubricant in small quantities to said antifriction bearing, said pump comprising
- (a) a housing (**57**),
- (b) a lubricant inlet channel including an inlet chamber (**59**) in said housing,
- (c) a pump chamber (**58**) intersecting said inlet chamber in said housing so as to define an inlet valve boundary edge (**88**) at the interface between the pump chamber and the inlet chamber,
- (d) an outlet line (**4**) communicating with said pump chamber and being connected to said duct of said antifriction bearing,
- (e) a guideway (**67**) intersecting said inlet chamber and being coaxially aligned with the pump chamber (**58**),
- (f) a pump piston (**66**) slidably mounted in the guideway (**67**) and including an end face (**87**) facing into the pump chamber,
- (g) a drive (**65**) for selectively reciprocating the pump piston in the guideway so that the end face of the pump piston is movable between a first position spaced outside of the boundary edge and an immersed position in the pump chamber, and so that the reciprocation of the pump piston results in small quantities of a lubricant being delivered through said outlet line to said duct of said antifriction bearing.

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5,711,616
BEARING SEAL FOR PROVIDING STATIC AND DYNAMIC BARRIERS

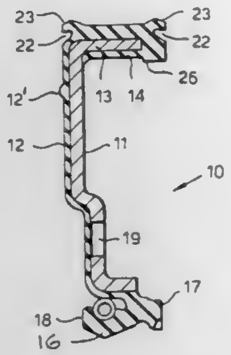
Roland Gassmann, Thannenkirch, France; Graham Sturman, Northampton, England, and Roland Duval, Bennwihr, France, assignors to The Timken Company, Canton, Ohio

Filed Apr. 9, 1996, Ser. No. 628,092

Claims priority, application United Kingdom, Apr. 10, 1995, 9507430

Int. Cl.⁶ F16C *33/76*

U.S. Cl. 384—482 **19 Claims**



1. In combination with a housing having a bore and with a bearing that includes an outer ring fitted into the bore of the housing, an inner ring located within the outer ring, and rolling elements between the outer and inner rings, the outer ring having a recess that opens radially outwardly and also axially out of one end of the ring, a seal for establishing a static barrier between the housing and the outer ring and a dynamic barrier between the outer and inner rings, said seal comprising: a generally rigid casing extending radially over that end of the outer ring out of which the recess opens, the casing having a margin near the inner race and an axially directed flange at its periphery, the flange extending into the recess of the outer ring; a first sealing member attached to the casing at its inner margin and establishing a dynamic fluid barrier along the inner ring; and a second sealing member attached to the flange of the casing and establishing a static seal barrier between a surface of the recess in the outer ring and the surface of the bore in the housing, the second sealing member being formed from a resilient sealing material and having a segment which contacts a surface of the recess in the outer ring and also having lips which when unrestrained have a diameter greater than the diameter of bore in the housing, but when the outer ring is in the bore are in contact with and are deflected inwardly by the housing, the second sealing member also having grooves located radially inwardly from and along the lips to accommodate the inward deflection of the lips, with the grooves as initially configured being at least partially occupied by the lips when the lips are deflected inwardly.

5,711,617
DUSTCAP FOR BEARING ASSEMBLY

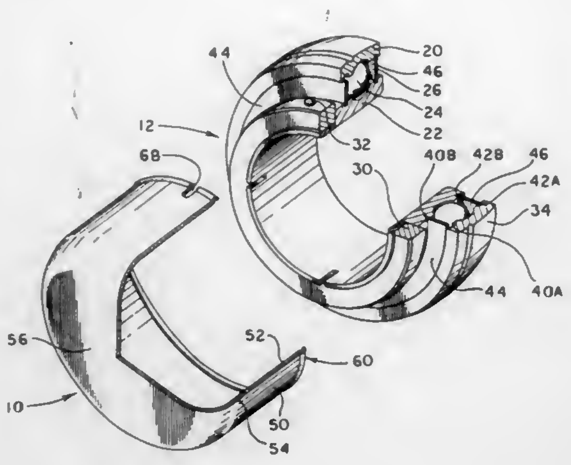
Horst H. Scheller, Valparaiso, Ind., assignor to MB Manufacturing, Inc., Valparaiso, Ind.

Filed Aug. 15, 1996, Ser. No. 699,773

Int. Cl.⁶ F16C *33/76*

U.S. Cl. 384—484 **9 Claims**

1. In combination, a bearing assembly and a dustcap, the bearing assembly having an outer race ring and an inner race ring with a plurality of ball bearings therebetween, the bearing assembly being gimballed in a housing such that said outer race ring may slide against said housing, said outer race ring having a groove therein and the dustcap having a lip extending outwardly therefrom, said lip being receivable in said groove to support said dustcap from said outer race ring such that said dustcap gimbals with said outer race ring and is not ejected by said gimballing outer race ring, and a seal normally disposed in said groove, said seal being displaced by said lip when said lip is received in said groove.



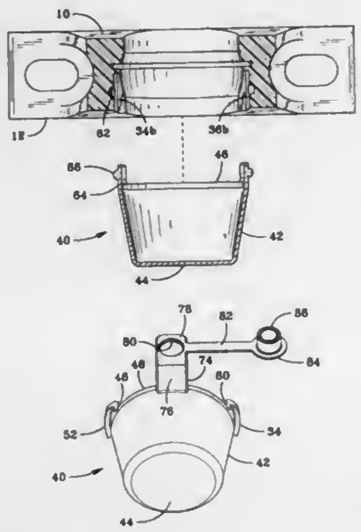
5,711,618
BEARING ASSEMBLY WITH END CAP

Walter P. Waskiewicz, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Nov. 27, 1996, Ser. No. 757,974

Int. Cl.⁶ F16C *33/76;23/08*

U.S. Cl. 384—489 **12 Claims**



1. A bearing assembly comprising:

a housing having an axially extending bore with circumferentially spaced grooves extending axially partially through the housing from one axial end of the housing, the grooves being adapted to facilitate the insertion of a rolling element bearing into the housing;

a bearing mounted in the bore and having inner and outer bearing rings with rolling elements; and

a hollow end cap having a closed wall at one axial end, the end cap being provided with resilient projections extending axially from the peripheral edge of the open end of the end cap and firmly engaging the housing grooves;

the housing having a channel located within each of the grooves, extending radially outwardly and axially outwardly into the housing, each projection having a finger at its axial end extending radially outwardly and axially toward the end cap closed wall and fitting into the respective channel.

5,711,619
PRINTING APPARATUS

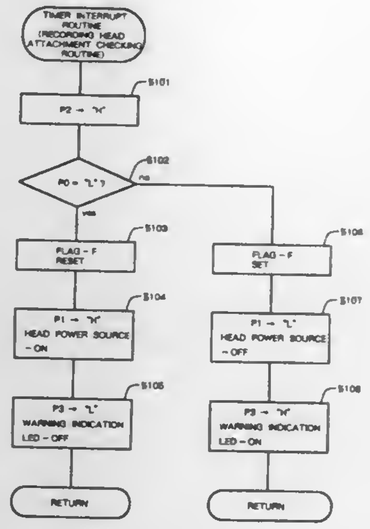
Yuichi Kaneko, and Jun-ichi Arakawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 508,258

Claims priority, application Japan, Jul. 29, 1994, 6-178125

Int. Cl.⁶ B41J *2/12*

U.S. Cl. 400—74 **12 Claims**


TIMER INTERRUPT ROUTINE (RECORDING HEAD ATTACHMENT CHECKING ROUTINE)
S101
P2 → "H"
S102
P0 = "L" ?
NO
YES
S103
FLAG - F RESET
S104
P1 → "H" HEAD POWER SOURCE - ON
S105
P3 → "L" WARNING INDICATION LED - OFF
RETURN
S106
FLAG - F SET
S107
P1 → "L" HEAD POWER SOURCE - OFF
S108
P3 → "H" WARNING INDICATION LED - ON
RETURN

1. A printing apparatus using a printing head to record an image onto a recording medium in accordance with recording data, said printing head being detachable relative to said printing apparatus and supplied with electric energy from said printing apparatus to operate, and further said printing head forming a status signal indicating its mounting condition in accordance with a predetermined signal from said printing apparatus, said printing apparatus comprising:

mounting means for mounting said printing head;

power supply means for supplying electric power to said printing head;

generating means for generating said predetermined signal at every predetermined time interval;

detecting means for detecting at every predetermined time interval whether said printing head is mounted on said mounting means in accordance with said status signal formed by said printing head in response to said predetermined signal generated by said generating means; and

control means responsive to the result of said detection by said detecting means for stopping the supply of electric power to said printing head from said power supply means.

5,711,620
COLOR THERMAL PRINTER

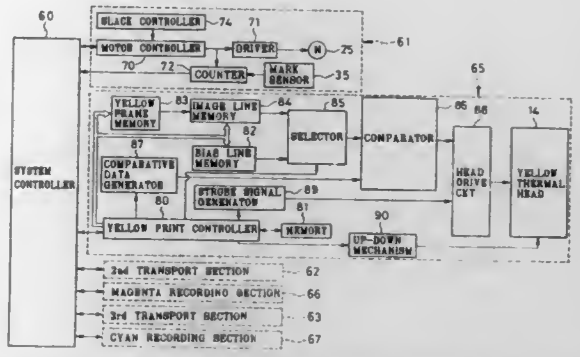
Hidemi Sasaki; Kenichi Shiba, and Satoru Goto, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 26, 1996, Ser. No. 723,951

Claims priority, application Japan, Sep. 28, 1995, 7-250488

Int. Cl.⁶ B41J *11/00;2/315*

U.S. Cl. 400—120.02 **18 Claims**



1. A color thermal printer for printing a full-color image on a recording material, comprising a plurality of thermal heads arranged in series along a transport path, each of said plurality of thermal heads recording a particular color frame of the full-color image on the recording material to print the full-color image while said recording material being advanced in a transporting direction at one time through the transport path, said color thermal printer comprising:

a plurality of platens, each being opposed to one of said plurality of thermal heads across the transport path, and movable relative to said opposed thermal head to press said recording material against said opposed thermal head;

a plurality of capstan rollers disposed respectively behind said plurality of thermal heads in the transporting direction of the recording material;

a plurality of pinch rollers, each being opposed to one of said capstan rollers across the transport path, and movable relative to said opposed capstan roller to nip said recording material;

a feed forward mechanism for providing information regarding speed of transport through a thermal head; and

driving means for driving said capstan rollers each individually to transport said recording material at an appropriate speed in accordance with said feed forward mechanism through each of said plurality of thermal heads.

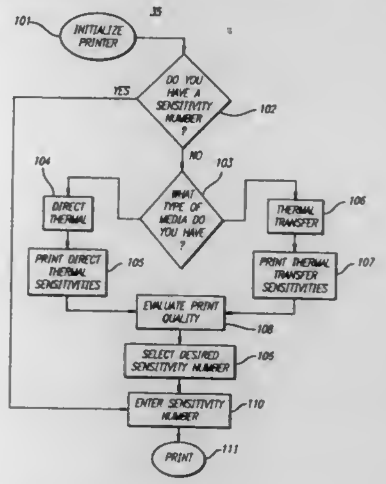
5,711,621
METHOD AND APPARATUS FOR SELECTING PRINTER PARAMETERS FOR DIFFERENT TYPES OF PRINT MEDIA

Pixie A. Austin, Marysville, Wash., assignor to Intermec Corporation, Everett, Wash.

Filed Oct. 16, 1996, Ser. No. 732,059

Int. Cl.⁶ B41J *2/36*

U.S. Cl. 400—120.13 **20 Claims**


35
101
INITIALIZE PRINTER
DO YOU HAVE A SENSITIVITY NUMBER ?
YES
102
NO
104
103
DIRECT THERMAL
WHAT TYPE OF MEDIA DO YOU HAVE ?
THERMAL TRANSFER
106
PRINT DIRECT THERMAL SENSITIVITIES
105
PRINT THERMAL TRANSFER SENSITIVITIES
107
EVALUATE PRINT QUALITY
108
SELECT DESIRED SENSITIVITY NUMBER
109
ENTER SENSITIVITY NUMBER
110
PRINT
111

1. In a printer having a print region defined by a thermal print head and a rotatable platen adapted to draw a print media therebetween, a method for calibrating the printer comprises the steps of:

identifying a type of print media which is selected for use on said printer, wherein said selected type of print media has unknown printer parameter values;

printing a series of test labels onto said selected type of print media using a parameter of said printer having a unique value for each individual one of said test labels of said series with identifying information of said unique parameter value being printed thereon;

after printing said series of test labels, inspecting said series of test labels to select one of said test labels of said series having a desired level of image quality; and

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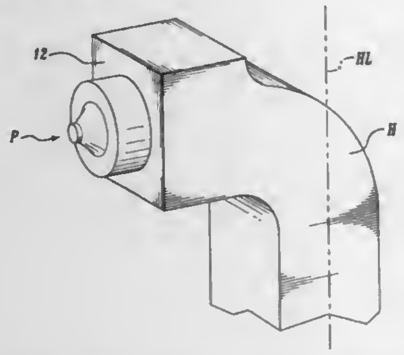
specifying said unique parameter value of said selected one of said test labels for further operation of said printer with said selected type of print media.

5,711,622

PRINTER ELEMENT

Edward D. Bringhurst, Federal Way, and David G. Starr, Renton, both of Wash., assignors to Tally Printer Corporation, Kent, Wash.

Continuation of Ser. No. 602,333, Feb. 16, 1996, abandoned.
This application Apr. 10, 1997, Ser. No. 827,673
Int. Cl.^{6} B41J *2/235*
U.S. Cl. 400—124.29 **26 Claims**



1. A combination print hammer and print element suitable for use in a dot matrix printer to print dots on a print-receiving substrate, said combination comprising:

(a) an elongate print hammer having one end designed for movement toward and away from a print-receiving substrate; and

(b) a print element affixed to the side of the end of said elongate print hammer that is designed for movement toward and away from a print-receiving substrate, said print element being injection molded of high-impact resistant metal so as to form a unitary construct, said unitary construct including a plurality of sections located along an axis of symmetry that lies generally orthogonal to the longitudinal axis of said elongate print hammer, said plurality of sections comprising:

(i) a cylindrical base, one end of said cylindrical base being affixed to said side of the end of said elongate print hammer that is designed for movement toward and away from a print-receiving substrate, the height of said cylindrical base relative to said side of the end of said elongate print hammer that is designed for movement toward and away from a print-receiving substrate being less than the diameter of said cylindrical base, the longitudinal axis of said cylindrical base lying along said axis of symmetry;

(ii) an impact element support, said impact element support having a frusto-conical shape, the longitudinal axis of said frusto-conically shaped impact element support lying along said axis of symmetry, the large diameter end of said frusto-conically shaped impact element support being less than the diameter of said cylindrical base, the large diameter end of said frusto-conically shaped impact element support being unitarily formed with the end of said cylindrical base opposite to the end affixed to said elongate print hammer such that the longitudinal axis of said cylindrical base and the longitudinal axis of said frusto-conical shape are coaxial; and

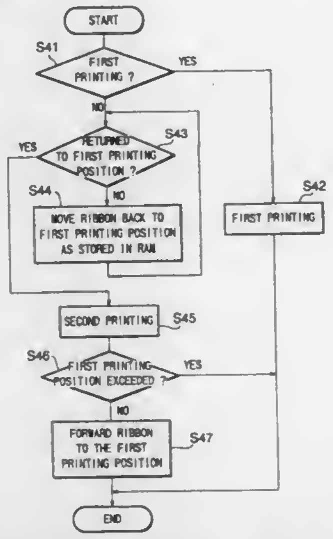
(iii) an impact element unitarily formed with the small diameter end of said frusto-conically shaped impact element support, the face of said impact element opposite said small diameter end of said impact element support having a convex shape, the distance between the outer end of said face of said impact element and the small diameter end of said frusto-conically shaped impact element support being substantially less than the diameter of the small end of said frusto-conically shaped support, the overall height of said print element relative to said side of the end of said elongate print hammer that is designed for movement toward and away from a print-receiving substrate being less than twice the diameter of said cylindrical base of said print element.

5,711,623

INK RIBBON RECORDING APPARATUS

Yoshitaka Nose, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 977,550, Nov. 17, 1992, abandoned.
This application Jan. 30, 1995, Ser. No. 381,011
Claims priority, application Japan, Nov. 30, 1991, 3-342242
Int. Cl.^{6} B41J *33/14*
U.S. Cl. 400—225 **12 Claims**


START
S41
FIRST PRINTING ?
YES
NO
RETURNED TO FIRST PRINTING POSITION ?
S43
YES
S44
NO
MOVE RIBBON BACK TO FIRST PRINTING POSITION AS STORED IN RAM
S42
FIRST PRINTING
SECOND PRINTING
S45
S46
FIRST PRINTING POSITION EXCEEDED ?
YES
NO
FORWARD RIBBON TO THE FIRST PRINTING POSITION
S47
END

1. An ink ribbon recording apparatus for use with a multi-pass thermal ink ribbon, the multi-pass ink ribbon having an ink layer having a thickness that is greater than that of an ink layer of a single-pass ink ribbon, the multi-pass thermal ink ribbon defining a length, a width, a lengthwise direction and a widthwise position, the apparatus comprising:

thermal print head means for performing a plurality of thermal printing operations using the multi-pass thermal ink ribbon,

means for detecting a position of the multi-pass thermal ink ribbon; and

means for pulling back the multi-pass thermal ink ribbon in the lengthwise direction, upon the completion of at least one printing operation during a plurality of printing operations, to a position from which at least one printing operation started, prior to a next printing operation while substantially simultaneously maintaining the widthwise position of the ink ribbon constant.

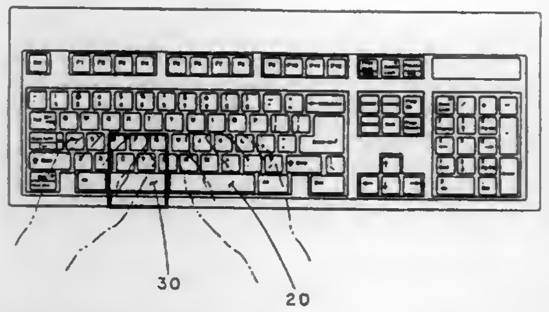
5,711,624

KEYBOARD WITH THUMB ACTIVATED BACKSPACE/ ERASE KEY

Robert D. Klauber, Fairfield, Iowa, assignor to Keyboard Advancements, Inc., Fairfield, Iowa

Continuation of Ser. No. 412,765, Mar. 29, 1995, Pat. No. 5,620,267, which is a continuation-in-part of Ser. No. 137,941, Oct. 15, 1993, abandoned, which is a continuation of Ser. No. 813,289, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 339,075, Apr. 14, 1989, Pat. No. 5,143,462.
This application Nov. 29, 1996, Ser. No. 754,169
Int. Cl.^{6} B41J *5/10*
U.S. Cl. 400—486 **23 Claims**

1. A keyboard for a computer, electronic typewriter, word processor or the like, comprising:



a plurality of alphanumeric keys comprising twenty-six alphabetic keys and ten numeric keys arranged corresponding to touch typing position each of which alphanumeric keys automatically effects a different alphanumeric character,

a plurality of non-alphanumeric keys,

said plurality of alphanumeric keys including left and right middle finger keys upon which middle fingers of a touch typist are positioned when said touch typist's hands and fingers are at rest in touch typing position,

a near edge of the keyboard nearer a touch typist than any other edge, and

a means to backspace/erase which automatically causes both backspacing to, and erasure of, a typed character wherein at least part of said means to backspace/erase is positioned within a region of the keyboard bounded by a first line passing through the respective centers of the left and right middle finger keys, a second line passing from the center of the left middle finger key perpendicular to the first line, a third line passing from the center of the right middle finger key perpendicular to the first line, and the near edge of the keyboard,

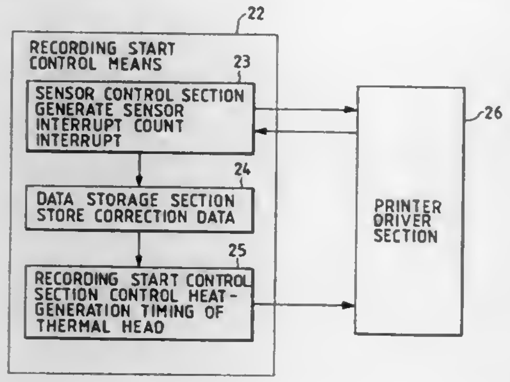
whereby means is provided for ergonomic activation of the backspace/erase key by a touch typist.

5,711,625

PRINTER AND RECORDING START CONTROL METHOD FOR THE SAME

Hiromitsu Takahashi, Iwate-ken, Japan, assignor to AlpsElectric Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1996, Ser. No. 699,596
Claims priority, application Japan, Aug. 23, 1995, 7-214988
Int. Cl.^{6} B41J *13/10*
U.S. Cl. 400—582 **4 Claims**


22
RECORDING START CONTROL MEANS
23
SENSOR CONTROL SECTION GENERATE SENSOR INTERRUPT COUNT INTERRUPT
24
DATA STORAGE SECTION STORE CORRECTION DATA
25
RECORDING START CONTROL SECTION CONTROL HEAT-GENERATION TIMING OF THERMAL HEAD
26
PRINTER DRIVER SECTION

1. A printer in which a recording medium holding mechanism is intermittently rotated by a stepping motor, and recording is performed a plurality times on a recording medium mounted on said recording medium holding mechanism in each rotational position of said recording medium holding mechanism by a recording head, said printer comprising:

a sensor for generating a detection signal when said recording medium holding mechanism is rotated into a predetermined rotational position;

position control means for turning off said stepping motor in response to said detection signal generated by said sensor; and

recording start control means including a sensor control section for calculating a time period between the generation of said detection signal and complete stop of said stepping motor, said recording start control means controlling recording performed by said recording head in accordance with the calculated time period such that recording is aligned on the recording medium relative to the predetermined rotational position,

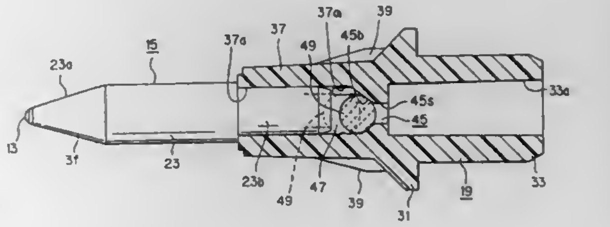
wherein said sensor control section generates interrupt signals at predetermined time intervals during the time period, and calculates the time period by counting the number of interrupt signals generated during the time period.

5,711,626

BALL-POINT PEN WITH BACK FLOW STOP

Seiichi Kobayashi, Yokohama; Kazuhiko Furukawa, Kanagawa; Hiroaki Koyama, Yokohama, and Toru Kitao, Sagamihara, all of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/02040, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO95/15859, PCT Pub. Date Jun. 15, 1995
PCT Filed Dec. 5, 1994, Ser. No. 501,077
Claims priority, application Japan, Dec. 6, 1993, 5-071098; Dec. 6, 1993, 5-071099; Feb. 28, 1994, 6-052601; Feb. 28, 1994, 6-052603; Mar. 16, 1994, 6-070163; Mar. 16, 1994, 6-070165; Apr. 12, 1994, 6-097034; Apr. 22, 1994, 6-106274
Int. Cl.^{6} B43M *11/02*
U.S. Cl. 401—219 **13 Claims**



1. A ball-point pen refill for a ball-point pen, said refill comprising:

a tip having a front end, a rear end, and a writing micro-ball fitted within said tip by press-forming said front end of said tip;

an ink-storing-pipe storing ink; and

a joint connecting said tip with said ink storing pipe;

wherein said joint comprises:

a tip-side bore and an ink-storing-pipe-side bore formed therein for allowing ink to pass therethrough when said tip and said ink storing pipe are fitted into said joint, the rear end of said tip being fitted within said tip-side bore;

a communicating hole formed within said joint between and eccentric to said tip-side bore and said ink-storing-pipe bore, said communicating hole communicating said tip-side bore with said ink-storing-pipe-side bore, said communicating hole having a larger-diameter portion and a small-diameter portion connected to said tip-side bore and said ink-storing-pipe-side bore, respectively; and

a large ball having a greater diameter than a bore diameter of said small-diameter portion, said large ball being disposed freely movably in at least a part of a space formed between the rear end of said tip and said large diameter portion of said communicating hole when said tip is fitted into said tip-side bore.

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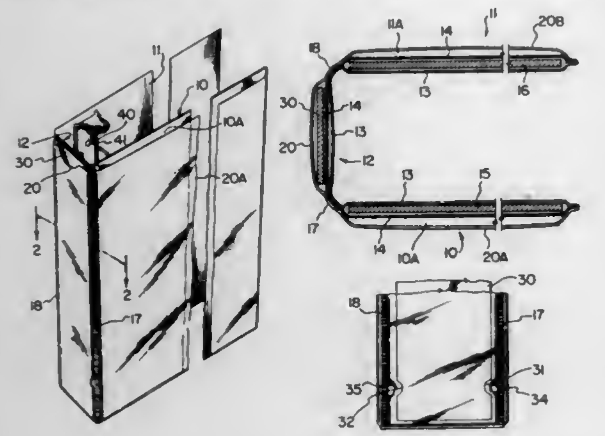
5,711,627
FLEXIBLE SPINE BINDER WITH WINDOW POCKET AND SPINE STIFFENER INSERT

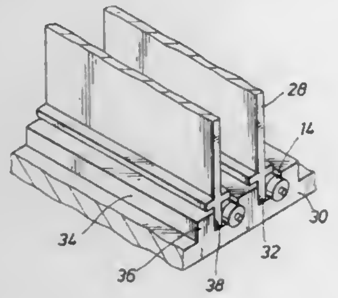
David R. Chapman, 145 Wychwood Place, London, Ontario, Canada, N6G 1S7
Filed May 8, 1996, Ser. No. 646,389
Int. Cl.⁶ B42F *13/00*
U.S. Cl. 402—3 **18 Claims**



1. A binder comprising front and rear covers interconnected by a spine and including means for releasably retaining sheet material in said binder, said spine being flexible and having an open pocket extending substantially along the entire length thereof, a stiff insert removably insertable into said open pocket transforming said flexible spine into a stiff spine and also providing means for labelling said binder.

5,711,628
EXPANSION CLAMP

Leroy S. Fletcher, College Station, Tex., assignor to Texas A & M University System, College Station, Tex.
Filed Jun. 14, 1996, Ser. No. 663,783
Int. Cl.⁶ F16B *2/02*
U.S. Cl. 403—5 **21 Claims**

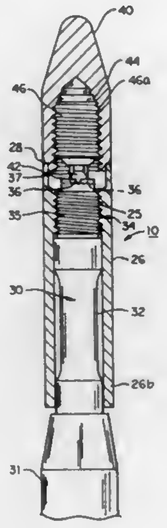


1. An expansion clamp in combination with a channel, the clamp for providing substantially uniform surface contact between a planar member inserted into the channel and one of the walls of the channel, the member and the channel wall having complementary surfaces, the combination comprising:

a fluid impervious expandable bladder having an elongated cylindrical structure, said bladder being disposed within the channel;
means for controlling a flow of fluid into or out of the expandable bladder;
an elongated jacket for at least partially enclosing the expandable bladder, said jacket having at least one open end for allowing access to said flow controlling means; and
wherein said jacket moves in response to the expansion of the expandable bladder to provide compression force against the planar member and thus provide the uniform surface contact between the planar member and the wall of the channel.

5,711,629
RECONSTITUTABLE ROD CLUSTER CONTROL ASSEMBLY WITH BIASED DRIVER

Douglas J. Attix, Lynchburg, Va., assignor to Framatome Cogema Fuels, Lynchburg, Va.
Filed Jan. 11, 1996, Ser. No. 583,931
Int. Cl.⁶ F16B *39/00*
U.S. Cl. 403—320 **21 Claims**

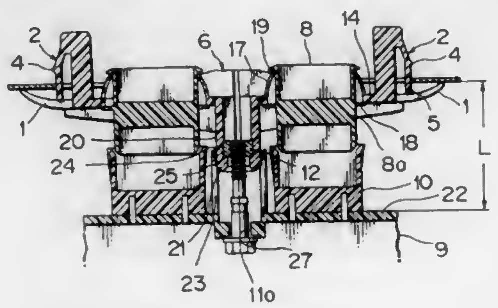


1. A rod connector assembly for removably securing a control rod to a spider structure, said rod connector assembly comprising:

(a) a tubular boss fixedly securable to the spider structure, said boss including interior threads formed on an interior surface of said boss;
(b) a mounting assembly including a receiving structure and a biasing means, wherein said mounting assembly includes a cap having a cavity formed therein, said biasing means including a driver and disposed in said cavity such that said driver extends outwardly from said cavity and into said boss, and wherein said cap is secured to said boss; and
(c) wherein, when said control rod is in a prescribed position with respect to said boss, said mounting assembly is operative to resist rotation of the control rod upon application to the control rod of an amount of torque less than a predetermined amount of torque.

5,711,630
CONNECTOR-HOLDING STRUCTURE

Shinji Kodama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Feb. 6, 1997, Ser. No. 798,018
Claims priority, application Japan, Feb. 8, 1996, 8-022491
Int. Cl.⁶ F16B *37/04*
U.S. Cl. 403—329 **8 Claims**

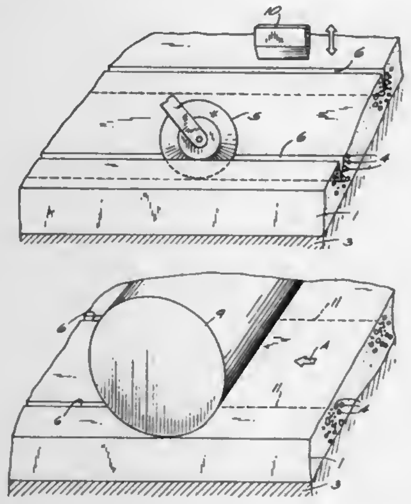


1. A connector-holding structure comprising:
a panel having a mount opening formed therein;
a first connector;

a connector-holding member via which said first connector is disposed in said mount opening in said panel;
a component having a second connector to be fitted to said first connector, which component is rigidly fixed to said panel;
said connector-holding member having first elastic means bendable in a fitting direction of said first and second connectors, and second elastic means inserted into said mount opening and bendable in a direction perpendicular to said connector-fitting direction,
said second elastic means having a projection for positioning said connector-holding member relative to said panel and a guide portion extending in said connector-fitting direction from said positioning projection to a point close to or in contact with said first elastic means,
wherein said positioning projection and said first elastic means engage with said panel from opposite sides of said panel to hold said panel therebetween, and said connector-holding member is movable in said connector-fitting direction within a range of a length of said guide portion.

5,711,631
METHOD OF ASPHALT PAVING AND PAVEMENT

Thomas Richard Amon, 219 Sunset Dr., Elkhorn, Wis. 53121
Continuation-in-part of Ser. No. 191,443, Feb. 3, 1994, Pat. No. 5,494,373, which is a continuation of Ser. No. 980,359, Nov. 23, 1992, abandoned. This application Feb. 21, 1996, Ser. No. 604,645
Int. Cl.⁶ E01C *11/02*
U.S. Cl. 404—74 **19 Claims**

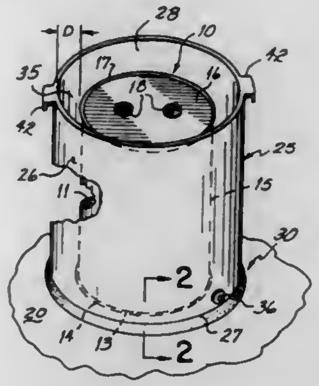


1. A process for paving a sub-base surface with compactable asphaltic concrete including aggregates and an asphaltic cement to provide a finished asphaltic pavement having dormant zones of potential fracture at predetermined locations, the process for paving comprising the steps of:

a) forming on said sub-base surface a continuous longitudinally extending mat of compactable asphaltic paving concrete of predetermined thickness, the mat having a longitudinal direction and including asphaltic cement and aggregates;
b) displacing said asphaltic cement and said aggregates in said mat before compacting to create a plurality of spaced apart temporary open score lines extending generally parallel to said longitudinal direction; and
c) compacting said mat of compactable asphaltic concrete to close and seal said open score lines and to provide a finished asphaltic pavement of predetermined density having a smooth uninterrupted traffic bearing top surface wherein said closed sealed score lines define a plurality of dormant zones of potential fracture substantially concealed at said spaced intervals, said dormant zones of potential fracture extending generally parallel to said longitudinal direction of said mat.

5,711,632
SECONDARY CONTAINMENT DEVICE AND METHOD

Gary Joseph Garrahan, Terre Haute, Ind., assignor to Sony Corporation, Tokyo, Japan, and Digital Audio Disc Corporation, Terre Haute, Ind.
Filed Mar. 12, 1996, Ser. No. 614,365
Int. Cl.⁶ B65D *90/02*
U.S. Cl. 405—52 **22 Claims**

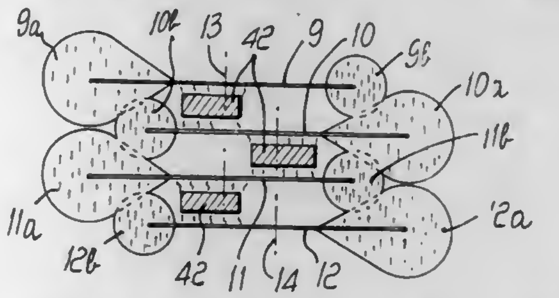


15. A method of secondarily containing a chemical enclosed in a primary container and the method comprising the steps of:

supporting the primary container having a chemical substance contained therein on a smooth planar horizontal supporting surface;
providing a secondary containment device having:
  a vertically oriented closed tubular sidewall formed of a chemically resistant material, the sidewall terminating in a lower rim of a resilient seal forming material defining an open bottom and lying in a plane; and
while the primary container is supported on the surface, lowering the secondary containment device, lower rim first, over the primary container until the device is removably resting on the supporting surface and the lower rim forms a chemical substance flow resisting seal against the supporting surface, with the sidewall spaced from the primary container over the entire circumference and height thereof to form a volume between the device and the primary container sufficient to contain spillage and leakage of the chemical therefrom.

5,711,633
APPARATUS FOR RECOVERING FLUID SUBSTANCES FLOATING ON A WATER SURFACE

Giancarlo Ravagnan, Riviera San Benedetto 142, 35139 Padova, Italy
PCT No. PCT/EP94/03130, § 371 Date Mar. 12, 1996, § 102(e) Date Mar. 12, 1996, PCT Pub. No. WO95/08673, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 19, 1994, Ser. No. 612,941
Claims priority, application Italy, Sep. 24, 1993, PD93A0188
Int. Cl.⁶ E02B *15/04*
U.S. Cl. 405—60 **9 Claims**



1. Apparatus for recovering fluid substances floating on a water surface, comprising multiple mutually alternately staggered disks

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that form two separate sequential arrangements of disks rotatable about respective parallel axes and with two drives that allow to apply a different motion to each sequential arrangement, each disk of said disks substantially having an equal radius and a distance between the parallel rotation axes being smaller than the radius of said disks so that mutually adjacent disks are arranged such that a collection region of a first disk formed where said first disk enters the water overlaps a discharge region of an adjacent second disk formed where said second disk exits the water.

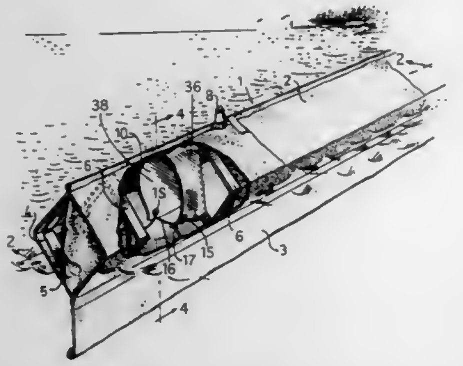
5,711,634
ARRANGEMENT FOR A BOOM

Per Olof Öberg, Nordmaling, Sweden, assignor to Expandi Systems AB, Sweden

Continuation-in-part of Ser. No. 211,121, Mar. 21, 1994, Pat. No. 5,511,906. This application Nov. 17, 1995, Ser. No. 560,041

Int. Cl.^{6} E02B *15/04*

U.S. Cl. 405—66 **11 Claims**



1. A buoyant boom comprising:

an elongate tubular casing having an inside wall, the tubular casing being movable between a collapsed rest position and an expanded operational position, the tubular casing having an upper portion and a lower portion;

a plurality of spaced dividing walls disposed within the tubular casing, the dividing walls being made of a flexible material;

an elongate shield part attached to the tubular casing;

expansion devices attached to the tubular casing, the expansion devices being movable between a folded position and an unfolded position;

biasing members attached to the expansion devices, the biasing members urging the expansion devices into the unfolded position so that the tubular casing is moved into the expanded operational position;

a valve operatively attached to the upper portion of the tubular casing so that air enters the tubular casing through the valve when the tubular casing is moved from the collapsed rest position to the expanded operational position and air exits the tubular casing through the valve when the tubular casing is collapsed by urging the biasing members into the folded position, the tubular casing being made of a flexible material so that the casing is coilable when in the collapsed rest position;

an impervious flexible sheet material disposed inside the tubular casing, the sheet material being folded at a mid-portion thereof and attached to an upper portion of the inside wall of the casing so that a first and a second flexible member extend downwardly from the inside wall of the tubular casing when the tubular casing is in the expanded position, the flexible members having opposite side edges, the side edges of the first flexible member being attached to the side edges of the second flexible member; and

a first chamber defined inside the first and second flexible members so that air fills the first chamber when the tubular casing is moved into the expanded position to provide buoyancy of the boom.

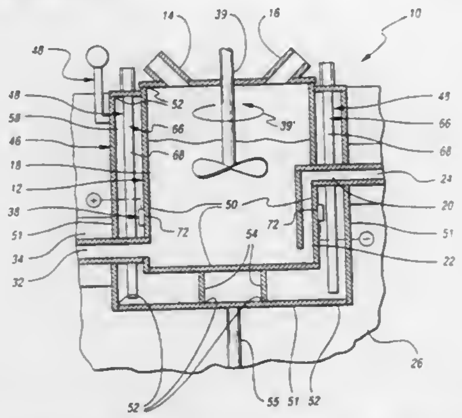
5,711,635
APPARATUS FOR HAZARDOUS WASTE VITRIFICATION

Kenneth H. Wetmore, Perrysburg; Kenneth R. Kormanyos, Sylvania, and Stephen F. Cox, Perrysburg, all of Ohio, assignors to Stir-Melter, Inc., Perrysburg, Ohio

Continuation-in-part of Ser. No. 246,412, May 20, 1994, Pat. No. 5,536,114. This application Jul. 2, 1996, Ser. No. 675,338

Int. Cl.^{6} B09B *3/00;* B62D *3/00*

U.S. Cl. 405—128 **9 Claims**



1. Apparatus for vitrifying hazardous waste, comprising:

a metallic melting vessel for receiving hazardous waste and any other necessary components for forming a glassy material upon heating;

a heater including spaced electrical connections for supplying a voltage across the metallic melting vessel to heat the melting vessel and material within the melting vessel;

a metallic containment vessel in which the melting vessel is located so the containment vessel upon failure of the melting vessel receives and contains any material that exits the melting vessel due to its failure; and

a sensor that is located externally of the melting vessel and at least partially externally of the containment vessel and detects failure of the melting vessel.

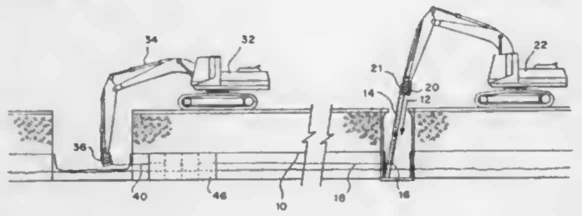
5,711,636
SYSTEM FOR LINING A PIPE

Mark L. Boyer, Houston, Tex., assignor to Boyer, Inc., Houston, Tex.

Division of Ser. No. 547,472, Oct. 24, 1995, Pat. No. 5,626,442. This application Jan. 8, 1997, Ser. No. 780,729

Int. Cl.^{6} F16L *55/18;1/00*

U.S. Cl. 405—154 **8 Claims**



1. A method for using a system for lining pipe comprising the steps of

(a) selecting a length of host pipe for lining;

(b) accessing the host pipe on both ends of a selected length of the host pipe for lining;

(c) positioning a down hole boom vertically in a shaft that accesses one end of the host pipe that has a first winch and a cable guide mounted thereon whereby the first winch drives a first cable down the shaft into the host pipe over the cable guide that positions the first cable into the host pipe;

(d) mounting a second winch with a second cable on a movable mount positioned at an access area at the host pipe opposite to the end where the down hole boom is located sufficient to accommodate a length of pipe liner and the second winch capable of movement from the surface to the host pipe;

(e) passing the first cable from the first winch mounted on the down hole boom over the cable guide through the length of the host pipe;

(f) further passing the cable through a length of liner pipe sized to line the inside of the host pipe which has been lowered into the access area next to the mouth of the host pipe using the second winch on the movable mount;

(g) further threading the first cable through a circular pulling mandrel with a central opening in a hub that has spokes extending therefrom to a circular outer ring;

(h) securing the first cable to the pulling mandrel so that upon spooling the first winch the pulling mandrel contacts the circular end surface of the pipe liner;

(i) pulling the pipe liner and pulling mandrel with the first cable and first winch through a length of the host pipe approximately the length of the pipe liner;

(j) releasing the first cable from the pulling mandrel and removing the pulling mandrel;

(k) lowering a second length of pipe liner into the access area adjacent to the first length of pipe liner with the second winch and a second cable;

(l) placing the pulling mandrel adjacent to the second length of pipe liner;

(m) securing the first cable to the pulling mandrel so that upon spooling the first winch the pulling mandrel contacts the circular end surface of the second length of pipe liner;

(n) pulling the pipe liner and pulling mandrel with first cable and first winch through a length of the host pipe approximately the length of the second pipe liner length; and

(o) repeating steps (k) through (n) until the length of host pipe is lined.

5,711,637
PROCESS OF PREVENTING LIQUEFACTION OF STRUCTURE FOUNDATION GROUND

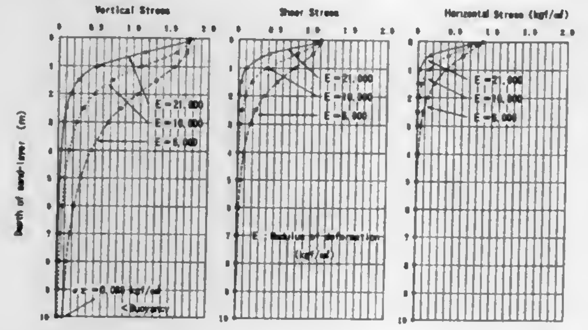
Tsukio I, 1378, Kaminofu, Shingu-machi, Kasuya-gun, Fukuoka-ken, Japan

Filed Feb. 20, 1996, Ser. No. 603,971

Claims priority, application Japan, Dec. 18, 1995, 7-347523

Int. Cl.^{6} E02D *3/12*

U.S. Cl. 405—229 **4 Claims**



1. A process of preventing liquefaction of a structure foundation ground, the process comprising the steps of determining a depth at which a load stress created by a structure to be constructed on the foundation ground is equal to the bearing capacity of an existing (original) ground, determining an equivalent depth converted from said depth on an assumption that the modulus of deformation is 21,000 kgf/cm^2, and forming a stabilized layer underneath the structure underground corresponding to said equivalent depth; the stabilized layer comprising a first component selected from the group consisting of:

natural soil, and

natural soil and broken stones, and a second component selected from the group consisting of

iron oxide and lime, and

an Al—Fe—Ti-base oxide and lime, said Al—Fe—Ti-base oxide being selected from the group consisting of an Al—Fe—Ti-base oxide composition substantially of aluminum oxide, iron oxide and titanium oxide and a mixture of aluminum oxide, iron oxide and titanium oxide.

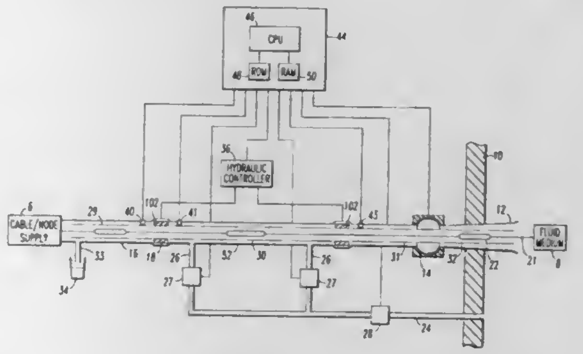
5,711,638
SYSTEM FOR DEPLOYING CABLE HAVING NODES INTO A FLUID MEDIUM AND A BLOWOUT PREVENTER

Michael A. D'Ambrosio, Arnold, Md., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Dec. 13, 1995, Ser. No. 571,335

Int. Cl.^{6} F16L *1/18;* B63B *35/04*

U.S. Cl. 405—168.3 **14 Claims**



1. A system for deploying cable having nodes, comprising:

a tubular member through which a cable having nodes travels from a cable supply point to a deployed point, said deployed point being a medium at a higher pressure than said cable supply point;

a first restrictor forming a part of said tubular member, said first restrictor having at least a first and second operating position, said first operating position allowing said cable to pass through said first restrictor, said second operating position allowing both said cable and said nodes to pass through said first restrictor;

a second restrictor forming a part of said tubular member and being disposed closer to said deployed point than said first restrictor, said second restrictor having at least a first and second operating position, said first operating position allowing said cable to pass through said second restrictor, said second operating position allowing both said cable and said nodes to pass through said second restrictor; and

control means for controlling whether said first and second restrictor are in said first and second operating position.

5,711,639
CLAMP FOR CYLINDRICAL OBJECT

Noel Tessier, North Attleboro; Anthony Colageo, Sharon; Depankar Neogi, Woburn, and Craig Douglas, Lexington, all of Mass., assignors to Emerson & Cuming Composite Materials, Inc., Canton, Mass.

Filed Feb. 1, 1996, Ser. No. 565,449

Int. Cl.^{6} F16L *1/12;* A44B *11/25*

U.S. Cl. 405—171 **15 Claims**

1. Apparatus shaped to be positioned about a cylindrical object which comprises:

a clamp comprising one or two generally cylindrical shaped sections having two free ends and formed from woven polymeric fiber layers in a solid polymeric matrix, said polymeric fiber extending in a direction about a perimeter of said cylindrical object,

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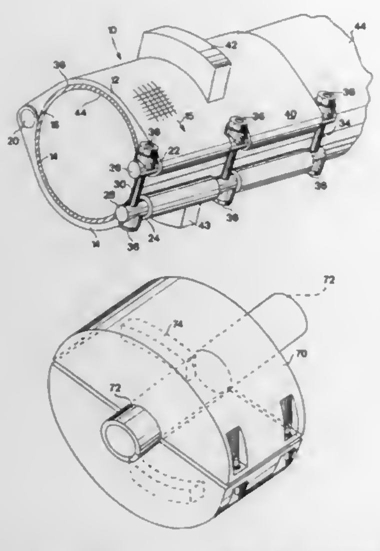
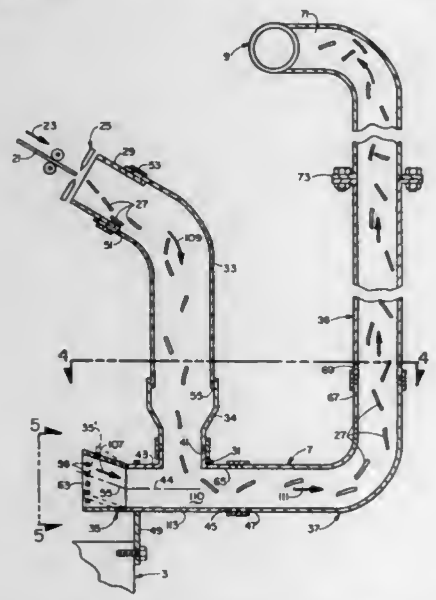


said free ends being joined by means for adjusting the distance between said free ends so as to adjust a compression force exerted by said clamp on said cylindrical object positioned within said clamp,

said clamp having an outside surface configured to fit with an inside surface of a buoyancy element,

said buoyancy element positioned about said clamp and having an inside surface configured to fit with said outside surface of said clamp to prevent said buoyancy element from moving along a length of said conduit.

5,711,640
WELD WIRE RECOVERY SYSTEM
Michael D. Ahern, Fond du Lac, Wis., assignor to Harbridge, Inc., Fond du Lac, Wis.
Filed Dec. 18, 1995, Ser. No. 574,215
Int. Cl.^{6} B65G *53/26*
U.S. Cl. 406—117 **16 Claims**



1. A weld wire recovery system for continuously transporting spent weld wire pieces that are continuously produced from an immovable source comprising:

(a) at least one compact modular collection station removably mounted to the source of spent weld wire pieces comprising:
  (i) an entry fitting having a non-closeable vertical inlet, a horizontal inlet, and a horizontal outlet concentric with the horizontal inlet;
  (ii) connector means for directing the spent weld wire pieces from the source immediately subsequent to production thereof into the vertical inlet of the entry fitting;
  (iii) air intake means joined to the entry fitting horizontal inlet for continuously directing transport air into the entry fitting during the production of the spent weld wire pieces; and
  (iv) riser means for directing the spent weld wire pieces in a downstream direction from the entry fitting horizontal outlet of only one said source;
(b) header means for directing the spent weld wire pieces in the downstream direction from the riser means; and
(c) a central collection station at a permanent location relative to the source of the weld wire pieces comprising:
  (i) exhauster means for continuously drawing the transport air into the air intake means and through the entry fitting horizontal inlet at a sufficient velocity and volume to sweep the spent weld wire pieces directed to the entry fitting vertical inlet solely by the transport air in the downstream direction and out of the entry fitting horizontal outlet and through the header means; and
  (ii) separator means interposed between the exhauster means and the header means for separating the spent weld wire pieces from the transport air.

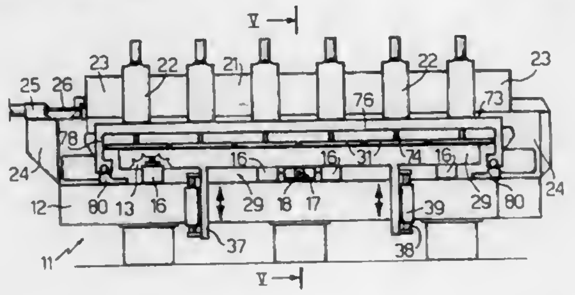
7. Apparatus for pneumatically transporting small pieces of dense material from a source thereof comprising:

(a) connector means for directing the pieces away from the source thereof;
(b) entry means for receiving the pieces from the connector means and transport air from the atmosphere;
(c) header means for directing the transport air and the pieces in a downstream direction from the entry means;
(d) separator means connected to the header means for separating the pieces from the transport air; and
(e) exhauster means connected to the separator means for creating the transport air,

wherein the connector means comprises a dielectric flexible connector having a first end clamped to the source of the pieces and a second end loosely received in the entry means,

so that the transport air transports the pieces from the entry means to the separator means.

5,711,641
METHOD AND DEVICE FOR LOADING AND UNLOADING PRINTED CIRCUIT BOARDS ON A MACHINE TOOL
Luigi Piovano, Giusto Canavese, Italy, assignor to Pluritec Italia S.p.A., Borgomanero, Italy
Filed Nov. 21, 1995, Ser. No. 560,236
Claims priority, application Italy, Jul. 14, 1995, TO95A0597; Nov. 21, 1995, TO94A0958
Int. Cl.^{6} B23B *35/00*
U.S. Cl. 408—1 R **23 Claims**



1. A device for loading and unloading printed circuit boards on a machine tool, comprising:

a table for supporting at least one of at least one formed pack and a group of mutually connected circuit boards, said at least one formed pack having a rectangular shape and providing a pair of opposite edges;

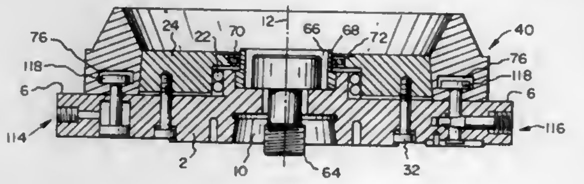
at least one machining head;

a control system for controlling relative displacement of said at least one machining head and said table along two axes;

two superimposed parallel surfaces for respectively supporting a first pack unloaded from said table and a second pack loaded on said table, said two superimposed parallel surfaces being vertically movable to be positioned in correspondence with said table; and

a transfer system transferring said at least one formed pack between said table and said two superimposed parallel surfaces, said transfer system including a member and an element, said member being movable over said two superimposed parallel surfaces and over said table, said element being fitted to said member and being adapted to alternately engage said opposite edges of each said at least one formed pack, said member causing said element to selectively load said at least one formed pack on said table and unload said at least one formed pack off said table by pushing said at least one formed pack, said element being selectively retractable for allowing said member to extend along said at least one formed pack without said element engaging said opposite edges.

5,711,642
FRONT-LOADING ROTARY RING CUTTER
Robert J. Ball, and Martin John Lakey, both of Plymouth, England, assignors to The Gleason Works, Rochester, N.Y.
Division of Ser. No. 362,696, Dec. 22, 1994, Pat. No. 5,542,791. This application May 2, 1996, Ser. No. 642,129
Int. Cl.^{6} B23C *5/06*
U.S. Cl. 409—234 **13 Claims**



12. A front-loading rotary cutter comprising:

a generally disc-shaped cutter head, said cutter head having opposed first and second sides, an axis of rotation, and a peripheral surface,

a generally disc-shaped centering disc located on said cutter head, said centering disc having opposed first and second sides with said second side of said centering disc being adjacent said first side of said cutter head, and a tapered outer edge surface,

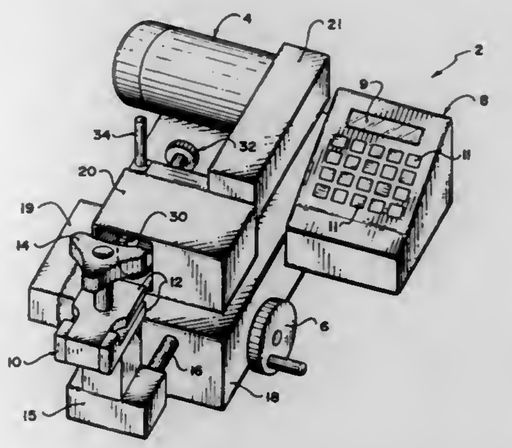
a cutter ring comprising at least one stock removing surface integral with a circular base portion, said base portion having a base surface located adjacent said first side of said cutter head, an outside surface, and a tapered inside ring surface, said tapered outer edge surface of said centering disc abutting against and complementary with said tapered inside ring surface of said cutter ring whereby said cutter ring is centered on said cutter head thereby enabling said cutter ring to rotate true about said axis, characterized in that:

said tapered inside ring surface includes an annular shoulder portion proximate said at least one stock removing surface,

said centering disc includes an annular shoulder portion located in said first surface adjacent said tapered outer edge surface, said shoulder portions together forming an annular slot,

said slot containing a clamping ring, said clamping ring comprising a plurality of attachment means extending from said clamping ring through said centering disc and into engagement with said cutter head, said clamping ring securing said cutter ring to said cutter head.

5,711,643
PORTABLE SEMI-AUTOMATIC COMPUTER CODE KEY CUTTING MACHINE
William Gordon Parr, and James H. Brooks, both of Abbotsford, Canada, assignors to Intralock Tools Ltd., Abbotsford, Canada
Filed Jul. 9, 1996, Ser. No. 677,818
Claims priority, application Canada, Jun. 28, 1996, 2180231
Int. Cl.^{6} B23C *3/00;1/20*
U.S. Cl. 409—83 **10 Claims**



1. A programmable semi-automatic portable key cutting machine comprising:

(a) a cutting machine for cutting a key pattern in a key blank;
(b) a power means for driving the cutting machine;
(c) a vice member for holding a key blank for cutting of a key pattern in the key blank by the cutting machine;
(d) a movement member for moving the vice member and a key blank held by the vice member reciprocally in lateral and longitudinal directions relative to the cutting machine;
(e) a manual member for manually adjusting the lateral position of the movement member;
(f) a step motor associated with the movement member for reciprocally moving the movement member in a longitudinal direction;
(g) a programmable computer for digitally recording a plurality of key patterns;
(h) a first sensor for detecting the lateral position of the movement member, and transmitting the position to the computer means; and
(i) second sensor for detecting the longitudinal position of the movement member, and transmitting the position to the computer means.

5,711,644
SCREW RETENTION DEVICE
Günter Regnath, Küssaberg, and Herbert Senn, Jestetten, both of Germany, assignors to Asea Brown Boveri AG, Baden, Switzerland
Filed Sep. 5, 1996, Ser. No. 707,605
Claims priority, application Germany, Nov. 2, 1995, 195 40 743.1
Int. Cl.^{6} F16B *39/10;39/24*
U.S. Cl. 411—131 **12 Claims**

1. A screw retention device for a screw by means of which a first component and a second component of a high-strength metal alloy are braced,

a plain washer engages positively on the first component and is braced by means of the head of the screw on this first component,

a retaining washer engages positively on the head of the screw, and

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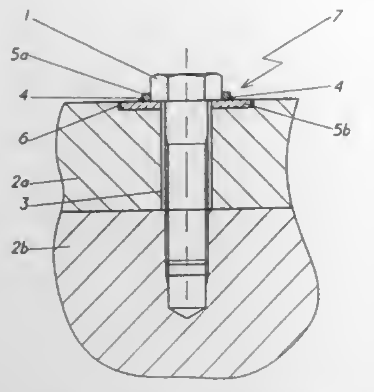


wherein the retaining washer is connected to the plain washer by means of a welding bead.

5,711,645
CONNECTING CLIP FOR TOILET SEAT

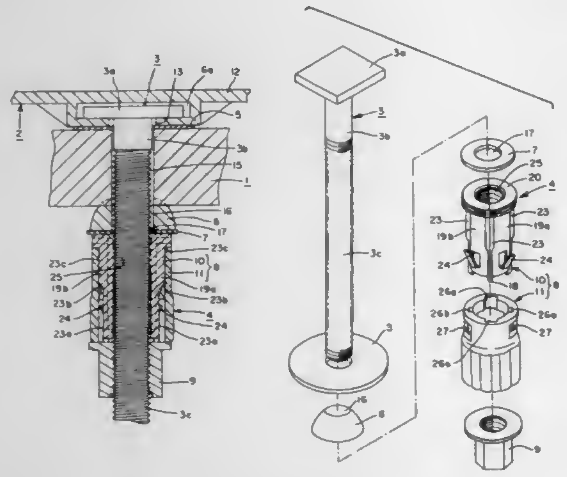
Tohru Sanbonmatsu, Toyota; Masataka Mizutani, Tokoname; Nobuyuki Tanaka, Tokoname; Akira Takamata, Tokoname; Shuniti Teranisi, Anjo, and Atsushi Sawaki, Chita-gun, all of Japan, assignors to NIFCO, Inc.; INAX Corporation, and Aisin Seiki Kabushiki Kaisha, all of Japan

Filed Apr. 1, 1996, Ser. No. 663,429

Claims priority, application Japan, Mar. 31, 1995, 7-097536; Mar. 27, 1996, 8-097613

Int. Cl.^{6} F16B *37/08*

U.S. Cl. 411—270 **31 Claims**



1. A connecting clip for a toilet seat, comprising:
a nut formed by a plurality of semicylinders that are connected and each having an inner peripheral surface, the inner peripheral surfaces of the semicylinders together defining a female screw portion, whereby said nut can be screwed onto a bolt, said nut including engaging members provided at a first longitudinal end of said nut to connect the plurality of semicylinders, said first longitudinal end opposing a second longitudinal end of said nut, said second longitudinal end including a connecting portion; and
an operating member mounted on an outer periphery of said nut and provided to be engaged with said nut at a first position and a second position, wherein in the first position, the operating member is positioned with respect to the nut such that the plurality of semicylinders approach each other, toward an axial center of said nut to reduce an inner diameter of said nut, and in the second position, the operating member is positioned with respect to the nut such that the plurality of semicylinders are separated from one another, away from the axial center of said nut to enlarge the inner diameter of said nut.

5,711,646
SUBSTRATE TRANSFER APPARATUS

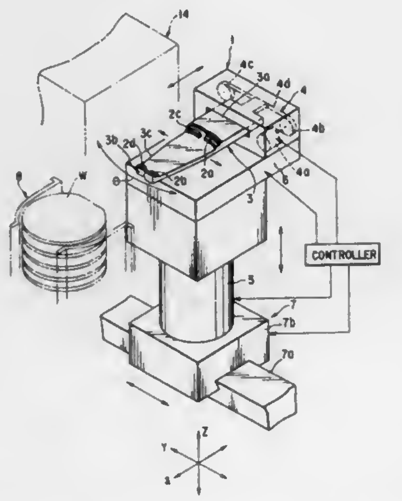
Issei Ueda; .Masami Akimoto, both of Kumamoto, and Hiroyuki Kudou, Kumamoto-ken, all of Japan, assignors to Tokyo Electron Limlted, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Continuation of Ser. No. 538,644, Oct. 4, 1995, abandoned. This application Apr. 22, 1997, Ser. No. 837,520

Claims priority, application Japan, Oct. 7, 1994, 6-268054

Int. Cl.^{6} B25J *15/06*

U.S. Cl. 414—225 **20 Claims**



1. A substrate transfer apparatus for receiving and delivering a substrate among a plurality of process locations and transferring the substrate among the process locations, said apparatus comprising;
an apparatus body;
a transfer arm member for supporting and transferring the substrate, said transfer arm member having a first end which is supported by the apparatus body and a second end which is free, an a having supporting means capable of supporting said substrate at a plurality of different supporting positions on a same plane, wherein when said substrate is supported by one of said supporting means at one of said supporting positions, each remaining supporting means is out of contact with said substrate, and wherein said supporting positions are adjacent to each other, substrate regions of adjacent supporting positions partially overlap with each other, with each substrate region corresponding to a region occupied by a substrate disposed in one of said supporting positions, and said supporting means has a first and a second support portion for supporting said substrate at positions opposing each other of a circumferential portion of said substrate;
moving means for moving the transfer arm member for enabling the transfer arm member to receive and deliver the substrate; and
switching means for horizontally shifting the transfer arm member in said same plane, thereby moving the first support portion and the second support portion between said plurality of different supporting positions for receiving and delivering the substrate on said supporting means.

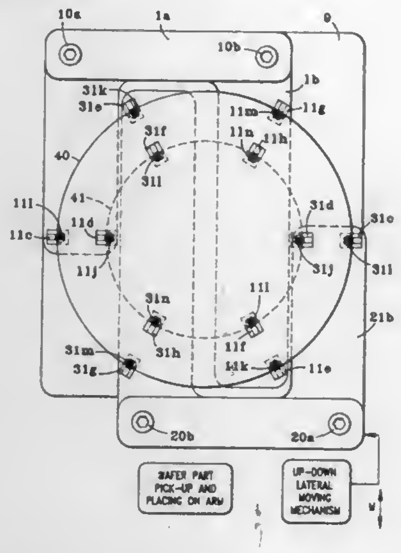
5,711,647
METHOD OF AND APPARATUS FOR LOCATING AND ORIENTATING A PART ON A GRIPPER AND TRANSFERRING IT TO A TOOL WHILE MAINTAINING LOCATION AND ORIENTATION ON THE TOOL

Alexander H. Slocum, Concord, N.H., assignor to AESOP, Inc., Concord, N.H.

Filed Oct. 17, 1994, Ser. No. 324,255

Int. Cl.^{6} B65G *65/00*

U.S. Cl. 414—749 **28 Claims**



1. An apparatus for kinematically gripping and transferring a part having, in combination, nestable planar gripper and tool arms each having at least two spaced leaves for nesting and each respectively provided with a set of three equilaterally co-planar spaced curved contact surface elements, with the elements of the gripper arm circumferentially displaced 60° from the corresponding elements of the tool arm; the part having six 60°-spaced peripheral grooves; means for relatively laterally moving and lowering and raising the gripper arm for placing the part upon the gripper arm with the gripper arm set of elements contacting three of the plate grooves to hold the part and for relatively laterally moving and lowering and raising the gripper arm relative to the nesting tool arm to cause the tool arm set of elements to contact the other three of the part grooves so as to transport and transfer the part from the gripper arm to the tool arm, and when desired, to cause the gripper arm to pick up the part from the tool arm, all with the location of the part uniquely established and defined in space, thus enabling repeatability while minimizing imposing stresses on the part.

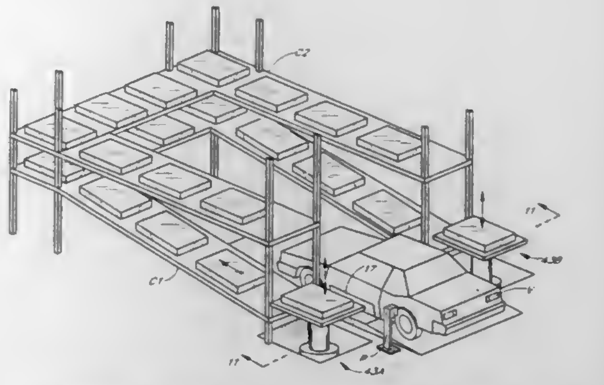
5,711,648
BATTERY CHARGING AND TRANSFER SYSTEM

Julius G. Hammerslag, San Juan Capistrano, Calif., assignor to Unlimited Range Electric Car Systems Company, San Clemente, Calif.

Continuation-in-part of Ser. No. 614,130, Mar. 12, 1996, abandoned, which is a division of Ser. No. 178,101, Jan. 6, 1994, Pat. No. 5,549,443. This application Nov. 12, 1996, Ser. No. 745,423

Int. Cl.^{6} B65G *67/02*

U.S. Cl. 414—786 **14 Claims**



1. A method of rapidly exchanging a battery of an electrically powered passenger vehicle, the vehicle having a battery compartment which extends through at least a portion of the vehicle, the method comprising the steps of:
providing a battery transfer and charging station comprising:
a drive-through vehicle bay;
a continuous battery transfer conveyor within the drive-through bay, the conveyor having a battery receiving end which receives an at least partially discharged battery from a first end of the battery compartment, and having a battery delivery end which delivers a charged battery to a second end of the battery compartment, the conveyor having multiple battery positions between the receiving and delivery ends to hold multiple batteries; and
a computer which controls the battery transfer conveyor by advancing the conveyor in single-battery-position increments to move batteries from the battery receiving end to the battery delivery end, the computer coupled to an electronic payment system which allows an operator of the vehicle to specify payment source information for payment of a fee associated with an exchange of the discharged battery with the charged battery;
positioning the vehicle within the drive-through bay such that the battery compartment is aligned with the battery receiving and delivery ends of the conveyor, the battery compartment containing the discharged battery;
specifying payment source information via the payment system to enable the computer to initiate a battery exchange operation; and
exchanging the discharged battery with the charged battery by programmably advancing the conveyor with the computer to shift the charged battery from the delivery end of the conveyor into the compartment while moving the discharged battery from the compartment to the receiving end of the conveyor.

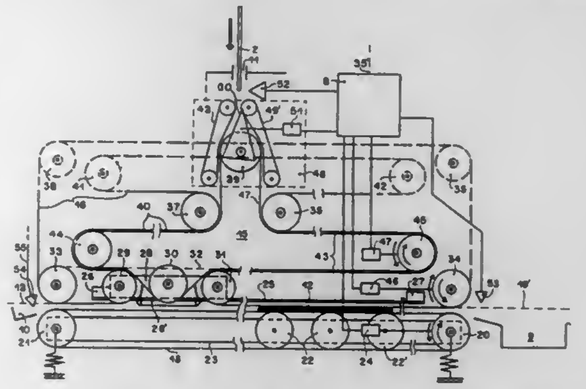
5,711,649
SHEET STACKING APPARATUS

Andre Gerlier, Sciez, France, assignor to Mars Incorporated, McLean, Va.

Continuation of Ser. No. 235,190, Apr. 29, 1994, Pat. No. 5,569,015, which is a continuation of Ser. No. 732,034, Jul. 18, 1991, abandoned. This application Aug. 16, 1994, Ser. No. 292,083

Int. Cl.^{6} B65H *29/00*

U.S. Cl. 414—790.7 **34 Claims**



1. An apparatus for stacking sheets on a stationary stack of individual sheets, comprising:
a carriage having first and second rollers;

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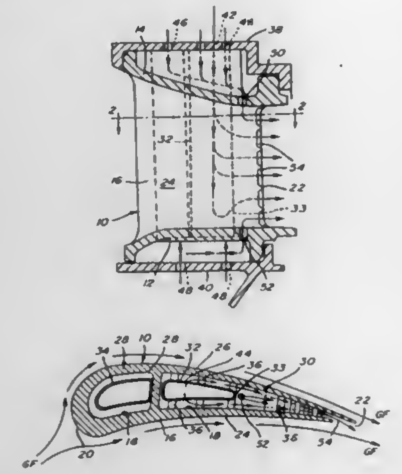
- a rail mounted relative to a stack position, wherein the carriage is displaceably mounted on the rail to traverse the stack position and to deposit a sheet onto the stationary stack of sheets;
- drive means for moving the carriage on the rail;
- a stack position surface upon which the stack is formed, the surface being stationary while the sheet is rolled onto the stack; and
- conveying means for conveying the sheet to the carriage, the conveying means comprising a first belt and a second belt which engage opposite sides of the sheet and cooperate to convey the sheet to the first roller, the first belt being entrained around the first roller and providing a stack holding section extending away from the first roller which is stationary with respect to the stack as the sheet is conveyed to the stack, whereby, as the carriage moves across the stack and the sheet is conveyed to the carriage, the top of the stack is supported by the stack holding section of the first belt without relative movement therebetween; and
- directing means to direct the sheet around the first roller for deposit on the stack.

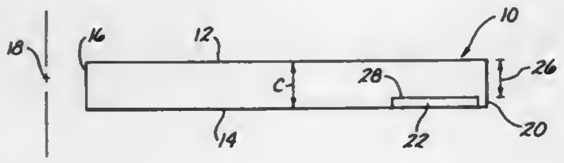
5,711,650
GAS TURBINE AIRFOIL COOLING
Ian Tibbott, St. Bruno; William Abdel-Messeh, Beloeil, and Michael Papple, Nun's Island, all of Canada, assignors to Pratt & Whitney Canada, Inc., Longueuil, Canada
Filed Oct. 4, 1996, Ser. No. 725,990
Int. Cl.^{6} F01D *9/04*
U.S. Cl. 415—115 **6 Claims**



1. An air cooling system for a turbine section airfoil, a gas turbine engine having a mainstream gas path therethrough comprising coolant air bleed means from a compressor section of the gas turbine engine to the airfoil; the airfoil including an airfoil wall having an exterior airfoil shape and defining an internal cavity; the airfoil including a platform at an end of the airfoil; the airfoil including an aft section defining a trailing edge, an insert tube in the cavity extending from the platform and communicating with the coolant air bleed means to pass a portion of the coolant air through the insert tube and into the cavity; air exhaust slots at the trailing edge and along the span of the airfoil across the mainstream gas path for exhausting gas from the cavity to the mainstream gas path; the airfoil further communicating with the coolant air bleed means to direct another portion of the coolant air to impinge on the platform, the improvement comprising an opening defined in the platform to communicate with the cavity in the aft section between the insert tube and the exhaust slots in the aft section of the airfoil to exhaust the portion of the coolant air impinged on the platform through the exhaust slots along with the portion of the coolant air passed into the cavity through the insert tube.

4. A method of cooling a hollow airfoil in a mainstream gas path in a turbine section of a gas turbine engine, the hollow airfoil having an inner platform and an outer platform and a trailing edge having outlets, comprising the steps of directing compressed coolant air along a flow path to the interior of the hollow airfoil through a conduit in the hollow airfoil, directing a second flow of compressed coolant air to the inner and outer platforms of the airfoil, bleeding the second flow of coolant air into the hollow airfoil downstream of the conduit in the hollow airfoil, directing the coolant air from the first and second flows of coolant air through the outlets in the trailing edge of the hollow airfoil into the mainstream gas path.

5,711,651
BLADE VORTEX INTERACTION NOISE REDUCTION TECHNIQUES FOR A ROTORCRAFT
Bruce D. Charles; Ahmed A. Hassan, both of Mesa; Hormoz Tadghighi, Gilbert; Ram D. JanakiRam, Mesa, all of Ariz., and Lakshmi N. Sankar, Atlanta, Ga., assignors to McDonnell Douglas Helicopter Company, Mesa, Ariz.
Continuation of Ser. No. 251,329, May 31, 1994, Pat. No. 5,588,800. This application Jun. 13, 1996, Ser. No. 662,601
Int. Cl.^{6} F01D *5/00*
U.S. Cl. 416—24 **15 Claims**



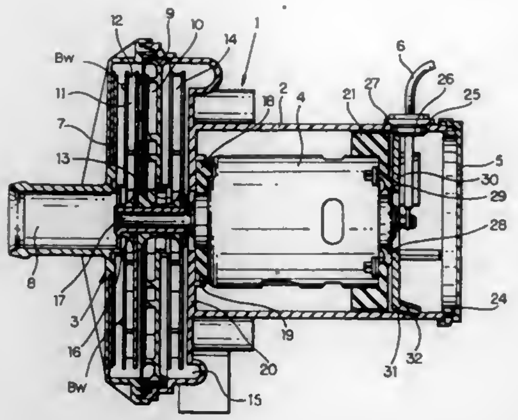
1. An active control device for reducing blade vortex-interaction (BVI) noise generated by a rotorcraft having a rotor blade including a tip end, a root end, a leading edge, and a trailing edge, said rotor blade being attached at said root end to a rotor hub on said rotorcraft and extending radially outwardly therefrom, having a radius R and a chord C, such that when said rotor hub is rotatably driven, said rotor blade rotates about said hub through a 360 degree azimuth, said active control device comprising:

- a movable flap pivotally attached to said rotor blade trailing edge by a hinge oriented generally radially along said rotor blade, at least a portion of said flap being positioned near said rotor blade tip, in about the outboard 25% of the rotor blade radial length;
- an actuator for deflecting and retracting the flap about said hinge;
- wherein said flap is adapted to be actuated to a deflected position during rotation of said rotor blade through predetermined regions of said rotor azimuth, and is further adapted to be actuated to a retracted position through the remaining regions of said rotor azimuth, thereby functioning to reduce BVI noise during operation of said rotorcraft.

5,711,652
ELECTRICALLY DRIVEN AIR PUMP HAVING A DRIVE MOTOR BALANCED IN SITU
Günter Van De Venne, Mönchengladbach; Rainer Peters, Goch, and Klaus Muckelmann, Düsseldorf, all of Germany, assignors to Pierburg AG, Neuss, Germany
Filed Oct. 30, 1995, Ser. No. 549,960
Claims priority, application Germany, Oct. 29, 1994, 44 38 750.4
Int. Cl.^{6} F04D *29/22;* **B64C** *27/72*
U.S. Cl. 416—144 **13 Claims**

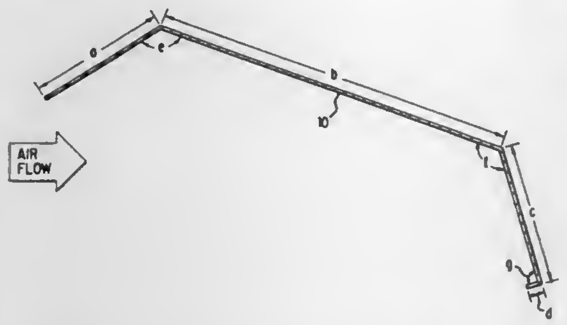
9. An electrically driven air pump comprising:

- a housing having first and second sections;
- an electric motor mounted in said first section of the housing;



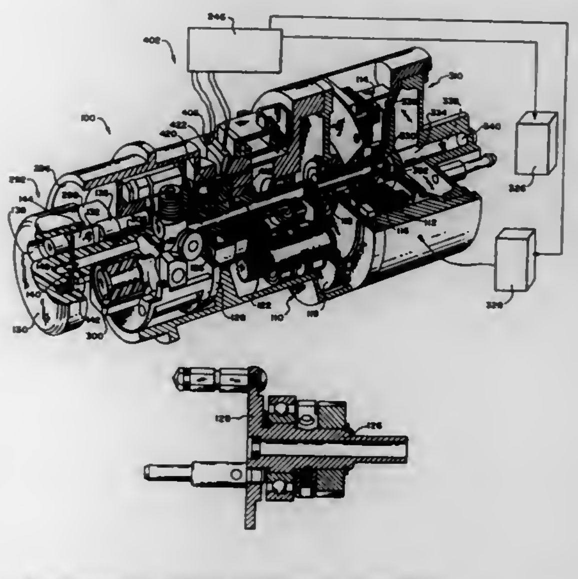
- a pumping mechanism in said second section of the housing, said electric motor having an output shaft projecting into said second section, said pumping mechanism comprising first and second rotor wheels secured to said output shaft, and a stator wheel fixed to said housing and interposed between said rotor wheels to form pumping stages on opposite sides of said stator wheel, one of said rotor wheels being disposed in said second section outwards of said stator wheel and exposed in said second section;
- means associated with said one of said rotor wheels for balancing said electric motor and said pumping mechanism, in situ, in their mounted state in said housing; and
- a cover permanently fitted on said housing and enclosing said second section, said cover being friction-fitted to said stator wheel and to said housing by press fitting said cover on said stator wheel and said housing subsequent to balancing of said electric motor.

5,711,653
AIR LIFTED AIRFOIL
Francis J. McCabe, #6 Bunker Hill Rd., Ottsville, Pa. 18942
Continuation-in-part of Ser. No. 507,129, Jul. 31, 1994, Pat. No. 5,599,172. This application Jul. 24, 1996, Ser. No. 685,134
Int. Cl.^{6} F04D *29/38*
U.S. Cl. 416—237 **1 Claim**



1. An airfoil for use in a flowing air stream, having a shape comprising a planar face portion and leading and trailing longitudinal edge portions associated with opposite edges of the face portion to form, in cross-section, an essentially inverted pan-shaped structure when disposed with its leading edge facing into the flow of air, and having a planar flange portion extending at an angle of approximately 90 degrees from and beneath the trailing edge portion back toward the leading edge portion.

5,711,654
PERISTALTIC PUMP WITH ROTOR POSITION SENSING EMPLOYING A REFLECTIVE OBJECT SENSOR
Richard L. Afflerbaugh, Libertyville, Ill., assignor to Baxter International Inc., Deerfield, Ill.
Filed Jun. 7, 1995, Ser. No. 472,548
Int. Cl.^{6} F04B *43/12*
U.S. Cl. 417—63 **6 Claims**



1. A peristaltic pumping mechanism comprising

- a peristaltic pumping element including a pump rotor carrying a roller, a drive motor, a drive shaft coupling the drive motor to the pump rotor to rotate the pump rotor about a rotational axis in a range of rotational positions including a load position, in which the pump rotor is presented to receive pump tubing,
- linkage coupled to the roller to move the roller between a retracted position free of contact with pump tubing and an extended position making operative contact with pump tubing,
- a reflective object sensor that transmits energy along a first optical axis and senses reflected energy along a second optical axis, the first and second axes converging at an optical focus, the reflective object sensor generating an output that varies according to magnitude of the reflected energy,
- a first disk carried by the drive shaft for rotation in synchrony with the pump rotor through the range of rotational positions, the first disk having an exterior surface made of a material that reflects energy transmitted by the reflective object sensor, the exterior surface being spaced in optical alignment with the reflective object sensor at or near the optical focus,
- a second disk carried by the drive shaft concentrically about the first disk for common rotation in synchrony with the pump rotor, the second disk being spaced inside the optical focus of the reflective object sensor, the second disk covering the exterior surface of the first disk, except for a slotted region, through which the exterior surface of the first disk is exposed, the slotted region being in optical aligned with the reflective object sensor only when the pump rotor is in the load position,
- the reflective object sensor generating, during rotation of the pump rotor through the range of rotational position, a first output while the slotted region is in optical alignment with the reflective object sensor and a second output different than the first output while the slotted region is out of optical alignment with the reflective object sensor, and
- a controller coupled to the reflective object sensor, the drive motor, and the linkage operative in response to the first output to command the drive motor to cease rotation of the pump rotor and to command the linkage to move the roller to the retracted position.

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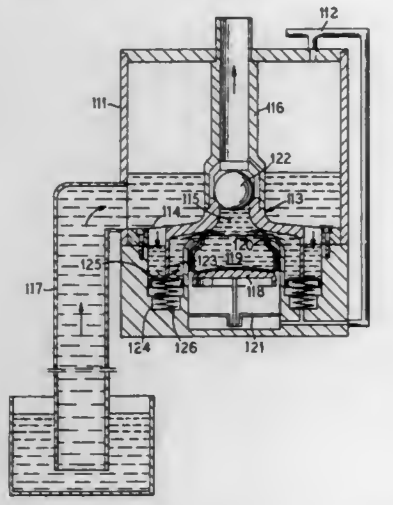
5,711,655
PUMP SYSTEM USING A VACUUM CHAMBER AND MECHANICAL PUMP COMBINATIONS

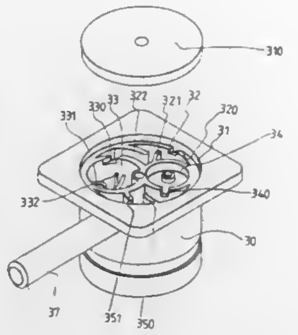
Stig Lundbäck, Ostra Tynningö, S-185 00 Vaxholm, Sweden
PCT No. PCT/SE92/00388, § 371 Date Dec. 7, 1993, § 102(e) Date Dec. 7, 1993, PCT Pub. No. WO92/21879, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 157,138
Claims priority, application Sweden, Jun. 7, 1991, 9101747
Int. Cl.^{6} F04B *23/08*
U.S. Cl. 417—85 **23 Claims**

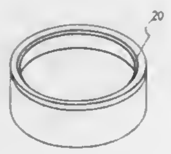


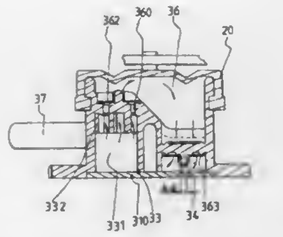
1. A pump arrangement for transporting liquid from a first location by means of a pump positioned at a second location, comprising
- a pump having a pump inlet, a pump outlet, and pressure pump means for expelling liquid supplied by way of the pump inlet through the pump outlet,
- a hermetically sealed vacuum compartment,
- means for maintaining a negative pressure in the vacuum compartment,
- a suction conduit for lifting liquid from a suction opening of said suction conduit at a hydraulic elevation below said pump inlet into the vacuum compartment which conduit is flow connected to the interior of the vacuum compartment, and
- means for connecting the pump inlet to the interior of the vacuum compartment with the pump outlet connected to an outlet conduit opening outside the vacuum compartment wherein said outlet conduit is located entirely above said suction opening of said suction conduit.

5,711,656
AQUARIUM PUMP HAVING SILENCING EFFECT

Hsien-tang Tsai, No. 4-1, Ta-Guang Street, Taichung City, Taiwan
Filed Oct. 29, 1996, Ser. No. 741,324
Int. Cl.^{6} F04B *39/12*
U.S. Cl. 417—312 **4 Claims**



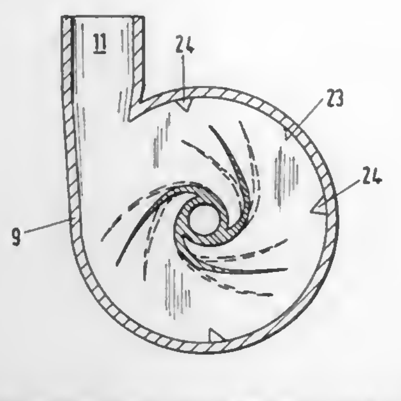




1. An aquarium pump comprising a cylinder provided in a bottom portion thereof with an air admitting chamber, an air inputting chamber, an air outputting chamber, and an air discharging chamber, said cylinder further provided in a top portion thereof with an air winding chamber, said air admitting chamber being in communication with atmosphere via an air inlet thereof, said air admitting chamber being in communication with said air inputting chamber via an indentation of said air inputting chamber, said air outputting chamber being communication with said air discharging chamber via an indentation of said air outputting chamber, said discharging chamber being connected with an air output tube, said air winding chamber provided with an air cap attached to an outer surface of said air winding chamber, said air winding chamber further provided therein with an air entry hole for communicating said air winding chamber with said air inputting chamber, said air winding chamber still further provided with an air exit hole for communicating said air winding chamber with said air outputting chamber, said air entry hole and said air exit hole provided respectively with a membrane for opening and closing said air entry hole and said air exit hole;
- wherein said air admitting chamber is provided therein with a plurality of winding air ducts for reducing the speed of atmospheric air drawn into said air admitting chamber;
- wherein said air inputting chamber is provided therein with a plurality of volute air ducts formed by a plurality of guide blades arranged spirally for reducing the speed of the atmospheric air;
- wherein said air outputting chamber and said air discharging chamber are provided with a plurality of winding air ducts;
- wherein said air cap is actuated to draw the atmospheric into said air admitting chamber such that the speed of the atmospheric air is reduced by said winding air ducts of said air admitting chamber, and that the atmospheric air is drawn into said air inputting chamber before the atmospheric air is further drawn into said air winding chamber via said air entry hole;
- wherein the atmospheric air in said air winding chamber is forced by the compression of said air cap into said air outputting chamber via said air exit hole of said air winding chamber before the atmospheric air is discharged via said air output tube without resonance.

5,711,657
CENTRIFUGAL PUMP, PARTICULARLY FOR FOUNTAINS

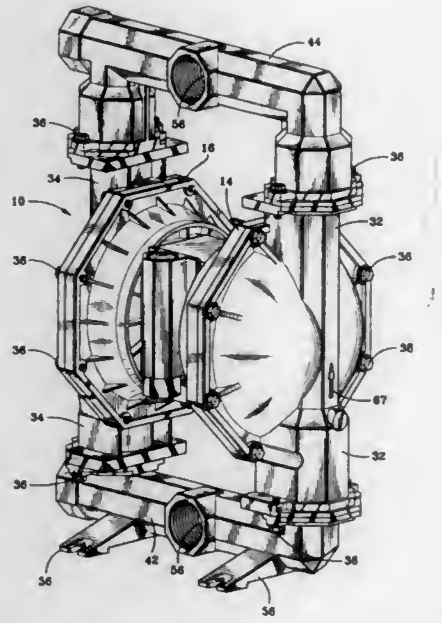
Dieter Hoffmeier, Ibbenbucren, Germany, assignor to Oase-Pumpen Wuebker Soehne GmbH & Co. Maschinenfabrik, Hoerstel, Germany
PCT No. PCT/EP95/02770, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO96/02763, PCT Pub. Date Feb. 1, 1996
PCT Filed Jul. 14, 1995, Ser. No. 615,212
Claims priority, application Germany, Jul. 15, 1994, 44 24 996.9
Int. Cl.^{6} F04D *29/24;13/02*
U.S. Cl. 417—319 **18 Claims**



1. Pump apparatus comprising a centrifugal pump, an electric motor axially aligned with said centrifugal pump, said electric motor comprising a single-phase synchronous motor having a permanent magnet rotor, said centrifugal pump comprising a housing and an impeller rotatable in said housing, said impeller having a hub and spiral impeller blades extending generally radially outwardly from said hub and generally spiralling outwardly in a direction opposite to the operational direction of rotation of said impeller, said impeller blades being flexible such that when said motor starts to rotate said impeller in a direction opposite to said operational direction, said impeller blades are flexed and extended radially outwardly at least 2% of the radial length of said impeller blades.

5,711,658
DIAPHRAGM PUMP WITH IMPROVED FLOW MANIFOLDS

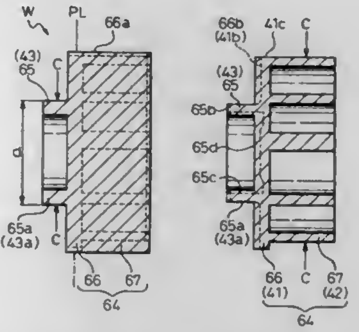
Michael Conti, and Gerald M. Distel, both of Bryan, Ohio, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Dec. 4, 1996, Ser. No. 759,919
Int. Cl.^{6} F04B *17/00*
U.S. Cl. 417—393 **8 Claims**



1. A diaphragm pump comprising: a pump housing having a first housing side and a second housing side; a first unitary manifold flow connected to the first housing side; a second unitary manifold flow connected to the second side, said first and second unitary manifolds adapted to be flow connected to either the first and second housing sides; a pump inlet manifold; and a pump discharge manifold, said pump inlet and discharge manifolds each having a first end, a second end, a first flow port provided at one of the ends and a second flow port located along the respective manifold between the manifold ends, the inlet and discharge manifolds adapted to be flow connected to said first and second unitary manifolds.

5,711,659
METHOD OF MANUFACTURING A MOVABLE SCROLL ELEMENT AND A SCROLL ELEMENT PRODUCED BY THE SAME METHOD

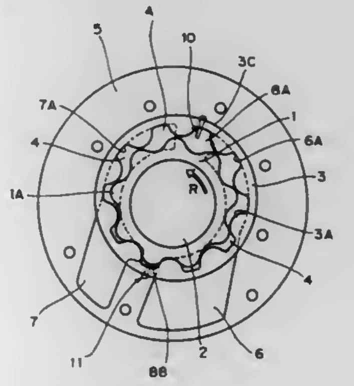
Tetsuhiko Fukanuma; Yasushi Watanabe; Shinya Yamamoto, all of Kariya; Yuichi Tsumagari, Toyokawa, and Shigeki Iwanami, Okazaki, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, and Nippondenso Co., Ltd., both of Kariya, Japan
Filed Jul. 10, 1996, Ser. No. 677,955
Claims priority, application Japan, Jul. 10, 1995, 7-173563
Int. Cl.^{6} F04C *18/04;* **B23P** *17/00*
U.S. Cl. 418—55.2 **6 Claims**



1. A movable scroll element adapted for being accommodated in a scroll type compressor, and including a disk-like end plate having opposite end faces, a drive power receiving portion axially projecting from one of said opposite end faces of said end plate and receiving a drive power for causing an orbiting motion of said movable scroll element, and a spiral portion axially projecting from the other of said opposite end faces,
- wherein said movable scroll element is produced by applying a predetermined amount of machine cutting to an incomplete cast or forged product of said movable scroll element, and
- wherein said drive power receiving portion of said movable scroll element has an outer face on which an unmachined outermost layer remains on said incomplete cast or forged product without being subjected to machine cutting.

5,711,660
INTERNAL GEAR TYPE ROTARY PUMP HAVING A RELIEF GROOVE

Mutsumi Mitarai, and Atsushi Kobayashi, both of Fuji, Japan, assignors to Jatco Corporation, Fuji, Japan
Filed Jun. 25, 1996, Ser. No. 670,818
Claims priority, application Japan, Jun. 30, 1995, 7-165245
Int. Cl.^{6} F04C *2/10*
U.S. Cl. 418—79 **6 Claims**



1. An internal gear type rotary pump comprising:
- a pump housing having a pump chamber defined by a peripheral surface and side surfaces, at least one of which is provided with an inlet port and a discharge port;

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an outer rotor having internal gear teeth, the outer rotor being rotatably disposed in the pump chamber; and

an inner rotor having external gear teeth, the external gear teeth being meshed with the internal gear teeth to define a variable volume chamber between the external gear teeth and the internal gear teeth for varying a volume of the volume chamber between a maximum volume at a closure portion and a minimum volume at an engaging portion,

wherein a sliding gap is defined between an outer peripheral surface of the outer rotor and the peripheral surface of the pump chamber, the sliding gap communicating with the inlet port and the discharge port, and

wherein at least one of the side surfaces at the closure portion has a thin groove having a closed end, the thin groove establishing communication between the variable volume chamber and the sliding gap so that working fluid in the closure portion escapes through the thin groove.

5,711,661

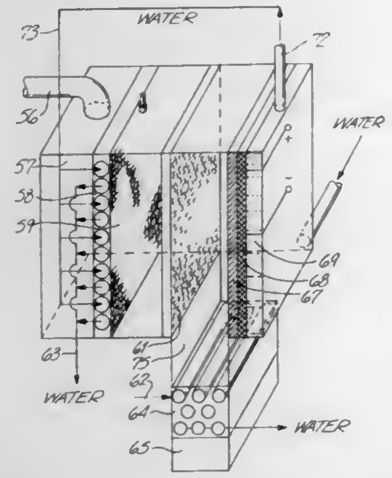
HIGH INTENSITY, LOW NO$_X$ MATRIX BURNER

Aleksandr S. Kushch, La Mesa, and Mark K. Goldstein, Del Mar, both of Calif., assignors to Quantum Group, Inc., San Diego, Calif.

Filed May 3, 1994, Ser. No. 237,306

Int. Cl.^{6} F23D *13/12*

U.S. Cl. 431—329 **15 Claims**



1. A matrix burner comprising:

a three dimensional porous gas distributing layer for distributing a fuel/air mixture;

a three dimensional matrix of emissive layers comprising at least three two dimensional porous layers downstream from the distributing layer;

open spaces between each of the successive layers; and

means for delivering a fuel/air mixture to the upstream face of the porous distributing layer at a sufficient velocity for maintaining a stable flame adjacent to the two dimensional porous layers.

5,711,662

GAS LIGHTER

Kunio Ishiguro, Tokyo, Japan, assignor to Ishimitsu Kinzoku Kogyo Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1996, Ser. No. 708,488

Claims priority, application Japan, Sep. 8, 1995, 7-231451

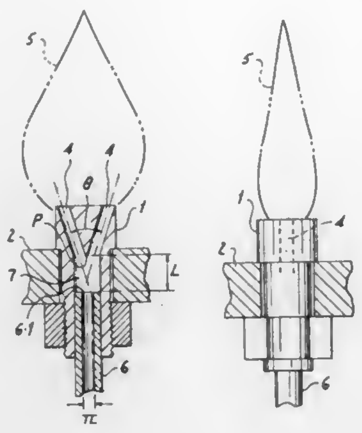
Int. Cl.^{6} F23D *14/28*

U.S. Cl. 431—344 **7 Claims**

1. A gas lighter comprising:

a lighter body;

a burner head projected columnarly from said lighter body; and



two gas nozzles formed in said burner head; wherein:

said burner head has an upper surface spaced from said lighter body and a longitudinal axis; and

said two gas nozzles are branched right and left at the same angle with respect to said longitudinal axis of said burner head and open in said upper surface spaced from said lighter body such that a flame emanating therefrom is formed on said upper surface of said burner head, spaced from said lighter body.

5,711,663

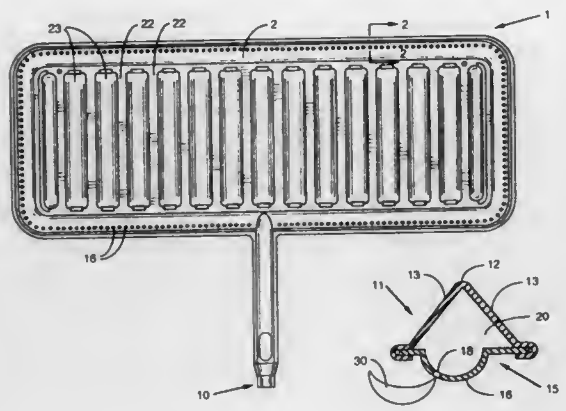
BURNER

Michael Giebel, Joplin; Steven Speck; Henry Schubert, both of Neosho, all of Mo., and Robert F. Minor, Sr., DeBary, Fla., assignors to Sunbeam Porducts, Inc., Delray Beach, Fla.

Filed Aug. 14, 1994, Ser. No. 290,423

Int. Cl.^{6} F23D *14/62*

U.S. Cl. 431—354 **5 Claims**



1. A gas burner, comprising:

(a) an input port in fluid communication with an elongated conduit member; said conduit member comprising an upper portion having a pair of sloping sides joined at an apex and having an angular cross-section, a lower portion having a depression, and including a plurality of spaced apart burner ports; said elongated conduit member further having an enclosed shape defining an open space therewithin; said plurality of spaced apart burner ports positioned on an outside portion of said depression with respect to a vertical center line through a cross-section of the depression; and

(b) a plurality of rib members spanning the open space within said elongated conduit member.

5,711,664

ROTARY MELTING FURNACE

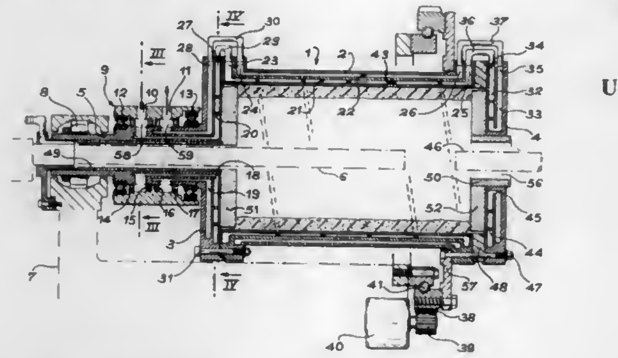
Claude Jegou, Villelaure; Fayez Kassabji, Avon, and Charley Renaux, Jouques, all of France, assignors to Commissariat A L'Energie Atomique, and Electricite De France Service National, both of Paris, France

Filed Jul. 22, 1996, Ser. No. 681,062

Claims priority, application France, Aug. 3, 1995, 95 09462

Int. Cl.^{6} F27B *7/38*

U.S. Cl. 432—116 **7 Claims**



1. A rotary melting furnace comprising:

an enclosure having a cylindrical shell, first and second disc-shaped flanges connected to the shell at ends thereof, and a liquid cooling circuit; a support for supporting the enclosure; and a motor for rotating the enclosure about an axis when a melting process occurs; and wherein the cooling circuit is unitary, and the shell includes a shell portion of the cooling circuit and the first and second flanges respectively include first and second flange portions of the cooling circuit.

5,711,665

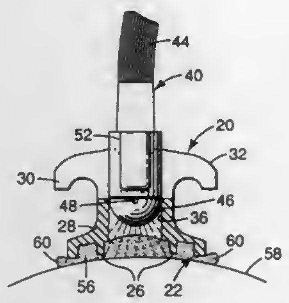
METHOD AND APPARATUS FOR BONDING ORTHODONTIC BRACKETS TO TEETH

Randall E. Adam, Sierra Madre, and Leonard A. Preston, Arcadia, both of Calif., assignors to Minnesota Mining & Manufacturing, St. Paul, Minn.

Filed Dec. 19, 1995, Ser. No. 575,095

Int. Cl.^{6} A61C *7/00*

U.S. Cl. 433—9 **46 Clalms**



1. The combination of an orthodontic bracket and a curing light assembly comprising:

an orthodontic bracket having a base with an outer surface for direct bonding to a tooth, said base including a central portion with at least one opening, said bracket having a body extending from the base in a direction away from said outer surface, said bracket also including at least one tiewing extending outwardly from the body and the slot next to said at least one tiewing for receiving an archwire, said body including a central section having a passage aligned with said at least one opening; and

a curing light assembly having a housing with an outer end portion of a size sufficient for reception in said passage, said curing light assembly including a source of light connected to said housing for emitting light from said outer end portion in order to cure bonding adhesive in contact with said central portion of said base when said outer end portion is received in said passage.

5,711,666

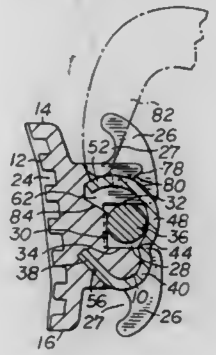
SELF-LIGATING ORTHODONTIC BRACKETS

G. Herbert Hanson, 57 Augusta St., Hamiliton, Canada, L8N 1P8

Filed Oct. 22, 1996, Ser. No. 734,833

Int. Cl.^{6} A61C *7/28*

U.S. Cl. 433—11 **21 Claims**



1. An orthodontic bracket comprising:

a bracket body having labial, lingual, gingival, occlusal, mesial and distal surface portions, the body having therein a mesial distal extending arch wire slot having lingual, gingival, and occlusal surfaces and opening to the bracket lingual surface portion; and

a ligating latch spring member having the form of a thin flat metal strip and comprising along its length in the order stated. an anchor portion, a flexing portion, a ligating portion and a latching portion;

the spring member also comprising a biasing portion between the flexing and ligating portions at the slot occlusal surface, or between the ligating and latching portions at the slot gingival surface, the biasing portion being convex toward the slot lingual surface and protruding into the slot;

wherein the anchor portion is retained by the bracket body to retain the spring member on the bracket body;

the ligating and latching portions are movable by flexing of the flexing portion between a slot open position in which the slot opening is open for insertion of an arch wire into the slot, and a latched slot closed position in which the slot opening is closed by the ligating portion for retention thereby of an arch wire in the slot; and

the spring member is latched in the slot closed position by latching engagement between the latching portion and the bracket body.

5,711,667

ORTHODONTIC BITE JUMPING DEVICE

William Vogt, R.D. 4, Box 4205, Bangor, Pa. 18013

Continuation-in-part of Ser. No. 287,216, Aug. 8, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,474

Int. Cl.^{6} A61C *7/36*

U.S. Cl. 433—19 **7 Claims**

1. An element for connecting a first appliance of an orthodontic device and a second appliance of the orthodontic device, wherein the first appliance and the second appliance are capable of association with teeth of a patient for applying forces to and between the first appliance and the second appliance, and the teeth associated with the first appliance and the second appliance, wherein the connecting element comprises:

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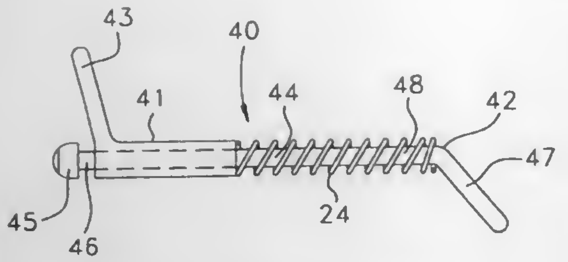


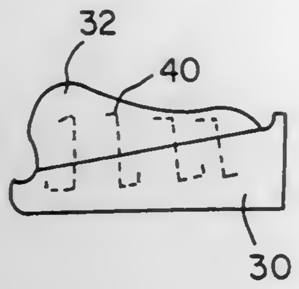
a body portion including an outer shell for defining a centrally disposed, hollow cavity, wherein a first end of the body portion includes means for connection with the first appliance;

a piston slidingly received in the hollow cavity of the body portion, and extending from a second end of the body portion opposite to the first end, wherein the piston includes a termination having means for connection with the second appliance; and

a spring associated with the piston, for producing compressive forces between the connection means of the body portion and the connection means of the piston, for application to and between the first appliance and the second appliance of the orthodontic device, wherein the spring is externally associated with the body portion.

5,711,668
METHOD OF INITIATING THE MAKING OF A DENTURE

Michael C. Huestis, 4700 Orleans Dr., Kokomo, Ind. 46902, assignor to Michael C. Huestis, Kokomo, Ind.
Filed Dec. 2, 1996, Ser. No. 757,628
Int. Cl.^{6} A61C *13/00*
U.S. Cl. 433—167 **18 Claims**



1. A method of initiating the making of a denture comprising the steps of:

a. Taking an impression of a worn denture to form a mold in an impressionable material;

b. Removing the worn denture from said impressionable;

c. Filling said mold with a curable material;

d. Allowing the material to cure to create a stint;

e. Removing said stint from said mold;

f. Pouring a resilient material into areas of said stint defining an undercut;

g. Allowing said resilient material to solidify to form a resilient layer;

h. Inserting at least one retention clip partially into said resilient layer;

i. Pouring an inelastic material onto said resilient layer and onto exposed surface areas of said stint corresponding to soft tissue of a patient;

j. Allowing said inelastic material to solidify to form a rigid layer mated with said resilient layer;

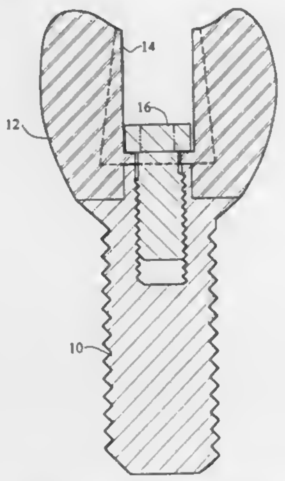
k. Mounting said stint with said two-layered model in an articulator;

l. Making a baseplate; and

m. Transferring tooth placement information from said stint to a new wax set-up with modifications as directed by a responsible dentist.

5,711,669
HIGH LOAD FACTOR TITANIUM DENTAL IMPLANT SCREW

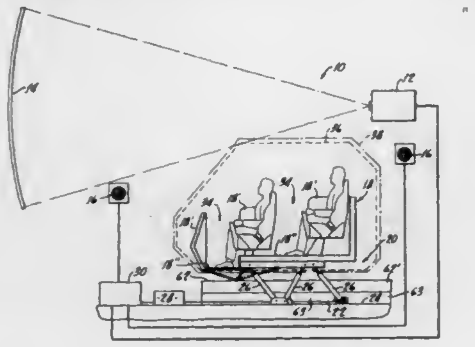
Steven M. Hurson, 5610 Van Gogh Way, Yorba Linda, Calif. 92887
Filed Nov. 12, 1996, Ser. No. 747,226
Int. Cl.^{6} A61C *8/00*
U.S. Cl. 433—174 **7 Claims**



1. A dental prosthesis system comprising a titanium dental implant having formed therein a threaded orifice, a titanium screw in the threaded orifice, and a coating on the titanium screw consisting essentially of a malleable biocompatible material that is sufficiently softer than titanium that upon application of torque to the screw such material will deform and be displaced without deformation of the titanium screw.

5,711,670
MOTION-BASE RIDE SIMULATOR WITH IMPROVED PASSENGER LOADING AND UNLOADING METHOD AND APPARATUS

Craig Kevin Barr, 2925 Alta Terr., La Crescenta, Calif. 91214
Filed Nov. 13, 1995, Ser. No. 556,490
Int. Cl.^{6} G09B *9/08;19/16*
U.S. Cl. 434—55 **24 Claims**



1. A six-degree motion-base ride-simulator theater comprising:

a passenger cabin including at least one means for occupancy of this cabin by a human passenger, thus establishing a forward direction for said passenger cabin, and a portal at a side of said cabin for allowing ingress and egress of the passenger;

means for providing an audio-visual presentation to the passenger;

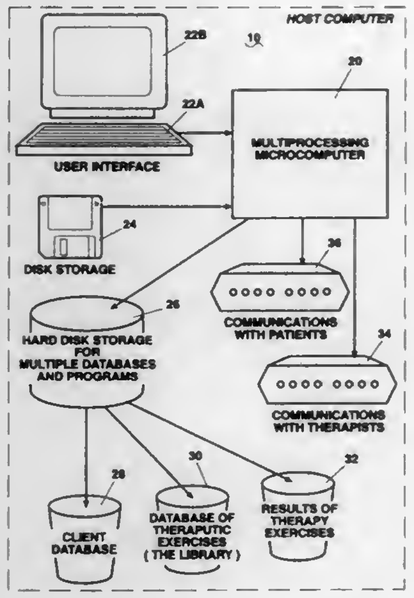
a six-degree movable motion base carrying said passenger cabin; said motion base including plural actuators providing motion to said passenger cabin; during ride simulation said motion base moving said passenger cabin within an operating envelope to provide G-forces to the passenger in concert with the audio-visual presentation; and mechanical motion stops associated with said plural actuators limiting motion of said actuators and cooperatively defining a maximum-mechanical-excursion envelope for motion of said cabin, which maximum-mechanical-excursion envelope is outside of said operating envelope;

a ride controller including means for driving selected ones of said actuators against said mechanical motion stops to position said cabin in a passenger loading/unloading position at one side of said maximum-mechanical-excursion envelope; and

a stationary passenger platform disposed at said one side of said cabin and outside of said operating envelope and immediately adjacent to but outside of said maximum-mechanical-excursion envelope, said stationary passenger platform being disposed immediately adjacent said passenger cabin in said loading/unloading position of the latter to allow passenger ingress and egress by passengers stepping directly between said passenger cabin and said stationary passenger platform.

5,711,671
AUTOMATED COGNITIVE REHABILITATION SYSTEM AND METHOD FOR TREATING BRAIN INJURED PATIENTS

Robert H. Geeslin, Sapulpa, and Richard H. Bost, Catoosa, both of Okla., assignors to The Board of Regents Of Oklahoma State University, Stillwater, Okla.
Continuation of Ser. No. 272,418, Jul. 8, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 755,708
Int. Cl.^{6} H04M *11/00*
U.S. Cl. 434—236 **10 Claims**


HOST COMPUTER
22B
10
20
22A
USER INTERFACE
MULTIPROCESSING MICROCOMPUTER
24
DISK STORAGE
36
26
HARD DISK STORAGE FOR MULTIPLE DATABASES AND PROGRAMS
COMMUNICATIONS WITH PATIENTS
34
COMMUNICATIONS WITH THERAPISTS
30
32
28
CLIENT DATABASE
DATABASE OF THERAPUTIC EXERCISES (THE LIBRARY)
RESULTS OF THERAPY EXERCISES

1. An automated rehabilitation system for treating a plurality of remotely located patients by a plurality of remotely located therapists comprising:

a host computer including a data bank having stored therein an array of treatment procedures, and including memory for storing response data;

a separate therapist computer unit for use by each of said remotely located therapists, each computer unit having a display and an input;

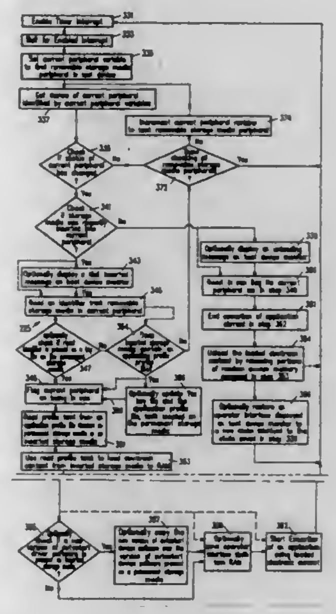
a plurality of remotely located patient computer units, one for each patient, each having a display and an input;

first communication means providing communication between each said therapist's computer unit and said host computer including means whereby said host computer data bank can be accessed independently and simultaneously by each said therapist for call up of said response data separately from each said patient of each said therapist for evaluation of the response data of each said patient including means whereby each said therapist may separately and simultaneously select rehabilitation procedures for each said patient; and

second communication means providing communication between each of said patient computer units and said host computer whereby said host computer data bank can be accessed by each said patient computer units to display a rehabilitation procedure specifically selected for each patient by a therapist, said host computer having means to receive and store response data arising therefrom, which response data are available to a therapist by said first communication means whereby each said therapist can remotely select a rehabilitation treatment procedure for each of said therapist's patients that may time independently be accessed individually by said patients and the results thereof stored in said host computer to be time independently accessed by said therapists to enable each said therapist to monitor progress of a plurality of separate, remotely located patients and to prescribe additional, future treatment procedures.

5,711,672
METHOD FOR AUTOMATICALLY STARTING EXECUTION AND ENDING EXECUTION OF A PROCESS IN A HOST DEVICE BASED ON INSERTION AND REMOVAL OF A STORAGE MEDIA INTO THE HOST DEVICE

Peter M. Redford, Los Gatos, and Donald S. Stern, San Jose, both of Calif., assignors to TV Interactive Data Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 269,492, Jul. 1, 1994. This application Jun. 30, 1995, Ser. No. 497,177
Int. Cl.^{6} G09B *5/00*
U.S. Cl. 434—307 R **34 Claims**



1. A method for automatically starting execution and automatically ending execution of a process in a host device based on insertion and removal of a removable storage media into a peripheral of said host device, said method comprising:

checking for insertion of said removable storage media in said peripheral;

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loading into a portion of random access memory of said host device at least a portion of the electronic content retrieved by said peripheral from a removable storage media in response to finding said removable storage media inserted in said peripheral during said checking;
automatically starting execution of an application after said loading, wherein said application uses at least a portion of said loaded electronic content;
checking for removal of said removable storage media from said peripheral;
automatically ending execution of said application in response to finding said removable storage media removed from said peripheral during said checking; and
automatically releasing said portion of said random access memory occupied during said loading.

20. A method for automatically starting execution of a process in a host device in response to insertion of a removable storage media into a peripheral of said host device and automatically ending execution of said process in response to removal of said removable storage media, said method comprising:
waiting for an interrupt;
automatically checking said removable storage media for a file of a predetermined name in response to occurrence of said interrupt;
automatically starting execution of an application by loading at least a portion of electronic content from said removable storage media into a portion of random access memory of said host device subsequent to finding said predetermined name file during said checking and;
automatically ending execution of said application in response to removal of said removable storage media.

28. A method for automatically starting and ending execution of a process in a host device, said method comprising:
booting an operating system of said host device;
automatically checking, in a peripheral, for an insertion or a removal of a removable storage media after completion of said booting; and
performing at least one of the following depending on the result of said automatically checking:
  automatically starting execution of a process in response to finding said removable storage media inserted during said automatically checking;
  automatically ending execution of a previously started process in response to finding a previously inserted removable storage media removed during said automatically checking.

5,711,673

METHOD FOR INTERPRETING A PLURALITY OF RESPONSE MARKS ON A SCANNABLE SURFACE

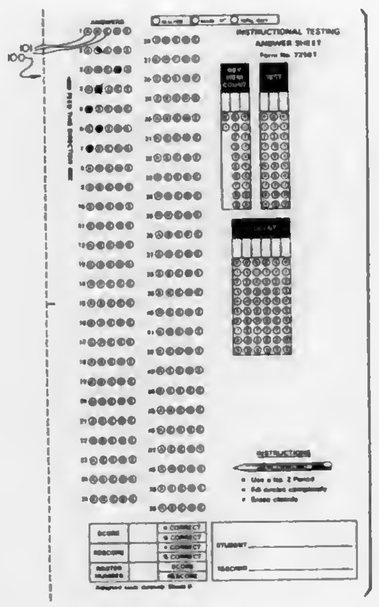
John N. Grundy, Jr., Gilbert, Ariz., assignor to National Computer Systems, Eden Prairie, Minn.

Division of Ser. No. 122,152, Sep. 17, 1993, Pat. No. 5,420,407. This application Feb. 24, 1995, Ser. No. 393,692

Int. Cl.^{6} G06K *7/10*

U.S. Cl. 434—353 **20 Claims**

1. A system for interpreting response bubble marks on a scannable surface including a plurality of response bubbles associated with a single question for receiving a respondent's response bubble marks responsive to said question, said system comprising:
scanner means for determining and storing a read level for each of the plurality of response bubbles, each said read level being one of a plurality of values on a mark darkness scale;
means for identifying each response bubble mark having a darkness read level at or above a read level threshold as an intended response mark; and



means for assigning a scoring value to each of said plurality of response bubbles, wherein at least two different response bubbles are assigned different non-zero scoring values.

5,711,674

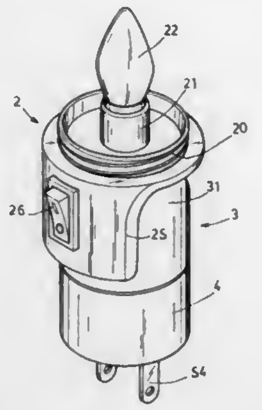
LAMP SOCKET AND PLUG ASSEMBLY

Shu-Hsun Chu, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan, Taiwan

Filed Mar. 15, 1996, Ser. No. 616,179

Int. Cl.^{6} A01R *39/00*

U.S. Cl. 439—11 **4 Claims**



1. A lamp socket and plug assembly comprising:
a lamp socket, said lamp socket including (1) an upright lamp base holder extending from a top side thereof to hold a lamp bulb, said lamp base having a side metal contact and a center metal contact for the connection of the ring contact and tip contact of the lamp bulb, (2) a threaded annular flange extending from the top side of said lamp socket around said lamp base holder for mounting a lampshade, (3) two downward coupling blocks extending from a bottom side thereof, said two downward coupling blocks having a pair of aligned pivot holes respectively formed therein, (4) a downward locating wall peripherally disposed at one side of said lamp socket, and (5) a switch mounted on said downward locating peripheral wall;
an adapter pivotally coupled to said lamp socket, said adapter including (1) a hollow cylindrical body having an open bottom end, (2) two upright lugs extending from a closed upper end of said cylindrical body on opposing sides thereof, (3) two inwardly directed pivot pins respectively extending from an inner side of said upright lugs and respectively inserted into the pivot holes formed in said coupling blocks of said lamp socket for permitting said lamp socket to be within 90° with respect to said adapter, (4) a downward annular coupling flange of reduced diameter extending from a bottom side thereof, said downward annular coupling flange having a locating groove formed therein and extending around one fourth of a periphery thereof, (5) an internally threaded center tube extending downwardly from said downward annular coupling flange and terminating in a neck, and (6) an arcuate slot formed through said closed upper end;
a plug holder coupled to said adapter, said plug holder including a hollow cylinder having an open top end coupled to said downward annular coupling flange of said adapter, said hollow cylinder having a raised portion on an interior thereof for engagement with said locating groove of said adapter to limit within 90° a rotary motion of said adapter relative to said plug holder, said hollow cylinder having an elongated slot formed through a bottom side thereof;
a plug fastened to the elongated slot of said plug holder, said plug including (1) an upright coupling block having a coupling hole formed therein for receiving said downward center tube of said adapter therein, (2) two blade holders disposed on two opposite sides of said upright coupling block, and (3) two metal blades respectively fastened to said blade holder for connection to said lamp socket;
means for electrically coupling said metal blades respectively to said side and center metal contacts through said switch irrespective of a pivotal and rotative displacement of said lamp socket relative to said adapter; and
a screw bolt mounted with a washer and inserted into the coupling hole of said upright coupling block and threaded into the internally threaded downward center tube of said adapter to fix said plug to said adapter.

5,711,675

METHOD MODULE, CONNECTING DEVICE THEREOF, WIRING HARNESS PROTECTOR, AND CONNECTING DEVICE OF INSTRUMENT WIRING HARNESS

Keizo Nishitani; Yoshiaki Nakayama; Minoru Kubota, and Keiichi Ozaki, all of Shizuoka, Japan, assignors to Yasaki Corporation, Tokyo, Japan

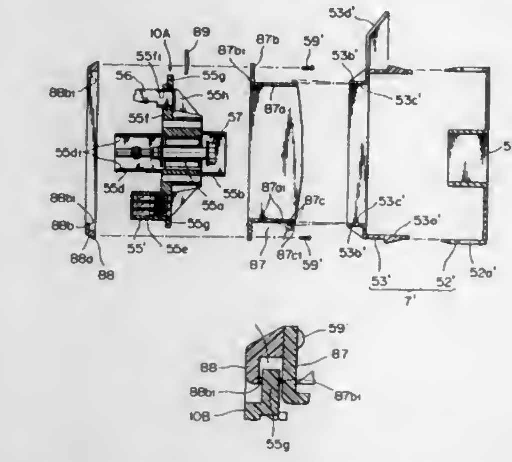
Continuation of Ser. No. 551,511, Nov. 1, 1995, abandoned, which is a division of Ser. No. 209,712, Mar. 14, 1994, Pat. No. 5,615,080. This application Mar. 13, 1997, Ser. No. 816,886

Claims priority, application Japan, Mar. 17, 1993, 5-57152; Jun. 3, 1993, 5-133425; Jun. 3, 1993, 5-133426; Dec. 27, 1993, 5-333753; Dec. 28, 1993, 5-334711

Int. Cl.^{6} H01R *33/00*

U.S. Cl. 439—34 **8 Claims**

1. A wiring harness protector (7) for simplifying the wiring arrangement of a wiring harness (8) and for facilitating the setting and assembling of said wiring harness (8), said protector (7) comprising:



a means for protecting a wiring harness (**8**) therein and a cover (**53**) thereof, wherein said protecting means is a protector main body (**52**) that has engaging holes (**52***a*) and stopper holes (**52***c*) which mate with engaging pawls (**53***a*) of said cover (**53**) and stoppers (**55***c*) of a first connector (**55**), respectively, to hold said cover (**53**) in place with respect to said protector main body (**52**);
wherein a plurality of through holes (**53***b*) are concentrated in said cover (**53**);
wherein said first connector (**55**) and at least a second connector (**56**) in said wiring harness (**8**) set in said protector main body (**52**) are set through said corresponding through holes (**53***b*) in a direction perpendicular to an extending direction of said wiring harness (**8**);
wherein said first and second connectors (**55**,**56**) are fixed by a connector stopper (**54**) to thereby form a multipolar connector (**10**); and
wherein a bolt (**57**) is set in said first connector (**55**) so that said bolt (**57**) protrudes outside of said protector (**7**) through an opening (**52***b*) in said protector main body (**52**) in order for said bolt (**57**) to be accessible without disassembly of said protector (**7**).

5,711,676

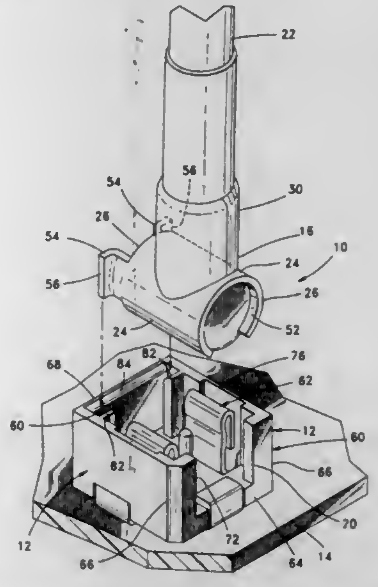
VERTICALLY MOUNTED CABLE PLUG

George W. Michael, III, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 26, 1996, Ser. No. 591,996

Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—63 **7 Claims**



1. The combination of a miniaturized coaxial connector and receptacle for vertical mounting thereto,
the receptacle comprising a dielectric housing defined by a plurality of upstanding walls from a base, means for surface mounting said receptacle to a planar electronic device, a grounding contact clip to be received therein, and a signal contact pin exposed within the interior thereof, and
the connector comprising a T-shaped housing consisting of a first housing portion to be received in said grounding contact clip, and a second housing portion extending perpendicular thereto, said T-shaped housing including a central cavity extending axially through said second housing portion and transversely through said first housing portion, said cavity containing an electrically isolated contact for engagement with said signal contact pin, where said first housing portion further includes a pair of end extensions which cooperate with means in said receptacle to ensure mating alignment of said connector with said receptacle.

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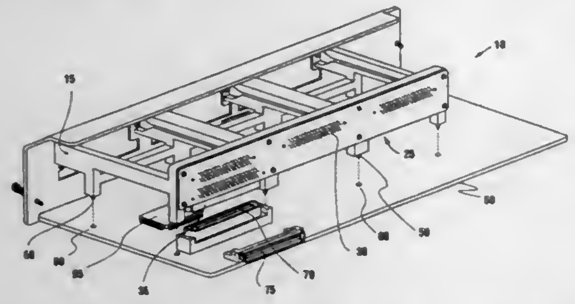
5,711,677
MULTI-FUNCTIONAL I/O CARD GUIDE

Paul K. Mui, Boise; R. Scott Johnson, Nampa; Bruce G. Johnson, Eagle; Wayne A. Albright, Nampa, and Eric L. Bokman, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1996, Ser. No. 585,995

Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—64 **8 Claims**



1. A guide mount system for interfacing at least one printed circuit assembly (PCA) card to a host PCA, the guide mount system comprising:
  (a) a first body attachable to the host PCA for slidably receiving the at least one PCA card; and,
  (b) a second body attachable to the first body for electrically interfacing the at least one PCA card with the host PCA, and wherein the second body includes a PCA plate having:
    (i) at least a first connector means for electrically interconnecting with the at least one PCA card;
    (ii) at least a second connector means electrically interconnected with the first connector for adaptively interconnecting with the host PCA, and wherein the second connector means is the only direct physical connection between the second body and the host PCA; and,
    (iii) attachment means for attaching the PCA plate to the first body such that a connector on the PCA card mates with the at least first connector means on the PCA plate when the PCA card is received in the first body.

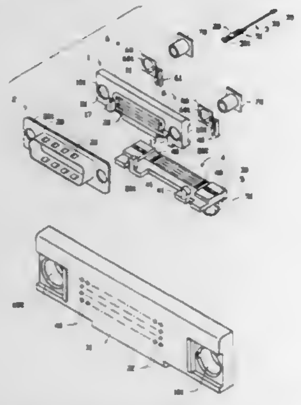
5,711,678
HIGH PIN DENSITY ELECTRICAL CONNECTOR STRUCTURE

Kun-Tsan Wu, Tu-Chen, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Dec. 11, 1995, Ser. No. 570,122

Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—79 **16 Claims**



1. An electrical connector comprising:
an insulation body, having a first surface and an opposite second surface with a plurality of figure "8" configured pin receiving holes formed on a central portion of insulation body and extending across from the first surface to the second surface, in a slightly inclined manner with regard to a horizontal axis parallel to said surfaces;
a shield having a plate portion disposed against the first surface of the insulation body and having an opening to expose the central portion of the insulation body, a shaped frame formed integrally with the plate portion to surround the opening as a circumferential wall and define therein a space with the pin receiving holes of the insulation body located within the space;
a plurality of electrically conductive pin members, respectively having a flat leading section of each of the pin members extending into the space defined by the shaped frame of the shield for electrical and mechanical engagement with an exterior coupling device, each of the pin members having an intermediate section connected along a longitudinal direction to the leading section and comprising engaging means for compliance with the configuration of the respective pin receiving hole for securely retaining the pin member within the pin receiving hole, in the same inclined manner for highly dense arrangement and a tailing section extending longitudinally from the intermediate section and comprising a leg segment.

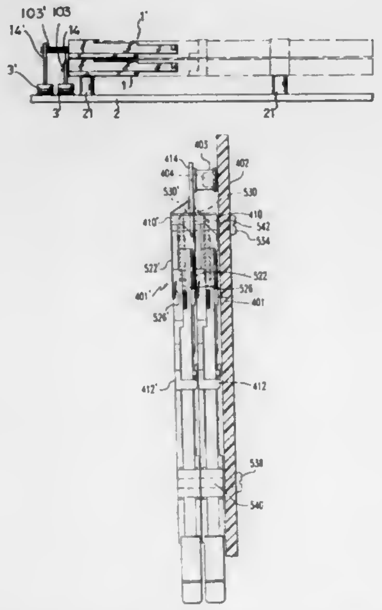
5,711,679
SHIELDED MEMORY CARD CONNECTOR

John M. Spickler, Marietta, Pa.; Kazutoshi Amano, Tokyo, Japan; Chih-Hui Hsia, Taipei, and Lein Wan Lu, Tao-Yuan Hsien, both of Taiwan, assignors to Berg Technology, Inc., Reno, Nev.

Continuation of Ser. No. 487,922, Jul. 11, 1995, abandoned, which is a continuation-in-part of Ser. No. 369,614, Jan. 6, 1995, abandoned. This application Nov. 20, 1996, Ser. No. 752,756

Int. Cl.^{6} H01R *23/72*

U.S. Cl. 439—79 **21 Claims**



1. A memory card connector for connecting a memory card to a main circuit board comprising:
  (a) a header having a plurality of inwardly extending pins and a plurality of outwardly extending pins;
  (b) electrical conductive means connected to the outwardly extending pins so that said electrical conductive means and said outwardly extending pins are electrically connected to the main circuit board; and
  (c) conductive shielding means at least partially enclosing the outwardly extending pins and electrically connected to the conductive means to be grounded to the main circuit board through the electrical conductive means wherein the conductive means comprises a conductive ground plane connected to the shielding means and at least one separate conductive signal plane connected to at least some of the outwardly extending pins.

5,711,680
SOCKET TYPE ELECTRIC DEVICE UNIT

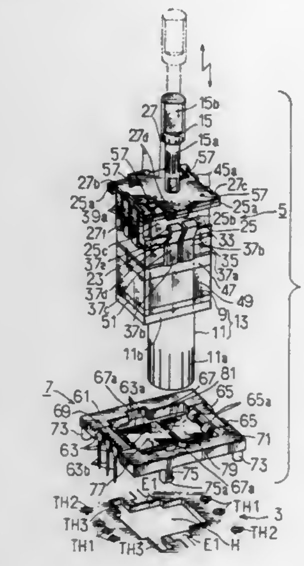
Tadayoshi Tsuneaki, Kamiichi-machi; Masahide Kanagawa, Toyama, and Michio Kurokawa, Tonami, all of Japan, assignors to Hokuriku Electric Industry Co., Ltd., Kami-Niikawagun, Japan

Filed Jul. 30, 1996, Ser. No. 688,428

Claims priority, application Japan, Mar. 19, 1996, 8-063132; Apr. 11, 1996, 8-089602

Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—83 **17 Claims**



1. A socket type electric device unit comprising;
an electric device including an operating member, at least one electric device mechanism having an electric characteristic or condition varied by said operating member, and a plurality of connecting terminal members each having a contact terminal portion exposed outside thereof and electrically connected to each one of a plurality of input or output electrodes on said electric device mechanism;
a socket including a socket body to be mounted on a circuit board, a plurality of stationary terminal members provided on said socket body and having contact terminal portions to contact said contact terminal portions of said connecting terminal members and a soldering terminal portion to be soldered to a soldering land of said circuit board, and a device insertion hole provided in said socket body and into which said electric device is to be at least partially inserted;
said device insertion hole in said socket body being formed of a hole through which said electric device is to partially extend;
said socket body of said socket being provided with a plurality of protrusions which is to engage a plurality of through holes provided in said circuit board whereby said socket is positioned relative to said circuit board;
and thereby said contact terminal portions of said plurality of connecting terminal members and said contact terminal portions of said plurality of stationary terminal members contacting each other when said electric device is partially inserted into said device insertion hole and into a device through hole in said circuit board.

5,711,681
JUMPER CONNECTOR

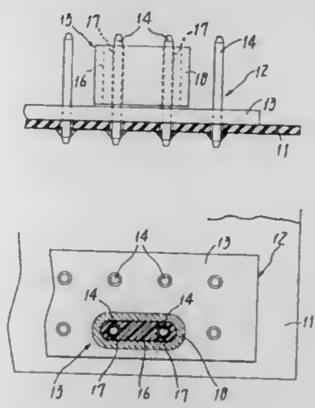
Miki Hasegawa, Itami, Japan, assignor to Japan Solderless Terminal Mfg. Co., Inc., Osaka, Japan

Filed Sep. 20, 1996, Ser. No. 718,239

Claims priority, application Japan, Sep. 27, 1995, 7-274837

Int. Cl.^{6} H01R *4/58*

U.S. Cl. 439—86 **16 Claims**



1. A jumper connector for making an electric connection between contact pins or posts protruding from a printed circuit board, the jumper connector comprising:
an accessible connector core made of a conductive elastomer;
at least one inner contact surface formed in or on the accessible core so as to be brought into contact with the pins or posts, said at least one inner contact surface extending a length of the accessible core so as to form at least one aperture extending through an entirety of the length of the accessible core; and
an insulating mantle integrally secure to and covering an outer surface of the accessible core.

5,711,682
ELECTRICAL CONNECTOR REQUIRING LOW INSERTION FORCE

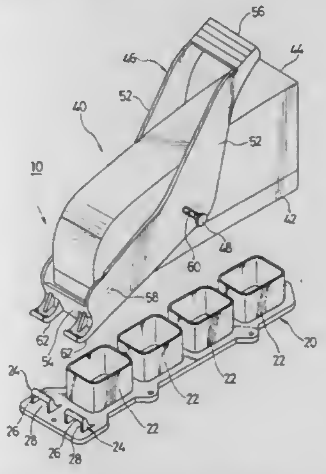
Toshiro Maejima, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 230,153

Claims priority, application Japan, Apr. 19, 1993, 5-091305

Int. Cl.^{6} H01R *13/00*

U.S. Cl. 439—157 **4 Claims**



1. A low insertion force electrical connector system requiring low insertion force to engage a first connector element arranged on a side of an electrical instrument with a second connector element arranged on a side of an electrical cable, said electrical connector system comprising:

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a first connector housing for retaining said first connector element;
a second connector housing for retaining said second connector element to be engaged with said first connector element, said second connector housing including opposing sidewalls provided with a pair of pins, each protruding laterally from a respective one of said opposing sidewalls; and
an operating lever of a shape forming a frame for accommodating said first connector housing therein, said frame comprising a pair of side plates, a front plate connecting front ends of said side plates with each other, and a rear plate connecting rear ends of said side plates with each other to provide an operating part to be operated by an operator, said front plate being provided with at least one hook part having a depressed plate, said operating lever further including a slit formed in each of said side plates and extending obliquely from lower edges of said side plates engageable with said pins;
wherein said first connector housing has at least one holder arranged at an end of said first connector housing to engage with said at least one hook part and to thereby rotatably support said operating lever, said at least one holder further comprising a lateral bar and a hole which is positioned under said lateral bar and into which said depressed plate of said at least one hook part is inserted; and
wherein, when said operating lever is rotated about said at least one holder of said first connector housing, said pins are urged downwardly by slidable engagement with said slits, whereby said second connector housing is moved directly toward said first connector housing.

5,711,683

Patent Not Issued For This Number

5,711,684

CONNECTOR HOUSING LOCKING MECHANISM

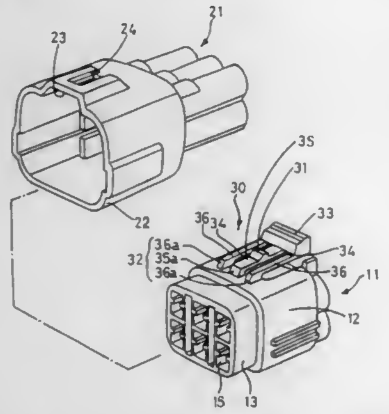
Kenji Inoue, and Hiroyuki Hayashi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Jan. 22, 1996, Ser. No. 589,539

Claims priority, application Japan, Feb. 24, 1995, 7-061892

Int. Cl.^{6} H01R *13/627*

U.S. Cl. 439—354 **4 Claims**



1. An electrical connector housing having a locking mechanism operable to engage another electrical connector housing, the locking mechanism comprising a resilient cantilevered locking arm of the housing, said locking arm having one of a fitting projection or fitting hole, said one fitting projection or fitting hole of said locking arm being engageable in the other of a fitting projection or fitting hole of said another housing to releasably secure the connector housings together, the locking arm having a foot portion at one end thereof to connect the locking arm to the housing and an operating member at the other end thereof, wherein the locking arm has two longitudinal slots formed therein so that the operating member is connected to the foot portion by a fitting arm member and a supporting arm member on each side of said fitting arm member, said one fitting projection or fitting hole of the locking arm being provided on the fitting arm member, the foot portion including a separate foot for supporting each of the fitting arm member and the supporting arm members, and wherein the foot supporting said fitting arm member is smaller than each foot supporting said supporting arm members so that the fitting arm member is less stiff than each of the supporting arm members.

5,711,685

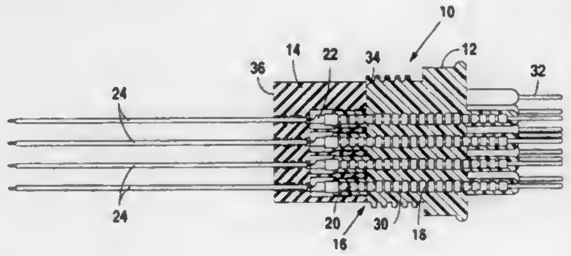
ELECTRICAL CONNECTOR HAVING REMOVABLE SEAL AT CABLE ENTRY END

Richard G. Wood, Magnolia, Tex., assignor to Tescorp Seismic Products, Inc., Houston, Tex.

Filed Jan. 23, 1996, Ser. No. 590,148

Int. Cl.^{6} H01R *13/40*

U.S. Cl. 439—587 **11 Claims**



1. An electrical connector assembly, comprising:
a body having a cable entry end, at least one electrical conductor disposed within the body and having a portion extending outwardly from the cable entry end of the body with a distal end of said outwardly extending portion of the electrical conductor being adapted for connection with an electrical lead component of a predefined cable assembly, and at least one sheath integrally formed with the body and having a predefined outer diameter extending a predetermined distance along and around said outwardly extending portion of the conductor from the cable entry end of the body to a position proximate said distal end of the conductor, said outwardly extending portion of the electrical conductor having a predefined length that is encapsulated along a significant portion of said predefined length by said sheath; and
a seal member having a first end adapted for mating with the cable entry end of said body, a second end spaced from said first end, and at least one internal passageway extending through the seal member from said first end to said second end, said internal passageway having a first portion extending inwardly from said first end a distance substantially equal to the length of the outwardly extending portion of the conductor and having an internal diameter along at least a portion of said length that is less than the predefined outer diameter of said sheath surrounding said conductor whereby an interference fit is provided between said sheath and said passageway, and a second portion extending inwardly from said second end and adapted to provide an interference fit around the insulation jacket of a predefined electrical lead when inserted therethrough for attachment to said distal end of the conductor.

5,711,686

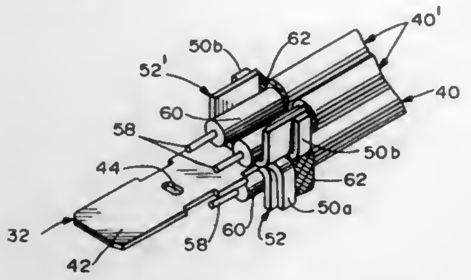
SYSTEM FOR TERMINATING THE SHIELD OF A HIGH SPEED CABLE

Michael O'Sullivan, Willowbrook; David L. Brunker, Naperville; Walter Graham McFarlane, Elgin, and Joseph W. Nelligan, Jr., LaGrange Park, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 1, 1996, Ser. No. 609,579

Int. Cl.^{6} H01R *9/03*

U.S. Cl. 439—610 **33 Claims**



1. A termination assembly comprising:
a pair of cables, each having an inner conductor, an inner dielectric surrounding at least a portion of said inner conductor, a metallic shield surrounding at least a portion of said inner dielectric and an outer insulating jacket surrounding at least a portion of said metallic shield, a portion of said outer jacket of each of said cables being removed to expose an exposed portion of said metallic shield;
a terminal to which said metallic shields are to be terminated, said terminal being at least partially disposed in a dielectric housing of an electrical connector and having a ground portion;
a conductive shield management member separating said metallic shield from said inner dielectric of each of said cables when said exposed portions of said metallic shields are being bonded to said shield management member such that said shield management member shields said inner dielectric of each of said cables from heat generated when said metallic shields are being bonded to said shield management member; and
a shield terminating member on said ground portion, said shield terminating member forming a receptacle for receiving said shield management member in conductive engagement therewith.

5,711,687

ELECTRICAL TERMINAL WITH LOCKING LANCE

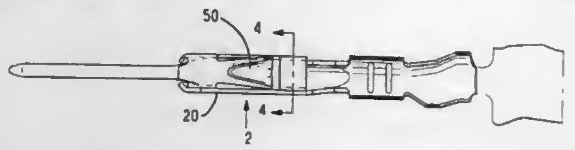
David Bouwe Kuiper-Moore, London; Peter Donald Gaulton, Ickenham, both of Great Britain; Christian Otto Bömmel, Vilbel, Germany; Rolf Jetter, Darmstadt, Germany, and Antonio Lehner, Wiesbaden, Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 6, 1996, Ser. No. 709,497

Claims priority, application United Kingdom, Sep. 12, 1995, 9518620; Sep. 12, 1995, 9518621; Sep. 12, 1995, 9518628

Int. Cl.^{6} H01R *13/434*

U.S. Cl. 439—745 **6 Claims**



1. An electrical terminal stamped and formed from sheet metal and comprising an outer body with a locking lance, and an inner contact body having a connection section for connection to a conducting wire, a body section, and a contact section extending therefrom for connection to a complementary terminal, the body section comprising a base wall and side walls extending upwardly therefrom to a top end, the outer body comprising a top wall mountable against the inner body top end and a side wall mountable against one of said side walls of the inner contact body, characterized in that the outer body side wall engages vertically in a gap that is formed by tabs extending alongside and spaced from the inner body side wall such that the outer body is mountable to the inner body by movement in the vertical direction, which is orthogonal to the mating direction of the terminal.

5,711,688

BATTERY TERMINAL

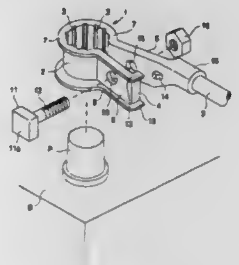
Hideki Matsunaga, and Mitsugu Furutani, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

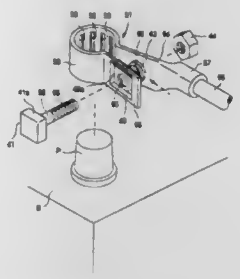
Filed Apr. 24, 1996, Ser. No. 637,085

Claims priority, application Japan, May 12, 1995, 7-138592; May 16, 1995, 7-142584

Int. Cl.^{6} H01R *4/42*

U.S. Cl. 439—762 **10 Claims**





1. A battery terminal comprising:
an electrode holding portion formed by bending band metal round into an annular shape;
a pair of first and second lugs extended outward from both ends of said electrode holding portion so as to face each other; and
a bolt to be fitted between the two lugs;
wherein said electrode holding portion is deformed so as to reduce the diameter through displacement of said pair of lugs in a direction to be closed to each other by the tightening of said bolt so that said electrode holding portion is pressed against the battery electrode,
said battery terminal further comprising:
a stopper to restrict the displacement of both of said lugs, said stopper being formed by bending a free end of said first lugs toward said second lugs so as to come into contact with said second lugs when said bolt is tightened; and
a reinforcement piece for maintaining shape of said stopper ranging from said lug to said stopper.

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5,711,689
REVERSE WIRE TERMINATION DEVICE

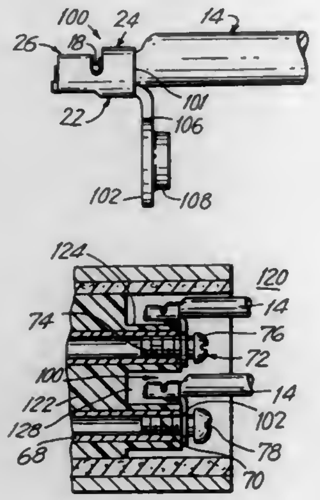
Walter Newman, Bayside, and Paul Endres, Glen Oaks, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 443,745, May 18, 1995, abandoned. This application Dec. 10, 1996, Ser. No. 762,756

The portion of the term of this patent subsequent to Jan. 19, 2014, has been disclaimed.

Int. Cl.⁶ H01R *4/30*

U.S. Cl. 439—801 **7 Claims**



1. A conductor terminating system comprising:

a) housing means fabricated from insulating material having at least two hubs therein, each of said at least two hubs having a central bore therethrough and at least two pockets, one pocket adjacent each of said at least two hubs;

b) at least two electrical contacts, one for each of said at least two hubs positioned in said central bores of said at least two hubs, each of said at least two electrical contacts having an internally threaded portion;

c) at least two terminal screws, one for each of said at least two hubs, each engaging a threaded portion of its associated one of said two electrical contacts;

d) at least two insulated electrical conductors, each having a central conducting means surrounding by insulation;

e) at least two conductor termination devices, one for each of said at least two insulated electrical conductors;

f) each of said at least two conductor termination devices having a crimp barrel means extending along a longitudinal axis of said insulated electrical conductor having a conductor gripping portion adjacent a first end of said crimp barrel means adapted to be crimped to and make electrical contact with said central conducting means adjacent said free end of said elongate insulated conductor and an insulation gripping portion adjacent a second end of said crimp barrel means adapted to be crimped to said insulation to provide strain relief for said elongate insulated conductor;

g) at least two lug means, one for each of said two conductor termination devices, formed integrally with said crimp barrel means and extending away from said second end of said crimp barrel means to a free end in a plane perpendicular to said longitudinal axis of said crimp barrel means; and

h) said at least two lug means each having an aperture therein to receive one of said at least two terminal screws to permit said lug means to be mounted to an associate one of said at least two hubs by engaging said terminal screw with the internally threaded portion of said associated contact in said hub with a portion of said associated conductor termination device in said associated pocket whereby said insulated electrical conductor extends in a plane parallel with a longitudinal axis of said associated hub.

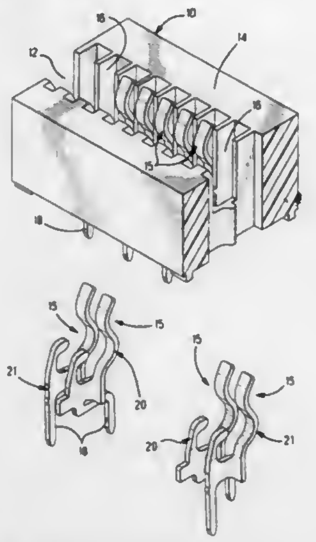
5,711,690
ELECTRICAL CONTACT AND METHOD FOR MAKING SAME

Roger Lee Thrush, Clemmons, N.C., and Timothy James Kinross, Taylors, S.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 18, 1996, Ser. No. 733,836

Int. Cl.⁶ H01R *11/22*

U.S. Cl. 439—862 **7 Claims**



1. An electrical contact comprising:

an electrically conductive body which is made from sheet material, the body having opposite major surfaces and a peripheral edge defined by a thickness of the sheet material, the body having a base portion and first and second arms which extend upwardly from the base portion, each of the first and second arms having a contact surface arranged to engage a respective opposite side of a circuit card which is inserted between the arms, the base portion having a bend which relocates the arms from a common plane such that the contact surface of the first arm is defined on the peripheral edge of the body, and the contact surface of the second arm is defined on one of the major surfaces of the body.

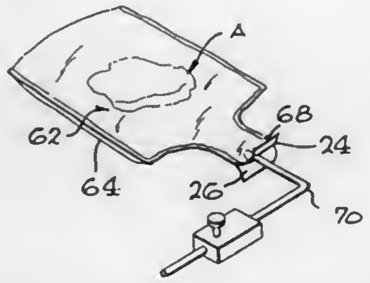
5,711,691
SELF-CLOSING AND SELF-SEALING VALVE DEVICE FOR USE WITH INFLATABLE STRUCTURES

Thomas V. Damask, Glendale, and Daniel A. Pharo, Valencia, both of Calif., assignors to Air Packaging Technologies, Inc., Valencia, Calif.

Filed May 13, 1996, Ser. No. 645,094

Int. Cl.⁶ B63B *35/58*

U.S. Cl. 441—41 **30 Claims**



1. A self-closing and self-sealing valve device for use in inflatable and deflatable structures, said valve device comprising:

a) a pair of relatively flat flexible sheets disposed upon one another in facewise engagement and having an inlet end and an outlet end with a gas passageway extending therebetween;

b) said flat flexible sheets having a pair of connecting regions extending along opposite side portions of the sheets between the inlet end and the outlet end for securing said two sheets together with air-tight longitudinal seals and with a gas passageway therebetween; and

c) an adhesive coating in said gas passageway substantially sealing the gas passageway for the full transverse distance between the connecting regions and for a substantial portion of the distance between the inlet end and the outlet end, said adhesive coating creating a gas-tight seal in the gas passageway to prevent gas from being expelled into the outlet end to exit through the inlet end in a back flow condition but which gas-tight seal will open when gas is introduced at the inlet end under sufficient pressure to cause an opening of the seal without need for a mechanical implement to open same.

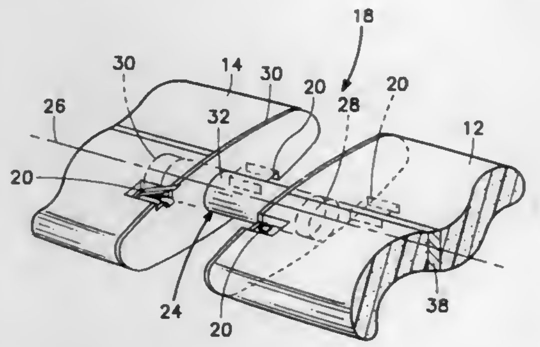
5,711,692
SECTIONALIZED SURFBOARD

Karl Dean Pope, 409 S. Fox St., Ojai, Calif. 93023

Continuation-in-part of Ser. No. 620,130, Mar. 21, 1996, abandoned. This application Mar. 4, 1997, Ser. No. 812,086

Int. Cl.⁶ A63C *15/05*

U.S. Cl. 441—74 **31 Claims**



1. A sectionalized, disassemblable board-like hull comprising:

a front section having a first interfacing surface;

a rear section having a second interfacing surface matable to the first interfacing surface; and

a connecting apparatus capable of releasably connecting the front section to the rear section in longitudinal alignment such that the first interfacing surface abuts the second interfacing surface to form a joint therebetween, said connecting apparatus comprising,

  a single loadbearing tube extending concentrically along a centrally located longitudinal axis of the hull at said joint, wherein a first portion of the tube assembly extends into a hole formed in the front section through the first interfacing surface and a second portion of the tube assembly extends into a hole in the rear section through the second interfacing surface, said single loadbearing tube bearing most of the bending and shear forces exerted on the hull at said joint.

5,711,693
PROCESS FOR FORMATION OF LARGE AREA FLAT PANEL DISPLAY USING SIDE JUNCTION

Kee-Soo Nam; Sin-Chong Park; Sang-Joon Park, and Sang-Ho Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Japan

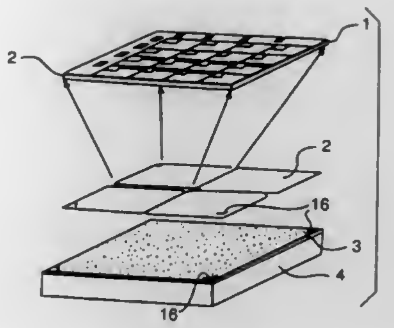
Filed Dec. 16, 1994, Ser. No. 357,019

Claims priority, application Rep. of Korea, Nov. 29, 1994, 94-31733

Int. Cl.⁶ H01J *9/18*

U.S. Cl. 445—24 **15 Claims**

1. A process for formation of a large area flat panel display utilizing tiling, comprising the steps of:



applying a tiling process on a plurality of thin film transistor panels so as to obtain a large area;

joining a supporting glass to one surface of said large area thin film transistor panels formed through said tiling process; and

coupling a common electrode panel with another surface of said large area thin film transistor panels formed through said tiling process;

wherein said supporting glass is provided with aligning marks and a black matrix, whereby defects on the tiling portion are reduced due to a scattering of light.

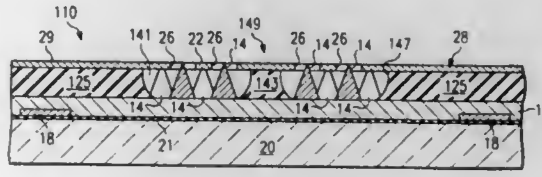
5,711,694
FIELD EMISSION DEVICE WITH LATTICE VACANCY, POST-SUPPORTED GATE

Jules D. Levine, Dallas; Chi-Cheong Shen, and Robert Taylor, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 453,043, May 30, 1995, Pat. No. 5,589,728. This application Jun. 26, 1996, Ser. No. 670,468

Int. Cl.⁶ H01J *1/30;9/18*

U.S. Cl. 445—24 **8 Claims**



1. A method of fabricating an electron emitter plate, comprising the steps of:

depositing a first layer of conductive material on a substrate;

depositing a layer of insulating material over said first layer of conductive material;

depositing a second layer of conductive material over said layer of insulating material;

forming a plurality of apertures in said second layer of conductive material; said apertures being arranged in a regular, periodic array defining a lattice having at least one internal vacancy;

etching said layer of insulating material through said apertures to form a cavity having a boundary encompassing said apertures, leaving unetched portions of said insulating material within said cavity to form a post under said at least one lattice vacancy; and

depositing conductive material through said apertures to form a microtip in each aperture in electrical communication with said first layer of conductive material.

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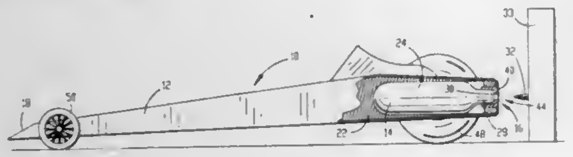
5,711,695
GAS-PROPELLED TOY WITH EXHAUST NOZZLE FOR GAS CARTRIDGE

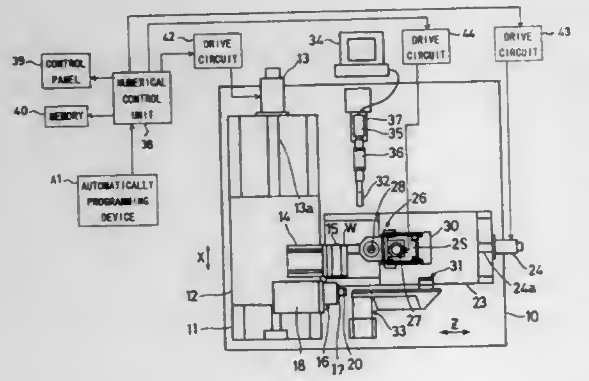
Ron Moran, Pittsburg, Kans., and Robert L. Olive, Phoenix, Ariz., assignors to Pitsco, Inc., Pittsburg, Kans.
Filed May 1, 1995, Ser. No. 432,571
Int. Cl.^{6} A63H *29/16*
U.S. Cl. 446—211 **9 Claims**



1. A gas-propelled toy, comprising:
a vehicle body having opposed front and rear ends;
a cartridge of pressurized gas carried by said body, said cartridge presenting an elongated, tubular neck outlet and a frangible plug terminal adjacent the end of said neck outlet for preventing release of gas from said cartridge;
said cartridge being oriented adjacent the rear end of said toy body with said neck outlet facing rearwardly; and
an annular, thrust-enhancing exhaust nozzle having a sidewall disposed about said neck outlet, and an end plate, said end plate having an arcuate wall defining an aperture,
said aperture adjacent to and in substantial registry with said plug terminal,
said aperture configured for permitting passage therethrough of a firing pin in order to pierce said plug terminal, and for subsequent exhaust therethrough of said gas within the cartridge upon release of said toy, in order to forwardly propel said toy, and
said end plate being in contact with said plug terminal.

5,711,696
APPARATUS FOR MACHINING A WORKPIECE TO NON-REVOLUTE SYMMETRIC AND ASPHERICAL SURFACE

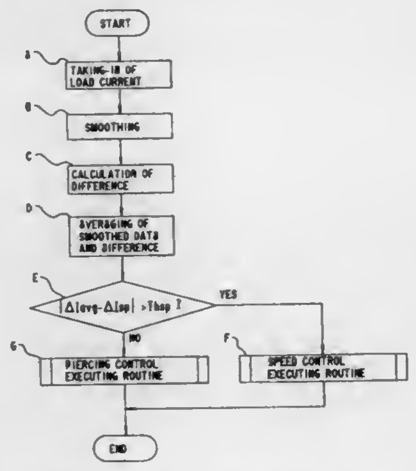
Yukio Maeda, Chiryu; Takao Taniguchi, Okazaki, and Tetsuji Oasaka, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Apr. 27, 1995, Ser. No. 429,639
Claims priority, application Japan, Apr. 28, 1994, 6-092609
Int. Cl.^{6} B24B *49/00;51/00*
U.S. Cl. 451—5 **3 Claims**



1. An apparatus for machining a workpiece which has a non-revolute symmetric and aspherical surface with a rotating grinding wheel, said apparatus comprising:
a workpiece supporting member supporting said workpiece;
a wheel head providing said grinding wheel an outer surface of which takes the form of a pan of a spherical shape;
first drive means for relatively moving said workpiece supporting member and said wheel head in an infeed direction;
second drive means for relatively moving said workpiece supporting member and said wheel head in a traverse feed direction perpendicular to said infeed direction;
third drive means for relatively moving said workpiece supporting member and said wheel head in a pitch feed direction perpendicular to both of said infeed direction and said traverse feed direction;
a truing device moved by said second drive means in said traverse feed direction relative to said grinding wheel, and having a truing element rotatable about an axis perpendicular to a rotational axis of said grinding wheel through a spherical center thereof;
control means for controlling said first, second and third drive means based upon aspherical shape data for said workpiece; and
a grinding wheel radius measuring device for measuring a radius of said workpiece, said grinding wheel radius measuring device being composed of a stroboscope flashing toward said grinding wheel at a predetermined time interval, a microscope arranged opposite to said stroboscope, and a display for displaying through a television camera a picture at an end of said grinding wheel which is enlarged by said microscope.

5,711,697
ROBOT CONTROL SYSTEM

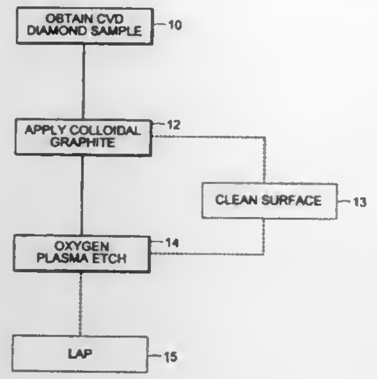
Tadashi Taninaga, and Tetsuya Ogawa, both of Osaka, Japan, assignors to Komatsu Ltd., Tokyo, Japan
PCT No. PCT/JP95/01197, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/35187, PCT Pub. Date Dec. 28, 1995
PCT Filed Jun. 16, 1995, Ser. No. 737,604
Claims priority, application Japan, Jun. 17, 1994, 6-135999
Int. Cl.^{6} B24B *49/00*
U.S. Cl. 451—5 **2 Claims**


START
A
TAKING-IN OF LOAD CURRENT
B
SMOOTHING
C
CALCULATION OF DIFFERENCE
D
AVERAGING OF SMOOTHED DATA AND DIFFERENCE
E
YES
NO
G
PIERCING CONTROL EXECUTING ROUTINE
F
SPEED CONTROL EXECUTING ROUTINE
END

1. A robot control system for controlling a robot which carries a grinding tool to grind the surface of a workpiece, the control system comprising:
(a) load current detecting means for detecting a load current supplied to the grinding tool;
(b) load current change detecting means for detecting the amount of a change in the load current supplied to the grinding tool;
(c) piercing amount controlling means for controlling the amount of piercing into the workpiece by the grinding tool according to the load current detected by the load current detecting means;
(d) grinding speed controlling means for controlling the grinding speed of the grinding tool according to the load current detected by the load current detecting means; and
(e) switching means for switching from the piercing amount controlling means to the grinding speed controlling means or vice versa such that when the amount of a change in the load current detected by the load current change detecting means is not more than a specified threshold value, the piercing amount controlling means executes its control and such that when the amount of a change in the load current detected by the load current change detecting means is more than the specified threshold value, the grinding speed controlling means executes its control.

5,711,698
METHOD OF SYNTHETIC DIAMOND ABLATION WITH AN OXYGEN PLASMA AND SYNTHETIC DIAMONDS ETCHED ACCORDINGLY

Rabindra N. Chakraborty, East Lansing, Mich.; Michael J. Ferrecchia; Paul D. Goldman, both of Marlboro, Mass., and Donnie K. Reinhard, East Lansing, Mich., assignors to Saint-Gobain/Norton Industrial Ceramics Corp, Worcester, Mass.
Filed May 5, 1995, Ser. No. 437,102
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—41 **22 Claims**



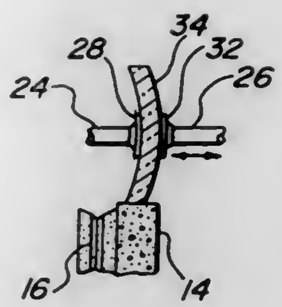
1. A method for ablating a synthetic diamond comprising:
a) applying colloidal graphite to a surface of the diamond; and
b) subjecting the surface of the diamond bearing the colloidal graphite to plasma etching.

5,711,699

Patent Not Issued For This Number

5,711,700
PROCESS TO EDGE AND POLISH POLYCARBONATE AND CR 39 LENSES WITH DIAMOND WHEELS

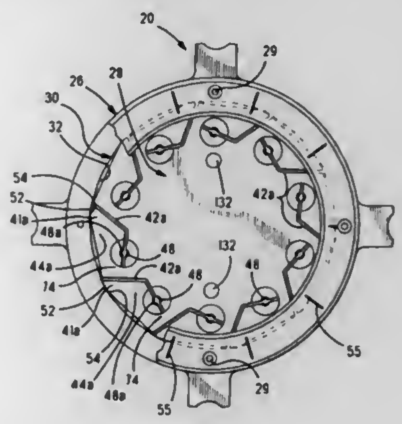
Dennis R. Raffaelli, Rochester Hills, Mich., assignor to Inland Diamond Products Co., Madison Heights, Mich.
Filed Feb. 22, 1994, Ser. No. 200,285
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—43 **12 Claims**



1. A process for polishing of a polycarbonate lens comprising the steps of:
a) providing an optical lens made of a polycarbonate material having a rough edge surface and a finished optical surface;
b) providing an abrasive finishing apparatus for finishing of the rough edge surface, said step of providing an abrasive finishing apparatus including providing an abrasive finishing apparatus having abrasive particles of a size from about 2 microns to about 60 microns and a concentration of the abrasive particles from about 10 concentration to about 200 concentration;
c) polishing at least a portion of said rough edge surface by causing said finishing apparatus to contact said portion of said edge surface to be polished at least once without the use of a coolant flow or with a coolant flow of about 8 ounces per minute or less; and
d) causing said finishing apparatus to contact said portion of said edge surface to be polished at least once with a coolant flow or an increased coolant flow, wherein a final finish substantially equal to said finished optical surface of the lens is produced.

5,711,701
UNIVERSAL POLISHING FIXTURE FOR HOLDING CONNECTORS

Soren Grinderslev, Hummelstown, and Randall B. Paul, Elizabethville, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Continuation-in-part of Ser. No. 668,028, Jun. 19, 1996, Pat. No. 5,643,064. This application Nov. 26, 1996, Ser. No. 756,465
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—378 **5 Claims**



1. A polishing fixture having nests for releasably holding optical fiber connectors during polishing, comprising:
at least portions of the nests being moveable by deflection of deflectable beams, the beams being deflectable to narrow the nests and hold optical fiber connectors received in the nests,
each of the beams being deflectable by engagement with at least one of multiple protruding working surfaces spaced apart along a force transmitting body,
and the force transmitting body avoiding jamming against the beams by being moveable beside each of the beams in a direction that unopposes a direction toward which respective deflected portions of the inclined beams point to disengage working surfaces from the beams and allow release of optical connectors in respective nests.

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5,711,702

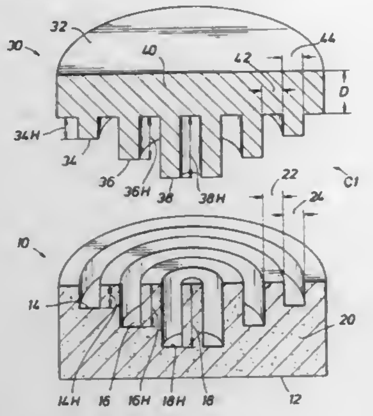
CURVE CUTTER WITH NON-PLANAR INTERFACE

John T. Devlin, Bridgewater, N.J., assignor to Tempo Technology Corporation, Somerset, N.J.

Filed Aug. 27, 1996, Ser. No. 703,864

Int. Cl.^{6} B24B *33/00*

U.S. Cl. 451—540 **26 Claims**



26. A cutting element, comprising:

a substrate layer having a first surface, the first surface being formed with at least one segmented channel having a pair of arcuate sidewalls, each sidewall having different centers of curvature; and

an abrasive layer having a cutting surface and an opposed mounting surface adapted to be bonded to said substrate layer, said opposed mounting surface having one or more projections being adapted to interlock with the respective segmented channel in said substrate layer.

5,711,703

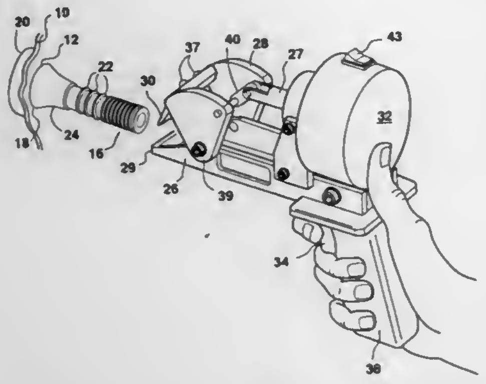
METHOD AND APPARATUS FOR REMOVING A FINGER FROM A POULTRY FEATHER PLUCKING DEVICE

Amnon Ben Peretz, Kibbutz Ramat Hakovesh, Israel, assignor to Duram Rubber Products, Kibbutz Ramat Hakovesh, Israel

Filed Feb. 18, 1997, Ser. No. 801,649

Int. Cl.^{6} A22C *21/00*

U.S. Cl. 452—92 **17 Claims**



1. An apparatus for removing a resilient poultry feather plucking finger from an opening in a rigid finger support, the finger support having a front and a back face, the finger having a shank portion with an enlarged shoulder, a neck portion and an enlarged head portion, the apparatus comprising:

(a) a body having a locator plate;

(b) a blade assembly, pivotally mounted on said body, said blade assembly featuring a blade;

(c) an actuator for pivoting said blade assembly substantially towards said locator plate, said actuator being mounted on said body; and

(d) an element mounted on said body which physically displaces the remainder of the finger once cutting action is completed.

5,711,704

COIN STORAGE AND DISPENSING APPARATUS

John Barry Hughes, Winston Hills, and Walter James Tuffs, Epping, both of Australia, assignors to Aristocrat Leisure Industries Pty. Ltd., Rosebery, Australia

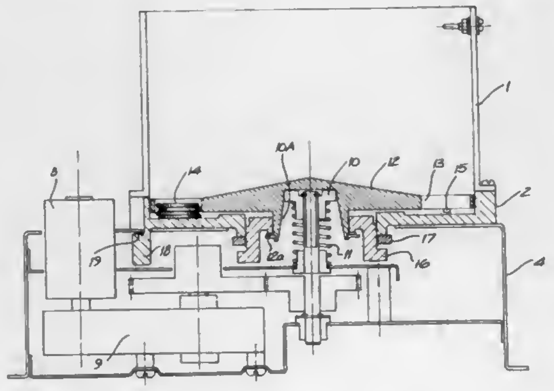
PCT No. PCT/AU94/00467, § 371 Date Jun. 10, 1996, § 102(e) Date Jun. 10, 1996, PCT Pub. No. WO95/05645, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 11, 1994, Ser. No. 596,123

Claims priority, application Australia, Aug. 12, 1993, PM 0534

Int. Cl.^{6} G07D *1/00*

U.S. Cl. 453—57 **8 Claims**



1. A coin dispensing apparatus having a cylindrical hopper an axis of which extends vertically, the bottom of the hopper being closed by a base above which is arranged a rotatable coin disc having circumferentially spaced holes for the receipt of coins, the base being provided with a coin exit slot through which coins are delivered, the base begin supported on a plinth containing a driving motor and driving means for rotating the coin disc, the base being removably secured to the plinth from which it is adapted to be readily removed together with the hopper and the coin disc, means which on removal and replacement of the base from the plinth bring the coin disc automatically into engagement with the driving means in the plinth and means for adjusting the spacing between the coin disc and the base to permit use of the apparatus with coins of different thicknesses.

5,711,705

ISOLATION WORK STATION

Russell Edward Krainiak, Washington, and Mark Anthony Huza, Greenville, both of N.C., assignors to Flanders Filters, Inc., Washington, N.C.

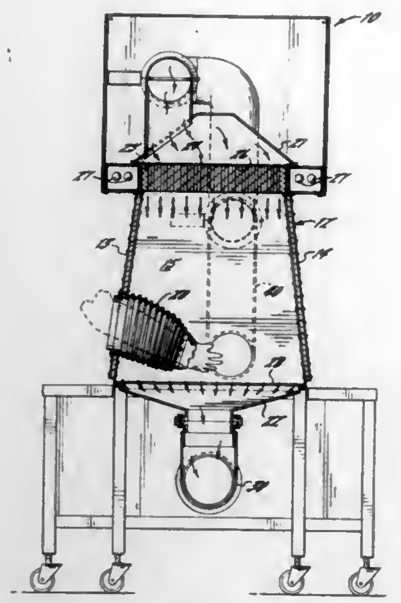
Filed May 25, 1995, Ser. No. 450,529

Int. Cl.^{6} B08B *15/02*

U.S. Cl. 454—57 **19 Claims**

I. An isolation work station suitable for providing an ultra clean work environment for the production of sterile products, drug manufacturing operations, and the like, and comprising:

a generally rectangular enclosure comprising upstanding front and rear side walls, and upstanding opposite end walls, with said side walls and said end walls defining an open top and an open bottom of said enclosure, said front side wall of said enclosure being transparent, and said enclosure further comprising at least one flexible glove sealably mounted in said front side wall of said enclosure so as to permit a technician to reach through said front side wall and into the enclosure to perform work tasks therein and while being isolated from the environment within the enclosure,



upper and lower plenums communicating with the open top and open bottom of the enclosure respectively,

filtering means comprising at least one high efficiency particulate air filter sealably mounted in said upper plenum and so as to be disposed horizontally across substantially the entire area of the top of said enclosure, and with said filtering means including a sterilant degrading catalyst, and

an air circulation system for circulating air downwardly through said filtering means and said enclosure and comprising a main duct extending from said lower plenum to said upper plenum at a location above said filtering means, and a blower positioned in said main duct for causing air to flow through said main duct from said lower plenum to said upper plenum and then through said filtering means and said enclosure and back to said lower plenum,

an air inlet duct communicating with the outside environment and with said main duct, and first valve means positioned in said air inlet duct for permitting selective flow therethrough,

first port means communicating with said main duct for permitting the main duct to be selectively connected to the inlet of a vaporized sterilant generator, and

second port means communicating with the main duct at a location downstream of said first port means for permitting the main duct to be selectively connected to the outlet of the vaporized sterilant generator.

5,711,706

ACCESS DOOR WITH A DOUBLE SEAL

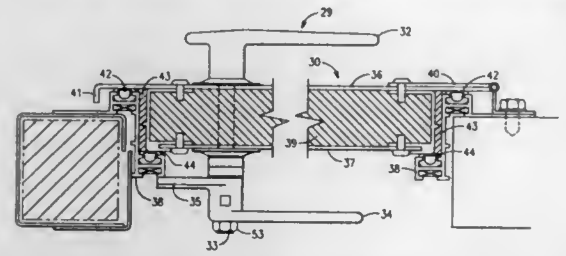
Charles K. Griffin, Conway; Ken Jurgensmeyer, Maumelle, both of Ark., and Paul R. Rogers, Hixson, Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 28, 1996, Ser. No. 671,969

Int. Cl.^{6} E06B *7/14*

U.S. Cl. 454—338 **8 Claims**

1. In an air handling apparatus having an enclosed duct through which air at a negative pressure is moved, an entry for gaining access to said duct that includes



a door frame mounted in an opening in said duct, said frame including a first outer seal for providing a moisture barrier that surrounds the frame, said outer seal having an aperture therein to permit ambient air to pass therethrough, and a second inner seal for providing an air barrier that surrounds said frame, said seals having an air gap therebetween; and

a door hingedly supported in said frame, said door having a first surface means for closing in sealing contact against said outer seal and a second surface means for closing in sealing contact against said inner seal when the door is closed against the frame whereby the air gap between the seals is maintained at ambient pressure when the door is at closure.

5,711,707

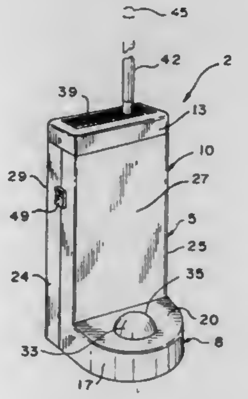
METHOD AND DEVICE FOR SIGNALLING THE WINNING OF A BINGO GAME

Pasquale Zoccole, and Nancy J. Zoccole, both of 5300 Quail Rise St., Las Vegas, Nev. 89130

Filed Nov. 30, 1995, Ser. No. 566,435

Int. Cl.^{6} G09F *21/02;* **A63B** *71/06*

U.S. Cl. 463—35 **7 Claims**



I. A device for use by a bingo player in signalling bingo personnel when a bingo game has been won comprising:

a housing;

means for a bingo player to signal the winning of a game of bingo to bingo personnel, said signal means including both an audible signalling unit having a stored, verbal bingo call and a visual signalling unit, said signal means being mounted, at least partially, within said housing; and

means for controlling said signal means to initially activate at least the audible signalling unit an then to enable continues activation of the visual signalling unit, said controlling means including a manual activation member exposed outside of said housing.

5,711,708

TWO CIRCUIT TIMER

Roger D. Fischer, 4572 County Rd. 214, Fulton, Mo. 65251

Filed Oct. 18, 1995, Ser. No. 544,939

Int. Cl.^{6} A63F *9/00*

U.S. Cl. 463—36 **19 Claims**

1. A two circuit timer comprising:

a primary timed circuit that controls activation and deactivation of a first external load;

a secondary circuit deactivated by said primary timed circuit, said secondary circuit controlling activating and deactivating a second external load;

a timer controlling a momentary deactivation of said primary timed circuit; and

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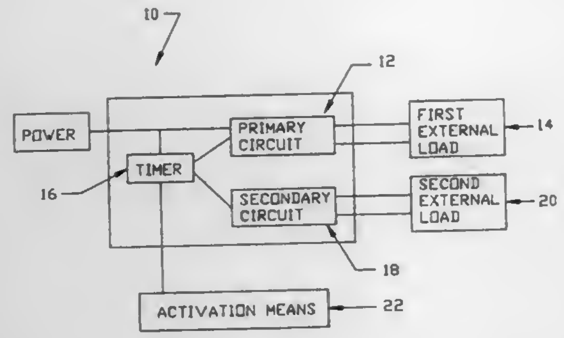
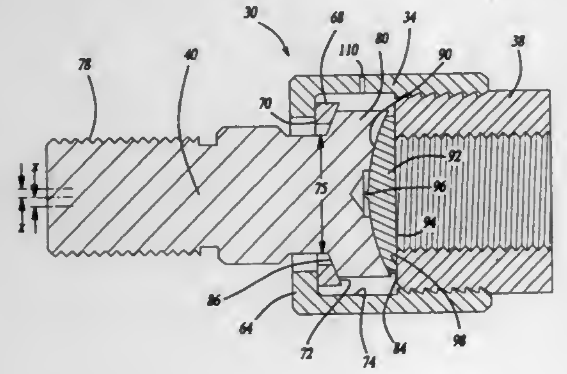


an actuator means that activates said timer and said secondary circuit to activate said second external load.

5,711,709
SELF-ALIGNING ROD END COUPLER

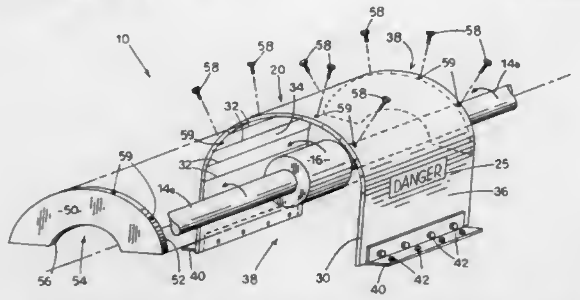
Christopher B. McCoy, Alpena, Mich., assignor to Douville-Johnston Corporation, Alpena, Mich.
Filed Mar. 7, 1996, Ser. No. 612,349
Int. Cl.^{6} F16D *3/10*
U.S. Cl. 464—106 **14 Claims**



1. A self-aligning rod end coupler, comprising:
- a housing having a first open end and a second open end, said first open end having an internally threaded portion and said second open end having a radially inwardly extending flange;
- a female adapter having an externally threaded portion for engaging said internally threaded portion of said first open end of said housing;
- a slide washer having a first surface slidably disposed against said radially inwardly extending flange of said second open end of said housing and having a partial, substantially spherical second surface;
- a male adapter having a first threaded end and a second end, said second end including a radially outwardly extending portion having a first partial, substantially spherical, concave surface on a longitudinal end of said male adapter and a second partial, substantially spherical, convex surface, said second partial, substantially spherical, convex surface of said second end of said male adapter engaging said partial, substantially spherical second surface of said slide washer; and
- a thrust washer disposed between said male adapter and said female adapter, said thrust washer having a partial, substantially spherical, convex surface for engaging said first partial, substantially spherical, concave surface of said second end of said male adapter wherein during rotational movement of said male adapter relative to said housing, said male adapter moves relative to said slide washer and said thrust washer.

5,711,710
ROTATING SHAFT COUPLING GUARD

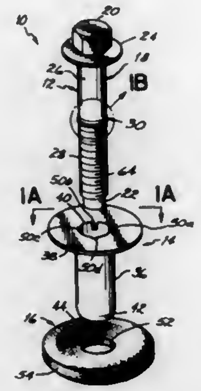
Kenneth J. Brisk, 3004 Guilford Ct., New Bern, N.C. 28562
Filed Jul. 12, 1995, Ser. No. 501,408
Int. Cl.^{6} F16C *1/26*
U.S. Cl. 464—170 **18 Claims**



15. A machine assembly including a guard for shielding a pair of exposed rotating shafts and a coupling interconnecting the shafts, comprising:
- a) a pair of exposed rotating shafts and a coupling interconnecting the pair of rotating shafts;
- b) a generally inverted U-shaped main guard panel for extending and curving over the pair of exposed rotating shafts and the coupling interconnecting the shafts;
- c) the main guard panel including a pair of opposed open ends and an open throughway defined internally within the main guard panel for permitting the two exposed rotating shafts and the interconnecting coupling to pass internally through the guard without the two shafts and the interconnecting coupling touching the main guard panel;
- d) a pair of end panels secured over the respective open ends of the main guard panel; and
- e) shaft cut-outs formed in the end panels for permitting the rotating shafts being shielded to extend therethrough.

5,711,711
METHOD OF MANUFACTURING A FASTENER ASSEMBLY WITH AXIALLY CAPTIVATED WASHER

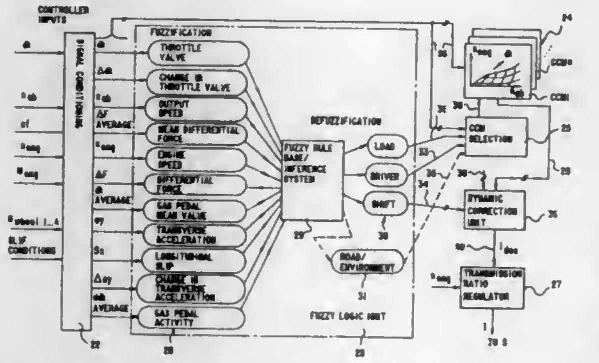
Rudolph Schmidt, Jr., Nicholasville, Ky., assignor to Crest Products, Inc., Lexington, Ky.
Division of Ser. No. 254,644, Jun. 8, 1994, Pat. No. 5,489,177. This application Nov. 17, 1995, Ser. No. 544,451
Int. Cl.^{6} B21D *53/20*
U.S. Cl. 470—41 **5 Claims**



1. In a method of making a sleeve for a fastener assembly, said sleeve having two ends and at least two detents extending inwardly from inner surfaces thereof, the steps of:
- inserting a first tool into one end of said sleeve;
- plowing sleeve material from the inner surface of said sleeve near one end thereof in an axial direction toward another end thereof, thereby displacing material into said sleeve from said inner surface to form said detents;
- withdrawing said first tool; and
- thereafter inserting a second tool and wiping off portions of said detents to define elongated inwardly facing surfaces thereon.

5,711,712
CONTROLLER FOR AN AUTOMATIC MOTOR VEHICLE TRANSMISSION

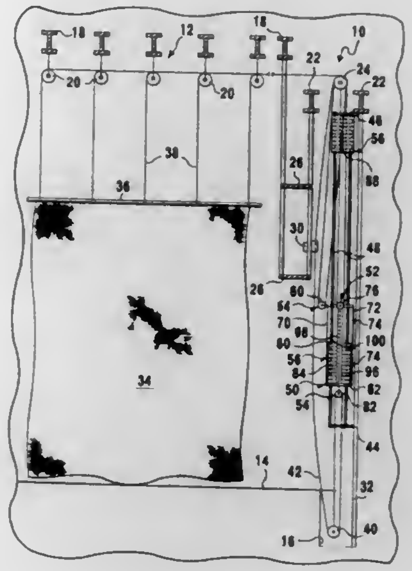
Friedrich Graf, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 19, 1996, Ser. No. 684,030
Claims priority, application European Pat. Off., Jan. 19, 1994, 94100742
Int. Cl.^{6} B60K *41/06*
U.S. Cl. 477—121 **10 Claims**



1. In a controller for an automatic motor vehicle transmission including a fuzzy logic unit having at least one rule base:
- for setting a transmission ratio of the automatic motor vehicle transmission with the aid of data stored in characteristic maps as a function of a gas pedal position and a vehicle speed, and
- for taking a load condition of a motor vehicle and a driving style of a driver into account when selecting one of the characteristic maps, the improvement comprising:
- one of rule bases and a plurality of prescribed load-adaptive and driver-adaptive control characteristic maps replacing the control characteristic maps, for setting an engine speed to a desired engine speed by continuous regulation of the transmission ratio; and
- a correction circuit being connected to the fuzzy logic unit and selectively receiving a blocking signal from the fuzzy logic unit taking into account a dynamic driving condition of the motor vehicle for limiting adjustments of the transmission ratio, and an active adjusting signal for actively determining adjustments of the transmission ratio;
- the fuzzy logic unit also taking into account increased vehicle loading when setting the transmission ratio.

5,711,713
MODIFIED THEATRICAL COUNTERWEIGHT APPARATUS

Donald Krueger, P.O. Box 26203, Birmingham, Ala. 35260
Filed Sep. 27, 1996, Ser. No. 726,053
Int. Cl.^{6} A63J *1/02*
U.S. Cl. 472—77 **19 Claims**



1. A modified theatrical counterweight apparatus in a double or single purchase counterweight system for a stage with a counterweight pit, the system having a plurality of loft beams over the stage, a plurality of loft beam sheaves underhung on the loft beams, two head block beams over the counterweight pit, an upright head block sheive between the two head block beams, a loading gallery above with an operating gallery below suspended vertically from one loft beam and the first head block beam, a pin rail on the operating gallery, a pair of guide rails extending vertically from the second head block beam into the counterweight pit, a piece of scenery with a batten suspended over the stage by a plurality of lift lines extending about the loft beam sheaves and the upright head block sheive, a tensioning floating foot block sheive carried within the counterweight pit, and an operating line extending between the upright head block sheive through the pin rail and the tensioning floating foot block sheive, said apparatus comprising:
- a) a bottom stop bracket affixed at a right angle to the guide rails above the counterweight pit;
- b) a top stop bracket affixed at a right angle to the guide rails at the second head block beam;
- c) a pair of elongate arbor bars extending vertically between said bottom stop bracket and said top stop bracket;
- d) an improved counterweight arbor carriage which slides upon said elongate arbor bars and the guide rails between said bottom stop bracket and said top stop bracket;
- e) means for coupling the lift lines to a top end of said improved counterweight arbor carriage from the upright head block sheive;
- f) means for coupling the operating line to the top end and a bottom end of said improved counterweight arbor carriage;
- g) a plurality of improved counterweights;
- h) means for storing some of said improved counterweights on said elongate arbor bars directly under said top stop bracket and above said improved counterweight arbor carriage until released; and
- i) means for locking some of said improved counterweights in said improved counterweight arbor carriage, after being released, whereby said improved counterweights will slide upon said elongate arbor bars when said improved counterweight arbor carriage raises the piece of scenery with said batten up from the stage.

5,711,714
ADD-ON-HAND-POWERED SWINGING MECHANISM FOR A PORCH SWING OR THE LIKE

Robert J. Daigle, 2408 Elizabeth St., Thibodaux, La. 70301
Filed Aug. 6, 1996, Ser. No. 692,717
Int. Cl.^{6} A63G *9/18*
U.S. Cl. 472—123 **20 Claims**

1. An add-on hand-powered swinging mechanism for a porch swing or the like comprising:
- an extension bar having a first extension bar end securable to a fixed surface adjacent said porch swing and a pulley connection mechanism at a second extension bar end;
- a pulley assembly, detachably mountable to said second extension bar end, including an extension bar connecting mechanism and a pulley wheel rotatably mounted within a pulley bracket; and

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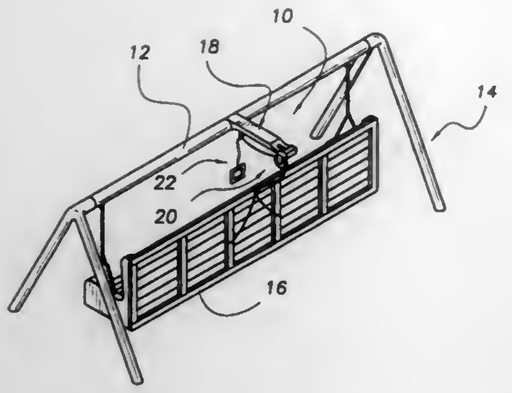


a cable assembly including a handle member, a cable guide having a mechanism for securing said cable guide to a back of said existing porch swing, and a cable having a first cable end secured to said handle member, a central cable section positionable through said cable guide mechanism and a second cable end split into two rope members, each rope member including a rope member attaching mechanism for attaching each rope mechanism to said back of said swing.

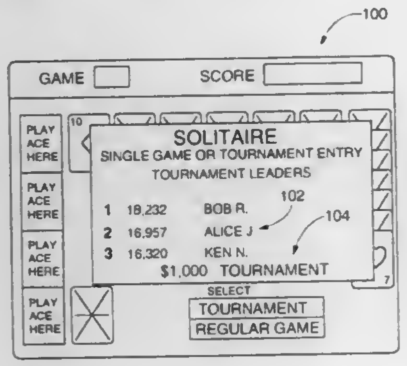
5,711,715
METHOD AND APPARATUS FOR TOURNAMENT PLAY OF COIN OPERATED GAMES

Dock E. Ringo, 205 NE. First Ave., Mineral Wells, Tex. 76067, and James Henry Pearson, 5263 Beasley Bend Rd., Lebanon, Tenn. 37087

Continuation-in-part of Ser. No. 540,667, Oct. 11, 1995, abandoned. This application Nov. 8, 1995, Ser. No. 555,218

Int. Cl.^{6} G06F *15/44;* **A63F** *9/22*

U.S. Cl. 473—9 **7 Claims**



1. A computer controlled method for conducting a solitaire tournament among a plurality of players of a solitaire card game comprising the steps of:

providing a coin operated video solitaire card game including a series of card plays to be made from at least one deck of cards arranged in the same card order for each player of said plurality of players, so that the potential number of card plays in said solitaire card game is the same for each said player thereof;

receiving credits so as to allow play of said solitaire card game;

allocating a portion of the credits received to a tournament award fund by means of computer;

playing said solitaire card game to completion by each said player of said plurality of players, while counting the number of card plays made by each said player and the time required by each said player for completion of said game;

awarding a numerical score to each said player proportional to the number of card plays made thereby in playing said game;

adding an additional score, inversely proportional to the time required by each said player for completion of said game, to said numerical score, so as to provide the total numerical score for each player of said plurality of players;

storing said total numerical score made by each player of said plurality of players in said solitaire tournament in computer memory; and

comparing all said total numerical scores, by means of computer to determine the highest said total numerical score for a game in said solitaire tournament.

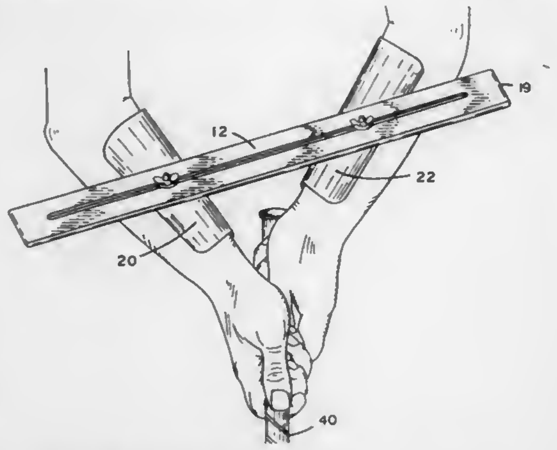
5,711,716
GOLF PUTTING TRAINING DEVICE

J. Andrew O'Brien, 6635 Banner Lake Cir., Apt. 4106, Orlando, Fla. 32821, and John A. De Dominicis, 11428 Willow Stowe La., Windermere, Fla. 34786

Filed Nov. 21, 1996, Ser. No. 753,253

Int. Cl.^{6} A63B *69/36*

U.S. Cl. 473—212 **14 Claims**



1. A golf putting training device for a golfer comprising:

an elongate rigid support member;

a pair of forearm-embracing members for receiving the golfer's forearms therethrough, said forearm-embracing members dimensioned for snugly embracing the golfer's forearms and each including means for supporting the golfer's forearms along substantially the entire length thereof between the golfer's wrists and the crook of the golfer's elbow;

each said forearm-embracing member mounted on said support member for longitudinal movement relative to said other forearm-embracing member along said support member and for independent pivotal movement relative to said support member about a pivot axis extending substantially perpendicularly of the longitudinal extent of said support member;

whereby the longitudinal spacing between and angular position of said forearm-embracing members can be adjusted to accommodate the size, shape and putting stance of the golfer in order that said training device will comfortably and correctly position the golfer's arms to encourage a pendulum-like putting motion which permits the larger muscles of the golfer to control the putting stroke and discourages the tendency to allow the wrists to adversely influence the putting stroke.

5,711,717
GOLF SWING SIMULATION APPARATUS

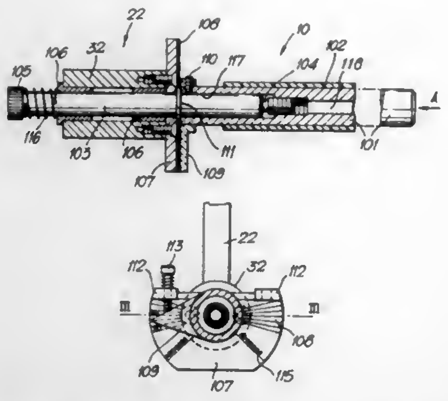
Ralph Henry Arthur Richards, 20 Homestead Gardens, Frenchay, Bristol, BS16 1PH, United Kingdom

Filed Feb. 20, 1996, Ser. No. 603,414

Claims priority, application United Kingdom, Feb. 21, 1995, 9503388

Int. Cl.^{6} A63B *69/36*

U.S. Cl. 473—229 **17 Claims**



1. Golf swing simulation apparatus for guiding a simulated golf swing including an address and a backswing, comprising a handle portion defining a grip axis, a mechanical swing-guiding linkage having a handle connector at which it is connected to the handle portion, so as to permit rotation of the handle portion relative to said linkage about the grip axis, and a mounting arrangement to mount the mechanical linkage on a stationary support;

said linkage being constructed to guide movement of the handle portion in a predetermined swing arc relative to the mounting arrangement, and

the handle portion and handle connector providing a grip rotation monitoring arrangement comprising a first engagement member on the handle portion radially overlapping with a second engagement member fixed on the handle connector so as to act as a stop abutment for the first engagement member, preventing said rotation of the handle portion about its grip axis during the backswing past a predetermined stop position corresponding to a predetermined angle of such rotation from a predetermined start position corresponding to the address.

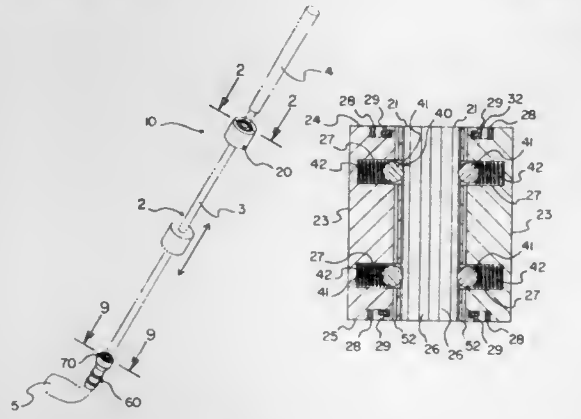
5,711,718
GOLF SWING IMPROVEMENT DEVICE

Daniel Mueller, 42714 N. Murphy Ave., Queen Creek, Ariz. 85242

Filed Jan. 30, 1997, Ser. No. 791,662

Int. Cl.^{6} A63B *69/36*

U.S. Cl. 473—234 **20 Claims**



17. A Golf Swing Improvement Device for use on a golf club having a shaft, a handle at one end of said shaft, and a head at an opposite end of said shaft, said device comprising:

a pair of semi-cylindrical members each having a planar surface, a convex surface, a semi-circular top surface, and a semi-circular bottom surface, said planar surface having a semi-circular groove therein extending from said semi-circular top surface to said semi-circular bottom surface, said semi-circular groove having at least one cavity therein;

a fastening means for mateably joining said pair of semi-cylindrical members to form a cylindrical sleeve member having a top surface and a bottom surface, and having a circular bore therethrough extending from said top surface to said bottom surface, said circular bore adapted to receive said shaft of said golf club whereby said cylindrical sleeve member is slidably mounted on said shaft of said golf club;

a shaft contact member protruding from said cavity into said circular bore of said cylindrical sleeve member, said shaft contact member contacting said shaft of said golf club as said cylindrical sleeve member slidably travels therealong; and

a projection spring located within said cavity and positioned behind said shaft contact member whereby said projection spring maintains said shaft contact member in continuous contact with said shaft of said golf club as said cylindrical sleeve member slidably travels therealong.

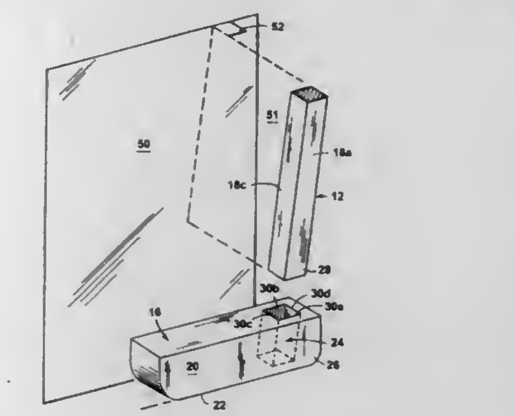
5,711,719
GOLF CLUB

Stephen Fireman, 10 Spooner Rd., Chestnut Hill, Mass. 02167

Continuation of Ser. No. 552,132, Nov. 2, 1995, abandoned. This application Dec. 4, 1996, Ser. No. 760,418

Int. Cl.^{6} A63B *69/36;53/02*

U.S. Cl. 473—251 **14 Claims**



1. A golf club for striking a golf ball in a desired direction, comprising:

a straight shaft member of square or rectangular cross section having first and second pairs of opposing side surfaces extending from a distal end of the shaft member and along a substantial portion of the shaft member, the second pair of opposing side surfaces perpendicular to the first pair of side surfaces; and

a head member having a ball striking surface and a heel portion, said head member having a square or rectangular hole sized to receive the distal end of the straight shaft member, the distal end of the straight shaft providing an index, the square or rectangular hole formed in the head member providing an index formed therein, and keyed to receive the index provided by the distal end of the shaft member to align the second pair of opposing surfaces to be parallel with the ball striking surface of the head member.

5,711,720
DECORATIVE HANDLE FOR IMPLEMENTS SUCH AS SPORTS RACQUETS

Richard Janes, Burlington Township, N.J., and Stephen J. Davis, Washington Crossing, Pa., assignors to Prince Sports Group, Inc., Bordentown, N.J.

Filed Apr. 19, 1996, Ser. No. 639,884

Int. Cl.^{6} A63B *49/08;53/14*

U.S. Cl. 473—300 **24 Claims**

1. A handle for a sports implement comprising:

a shaft having a portion intended to be gripped, said portion having an outer surface containing a decorative design; and

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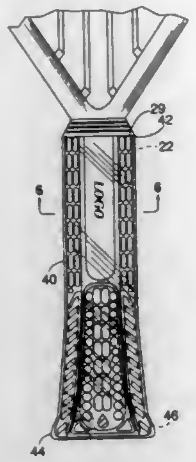


an overgrip sleeve made of a thin, translucent, elastomeric material, which is sized to cover said outer surface and be in frictional contact therewith, such that said decorative design is visible.

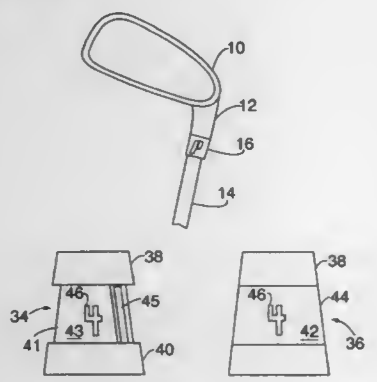
5,711,721
FERRULE FOR GOLF CLUB

Brenda Johnson, Southampton, N.J., and Richard P. Hulock, Quakertown, Pa., assignors to Prince Sports Group, Inc., Bordentown, N.J.

Filed Dec. 19, 1996, Ser. No. 769,837

Int. Cl.^{6} A63B *53/02*

U.S. Cl. 473—308 **17 Claims**



1. A ferrule for a golf club, comprising:

a first member having at least one raised element with a top surface; and

a second member molded about said first member so as to surround said raised element, and having a generally annular, outwardly facing surface that is at least generally flush with said top surface for exposing said top surface; wherein said first and second members are made from materials of different colors, and wherein at least one of said first and second members defines a longitudinal hole therethrough for receiving a golf club shaft.

5,711,722
GOLF CLUB HEAD

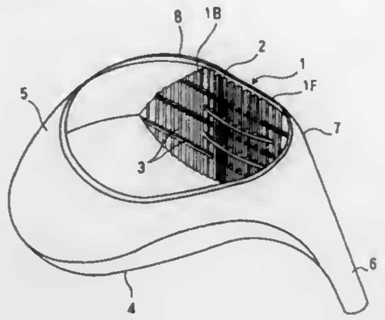
Tetsuya Miyajima, Tokyo; Hirato Shimasaki, and Hiroshi Ezaki, both of Saitama-ken, all of Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1996, Ser. No. 707,286

Claims priority, application Japan, Apr. 9, 1995, 7-250158; Mar. 21, 1996, 8-091933; Jun. 28, 1996, 8-188707

Int. Cl.^{6} A63B *53/04*

U.S. Cl. 473—346 **16 Claims**



1. A wood or iron golf club head comprising:

a plate wall made of a metal having a front face for striking a ball and a back face opposite said front face;

said back face having a plurality of ridges projecting rearwardly from the back face;

said ridges including one of vertical ridges. horizontal ridges and both vertical and horizontal ridges;

said ridges being disposed at least in an area behind a sweet spot area of the front face;

said ridges having top portions which are semicircular in cross section and said ridges defining troughs therebetween with said troughs having bottoms which are semicircular in cross section such that said ridges define circular convexities and circular concavities; and

said ridges having a height in a range of 1 to 5 mm and said ridges being spaced at intervals in a range of 2 to 10 mm.

5,711,723
THREE-PIECE SOLID GOLF BALL

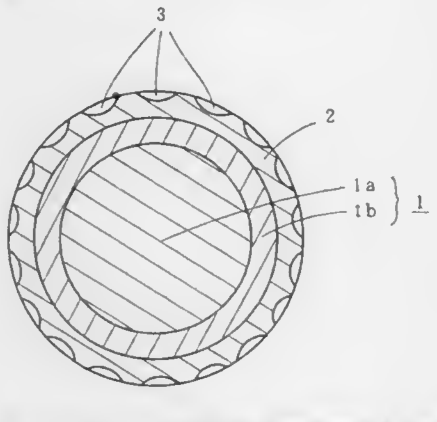
Hidenori Hiraoka, Akashi; Kazushige Sugimoto, Shirakawa; Keiji Moriyama, Shirakawa; Yoshimasa Koizumi, Shirakawa, and Kuniyasu Horiuchi, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-Ken, Japan

Filed Apr. 4, 1996, Ser. No. 625,813

Claims priority, application Japan, Apr. 5, 1995, 7-106909

Int. Cl.^{6} A63B *37/06;37/14*

U.S. Cl. 473—374 **3 Claims**



1. A three-piece solid golf ball comprising a core having a two-layer structure of a center and a shell covering the center, and a cover covering the core, wherein

the center has a diameter of 25 to 37 mm, a JIS-C hardness of 60 to 85 at its center point, and a JIS-C hardness difference between the center point and a surface of the center of not more than 4,

the shell has a JIS-C surface hardness of 75 to 90, and

the cover has a stiffness modulus of 1,200 to 3,600 kg/cm^2 with the hardness being measured by a JIS-C type hardness tester.

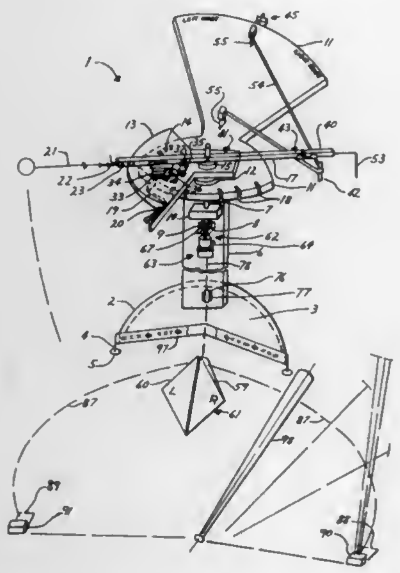
5,711,724
BASEBALL BATTERS WARM-UP DEVICE

James Robert McGovern, 205 E. 239th St., Bronx, N.Y. 10470

Filed Oct. 17, 1995, Ser. No. 544,327

Int. Cl.^{6} A63B *69/00*

U.S. Cl. 473—427 **2 Claims**



1. A baseball batters warm-up device comprising:

baseball batting means consisting of a baseball bat, device structural element means including,
  - a pan like ballast holding base, set on flat disks that are screw adjustable to provide device leveling,
  - a vertical post supported to the base,
  - a circular platform supported to the post and having an elongated shelf, extending out from its rear quadrant, said platforms remaining quadrants leading edge containing several equally spaced vertical notches,
  - a rotatable platform, fan like in shape, that carries an electromagnetic arm holding mechanism switch on its top surface,
    - where said platform carries a hand operated, spring loaded, platform position retension lever that pivots on a bracket fastened to the platform outer edge,
    - so that the batter can manually set the location of the arm holding switch platform by depressing said lever and resetting its end into a selected notch,

device structural element spacing means including,
  - a circular spacer disk disposed between said circular platform, and said fan like shaped platform,
  - and a circular spacer disk disposed above said fan like shaped platform,

ball arm means including,
  - a base arm piece that is fastened stationarily to said shaft by set screw,
  - a short hinged end piece, that is fastened to one end of the base piece by a bracket that provides a hinge and a clasp,
  - and a flexible rod that carries a ball at one end, and a spring adapter at its opposite end,
  - where said hinged end piece can be elevated manually on its hinge to a near verticle attitude, and when returned to the horizontal, snapping into and being gripped by the spring like vertical sides of said clasp, stabilized on said bracket's horizontal member as a lengthwise continuation of said base piece,

ball arm energizing means including,
  - an elastic line that is carried, strung between two line posts that are spaced apart and set vertically in the top surface of the circular platforms extension,
  - an elastic line screw clamp, one carried at the top of each line post,
  - and a vertical spindled line deflector post that is set in and projects downward from the bottom surface of said arm short end piece,
    - so that when said arm is forceably counter rotated, and the deflector encounters the line, the line is stretched and generates a counter force that becomes resident and stored in the arm, as the counter rotation pushes the arm into said electromagnetic holding switch,

ball arm travel limit means including,
  - a line,
  - a pulley and line supporting bracket,
  - a U type anchor bolt,
  - a coil spring,
  - a counterweight,
  - and a ball arm line lever,
    - where the line lever is set in and projects down from the end of the short end piece,
    - the line is fastened by the U bolt to the outer edge of said shelf, then draped over the bracket supported pulley, through the spring, and holds the suspended counterweight,
    - so that when the arm is released and the ball is projected through the batters strike zone, and the batter swings and misses, the line lever encounters said line and displaces the counterweight, possibly encounters the coil spring, and is slowed gradually, and stopped,

ball arm resetting means including,
  - a DC motor,
  - a motor shaft rubber rimmed pulley,
  - a bracket with a hinged motor base plate,
  - a motor base plate tension spring,
  - and a ball arm shaft rubber surfaced pulley
    - where line pressure on the base plate tilts the motor and its pulley into contact with said shaft pulley,
    - so the actuated motor will counter rotate the ball arm and its shaft into the elastic line,

home plate double switch means including,
  - a base piece that carries a strut that is fastened to the face of said post,
  - a right hand switch foot pedal and a left hand switch foot pedal that are hinged to the outer edge of said base,
  - a plate inclined lever, hinged to the end of said strut, and a line lever guide, comprised of two parallel vertical pieces, that support two small line diverting pulleys,
  - a flat metal spring under each panel to provide upward pressure on the foot pedals,
  - a pair of motor circuit electrical contacts, mounted between each panel and the plate base piece,
  - a lever diverter bar fastened to the underside of each panel,
  - a remote line diverting pulley and bracket that are fastened at the base, on the face of the post,
  - and a nylon line that extends from the upper end of the hinged line lever, through the small diverter pulleys, behind the post base diverter pulley and is attached to the unfastened end of the motor bracket base plate,
    - so that when said right hand batting mode foot panel is stepped on, the lever diverter bar catches the line lever, and in pushing it down, the nylon line is displaced, and the motor is tilted into contact with the arm shaft pulley, and when the right panel contacts make contact, the motor counter rotates the shaft and arm in a clockwise direction into the holding switch, thus energizing the arm and setting it,

passive infrared motion sensing means including,

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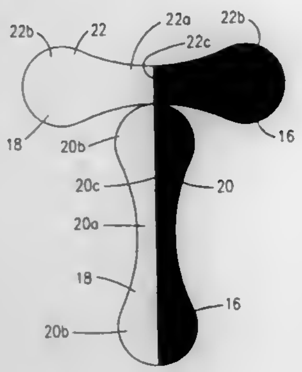
two sensors, one with its beam adjacent the right hand batter, and able to be interrupted by the batters bat when he performs his back-swing,
and another in like fashion, able to be interrupted by the left hand batters bat when he performs his back-swing,
said sensors becoming operative in said device's circuit, individually, dependent upon the operation of said device's circuit,
circuit means for said device including,
wiring connecting, a 110 volt AC line, to a 16.5 volt transformer, to an AL $^{6}/_{12}$ power supply, to a three way switch, to a home plate douuble switch, and to a 12 volt DC motor,
where said three way switch in one position provides power from the AL $^{6}/_{12}$ to a right hand batter passive infrared motion sensor, and to the right side of said double switch,
and in the other position provides power from the AL $^{6}/_{12}$ to a left hand batter passive infrared motion sensor, and to the left side of said double switch,
so that said arm holding magnetic switch is activated to release said ball arm, on the side of home plate that the three way switch has been positioned in,
and where said motor is actuated and oriented by the batter when he steps on the right side panel of said home plate to reset said ball arm for a right hand batter, and where said motor is actuated and oriented by the batter when he steps on the left side panel of said home plate, to reset said ball arm for a left hand batter.

5,711,725
PRACTICE BASEBALL/SOFTBALL WITH CONTRASTING COLORS

Timothy A. Bengtson, 2704 Lawrence Ave., Lawrence, Kans. 66047

Filed Jan. 23, 1997, Ser. No. 788,048
Int. Cl.^{6} A63B *69/00*
U.S. Cl. 473—451 **5 Claims**

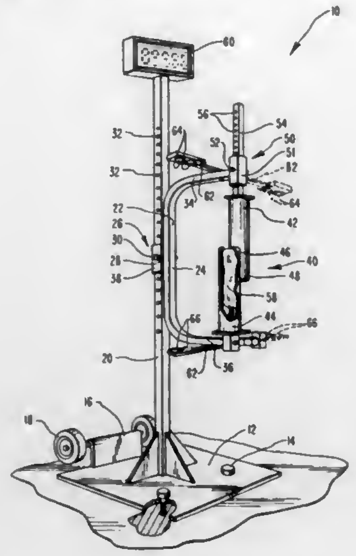


1. A practice baseball/softball comprising:
a substantially spherical ball member having a substantially spherical surface; and
means on said surface for providing a relatively light color on approximately one half the area thereof and a relatively dark color on approximately one half the area thereof, wherein
said ball member has a core and a cover surrounding said core;
said cover includes first and second sections stitched together along a seam, each section occupying substantially one half of the area of said surface;
each said section has a longitudinal axis and a transverse axis and is symmetrical about each said axis;
said first section is colored said light color on one side of the longitudinal axis thereof and said dark color on the other side of the longitudinal axis thereof; and
said second section is colored said light color on one side of the transverse axis thereof and said dark color on the other side of the transverse axis thereof.

5,711,726
BATTING SIMULATOR APPARATUS WITH FORCE, BAT ANGLE, AND VELOCITY READOUT

Steven B. Powers, 2126 S. 1900 East, Salt Lake City, Utah 84106

Filed Jul. 15, 1994, Ser. No. 275,583
Int. Cl.^{6} A63B *69/40*
U.S. Cl. 473—453 **19 Claims**



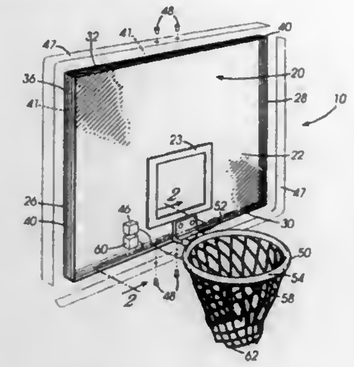
1. A batting practice device comprising:
(a) impact target area means formed of overlapping lengths of resilient tubing, resiliently articulating between a rest position and an impact position, for providing an impact target area upon which a bat directly impacts, the impact target area means moving from the rest position to the impact position upon application of a predetermined force by the bat upon said impact target area means, and resiliently returning to the rest position upon the bat moving through and past the impact target area of the impact target area means;
(b) a base section;
(c) a support member rising vertically from the base section;
(d) a U-bar, adjustably mounted to the support member, having an upper arm and a lower arm each extending to a free end horizontally outward from said support member, and having means attached at the ends of the upper and lower arms for attaching the target;
(e) wherein said target comprises:
(i) an upper length of resilient tubing fixed at an upper end thereof to the free end of the upper arm of the U-bar through an upper resilient tubing support member; and
(ii) a lower length of resilient tubing fixed at a lower end thereof to the free end of the lower arm of the U-bar, the upper resilient tubing having a lower end opposite the upper end of the upper resilient tubing, the lower resilient tubing having an upper end opposite the lower end of the lower resilient tubing, and the lower end of the upper resilient tubing being adjacent to and overlapping the upper end of the lower resilient tubing when in the rest position; and
(f) means for adjusting the target to require a different predetermined force to move the target from the rest position to the impact position by adjusting the overlap of the lower end of the upper resilient tubing and the upper end of the lower resilient tubing, said means comprising:
(i) a boxed channel having a slot therethrough and attached to the free end of the upper arm of the U-bar;
(ii) the upper resilient section support member having multiple slots therethrough and being slidably received within the boxed channel; and
(iii) a pin extending through the slot of the boxed channel and through any one of the multiple slots through the inner member so as to prevent the inner member from vertical movement relative to the boxed channel;

whereby the upper resilient tubing can be adjusted to vary the overlap.

5,711,727
ILLUMINATED BASKETBALL GOAL AND BASKETBALL

André L. Edge, and Larry Hurell, both of 1824 Mechanicsville Rd., Florence, S.C. 29501

Filed Feb. 4, 1997, Ser. No. 821,957
Int. Cl.^{6} A63B *63/08*
U.S. Cl. 473—479 **20 Claims**

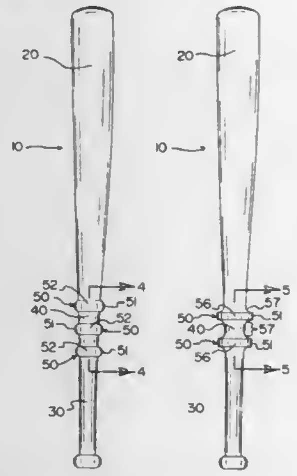


14. A system for playing basketball comprising:
a backboard, said backboard having a perimeter and a front surface;
a rim extending from said front surface of said backboard, said rim having a perimeter;
means for illuminating said backboard, said backboard illuminating means carded by said perimeter of said backboard;
means for illuminating said rim, said rim illuminating means carried by said perimeter of said rim;
a basketball having an exterior, said basketball having a plurality of ribs on said exterior; and
means for illuminating said basketball.

5,711,728
SHOCK AND VIBRATION ABSORBING BALL BAT

Severino V. Marcelo, 3488 Baskerville Rd., Fremont, Calif. 94555

Filed Oct. 25, 1996, Ser. No. 738,399
Int. Cl.^{6} A63B *59/06*
U.S. Cl. 473—520 **6 Claims**

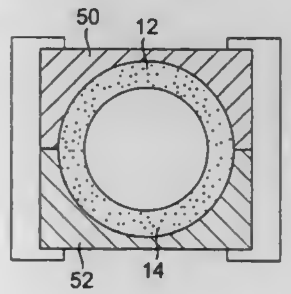


1. A Shock and Vibration Absorbing Ball Bat, comprising:
an elongated member formed of a single piece of material including
a hitting portion,
a handle portion,
an intermediate portion provided between said hitting portion and said handle portion, and
a knurl provided along said intermediate portion of said elongated member above said handle portion and below said hitting portion, said knurl coaxially aligned with said intermediate portion of said elongated member,
said knurl being defined by a peripheral wall, said peripheral wall having a diameter greater than the diameter of said intermediate portion of said elongated member immediately adjacent said knurl whereby said knurl is radially enlarged relative to said intermediate portion of said elongated member immediately adjacent said knurl,
wherein said knurl is a convex knurl and wherein said peripheral wall is convex-shaped.

5,711,729
BALL AND METHODS FOR MAKING THE SAME

Raymond Chong Veng Chan, Kowloon, Hong Kong, assignor to Joyful Long International Ltd., Kowloon, Hong Kong

Filed Aug. 7, 1996, Ser. No. 693,414
Int. Cl.^{6} A63B *37/12*
U.S. Cl. 473—609 **8 Claims**



1. A method of making a ball comprising the steps of:
providing a mixture of rubber containing a distribution of pieces of cork, the rubber forming between about 50.2% to 75.3%, by weight, of the mixture and the pieces of cork forming between about 8.6% to 11.3%, by weight, of the mixture;
extruding said mixture of rubber containing a distribution of pieces of cork;
molding said extruded mixture of rubber containing a distribution of pieces of cork so that said molded mixture has a spherical surface; and
sponging said molded mixture of rubber containing a distribution of pieces of cork to provide material suitable for use in a ball.

5,711,730
TORQUE MONITORING APPARATUS

Oswald Friedman, Lichtenau, and Armin Veil, Ottersweier-Unzhurst, both of Germany, assignors to Luk Getriebe-Systeme GmbH, Bühl /Baden, Germany

Filed Dec. 6, 1995, Ser. No. 568,134

Claims priority, application Germany, Dec. 6, 1994, 44 43 332.8

Int. Cl.^{6} F16H *61/00*
U.S. Cl. 474—18 **27 Claims**

1. A fluid-operated torque sensor for use between a rotary torque transmitting driving member and a rotary torque receiving driven member and arranged to transmit at least a portion of torque from said driving member to said driven member as well as to receive a pressurized fluid from a source, comprising a first plenum chamber for pressurized fluid, a throttle valve including at least two relatively movable valving elements arranged to select the pressure of fluid in said first plenum chamber to thus determine the magnitude of torque transmittable between said driving and driven members,

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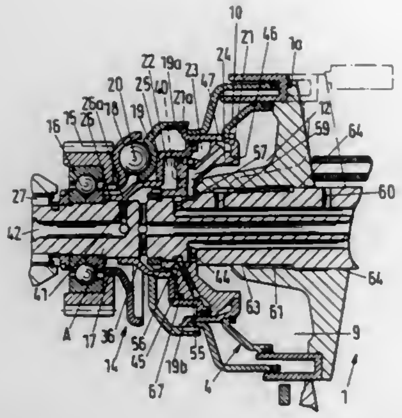


and at least one second plenum chamber connectable with and sealable from said first plenum chamber in dependency upon variations of at least one operational parameter.

5,711,731

BICYCLE REAR DERAILLEUR JOCKEY PULLEY

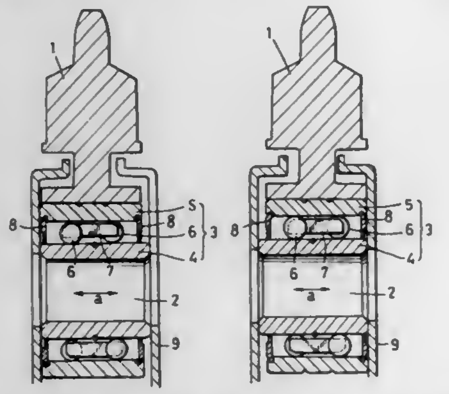
Masahiko Fukuda, Shimonoseki, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Sep. 6, 1996, Ser. No. 708,556

Claims priority, application Japan, Sep. 26, 1995, 7-270636

Int. Cl.^{6} F16H *59/00*

U.S. Cl. 474—79 **18 Claims**



1. A bicycle rear derailleur jockey pulley assembly comprising: a cogwheel (**1**) supported on a bearing (**3**), the bearing (**3**) including:
an outer ring (**5**) supporting the cogwheel (**1**);
an inner ring (**4**) disposed radially inwardly of the outer ring (**5**);
a plurality of rolling members (**6**,**11**) disposed between the inner ring (**4**) and the outer ring (**5**); and
wherein the outer ring (**5**) is capable of movement relative to the inner ring (**4**) in an axial direction (a).

5,711,732

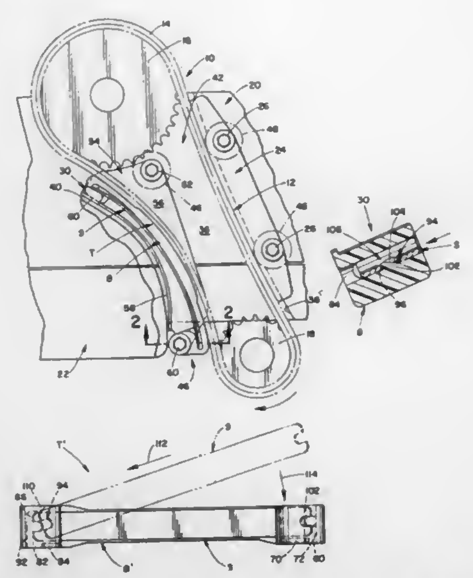
CHAIN TENSIONER APPARATUS AND METHOD

Anthony S. Ferenc, Dearborn Heights, and James D. Young, Chesaning, both of Mich., assignors to Cloyes Gear and Products, Inc., Mentor, Ohio

Filed Apr. 30, 1996, Ser. No. 640,333

Int. Cl.^{6} F16H *7/08*

U.S. Cl. 474—111 **29 Claims**



1. A chain tensioning apparatus mounted on a support structure, said apparatus for tensioning a chain in a timing chain assembly having a pair of sprockets operatively connected by a chain, the chain tensioning apparatus comprising:
an elongated shoe having first and second enlarged ends spaced apart along a longitudinal axis and joined by an elongated central body section, the enlarged ends each having a narrow slot extending laterally into the enlarged end, and a surface within each narrow slot having a ramp thereon, said ramp being increasingly offset from said surface in a direction perpendicular to the longitudinal axis; and,
an elongated spring having first and second ends each having a locking face extending longitudinally into the spring, the spring insertable into the slots of the elongated shoe in a direction perpendicular to the longitudinal axis and terminating in first and second ends of the elongated shoe after locking over the ramp whereby the spring extends longitudinally of the shoe generally parallel to the elongated central body.

5,711,733

POWER TRANSMISSION CHAIN

Günter Blase, Bergisch Gladbach, Germany, assignor to Igus Spritzgussteile Fur Die Industrie GmbH, Köln, Germany

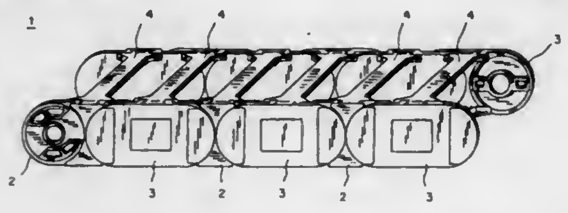
PCT No. PCT/DE94/00868, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO95/04231, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 26, 1994, Ser. No. 586,699

Claims priority, application Germany, Jul. 28, 1993, 43 25 259.1

Int. Cl.^{6} F16G *13/02*

U.S. Cl. 474—227 **3 Claims**



1. Power transmission chain for guiding cables, hoses and the like, including chain straps (**2**,**3**) which include means to be connected in detachable fashion by upper and lower cross-members (**4**), which are assembled in two parallel strands and overlap each other and can be angled, where a part of the chain strap arranged on an inside of an area of mutual overlap includes a protruding peg on an outer side thereof which engages a circular recess located on an inner side of the outer chain strap and inward-facing studs roughly halfway along a pitch length of the chain straps for receiving the cross-members, wherein inner and outer straps (**2** and **3**) alternate, lying opposite each other in each chain strand, which are positioned flush to center sections (**8**) in areas of overlap and wherein cross-members (**4**) are attached to the outer straps (**3**) end sections of which include dimension means to overlap the overlap area of the adjacent inner straps (**2**) and act as a stop to prevent the chain straps (**2**, **3**) separating transverse to the direction of travel.

5,711,734

POWER TRANSMISSION BELT

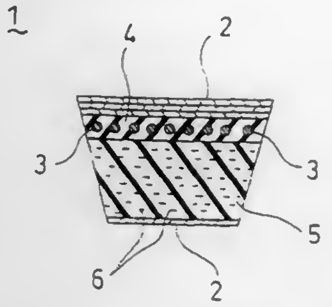
Tsutomu Shioyama, and Katsuya Yamaguchi, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Nov. 26, 1996, Ser. No. 753,499

Claims priority, application Japan, Nov. 27, 1995, 7-307439

Int. Cl.^{6} F16G *1/08*

U.S. Cl. 474—260 **8 Claims**



1. A power transmission belt, characterized in that
at least one of elements of the belt is made of a alkylated chlorosulfonated polyethylene composition in which a value of tan δ under conditions of a temperature of 100° C. and a frequency of 10 Hz is 0.08 to 0.15.

5,711,735

POWER TRAIN OF AN AUTOMATIC TRANSMISSION FOR A VEHICLE

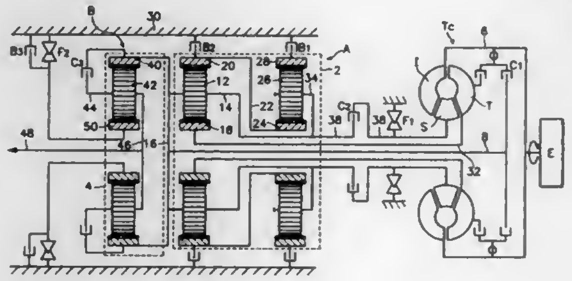
Donghoon Park, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Co., Seoul, Rep. of Korea

Filed Aug. 15, 1995, Ser. No. 515,164

Claims priority, application Rep. of Korea, Aug. 18, 1994, 94-20393

Int. Cl.^{6} F16H *47/08;3/62*

U.S. Cl. 475—44 **11 Claims**



1. A power train of an automatic transmission for a vehicle comprising:
a torque converter for changing a torque speed of power from an engine;
an input shaft;
a compound planetary gear unit including a first ring gear, a first sun gear, first pinion gears in a gearing relationship with said first ring gear and said first sun gear, a first planetary carrier being connected to said first pinion gears, a second ring gear, a second sun gear, second pinion gears in a gearing relationship with said second ring gear and said second sun gear, and a second planetary carrier being connected to said second pinion gears;
said first planetary carrier operationally connected to said input shaft and said second planetary carrier;
said first sun gear operationally connected to a turbine of said torque converter such that said first sun gear serves as an input element;
said second sun gear being connected to said first ring gear;
a first friction element mounted to a housing of said automatic transmission for selectively fixing rotation of said first ring gear such that said first ring gear and said second sun gear serve as one of an input element and a reaction element; and
a second friction element operationally connected to a stator of said torque converter and said second planetary carrier, said second friction element selectively, operationally connecting said stator and said second planetary carrier; and
a simple planetary gear unit operationally connected to said compound planetary gear unit and an output shaft, said simple planetary gear unit including a third ring gear, a third sun gear, third pinion gears in a gearing relationship with said third ring gear and said third sun gear, and a third planetary carrier being connected to said third pinion gears, said third ring gear being operationally connected to said input shaft.

5,711,736

MOTOR APPARATUS WITH REDUCTION GEAR

Yasumasa Kyodo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

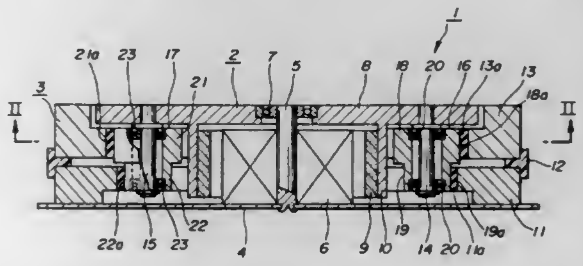
PCT No. PCT/JP95/01092, § 371 Date Mar. 8, 1996, § 102(e) Date Mar. 8, 1996, PCT Pub. No. WO95/34116, PCT Pub. Date Dec. 14, 1995

PCT Filed Jun. 2, 1995, Ser. No. 592,401

Claims priority, application Japan, Jun. 3, 1994, 6-144071

Int. Cl.^{6} H02K *7/116*

U.S. Cl. 475—149 **4 Claims**



1. A motor apparatus with reduction gear, comprising: a motor portion composed of a stator coil disposed at the periphery of a center shaft, a rotational body rotatably supported by the center shaft, and a magnet attached to the rotational body in a manner opposite to the stator coil; and
a reduction gear portion composed of a first ring disposed at the outer periphery of the rotational body with the center thereof being caused to be substantially in correspondence with the center of rotation of the rotational body, a second ring rotatably supported with respect to the first ring with the center thereof being caused to be substantially in correspondence with the center of rotation of the rotational body, a plurality of shafts disposed at substantially equal intervals on the circumference with the center of rotation of the rotational body being as the center, and a plurality of planetary gears respectively rotatably attached on these shafts, wherein a portion of the planetary gears is rotated along the inner circumferential surface of the first ring, and the other portion of the planetary gears is rotated along the inner circumferential surface of the second ring;
wherein the inner circumferential surfaces of the first and second rings are abrasive, or friction members are provided thereat, thereby to form friction surfaces, whereby the planetary gears are rotated along the inner circumferential surfaces of the first and second rings in the state where the friction surfaces are caused to be in contact with the outer circumferential surfaces of the planetary gears.

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5,711,737
DIFFERENTIAL APPARATUS

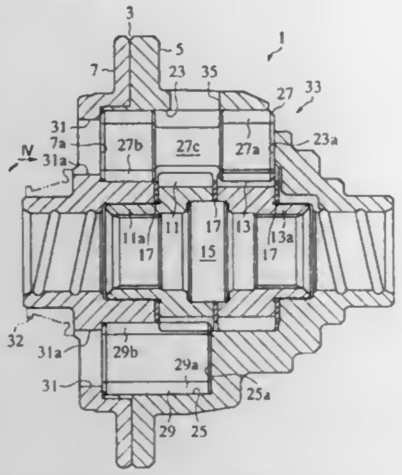
Masao Teraoka; Osamu Ishikawa; Satoshi Aiba, and Kenji Hiraishi, all of Tochigi-ken, Japan, assignors to Tochigi Fuji Sangyo Kabushiki Kaisha, Tochigi-ken, Japan

Filed Nov. 7, 1995, Ser. No. 554,453

Claims priority, application Japan, Sep. 11, 1994, 6-274825; Apr. 14, 1995, 7-089504

Int. Cl.⁶ F16H *01/45*

U.S. Cl. 475—160 **4 Claims**



1. A differential apparatus comprising:
a differential casing (**3**) rotatable about an axis;
a pair of helical side gears (**11**, **13**) arranged in the differential casing (**3**) so as to be individually rotatable about said axis;
a pair of axially extending bores (**23**, **25**) formed in a body portion (**5**) of the differential casing (**3**) so as to revolve around the side gears as the differential casing rotates;
a pair of mutually meshing helical pinions (**27**, **29**) slidably rotatably fitted respectively in the bores (**23**, **25**), the helical pinions having rotational axes fixed in relation to the differential casing and engaged respectively with the side gears (**11**, **13**); and
a lubrication hole (**31**) formed through a radially extending side portion (**7**) of the differential casing (**3**) at a region always coinciding with a mutual meshing point between axial ends of the pinions (**27**, **29**), the lubrication hole communicating with outside of the differential casing (**3**) whereby a screw pumping effect by rotation of the meshing pinions sucks lubricant through the lubrication hole from outside the differential casing to introduce that lubricant into the differential casing at the mutual meshing point;
so as to forcibly circulate the lubricant inside the casing.

5,711,738
CONICAL ROLLER BEARING FOR SUPPORTING A PINION SHAFT OF DIFFERENTIAL GEAR

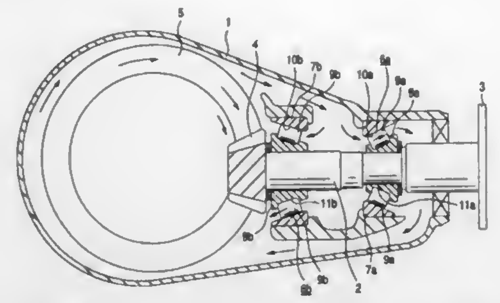
Kenichi Abe; Takaaki Shiratani, and Akira Ishimaru, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 24, 1996, Ser. No. 685,614

Claims priority, application Japan, Jul. 24, 1995, 7-186880

Int. Cl.⁶ F16H *48/06;* **F16C** *19/22*

U.S. Cl. 475—246 **8 Claims**



1. A conical roller bearing for supporting a pinion shaft of a differential gear, comprising:
an inner race having an inner raceway in an outer circumference of the inner race, and fitted around the pinion shaft;
an outer race having an outer raceway in an inner circumference of the outer race; and a plurality of conical rollers arranged rollingly between the inner raceway and the outer raceway at a contact angle which the outer raceway is inclined with respect to a center line through the outer race, wherein the contact angle is 22° to 28°, a Da/L value of Da to L is 0.51 to 1.0 where Da is a large diameter of each conical roller and L is a length of each conical roller, and a roller number coefficient defined by $k=(d_m/Da)\cdot\sin(180°/z)$ is 1.16 to 1.32 where d_m is a diameter of a pitch circle in which the conical rollers are arranged and z is the number of conical rollers.

5,711,739
PLANETARY GEAR TRANSMISSION SYSTEM

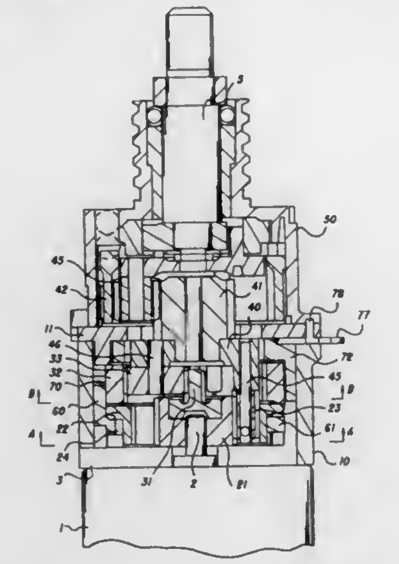
Koichi Hashimoto; Akihiro Ishibashi; Ichiro Kishi, all of Hikone; Yosuke Ishida, Yasu-gun, and Hidenori Shimizu, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Aug. 23, 1995, Ser. No. 518,508

Claims priority, application Japan, Aug. 26, 1994, 6-202506; Apr. 25, 1995, 7-100844

Int. Cl.⁶ F16H *3/44*

U.S. Cl. 475—254 **27 Claims**



1. A planetary gear transmission system, comprising:
a main planetary gear train composed of a main sun gear (**21**), a main hollow gear (**22**) coaxial with said main sun gear, and main planet gears (**23**) meshing with said main sun gear and said main hollow gear, said main sun gear having means for direct connection to an input rotary shaft (**2**) of an electric motor to rotate;
a sub planetary gear train composed of a sub sun gear (**31**), a sub hollow gear (**32**) coaxial with said sub sun gear, and sub planet gears (**33**) meshing with said sub sun gear and said sub hollow gear and having a different gear ratio than said main planetary gear train, said sub sun gear connected to said main sun gear to rotate together therewith;
a common carrier (**40**) supporting said main and sub planet gears (**23**, **33**) and rotatable about a common center axis of said main and sub sun gears (**21**, **31**), said common carrier adapted in use to be drivingly connected to an output shaft (**5**);
lock means (**60**, **61**) for locking said main hollow gear and releasing the same, wherein said main planetary gear train has a lower reduction ratio than the sub planetary gear train; and
first one-way clutch means (**70**) which is connected to said sub hollow gear (**32**) to permit said sub hollow gear to rotate in a first direction and to prohibit said sub hollow gear from rotating in a second direction opposite to said first direction, said first direction being selected to be a direction in which said sub hollow gear (**32**) is permitted to rotate during said common carrier (**40**) rotates, while said main hollow gear (**22**) is fixed by said lock means, such that said sub hollow gear (**32**) is locked in said second direction after said main hollow gear (**22**) is released to thereby permit said common carrier (**40**) to continue rotating at a speed reduction ratio different than when said main hollow gear is fixed.

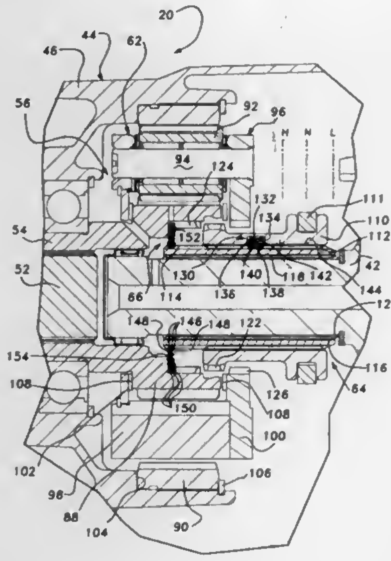
5,711,740
MECHANICAL CLUTCH FOR PLANETARY-TYPE GEAR REDUCTION UNIT

Richard A. Bakowski, Warners, N.Y., assignor to New Venture Gear, Inc., Troy, Mich.

Filed May 29, 1996, Ser. No. 655,119

Int. Cl.⁶ F16H *3/78;37/06*

U.S. Cl. 475—303 **11 Claims**



1. A gear reduction unit comprising:
an input member;
an output member;
a planetary gear assembly driven by said input member at a reduced speed ratio relative thereto;
a range sleeve supported for rotation with said output member and movable thereon between a first position uncoupled from said input member, a second position coupled to said input member for driving said output member at a direct speed ratio relative to said input member, and a third position coupled to said planetary gear assembly for driving said output member at said reduced speed ratio; and
a clutch apparatus operably installed between said input member and said output member, said clutch apparatus being actuated in response to movement of said range sleeve toward either of its second and third positions for stopping relative rotation between said input member and said output member prior to coupling of said range sleeve to either of said input member and said planetary gear assembly, said clutch apparatus including a first clutch plate fixed for rotation with said input member, a second clutch plate fixed for rotation with said output member, and a thrust mechanism for actuating said clutch apparatus by frictionally clamping said first and second clutch plates in response to movement of said range sleeve toward its second and third positions.

5,711,741
FAIL SAFE FOR TOROIDAL CONTINUOUS VARIABLE TRANSMISSION

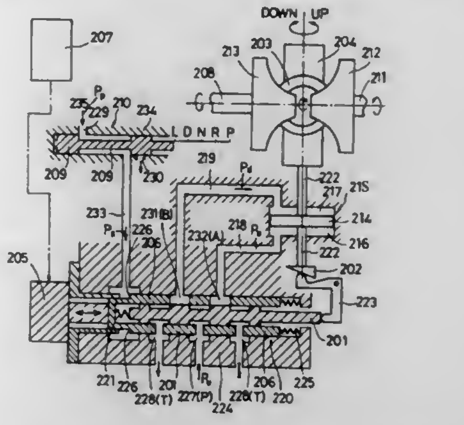
Eiji Inoue, Sagamihara, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Feb. 20, 1996, Ser. No. 604,075

Claims priority, application Japan, Feb. 27, 1995, 7-061618; Feb. 28, 1995, 7-063457; Feb. 28, 1995, 7-063461

Int. Cl.⁶ F16H *15/38*

U.S. Cl. 476—10 **4 Claims**



1. A toroidal continuous variable transmission comprising;
an input shaft;
input disks that rotate with the input shaft;
output disks disposed opposite the input disks and rotatably supported on the input shaft;
tiltable power rollers each disposed between any one of the input disks and any one of the output disks to transmit torques from the input disks to the output disks;
trunnions each rotatably supporting any one of the power rollers and adapted to be displaced in the axial direction of a tilt shaft from the neutral position to tilt the power rollers about the tilt shaft;
actuators each having a hydraulic cylinder, a spool valve having a spool to regulate oil pressure to the hydraulic cylinders, a sleeve installed axially shiftable in the spool valve to set the transmission ratio to a predetermined value,
the hydraulic cylinder having a piston to displace the trunnion in the axial direction of the tilt shaft and cylinder chambers formed on both sides of the piston;
a controller to control the axial position of the sleeve by the actuator; and
a manual valve device to change the setting position of the sleeve in response to the gearshift range of a shift lever when the actuator is not working.

5,711,742
MULTI-SPEED MARINE PROPULSION SYSTEM WITH AUTOMATIC SHIFTING MECHANISM

Brian M. Leinonen, Perkins; Philip T. Scott, and Robert F. Novotny, both of Stillwater, all of Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Jun. 23, 1995, Ser. No. 494,605

Int. Cl.⁶ F16H *59/30;* **B63H** *23/02*

U.S. Cl. 477—121 **16 Claims**

1. A marine propulsion system comprising:
an engine that provides power through a crankshaft rotating at an engine revolution rate;
a shifting mechanism, having at least a high gear and a lower gear, that inputs power from the engine crankshaft and outputs power to drive at least one propeller to propel a boat;
an electronic controller that inputs an RPM signal that is proportional to the engine revolution rate and an engine load signal that gives an indication of engine load, and outputs a control signal to control shifting of the shifting mechanism;

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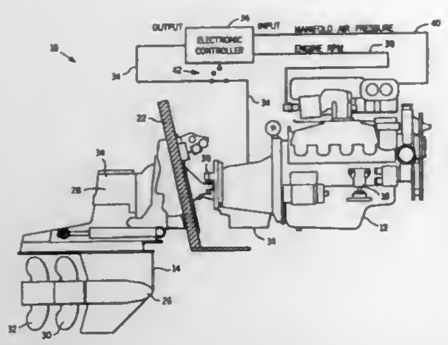


wherein said controller causes the shifting mechanism to shifts to high gear before the onset of propeller cavitation.

5,711,743

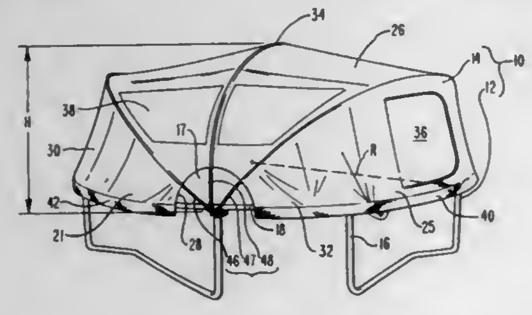
TRAMPOLINE TENT

Albert Gordon Nichols, Jr., Dallas; Jeff Kollmeier, Arlington, both of Tex.; William T. Dalebout, North Logan, and Scott R. Watterson, Logan, both of Utah, assignors to Jumking, Inc., Garland, Tex.

Filed Sep. 25, 1996, Ser. No. 719,491

Int. Cl.⁶ A63B *5/11*; E04H *15/02*

U.S. Cl. 482—27 **19 Claims**



1. A foldable tent apparatus for attachment to a trampoline assembly comprising a trampoline having a frame, a flexible bed disposed within the frame, and spring means for connecting the flexible bed to the frame, said tent apparatus comprising:

shell means for forming a protective tent shelter that covers said flexible bed of the trampoline, and which is foldable from a first position wherein the shell means is fully opened so as to be supported above and so as to provide a tent shelter over the flexible bed, to a second position wherein the shell means is collapsed for storage about the periphery of said trampoline frame so as to permit the flexible bed to be usable for jumping;

a plurality of primary flexible support rods each having a first length, and at least one adjustable flexible support rod having a second length that is shorter than said first length but which is long enough to accommodate adjustable movement from said first position wherein said adjustable flexible support rod is essentially vertically oriented, to said second position wherein said adjustable flexible support rod is essentially arcuately aligned with said primary flexible support rods to accommodate storage, each said flexible rod having first and second ends and said flexible support rods together providing a supporting framework by which said shell means is supported over said flexible bed of the trampoline, and the length of the adjustable flexible support rod being such as to provide a tent shelter having a low center profile when in the first, opened position; and

a pair of hinge means, adapted for releasable attachment to opposing sides of said trampoline frame, for providing pivotal support to said first and second ends of each flexible support rod at an essentially common point on said opposing sides, each said hinge means comprising:

releasable clamp means for attachment to said opposing sides of said trampoline frame, said releasable clamp means comprising means for pivotal attachment of one of the first or second ends of the primary flexible support rods, such that said primary flexible support rods can be pivoted together when collapsing said shell means for storage, or such that said primary flexible support rods can be pivoted away from each other when opening the shell means to provide said tent shelter; and

slidable collar means for providing pivotal attachment of one of the first or second ends of the adjustable flexible support rod to one of said primary flexible support rods along the length thereof, and for providing sliding adjustment of the ends of said adjustable flexible support rod along said length of said primary flexible support rod between a storage position so as to permit arcuate alignment of the adjustable flexible support rod with the primary flexible support rods as they are pivoted together when collapsing the shell means to the second position for storage of the shell means, and a support position wherein the slidable collar means is slidable into contact with one or the other of said means for pivotal attachment so that the adjustable flexible support rod is essentially vertically oriented for center support of the shell means.

5,711,744

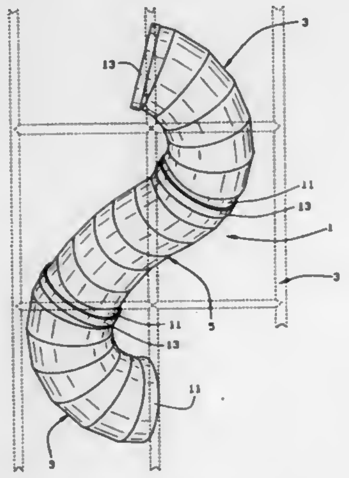
HELICAL TUBE RECREATIONAL COMPONENT

Grant M. Strawcutter; James O. Dunn, Jr., and Jonathan E. Brooks, all of Charlotte, N.C., assignors to Soft Play, L.L.C, Charlotte, N.C.

Filed Jun. 5, 1996, Ser. No. 659,175

Int. Cl.⁶ A63B *9/00*

U.S. Cl. 482—35 **11 Claims**



1. A one-piece helical tube component for use in forming spiral or helical playground units, comprising:

the one-piece helical tube component including an interconnected series of integrally molded helical tube segments each having a constant predetermined inner and outer diameter and a constant predetermined helical slope, adjacent helical tube segments being rotatively offset from each other by a constant predetermined number of degrees to provide a continuing interconnected series of integrally molded substantially diametrical similar helical tube segments of progressively increasing helical slope from one end of the one-piece helical tube component to an opposite end;

opposite ends of each helical tube segment having a cylindrical edge surface each of which is longitudinally aligned with the cylindrical edge surface of an adjacent substantially diametrically similar helical tube segment in order to provide a substantially smooth interior sliding surface for the one-piece helical component; and

complementary male and female tube segments adjacent opposite ends of the interconnected series of integrally molded helical tube segments for corresponding mating engagement with complementary male and female tube segments of another similarly formed helical tube component.

5,711,745

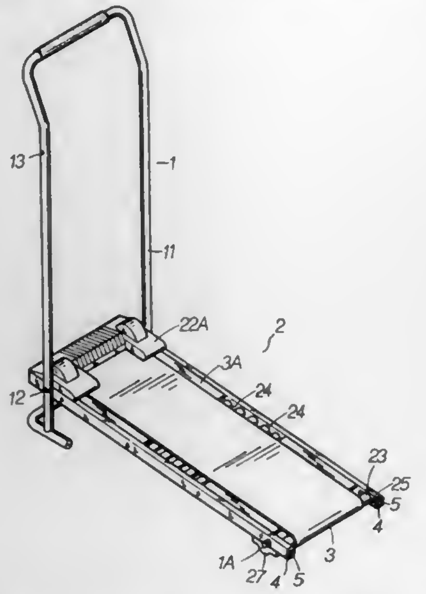
MULTI-PURPOSE EXERCISE MACHINE

Li-Hsiang Yang, 11, Alley 1, Lane 78, Chang Lu Road, Changhua, Taiwan

Filed Nov. 21, 1996, Ser. No. 754,316

Int. Cl.⁶ A63B *22/02*

U.S. Cl. 482—54 **4 Claims**



1. A multi-purpose exercise machine comprising a grip frame of a U-shaped construction and a treading frame, said grip frame composed of two arms provided respectively at an open end thereof with a fastening hole for receiving therein a screw for fastening said grip frame with said treading frame, one of said two arms provided at an upper segment thereof with a through hole, said treading frame provided with a through hole corresponding in location to said through hole of said grip frame and engageable with a locating pin, said treading frame comprising a front cross rod and a rear cross rod, with said front cross rod being provided respectively at both ends thereof with a cover, said front cross rod and said rear cross rod provided therebetween a plurality of rolling cylinders which are provided respectively at both ends thereof with a fastening portion engaged rotatably with said fastening hole of said treading frame, said rolling cylinders further provided thereon with a support board and a foot pad, said rear cross rod provided respectively at both ends thereof with a fastening portion having a threaded hole and engaging rotatably an oblong hole, said treading frame provided at a rear end thereof with a hollow portion which is engaged with a locating block having a screw hole for receiving a screw such that said screw is engaged with said threaded hole of said fastening portion of said rear cross rod.

5,711,746

PORTABLE CONTROLLABLE FLUID REHABILITATION DEVICES

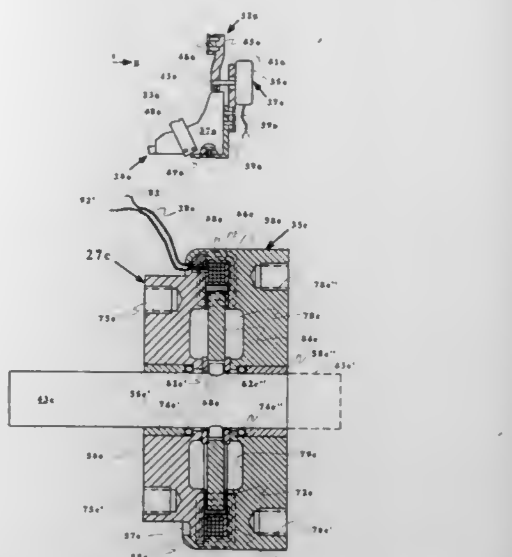
J. David Carlson, Cary, N.C., assignor to Lord Corporation, Cary, N.C.

Filed Mar. 11, 1996, Ser. No. 613,704

Int. Cl.⁶ A63B *21/008*

U.S. Cl. 482—112 **11 Claims**

11. A portable controllable fluid rehabilitation device for providing resistive forces for rehabilitative exercise of muscles acting



between a first body part and a second body part which are spaced on either side of a body joint, comprising:

(a) a first bracket means for fixedly securing to the first body part thereto;

(b) a second bracket means for fixedly securing to the second body part thereto;

(c) a magnetorheological fluid rotary brake attached between said first bracket means and said second bracket means, said magnetorheological fluid rotary brake providing resistive forces about a defined axis adjacent the body joint to exercise the muscles upon movement of said first bracket means relative to said second bracket means resulting from movement of the first body part relative to the second body part, said controllable fluid brake further comprising a housing having first and second halves fixedly secured together, said housing including an magnetically-soft outer peripheral flux path and a recessed portion, a shaft having a rotor mounted thereon, said rotor being received within said recessed portion and forming a gap on either side of said rotor which contains said magnetically controlled fluid, and a circumferentially wound coil adjacent said rotor and located radially inward from said outer peripheral flux path, said coil generating a magnetic field which is carried by said outer peripheral flux path and across said gaps; and

(d) a controller for allowing variable percentage adjustment of said resistive forces applied between a high percentage of resistance and a low percentage of resistance and which also vary according to a predetermined profile which varies torque as a function of position between said first bracket means and said second bracket means.

5,711,747

ELASTIC EXERCISE BANDS AND CUFFS

Jyl L. Steinback, 15202 N. 50th Pl., Scottsdale, Ariz. 85254

Filed Nov. 29, 1994, Ser. No. 346,565

Int. Cl.⁶ A63B *21/02*

U.S. Cl. 482—124 **11 Claims**

7. An exercise device comprised of:

a plurality of cuff members comprised of a substantially flat strap whereby said flat strap is longer than the periphery of a user's limb sought to be encompassed, each of said straps adapted to be formed into loops for receiving the limb of the user and having a first end, a second end, an inner flat surface, an outer flat surface, and at least one strip of complimentary hook and loop fastener secured to said first end and said second end on opposite flat surfaces;

a piece of lamb's skin with wool attached, positioned and secured equi-distant between said first end and said second end on said inner flat surface;

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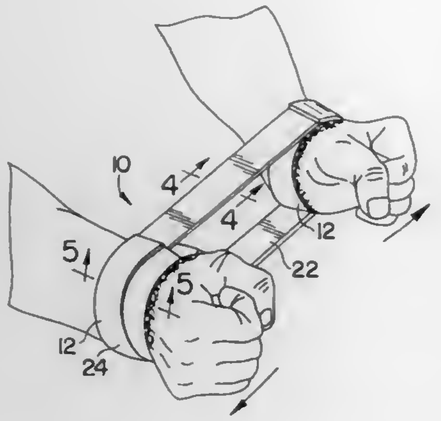


an envelope-like enclosure formed on said outer flat surface of each of said cuff members, comprising a first flap member having secured thereto a strip of complimentary hook and loop fastener and a second flap member having secured thereto a reciprocating strip of complimentary hook and loop fastener wherein the first and second flap members extend outwardly from opposite sides of said flat strap and along opposite lengths of said flat strap such that they overlap at a center of the outer flat surface of said cuff members along a substantial length of said flat strap adapted to surround at least the outer surface of the user's limb when folded over the outer surface of said flat strap;

a stiffener element positioned between said outer surface of said flat strap and said envelope-like enclosure; and

at least one elongate resilient element continuously formed into a loop configuration for placement within said envelope-like enclosures formed on said outer flat surface of each of said cuff members.

5,711,748

Patent Not Issued For This Number

5,711,749
TRUNK STRENGTHENING CARDIOVASCULAR EXERCISE APPARATUS

Kenneth Miller, New York, N.Y., assignor to Aerobic Funding One, LLC, New York, N.Y.

Filed Oct. 6, 1995, Ser. No. 539,984

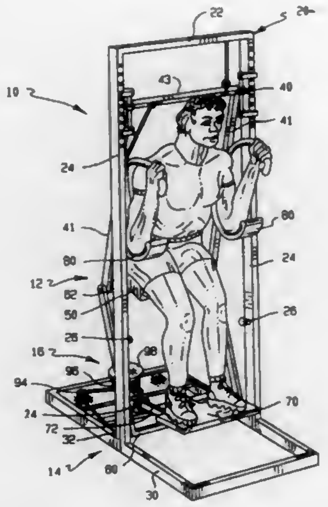
Int. Cl.^{6} A63B *21/00;23/02*

U.S. Cl. 482—135 **28 Claims**

1. An apparatus for exercising a user's abdominal muscles and back muscles, comprising:

framework means, wherein the framework means comprises a vertical frame mounted to a support means for stabilizing the apparatus;

dynamic means for producing a forward folding movement and a return straightening movement, requiring the use of a user's abdominal muscles during the forward folding movement and the use of a user's back muscles during the return straightening movement, wherein the dynamic means comprises an upper frame pivotally and slideably mounted to the vertical frame and a lower frame pivotally mounted to the vertical frame, said upper frame pivotally attached to said lower frame; and



resistance means for opposing at least one of the forward folding movement and the return straightening movement.

5,711,750
REINFORCED EXPANDABLE FOLDERS

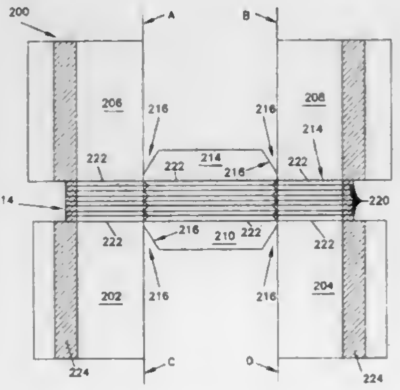
Duane Christensen, Hastings, Minn.; Theodore V. Kachel, Purchase, N.Y.; Jonathan B. Rivlin, East Brunswick, N.J.; Robert E. Hawes, Jr., Huntington Bay; Lee A. Boy, Staten Island, both of N.Y.; Setsuo Kanamoto, Montebello, Calif.; Eric R. Aaldenberg, Bayside; John Heffernan, Setauket, both of N.Y.; James J. Lynch, Berkley Heights, N.J., and Cheryl Dellacroce-Steinberg, Jericho, N.Y., assignors to Smead Manufacturing Company, Hastings, Minn.

Division of Ser. No. 259,356, Jun. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 867,952, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,291, Aug. 21, 1991, Pat. No. 5,161,731, and Ser. No. 769,001, Sep. 30, 1991, Pat. No. 5,261,636, which is a continuation of Ser. No. 483,094, Feb. 21, 1990, Pat. No. 5,066,045.

This application Jun. 7, 1995, Ser. No. 483,925

Int. Cl.^{6} B32B *31/04;* **B31F** *5/04*

U.S. Cl. 493—210 **4 Claims**



1. A method of making an expandable folder, comprising:

providing an integral blank of material, the blank including first and second panels separated by a gusset portion and having a first surface;

attaching separate right and left reinforcing strips on a first face of the blank, the right and left reinforcing strips each being attached respectively to right and left sides of the first and second panels, and right and left outer edges of the gusset portion;

forming a gusset in the gusset portion intermediate the first and second panels, by forming a plurality of folds, the folds being in close proximity and substantially parallel to each other, the folds extending entirely across the gusset portion;

making a plurality of substantially parallel cuts extending inwards from top and bottom edges of the first and second panels respectively to the gusset to form respective central panel members on the first and second panels, the central panel members separated from right and left panels on the first and second panels respectively, each central panel member being intermediate the side panels of the respective first and second panels;

folding the first surfaces of the central panel members and the left and right side panels of the first and second panels along respective edges of the gusset, towards the first surface of the gusset;

providing corner fold lines across the gusset substantially perpendicular to the plurality of folds, the corner fold lines extending between the cuts separating the central panel members and side panel members on respective first and second panels, the corner fold lines being substantially parallel; and

attaching the right and left side panels of the first panel and substantially all of the central panel member of the first panel together to form a unitary front panel, and attaching the right and left side panels of the second panel member and substantially all of the central panel member of the second panel together to form a unitary back panel.

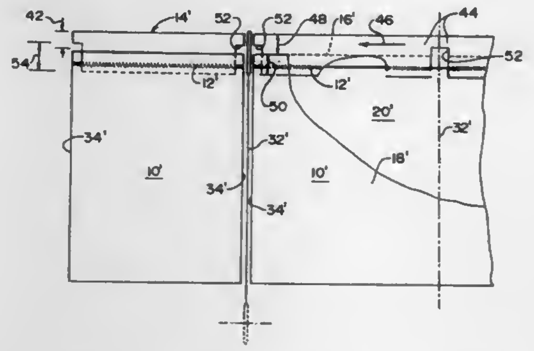
5,711,751
HERMETIC SEAL FOR A PLASTIC BAG

Hikmet Harmanoglu, 179 Morgan Ave., Brooklyn, N.Y. 11237

Filed Jul. 5, 1995, Ser. No. 498,085

Int. Cl.^{6} B31B *1/90*

U.S. Cl. 493—224 **1 Claim**



1. A method of successively forming in side by side relation plural plastic bags each having a widthwise oriented adhesive deposit along a top edge of each bag with a release strip in covering relation thereover and in an interposed position between overlying upper edges of a bag front panel and a bag rear panel bounding an opening into said bag wherein removal of said release strip is adapted to provide an adhesive closure for said bag opening, said method of forming said plastic bags comprising the steps of preparing said release strip with a height sized in said interposed position thereof between upper edges of said bag front and rear panels to have an upper length portion thereof extending outwardly in the plane of said bag front and rear panels, notching a downwardly facing rectangular shape having spaced apart vertically oriented side edges and a connecting horizontally oriented upper edge in a lower portion of said release strip at spaced locations therealong adapted to coincide with side edges of said successive plastic bags, depositing an adhesive on successive bag rear panels, positioning said notched release strip in covering relation over said adhesive deposit with said upper edge in a clearance position above said upper edges of said front and rear panels, folding successive bag front panels over said bag rear panels and against an uncovered adhesive deposit in each said release strip notch, and heat sealing at transverse spaced intervals coinciding with said release strip notches said front and rear panels to each other to form side edges of said successive plastic bags, whereby each bag has heat sealed side edges for the entire length thereof.

5,711,752
RIBBON CURLING AND SHREDDING METHOD

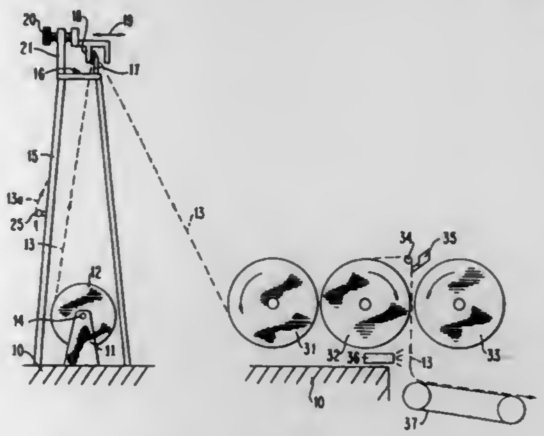
Fredric Goldstein, Varmdovagen 207, 13141 Nacka, Sweden

Continuation of Ser. No. 244,022, May 13, 1994, Pat. No. 5,518,492. This application May 20, 1996, Ser. No. 650,493

Claims priority, application United Kingdom, Nov. 14, 1991, 9124249

Int. Cl.^{6} B31F *1/14;1/00;* **B65H** *23/10;16/00*

U.S. Cl. 493—459 **1 Claim**



1. A method for curling ribbon utilizing a device having a delivery means for delivering a ribbon supply, a curling means located downstream of said delivery means for curling the ribbon, a mechanical drawing means for mechanically drawing a ribbon across the curling means and a stripping means for separating the ribbon from said mechanical drawing means comprising the steps of:

delivering a supply of unstressed curlable ribbon from said delivery means;

mechanically drawing said ribbon, by utilizing said mechanical drawing means, across said curling means, said curling means being located downstream of said delivery means, and said mechanical drawing means being located downstream of said curling means;

curling said ribbon with said curling means; and

separating the curled ribbon utilizing said stripping means from said mechanical drawing means in order to prevent the curled ribbon from adversely affecting operation of said mechanical drawing means by preventing the ribbon from adhering to the mechanical drawing means.

5,711,753
BLOOD PUMP DEVICE AND METHOD OF PUMPING BLOOD

John J. Pacella, Pittsburgh, Pa.; Andrew H. Goldstein, Rochester, N.Y.; Dennis R. Trumble, Pittsburgh, Pa.; Richard E. Clark, Sewickley, Pa., and Fred W. Moeller, McKeesport, Pa., assignors to Allegheny-Singer Research Institute, Pittsburgh, Pa.

Continuation of Ser. No. 228,433, Apr. 15, 1994, abandoned.

This application Mar. 18, 1996, Ser. No. 618,084

Int. Cl.^{6} A61M *1/12*

U.S. Cl. 600—16 **9 Claims**

1. A blood pump device comprising:

a blood pump for implantation in a patient;

an inlet cannula connected to the blood pump and for connection to a patient's circulatory system through which blood of the patient passes to the blood pump and is pumped when the blood pump is implanted in the patient;

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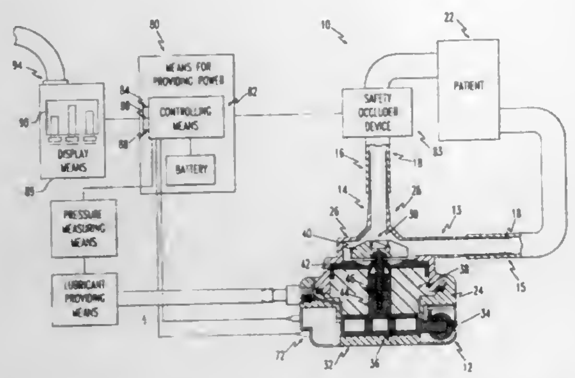


an outlet cannula connected to the blood pump and for connection to the patient's circulatory system through which blood of the patient passing from the blood pump when the blood pump is implanted in the patient;

a safety occluder device disposed about the outlet cannula, said blood pump, cannulae and safety occluder device together for implantation into the chest of the patient; and

means for providing power to the blood pump so that blood can be pumped through the outlet cannula that is received from the inlet cannula, said providing means comprising a controller having means for sensing pump failure and an output terminal for actuating the safety occluder device in an event of pump failure so the safety occluder device prevents retrograde pump flow through the outlet cannula, said safety occluder device in communication with the output terminal.

5,711,754
INTRA-AORTIC BALLOON CATHETER

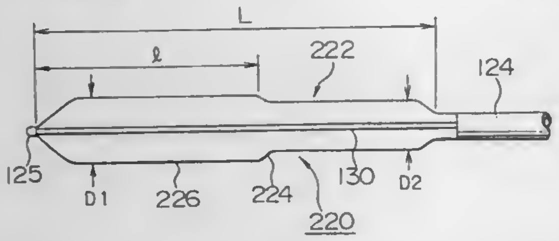
Shinichi Miyata; Tetsuo Toyokawa; Kouichi Sakai, all of Yokohama; Masaru Miyahara, Tokyo; Takashi Tsuji, Fujisawa, and Donald Robert Kirkpatrick, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 181,952, Jan. 18, 1994, Pat. No. 5,514,073, which is a continuation of Ser. No. 903,770, Jun. 25, 1992, abandoned. This application Jan. 19, 1996, Ser. No. 582,348

Claims priority, application Japan, Jun. 27, 1991, 3-183386; Jun. 27, 1991, 3-183387

Int. Cl.^{6} A61N *1/362*

U.S. Cl. 600—18 **18 Claims**



18. An intra-aortic balloon catheter comprising:

a balloon portion which is inserted into an aorta and which repeatedly expands and contracts so as to assist pumping action of the heart, said balloon portion having a tip side and an end side, the balloon portion having cross-sectional areas of the tip side and the end side of the balloon portion which differ, the balloon portion having a step portion which is a boundary portion between the tip side and the end side, the length of the tip side of the balloon portion being more than about ¼ of a total length of the balloon portion, and the cross-sectional area of the balloon portion being smaller at the end side than the tip side;

a catheter tube connected to the end side of the balloon portion, said catheter tube introducing a pressurized gas into and leading the pressurized gas out from said balloon portion; and

an inner tube which communicates with a blood introduction port provided at a tip of said balloon portion and extending through said balloon portion and catheter tube in the axial direction, said catheter tube being empty except for the inner tube provided therein such that the inner tube is the only structure provided within the catheter tube, and the inner tube being empty.

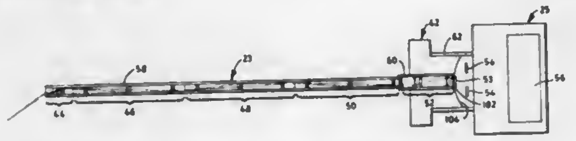
5,711,755
ENDOSCOPIC DIAGNOSTIC SYSTEMS AND ASSOCIATED METHODS EMPLOYING INFRARED RADIATION

Leonard J. Bonnell, Huntingdon Valley, Pa.; Dennis C. Leiner, Jaffrey, N.H., and Thomas Brukilacchio, Reading, Mass., assignors to Vipera Systems, Inc., Huntingdon Valley, Pa.

Filed Apr. 14, 1995, Ser. No. 421,949

Int. Cl.^{6} A61B *1/04*

U.S. Cl. 600—109 **15 Claims**



1. An endoscope system, having distal and proximal ends, for use in imaging infrared radiation from interior structures at wavelengths greater than 2 micrometers, said endoscope system comprising:

a refractive objective lens for forming a real image of radiation emitted from an interior structure of interest in an image plane;

at least one relay section consisting solely of refracting elements for transferring said real image to form an intermediate image in a conjugate plane located near said proximal end of said system;

an aperture stop for said endoscope system; and

a refracting coupling lens, located near said proximal end of said system, for forming a final image of said intermediate image in a detector plane located at the proximal end of said system, said refractive objective lens, relay section, and refracting coupling lens all being fabricated of materials that are transmissive at least at 2.0 micrometers and above.

5,711,756
ENDOSCOPE HAVING EXCHANGEABLE OBJECTIVE UNIT

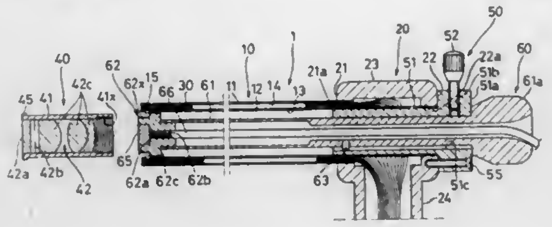
Toshio Chikama, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed May 23, 1996, Ser. No. 652,793

Claims priority, application Japan, May 31, 1995, 7-156837

Int. Cl.^{6} A61B *1/05*

U.S. Cl. 600—112 **9 Claims**



1. An endoscope comprising:

(a) a body including a hollow insert portion, said insert portion being elongate and having a hard distal end portion, said insert portion and a proximal end portion including a first and a second receiving space formed in the distal end portion thereof, said first and second receiving spaces extending in an axial direction and being partitioned with each other, said first receiving space being open at a distal end face of said insert portion;

(b) illumination light transmission member whose distal end portion is disposed within said second receiving space and extending backwardly through said insert portion;

(c) a rigid holder extending in an axial direction through said insert portion and projecting backwardly of the proximal end portion, said holder being slidable in said first receiving space between a forward position where a distal end of said holder is disposed near a distal opening of said first receiving space and a backward position where the distal end of said holder is retracted from the distal opening of said first receiving space;

(d) light receiving member mounted on the distal end of said holder, and adapted to receive reflected light from an observation object via an objective optical system;

(e) image transmission member for backwardly transmitting image information received by said light receiving member, said image transmission member being inserted through said insert portion;

(f) an objective unit including said objective optical system, and a sleeve-like support for receiving and supporting said objective optical system, said objective unit being slidably received within said first receiving space, a rear end of said support of said objective unit being detachably connected to the distal end of said holder; and

(g) a fixture mechanism for supporting said holder at said backward position, said backward position of said holder is determined such that a distal end of said objective unit connected to said holder being disposed at the distal opening of said first receiving space, thereby said backward position of said holder being determined in accordance with an axial dimension of said objective unit.

5,711,757
CONTROLLER ESPECIALLY FOR PNEUMATIC CONTINUOUS PASSIVE MOTION DEVICES

Julian D. Bryant, Huntington, Great Britain, assignor to Neoligaments Limited, Leeds, England

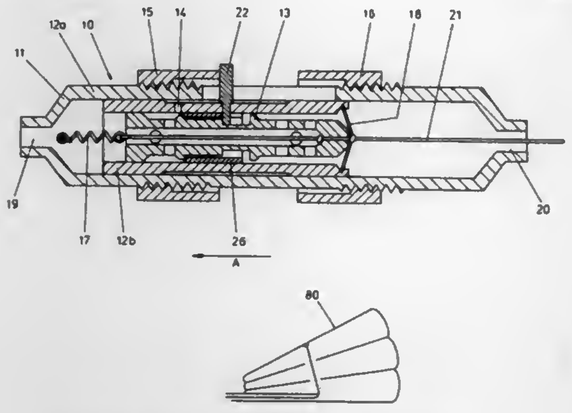
PCT No. PCT/GB94/02293, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/10998, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 19, 1994, Ser. No. 633,748

Claims priority, application United Kingdom, Oct. 20, 1993, 9321602

Int. Cl.^{6} A61H *1/00*

U.S. Cl. 601—23 **17 Claims**



1. A continuous passive motion device comprising:

a controller comprising:

a housing;

a moveable portion moveable within the housing between an first position and a second position; and

positioning means for causing the moveable portion to return to the first position after movement to or towards the second position; and

an inflatable body attached to the controller, and pump means attached to the controller for pumping air into the device, wherein in use when the controller is in the second position, the inflatable body may be inflated by air supplied by the pump means, and when the controller is in the first position, the inflatable body deflates, wherein the inflation/deflation cycle is effected entirely by power derived from the air supply and wherein the inflatable body is attached to the controller by an elongate member having a first end and a second end, the first end of the elongate member being attached to the inflatable body, and the second end of the elongate member being attached to the moveable portion of the controller.

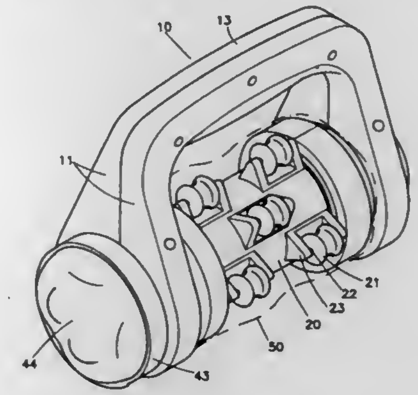
5,711,758
HANDY BODY MASSAGER

James Tseng, No. 322, Chang Chun Road, Taoyuan City, Taiwan

Filed Jun. 28, 1996, Ser. No. 671,966

Int. Cl.^{6} A61H *15/00*

U.S. Cl. 601—127 **2 Claims**



1. A handy body massager comprising:

a casing comprised of two symmetrical halves connected together by screws, having a motor chamber at one end, a bearing block at an opposite end, a substantially U-shaped handle connected between said motor chamber and the bearing block, two holder mounts respectively connected to said motor chamber and said bearing block at an inner side, an axle bearing mounted in said bearing block, two annular roller holders respectively mounted in said holder mounts, each of said annular roller holders comprising an inner diameter, an inside annular groove around said inner diameter, and a plurality of rollers pivotably mounted in said inside annular groove and equiangularly spaced from one another;

a barrel mounted between said wheel holders and supported on the rollers of said annular wheels, said barrel comprising a plurality of roller racks spaced around the periphery, a plurality of wheel axles respectively mounted in said roller racks in parallel to the longitudinal central axis of said barrel, a plurality of massaging rollers respectively turned about said wheel axles, a connecting block fixedly mounted on the inside near one end, and a soft covering covered over the massaging rollers of said barrel;

a motor mounted in said motor chamber of said casing, said motor having a shell fixedly secured to said casing by a mounting frame, and a motor shaft coupled to a reduction gear;

a reduction gear fixedly secured to the shell of said motor and coupled to the motor shaft of said motor, having an output shaft fixedly connected to the connecting block of said barrel; and

a massaging disk coupled to the output shaft of said reduction gear and disposed outside said casing, said massaging disk having a plurality of massaging rollers turned about a respective wheel axle at an outer side, and a soft covering covered over the massaging rollers of said massaging disk.

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5,711,759

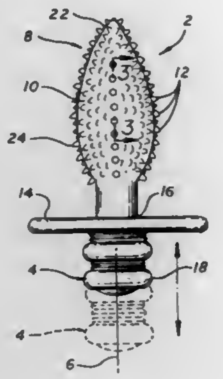
ORAL HYGIENE DEVICE

Jennifer Maria Smith, and Steven Ernest Smith, both of 31843 Oak Ridge Pkwy., Bulverde, Tex. 78163

Filed Apr. 26, 1994, Ser. No. 233,128

Int. Cl.^{6} A61H *13/00*

U.S. Cl. 601—139 **20 Claims**



1. An oral hygiene device for infants and young children comprising:

a handle member symmetrically oriented about a handle axis with the handle member having a first end and a second end, and

a head member having a generally oval shape, including a forward end and a back end and a nodule support surface, such head member and said nodule support surface extending longitudinally in a direction generally in alignment with said handle axis, and a plurality of nodules of varying heights and thicknesses supported by and extending from said nodule support surface, and

a resilient abutment flange normally oriented relative to the handle axis fixedly mounted to said first end at an interface of the handle member and said head member, and

said forward end of said head member having a shape that is slightly elongated and tapered relative to the shape of said back end of said head member.

5,711,760

SELF-INFLATING VENOUS BOOT

Ibrahim M. Ibrahim, and Sharon Caruth Ibrahim, both of Closter, N.J., assignors to Englewood Research Associates, Englewood, N.J.

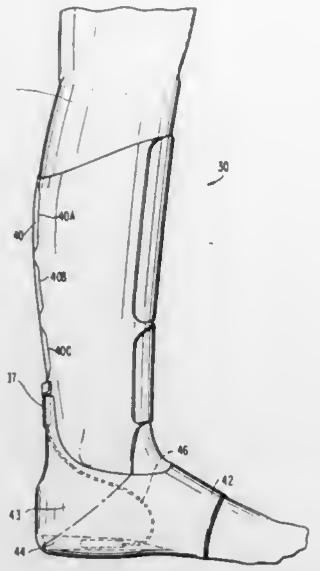
Continuation of Ser. No. 31,558, Mar. 15, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 427,682

Int. Cl.^{6} A61H *9/00*

U.S. Cl. 601—149 **37 Claims**

1. A method of applying cyclic pressure to the veins within a person's leg, this method being applicable during normal walking where there is a sequence that the heel strikes the floor followed by the calf contracting and the heel rising as weight is shifted to the ball of the foot, comprising the steps:

a-engaging the outer surface of the leg in the area of the calf; and



b-applying pressure to said engaged surface cyclically and only when the heel strikes and engages the floor during normal walking.

5,711,761

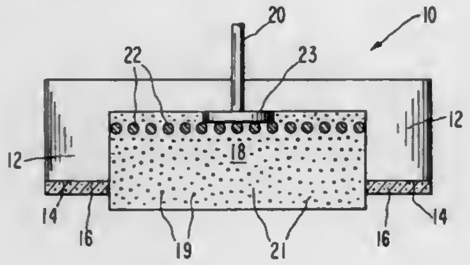
IONTOPHORETIC DRUG DELIVERY

Darrel F. Untereker, Cedar; Joseph B. Phipps, Plymouth, and Gary A. Lattin, Forest Lake, all of Minn., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 101,803, Aug. 2, 1993, Pat. No. 5,415,628, which is a continuation of Ser. No. 891,319, May 29, 1992, abandoned, which is a division of Ser. No. 154,566, Feb. 10, 1988, Pat. No. 5,135,477, which is a continuation-in-part of Ser. No. 665,698, Oct. 29, 1984, Pat. No. 4,747,787, and a continuation-in-part of Ser. No. 665,699, Oct. 29, 1984, Pat. No. 4,747,819. This application Feb. 24, 1995, Ser. No. 394,075

Int. Cl.^{6} A61N *1/30*

U.S. Cl. 604—20 **9 Claims**



1. An electrotransport method of delivering an ionic drug D+ comprising the steps of:

providing a reservoir comprising DOH dispersed in a polymer gel in electrical communication with an electrochemically active conductive member;

contacting said reservoir to the skin of a patient;

hydrolyzing water in said reservoir producing hydronium ions;

reacting the hydronium ions with the DOH producing an ionic drug, D+; and,

electrically transporting D+ through the skin.

5,711,762

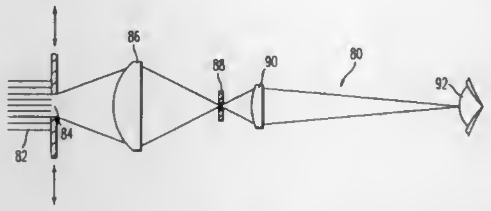
LASER SURGERY APPARATUS AND METHOD

Stephen Trokel, New York, N.Y., assignor to Visx, Incorporated, Sunnyvale, Calif.

Division of Ser. No. 341,207, Dec. 5, 1994, which is a division of Ser. No. 893,841, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 673,541, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 109,812, Oct. 16, 1987, Pat. No. 5,108,388, which is a continuation of Ser. No. 859,212, May 2, 1986, abandoned, which is a continuation of Ser. No. 561,804, Dec. 15, 1983, abandoned. This application Jun. 7, 1995, Ser. No. 474,243

Int. Cl.^{6} A61N *5/03*

U.S. Cl. 606—5 **23 Claims**



1. A system for use in a laser source surgical method for removing corneal tissue, said system comprising:

(a) a laser that produces a beam of radiation at a wavelength of about 193 nanometers in a series of pulses;

(b) a laser delivery system means for receiving said radiation from said laser and delivering a fraction of said radiation to a cornea; and

(c) wherein said radiation produces a depth of ablation of approximately 1 micron for each accumulation of one joule per square centimeter of energy applied.

5,711,763

COMPOSITE BIOLOGICAL IMPLANT OF A CERAMIC MATERIAL IN A METAL SUBSTRATE

Tohru Nonami, and Naoyoshi Satoh, both of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 251,635, May 31, 1994, abandoned, which is a continuation of Ser. No. 839,391, Feb. 20, 1992, abandoned. This application Jun. 30, 1995, Ser. No. 497,037

Claims priority, application Japan, Feb. 20, 1991, 3-045676

Int. Cl.^{6} A61F *2/28*

U.S. Cl. 623—16 **16 Claims**

1. A composite biotic implant prepared by a process comprising:

placing ceramic particles made of diopside, wollastonite or combination thereof, having a mean particle size ranging from 1 to 5,000 μm and having an average shape factor of up to 2 on a surface layer of a metal substrate; and

embedding said ceramic particles in the metal substrate to the extent of 40–75% of the ceramic particle size by plastic working, thereby forming an embedment layer, said composite implant having a surface roughness Ra ranges from 1 to 2,000 μm.

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5,711,764
COMPOSITION AND PROCESS FOR DECOLORIZING AND/OR DESIZING GARMENTS

Eric M. Wasinger, 16403 Ledge Way, San Antonio, Tex. 78232
Filed Oct. 3, 1996, Ser. No. 725,630
Int. Cl.⁶ D06L *3/02;* **B01D** *19/00;* **C11D** *1/37;3/395*
U.S. Cl. 8—110 **3 Claims**

1. A composition for use in desizing and decolorizing a fabric or garment in a washer with water which comprises:
about 40 to 60% by weight of a reducing agent selected from the group consisting of thiourea, thiourea dioxide, and alkali metal sulfoxylate formaldehyde;
about 5 to 20% by weight of an anionic surfactant;
about 1 to 6% by weight of an anti-foaming agent;
about 5 to 15% by weight of a dye or soil redeposit prevention agent; and
about 20 to 40% by weight of fillers.

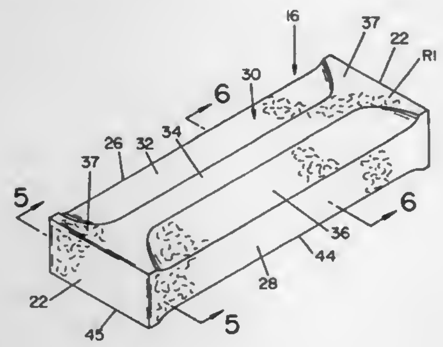
5,711,765
PROCESS FOR THE DIRECT DYEING OF HUMAN KERATIN FIBRES USING CATIONIC DYES AND WATER VAPOR

Marie-Pascale Audousset, Asnieres, France, assignor to L'Oreal, Paris, France
Continuation of Ser. No. 531,007, Sep. 20, 1995, abandoned. This application Sep. 30, 1996, Ser. No. 723,834
Claims priority, application France, Sep. 21, 1994, 94 11265
Int. Cl.⁶ A61K *7/13*
U.S. Cl. 8—426 **22 Claims**

1. A process for the direct dyeing of keratin fibres which have differences in sensitization to lower selectivity thereon, which comprises
directly dyeing said fibres to lower said selectivity by applying to said keratin fibres a dye composition containing at least one cationic direct dye selected from cationic naphthoquinone and anthraquinone dyes, cationic methine dyes, cationic azo dyes, cationic oxazine dyes, and the salts of said compounds; and
contacting said keratin fibres with a gas containing water vapour, said gas having a temperature greater than 75° C., for a contact time between said gas and said keratin fibres not exceeding two minutes.

5,711,766
WOOD FIRE STARTER HAVING IMPROVED STACKING PROPERTIES

Bruce K. Bain, Akron, Ohio, assignor to Forest Technology Corporation, Akron, Ohio
Filed Feb. 26, 1996, Ser. No. 605,520
Int. Cl.⁶ C10L *5/36*
U.S. Cl. 44—530 **29 Claims**



1. A wax-based fire starter brick having a convex top wall including flattened end portions having a width equal to the width of said brick, a bottom wall, and at least one side wall.

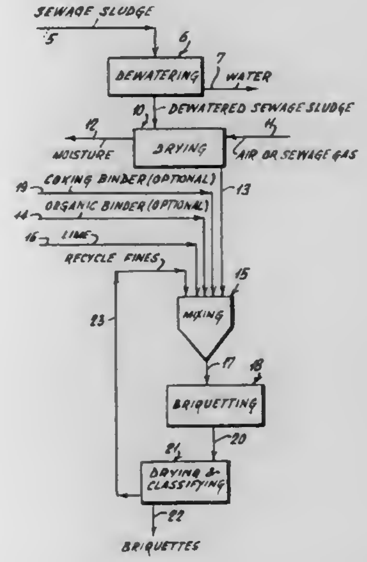
5,711,767
STABILIZERS FOR THE PREVENTION OF GUM FORMATION IN GASOLINE

Matthew E. Gande, Danbury, Conn.; Paul A. Odorisio, Leonia, N.J.; Ramraj Venkatadri, Ardsley, and Geoffrey W. Broadhurst, Irvington, both of N.Y., assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.
Filed Jul. 11, 1996, Ser. No. 678,165
Int. Cl.⁶ C10L *1/18;1/22*
U.S. Cl. 44—423 **41 Claims**

1. A process for the prevention of oxidative degradation and gum or deposit formation in gasoline which comprises
adding to gasoline subject to oxidative or thermal induced degradation an effective stabilizing amount of stabilizer system which is a nitroxide compound with the proviso that the nitroxide compound is not di-tert-butyl nitroxyl, 1-oxyl-2,2,6,6 -tetramethylpiperidine or a diaryl nitroxide.

5,711,768
SEWAGE SLUDGE DISPOSAL PROCESS AND PRODUCT

Helmut W. Schulz, Harrison, N.Y., assignor to Dynecology, Inc., Harrison, N.Y.
Continuation-in-part of Ser. No. 242,532, May 13, 1994, Pat. No. 5,431,702, which is a continuation-in-part of Ser. No. 37,086, Mar. 25, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,392
Claims priority, application WIPO, Jan. 19, 1993, PCT/US93/00472
Int. Cl.⁶ C10L *5/14;5/46*
U.S. Cl. 44—552 **2 Claims**



1. Molded or extruded briquettes or pellets consisting essentially of on a dry basis from about 70 to about 95 weight percent sewage sludge solids, and from about 3 to about 12 weight percent lime formed by molding or extruding into briquettes or pellets at a pressure in the range of from about 3,000 to about 5,000 psi a mixture of at least partially dried sewage sludge solids and lime, said mixture containing from about 12 to about 22 weight percent moisture.

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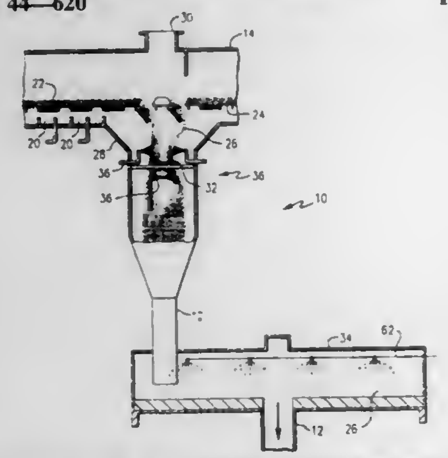
5,711,769
PROCESS FOR PASSIVATION OF REACTIVE COAL CHAR

Franklin George Rinker, Perrysburg; Deane Avent Horne, Toledo, both of Ohio; Dennis Wayne Coolidge, Gillette, Wyo., and Ernest Peter Esztergar, La Jolla, Calif., assignors to Tek-Kol Partnership, La Jolla, Calif.

Filed Sep. 8, 1995, Ser. No. 525,235
Int. Cl.^{6} C10L *5/00;* C10B *21/18*
U.S. Cl. 44—620 **17 Claims**



1. A continuous process for treating coal to form stable coal char by passivating the coal and then rehydrating and cooling the product thereof to prevent spontaneous ignition, the process comprising the steps of:

a) pyrolyzing the coal by progressively heating substantially all of the coal to a temperature sufficient to vaporize and remove low end volatile materials from the coal and heating to a mild gasification temperature to form coal char and sufficient to mobilize at least a portion of high end volatile materials within the char and at least partially collapse micropores within the char;

b) cooling the coal char to a temperature sufficient to demobilize the volatile materials within the at least partially collapsed micropores of the coal char and to pyrolytically passivate the coal char and form a char having about 14–22 wt % high end volatile;

c) conveying the char of step b) to a reaction vessel wherein a process gas having about 3%–21% by volume oxygen flows through the reaction vessel to at least partially fluidize the coal char and oxidatively passivate the coal by chemisorption of oxygen;

d) monitoring the temperature and oxygen content of the process gas exiting the reaction vessel;

e) progressively decreasing the temperature of the oxidative passivation within the reaction vessel from 200° to 100° C. in response to the monitored temperature of the process gas:

f) replenishing the oxygen content of the process gas flowing from the reaction vessel in response to the monitored oxygen content of the process gas;

g) reintroducing the replenished process gas to the reaction vessel; and

h) substantially simultaneously rehydrating and cooling the passivated coal char to form a stable coal char having about 5–10 wt % moisture.

5,711,770
ENERGY CONVERSION SYSTEM

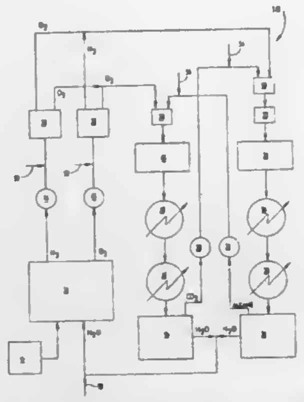
Mylan Malina, 316 Malina Dr., Rogersville, Mo. 65742

Filed Jan. 4, 1996, Ser. No. 582,913
Int. Cl.^{6} C10J *1/00*
U.S. Cl. 48—197 R **5 Claims**

1. A energy conversion apparatus comprising:

a dissociation unit for dissociating water into hydrogen gas and oxygen gas and separating hydrogen gas from oxygen gas;

an energy source for providing energy to the dissociation unit;



a hydrocarbon combustion unit in which oxygen gas and hydrocarbon gas react to form a combustion product comprising carbon dioxide gas and water vapor;

a first heat exchanger for cooling the combustion product and condensing water vapor from the combustion product;

a carbon dioxide separator for separating the carbon dioxide gas from water condensed in the first heat exchanger;

a hydrocarbon synthesis reactor in which carbon dioxide gas reacts with hydrogen gas to form a mixture comprising hydrocarbon gas and water vapor;

a second heat exchanger for cooling the mixture and condensing water vapor from the mixture;

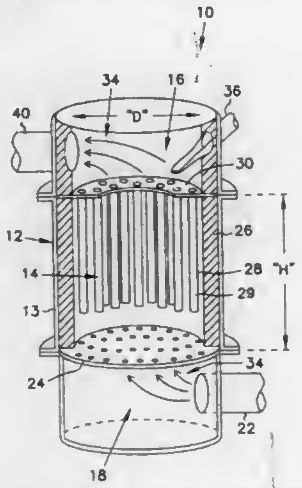
a hydrocarbon separator for separating hydrocarbon gas from water condensed in the second heat exchanger;

a conduit system for directing oxygen gas from the dissociation unit to the hydrocarbon combustion unit, carbon dioxide gas from the hydrocarbon combustion unit to the hydrocarbon synthesis reactor, water from the hydrocarbon combustion unit and the hydrocarbon synthesis reactor to the dissociation unit, hydrogen gas from the dissociation unit to the hydrocarbon synthesis reactor, and hydrocarbon gas from the hydrocarbon synthesis reactor to the hydrocarbon combustion unit.

5,711,771
LATENT HEAT-BALLASTED GASIFIER

Robert C. Brown, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 268,636, Jun. 30, 1994, Pat. No. 5,516,345. This application Apr. 8, 1996, Ser. No. 630,109
Int. Cl.^{6} F28D *20/02*
U.S. Cl. 48—197 R **19 Claims**



1. A method for storing heat comprising the steps of:

providing a vessel having a) a fluidization chamber in the vessel, b) a plurality of ballast housings arranged in the fluidization chamber to permit dispersion of heat therebetween, the ballast housings containing a solid material with a melting point at a predetermined temperature, c) a particulate material in the fluidization chamber, and d) an exhaust port in fluid communication with the vessel;

introducing heat into the fluidization chamber; and

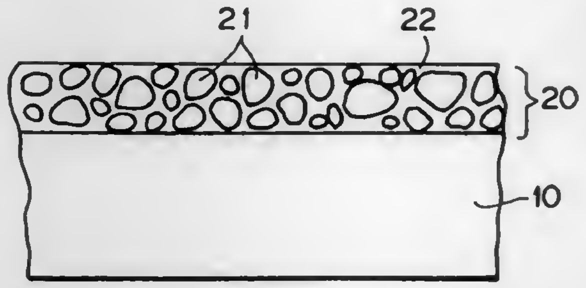
melting said solid material;

heat energy evolved from the material in the ballasts during a transition from a liquid state to a solid state being capable of providing heat at least into said fluidization chamber.

5,711,772
ABRASIVE MEMBER

Katsumi Ryoke, and Masaaki Fujiyama, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1996, Ser. No. 625,342
Claims priority, application Japan, Mar. 30, 1995, 7-073498
Int. Cl.^{6} B24D *11/00*
U.S. Cl. 51—295 **8 Claims**



1. An abrasive member comprising a substrate and an abrasive layer, said abrasive layer comprising a binder and abrasive grains dispersed therein, wherein said abrasive grains comprise sintered α-alumina grains.

5,711,773
ABRASIVE MATERIAL FOR PRECISION SURFACE TREATMENT AND A METHOD FOR THE MANUFACTURING THEREOF

Oleg Vladimirovich Selifanov; Eduard Ivanovich Tochitsky, and Valerii Vladmiriovich Akulich, all of Minsk, Belarus, assignors to Plasmoteg Engineering Center, and TEGO Scientific and Engineering Center of Physics and Technology of Thin Films, Minsk, Belarus

Division of Ser. No. 342,087, Nov. 17, 1994, Pat. No. 5,643,343. This application Mar. 25, 1997, Ser. No. 823,733
Int. Cl.^{6} B24D *11/00;* C09C *1/68*
U.S. Cl. 51—306 **32 Claims**

1. A method of manufacturing an abrasive material, said method comprising the steps of:

evacuating a deposition chamber to a residual gas pressure of less than 5×10^{-5} Torr, said deposition chamber containing a substrate; and

depositing a diamond-like carbon-based material on said substrate using a vacuum plasma deposition process, said vacuum plasma deposition process incorporating at least one vacuum are plasma accelerator containing at least one consumable electrode wherein at least one consumable electrode is a solid carbon electrode, wherein each vacuum arc plasma accelerator creates at least one initiating plasma and generates a plasma from its consumable electrodes, said generated plasma originating from at least one microspot on a plasma forming surface of each of said consumable electrodes, wherein each generated plasma is directed towards said substrate, wherein said diamond-like carbon-based material formed from said vacuum plasma deposition process has a Vickers hardness of at least 5500 kilograms per square millimeter and comprises at least 80 atomic percent carbon, less than 0.1 atomic percent hydrogen, and less than 0.1 atomic percent oxygen.

5,711,774
SILICON CARBIDE ABRASIVE WHEEL

David A. Sheldon, Millbury, Mass., assignor to Norton Company, Worcester, Mass.

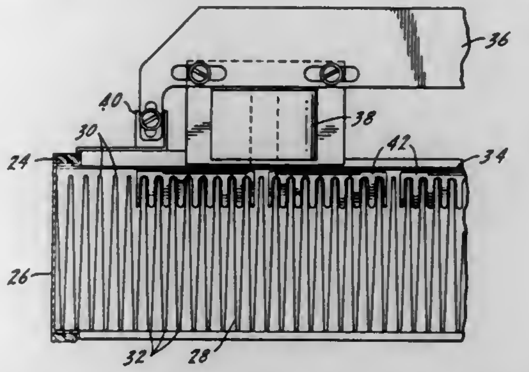
Filed Oct. 9, 1996, Ser. No. 727,889
Int. Cl.^{6} B24D *3/02*
U.S. Cl. 51—307 **8 Claims**

1. An abrasive grinding wheel comprising silicon carbide abrasive grain, about 5 to 21 volume percent hollow ceramic spheres, and a vitreous bond, wherein the vitreous bond after firing comprises, on a weight percentage basis, greater than about 50% SiO_2, less than about 16% Al_2O_3, from about 0.05 to about 2.5% K_2O, less than about 1.0% Li_2O and from about 9 to about 16% B_2O_3.

5,711,775
SWEEPER WITH ELECTROMAGNETIC FILTER CLEANING

Bruce F. Field, Golden Valley, and Nilabh Narayan, Plymouth, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Apr. 15, 1996, Ser. No. 623,698
Int. Cl.^{6} A47L *9/20;* B01D *46/04*
U.S. Cl. 55—273 **35 Claims**



1. A sweeping machine including a housing, wheels for moving the housing, a sweeping brush mounted on the housing, a hopper positioned adjacent the brush to receive dust and debris therefrom, a dust collection chamber on the housing, a vacuum fan mounted on the housing and creating an air flow path from the brush through the hopper and to the dust collection chamber, a filter element in said air flow path, said filter element including a plurality of generally parallel pleats extending in a direction transverse to the air flow path, a plurality of electric coils positioned adjacent said pleats, a plurality of metal elements associated with said pleats, and means for applying pulsed electric power to said electric coils, with the electromagnetic fields caused thereby moving said metal elements and the pleats associated therewith to impart a shaking cleaning movement to said pleats.

5,711,776
AIR ESCAPING MEANS

Morten Karlsen, Øvre Årdal, and Robert Sandvik, Årdalstangen, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Jun. 3, 1996, Ser. No. 656,832
Claims priority, application Norway, Jun. 2, 1995, 952218
Int. Cl.^{6} B01D *45/08*
U.S. Cl. 55—325 **11 Claims**

1. A de-aeration device for separating solid particles from a gas, said device comprising:

a container having an inlet for the supply of gas contaminated with solid particles to be removed and a gas outlet for discharging purified gas;

said container having a flow-through direction extending from said inlet to said gas outlet;

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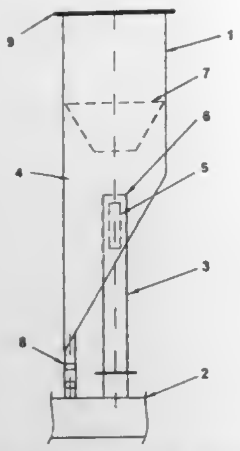
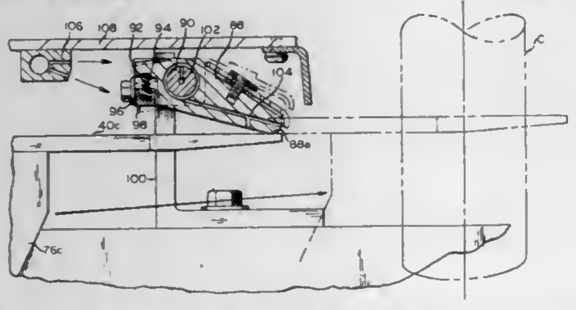


said container having a cross section dimensioned in a manner such that gas flows through said container at a velocity that is less than a velocity necessary for the gas to carry the solid particles;
means at said inlet to deflect the incoming gas to be caused to flow substantially laterally of said flow-through direction and
a filter cloth provided across said gas outlet.

5,711,777
GLASS GOB SHEARING APPARATUS WITH CONTACT LUBRICATED BLADES AND METHOD OF SHEARING EMPLOYING SAME

George A. Nickey, Maumee; Ronald T. Myers, Whitehouse; John M. Slifco, Toledo; Richard W. Craig, Toledo, and Robin L. Flynn, Toledo, all of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio
Filed Feb. 6, 1996, Ser. No. 602,873
Int. Cl.^{6} C03B *7/10;40/02;* **B26D** *7/08*
U.S. Cl. 65—26 **24 Claims**

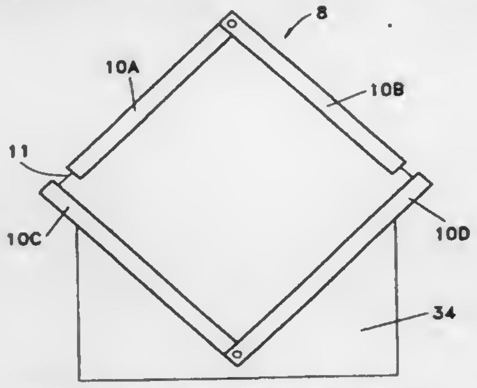


1. Shear apparatus for shearing at least one stream of molten glass into individual gobs, said apparatus comprising:
a first carriage;
a second carriage, said second carriage being opposed to said first carriage;
means for slidably supporting said first carriage;
means for slidably supporting said second carriage;
a first blade carried by said first carriage;
a second blade carried by said second carriage;
drive means for simultaneously driving said first carriage and said second carriage toward and away from one another along travel paths between first positions of said first carriage and said second carriage where said first blade and said second blade are spaced apart from one another and second positions of said first carriage and said second carriage where said first blade and said second blade partly overlap one another to shear a stream of molten glass flowing therebetween; and
lubricant application means for applying a lubricant to a surface of one of said first blade and said second blade, said surface being a surface that contacts the other of said first blade and said second blade when said first blade and said second blade partly overlap one another, said lubricant application means comprising a contact portion that contacts said surface of said one of said first blade and said second blade to evenly spread the lubricant thereon into a thin, relatively uniform covering.

19. A method of shearing at least one vertically flowing stream of molten glass into individual gobs comprising the steps of:
providing first and second opposed, generally horizontally extending double-ended shear blades, each of which has a shearing end;
simultaneously moving the first and second shear blades along first and second paths of travel toward and then away from one another to bring the shearing ends of each of the first and second shear blades into partly overlapping contact with one another in alignment with the stream of molten glass when the first and second shear blades are at innermost locations along the first and second paths of travel; and
applying a lubricant to a surface of one of said first blade and said second blade, said surface being a surface that contacts the other of said first blade and said second blade when said first blade and said second blade partly overlap one another, the lubricant being applied by contacting said surface with a lubricant application means to evenly spread the lubricant thereon to form a thin, relatively uniform coating.

5,711,778
METHOD AND APPARATUS FOR ANNEALING GLASS SHEETS

Keith L. House, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Jun. 26, 1996, Ser. No. 670,963
Int. Cl.^{6} C03B *25/00*
U.S. Cl. 65—117 **18 Claims**



1. A method of annealing glass sheets comprising:
assembling a plurality of glass sheets vertically in a frame, said frame separating said glass sheets while simultaneously retaining portions of all four edges of the glass sheets; and
annealing the glass by exposing the glass sheets, while still retained within the frame, to a temperature suitable for relieving stress within the glass sheets.

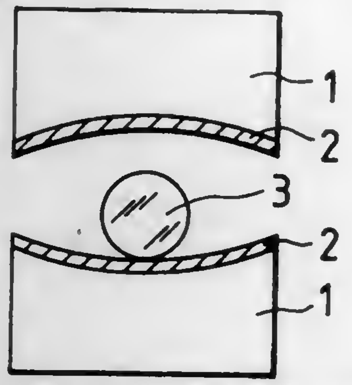
5,711,779
METHOD FOR FORMING ZINC PHOSPHATE BASED GLASSES

Noshir B. Havewala, Corning; Kevin T. Morris, Hammondsport; Michelle D. Pierson, Painted Post, and Robert D. Shoup, Hammondsport, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Filed Feb. 17, 1994, Ser. No. 178,418
Int. Cl.^{6} C03B *5/16;* **C01B** *15/16;25/26;* **C03C** *3/17*
U.S. Cl. 65—134.1 **7 Claims**

1. A process for the manufacture of a zinc phosphate glass comprising the steps of:
(a) intimately mixing phosphoric acid and a zinc-containing compound in water to form a mixture of zinc hydrogen phosphates in an aqueous slurry, the slurry being essentially homogeneous and comprising P_2O_5 and ZnO in a weight ratio within the range of 1.2 to 2.0; and,
(b) converting the so-formed slurry, directly or indirectly to a molten zinc phosphate glass; and
(c) cooling the molten zinc phosphate glass.

5,711,780
MOLD FOR MOLDING OPTICAL ELEMENT

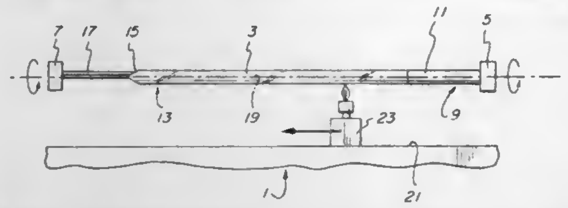
Yasushi Taniguchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 70,060, Jun. 2, 1993, abandoned. This application May 30, 1995, Ser. No. 453,354
Claims priority, application Japan, Jun. 8, 1992, 4-171526
Int. Cl.^{6} C03B *11/08;40/00;* **B29C** *33/56*
U.S. Cl. 65—286 **4 Claims**



1. A mold for press molding an optical element of glass, wherein carbon ions are injected into a molding surface of a mold base of said mold and wherein said molding surface subjected to said carbon ion injection is subjected to further treatment in order to form on said molding surface a film selected from the group consisting of a diamond film, a hydrogenated amorphous carbon film, and a hard carbon film or a film consisting of a mixture of at least two thereof.

5,711,781
APPARATUS AND METHOD FOR HEATING AN ELONGATED GLASS

Hans-Jurgen Lysson, Korschenbroich, and Frank Lisse, Cologne, both of Germany, assignors to Kabel Rheydt Aktiengesellschaft, Monchen-Gladbach, Germany
Continuation of Ser. No. 236,375, May 2, 1994, abandoned. This application Aug. 16, 1996, Ser. No. 697,017
Claims priority, application Germany, May 4, 1993, 43 14 638.4
Int. Cl.^{6} C03B *23/045;29/00*
U.S. Cl. 65—385 **15 Claims**

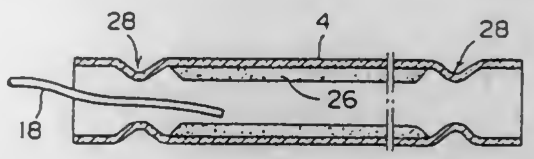


1. An apparatus for heating an elongated glass body comprising:
a rotatable first chuck for clamping a first end of said elongated glass body;
a slidable burner;
a rotatable second chuck; and
a quartz tube clamped into said second chuck, said quartz robe being constructed and arranged to receive a second end of said elongated glass body such that said elongated glass body is secured between said first and said second chucks without aligning, welding and subsequent melting off of a quartz rod from said elongated glass body to assist in said securing of said elongated glass body between said first and second chucks.

6. A method for heating an elongated glass body, said method comprising the steps of:
clamping a first end of said elongated glass body into a first rotatable chuck;
introducing a second end of said elongated glass body into a quartz tube which is secured in a second rotatable chuck thereby securing said elongated glass body between said first and second chucks without aligning, welding and subsequent melting off of a quartz rod from said elongated glass body to assist in said securing of said elongated glass body between said first and second chucks;
rotating said elongated glass body around the longitudinal axis thereof; and
heating said elongated glass body by means of a burner that slides at least parallel to said longitudinal axis thereof.

5,711,782
PROCESS FOR FABRICATING AN OPTICAL FIBER PREFORM

Kouji Okamura, and Tadao Arima, both of Shimotsuga-gun, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 156,898, Nov. 24, 1993, abandoned, which is a division of Ser. No. 63,046, May 19, 1993, Pat. No. 5,284,500, which is a division of Ser. No. 687,869, Jun. 4, 1991, abandoned. This application Aug. 9, 1996, Ser. No. 694,795
Claims priority, application Japan, Oct. 31, 1989, 1-281843; Nov. 8, 1989, 1-288732; Nov. 8, 1989, 1-288733; Nov. 8, 1989, 1-288734; WIPO, Oct. 31, 1990, PCT/JP90/01398
Int. Cl.^{6} C03B *37/014*
U.S. Cl. 65—390 **16 Claims**



1. A method of making an optical fiber preform doped with a rare earth element, comprising:
(a) depositing a porous oxide glass layer along a length of an internal surface of a quartz reaction tube having a first inner diameter;
(b) forming a pair of portions, each of the portions having a second inner diameter smaller than the first inner diameter, one of the portions positioned at each end of the length of the internal surface of the quartz reaction tube; and
(c) providing a solution, including a rare earth element compounds between the pair of the portions to impregnate the porous oxide glass layer with the solution.

5,711,783
PREPARATION FROM METAL ALKOXIDES OF HIGH PURITY METAL POWDER

Martin Schloh, Köln, Germany, assignor to H.C. Starck, GmbH & Co., KG, Goslar, Germany
Continuation of Ser. No. 373,592, Jan. 17, 1995, abandoned. This application Jul. 11, 1996, Ser. No. 678,095
Claims priority, application Germany, Feb. 15, 1994, 44 04 747.9
Int. Cl.^{6} B22F *9/22*
U.S. Cl. 75—362 **11 Claims**

7. Process for preparing high purity powder of a metal selected from the group consisting of tantalum and tungsten, comprising:
(a) purifying one or more alkoxide compounds of the metal by a

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method selected from the group consisting of distillation and sublimation, and (b) reacting said one or more alkoxide compounds of the metal in the gas phase with a reducing gas.

5,711,784
METHOD FOR PHYTOMINING OF NICKEL, COBALT AND OTHER METALS FROM SOIL

Rufus L. Chaney, Beltsville; Jay Scott Angle, Elliot City, both of Md.; Alan J. M. Baker, Sheffield, United Kingdom, and Yin-Ming Li, Potomac, Md., assignors to University of Maryland at College Park, College Park, Md.

Filed Jun. 6, 1995, Ser. No. 470,440

Int. Cl.^{6} C22B *3/18*

U.S. Cl. 75—712 **5 Claims**

1. A method of recovering nickel from soil, comprising cultivating alyssum plants in soil containing nickel under conditions sufficient to permit said alyssum to accumulate nickel from the soil in above-ground tissues of said alyssum such that at least 2.5% of the air-dried above-ground tissue of said alyssum is nickel, harvesting said alyssum as biomass materials after accumulation of nickel from the soil, and recovering nickel from said biomass materials, wherein said soil is conditioned by maintaining pH of the soil at a range of 4.5 to 6.2, wherein said soil has an exchangeable calcium concentration and an exchangeable Mg concentration and managing said exchangeable calcium concentration at a value lower than 20% of the exchangeable Mg concentration, adding ammonium-containing fertilizer to said soil and adding chelating agents to said soil.

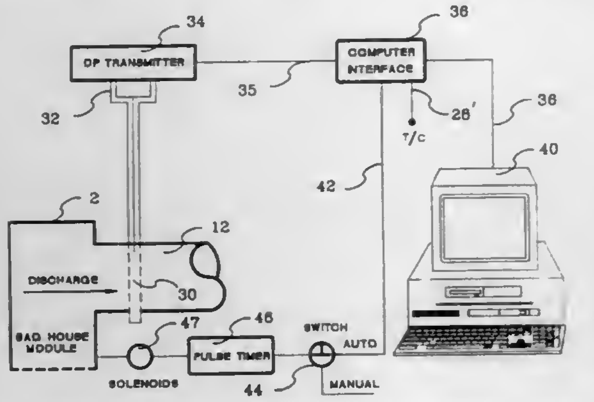
5,711,785
METHOD AND APPARATUS FOR CONTROLLING THE CLEANING CYCLE OF AIR FILTER ELEMENTS AND FOR PREDICTING THE USEFUL LIFE THEREOF

Allan L. Maxwell, Sistersville, W. Va., assignor to Ormet Corporation, Wheeling, W. Va.

Filed Oct. 26, 1995, Ser. No. 548,443

Int. Cl.^{6} B01D *46/04*

U.S. Cl. 95—15 **15 Claims**



1. Apparatus for cleaning filter elements in a plurality of parallel ducted modules wherein each module contains a plurality of filter elements, each of said modules having pulse means to dislodge accumulated particulate matter from the filter elements when said means is activated, said apparatus comprising:

- means for measuring an impact pressure and a static pressure of a gas stream flowing from each module;
- means for transmitting said impact pressure and static pressure measurements to a computer means for calculating an actual volumetric flow rate of gas flowing from each module and for comparing said actual volumetric flow rate with a flow rate set point; and
- means for signaling the pulse means of each module to activate said pulse means for a given module when the calculated flow rate for the given module is below said set point and for deactivating said pulse means when said calculated flow rate for the given module is at least equal to said set point.

9. A method for cleaning filter elements in a plurality of parallel ducted modules housing a plurality of filter elements, each of said modules having cleaning means to dislodge accumulated particulate matter from the filter elements when the cleaning means is selectively activated, the method comprising the steps of:

- a) measuring an impact pressure and a static pressure in a gas stream being discharged from each module;
- b) calculating an actual volumetric flow rate of said gas stream from each module;
- c) measuring a temperature of said gas stream and calculating a density factor for said gas stream based on said measured temperature;
- d) calculating an adjusted flow rate set point based upon said density factor;
- e) comparing said actual volumetric flow rate from each module and said adjusted set point;
- f) activating the cleaning means for a given module when the actual volumetric flow rate is less than the adjusted set point for said given module; and
- g) deactivating the cleaning means when the volumetric flow rate for the given module is at least equal to the adjusted set point.

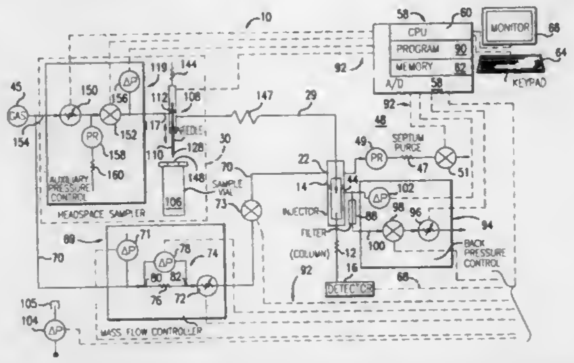
5,711,786
GAS CHROMATOGRAPHIC SYSTEM WITH CONTROLLED SAMPLE TRANSFER

John V. Hinshaw, New Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 21, 1996, Ser. No. 734,689

Int. Cl.^{6} B01D *15/08*

U.S. Cl. 95—82 **16 Claims**



1. A method for transferring analyte sample in a gas chromatographic system that includes a gas chromatographic column with a column inlet, injector means with a chamber selectively receptive of a carrier gas flow and an analyte sample in a transfer gas with the chamber communicating with the column inlet for injecting carrier gas and sample into the column, flow means for effecting a carrier gas flow into the chamber at a constant flow rate, primary pressure means for maintaining a constant primary pressure at the column inlet, a transfer pressure source of a transfer gas, and transfer means for selectively communicating a sample vessel with the transfer pressure source or the chamber, the sample vessel containing an analyte sample, wherein the method comprises steps of initially pressurizing the sample vessel with the transfer gas from the transfer pressure source so as to effect a vessel pressure at a starting pressure greater than the primary pressure, and communicating the sample vessel with the chamber so as to transfer analyte sample in the transfer gas from the sample vessel to the chamber by the vessel pressure while declining from the starting pressure during a transfer period, the transfer period being such that the vessel pressure while declining from the starting pressure remains greater than the primary pressure, with the pressurizing and the carrier gas flow discontinued, whereby analyte sample is transferred through the chamber into the column by the primary pressure linearly with time during the transfer period.

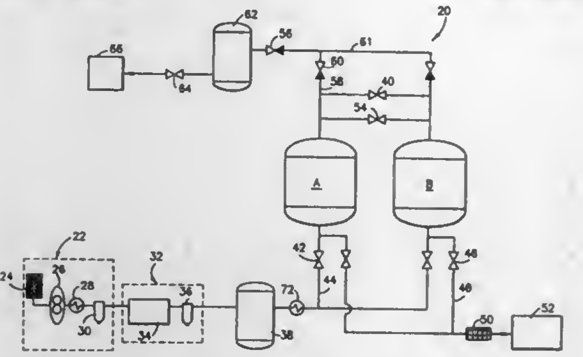
5,711,787
OXYGEN RECOVERY PRESSURE SWING ADSORPTION PROCESS

Allastair Neill, Mississauga, Canada; Frederick Wells Leavitt, Amherst, N.Y., and Antonio Felippe Zaccur Figuelredo, Niteroi, Brazil, assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Nov. 22, 1995, Ser. No. 561,654

Int. Cl.^{6} B01D *53/053*

U.S. Cl. 95—96 **18 Claims**



1. In a pressure swing adsorption process for the separation of at least one non-preferentially-adsorbable first gas from a gas mixture containing the first gas and one or more selectively-adsorbable second gas(es) in which the gas mixture is supplied cyclically to one of at least two adsorption beds capable of selectively adsorbing the second gas(es) at elevated pressure while passing the first gas therethrough to a receptor tank, each adsorption bed having a feed end into which the gas mixture is directed and a product end from which the first gas is withdrawn, the improvement comprising the steps of:

- (a) compressing the gas mixture to a pressure in the range of approximately 45 psig to 105 psig; and
- (b) preheating the gas mixture of step (a) to a temperature in the range of approximately 100° F. to 200° F.;
- (c) causing flow of the pressurized gas mixture into and through a first of at least two adsorption beds for selectively adsorbing therein the second gas;
- (d) discharging from the product end of the first adsorption bed a first quantity of the first gas to the receptor tank at an elevated pressure in the range of 40 psig to 100 psig, with a purity of approximately 88% to 95%, and at a recovery of approximately 30% to 45%; and
- (e) substantially simultaneously with step (d), purging the second adsorption bed of the second gas.

5,711,788
DUST NEUTRALIZING AND FLOCULATING SYSTEM

Yong Jin Kim, Dae Jeon; Won Suk Hong, Seoul; Han Geel Yeom; Jae Ouk Lee, both of Dae Jeon; Yong Seung Moon, Ansan; Won Huy Lee, Souwon; Chan Yeol Lee, Goun San, and Jung Ho Kim, Ansan, all of Rep. of Korea, assignors to Cambridge Filter Korea, Ltd., Ansan, Rep. of Korea

Filed Mar. 28, 1996, Ser. No. 625,803

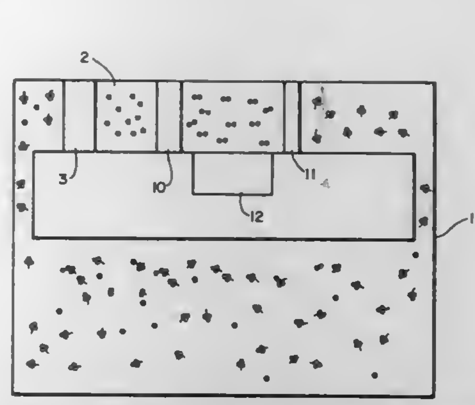
Claims priority, application Rep. of Korea, Mar. 30, 1995, 95-6973

Int. Cl.^{6} B03C *3/66*

U.S. Cl. 96—3 **8 Claims**

1. In an air cleaning system including a clean room, an air flow passage provided at an upper portion of the clean room and adapted to flow air for cleaning, and a moderately efficient filter arranged in the air flow passage, a dust neutralizing and flocculating system, which is arranged downstream of the moderately efficient filter in the air flow passage, said system comprising:

- a radio frequency generating electrode for dipolarly magnetizing fine particles entrained in the air emerging from the filter;
- an ion generating electrode for adding cations and anions to the dipolarity magnetized fine particles, thereby promoting a flocculation of the fine particles; and,



- a voltage generator for generating a controlled voltage to be applied to the ion generating electrode.

5,711,789
APPARATUS FOR PUMPING GAS-CONTAINING FIBER SUSPENSIONS

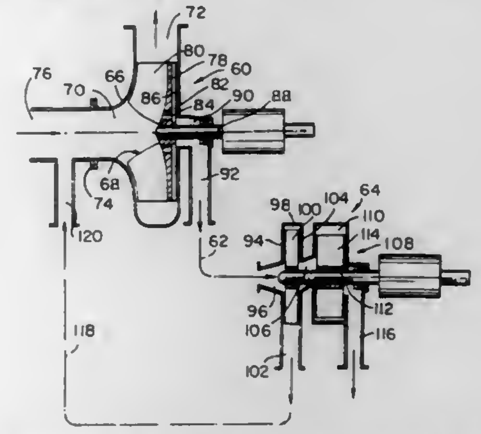
Jorma Elonen, Jämsänkoski, and Heikki Manninen, Ummeljoki, both of Finland, assignors to A. Ahlstrom Corporation, Noormarkuu, Finland

Continuation of Ser. No. 763,637, Sep. 23, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,858

Claims priority, application Finland, Sep. 25, 1990, 904701

Int. Cl.^{6} B01D *19/00*

U.S. Cl. 96—216 **7 Claims**



1. An apparatus for pumping fiber suspensions of pulp and paper industry, said apparatus comprising the combination of a centrifugal pump and a separation/vacuum unit, said centrifugal pump having a housing with an axial inlet, a tangential outlet for degassed medium and a back wall opposite to said axial inlet, and a centrifugal impeller arranged in said housing on a shaft driven by a first drive means; said impeller having a rear plate with working vanes arranged on the side facing said axial inlet and back vanes on the side facing said back wall of the housing; at least one of said impeller and said shaft further having a flow passage for introducing gas containing medium from the side of the impeller facing said axial inlet to the side of the impeller facing said back wall; said back will having an opening connected to a flow passage introducing said gas containing medium to a pipe connecting the opening of said centrifugal pump to an axial inlet of said separation/vacuum unit; said separation/vacuum unit comprising a casing with a separation chamber and a vacuum chamber, a shaft driven by a second drive means extending through said casing and said chambers and provided with an impeller in said separation chamber and a rotor in said vacuum chamber, said separation chamber further having a tangential outlet for discharging a gas-free medium from said separation/vacuum unit and an axial outlet for discharging gas from said separation/vacuum unit, said vacuum chamber further having an axial inlet for receiving gas from said axial outlet of said separation chamber and a tangential outlet for discharging said gas from said vacuum chamber.

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MARKING COMPOSITION

Miriam Coller, 84-05 Avon St., Jamaica, N.Y. 11432
Continuation of Ser. No. 534,072, Sep. 26, 1995, abandoned, which is a continuation-in-part of Ser. No. 311,547, Sep. 23, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 624,838
Int. Cl.^{6} C09D *11/00*
U.S. Cl. 106—31.01 **13 Claims**

1. An aqueous marking composition comprising a water soluble salt or a mixture of water soluble salts in an amount of from about 1% to about 25% by weight selected from the group consisting of sodium chloride, magnesium chloride, and calcium chloride; and, water soluble colorants.

5,711,791

PRINTING INKS

John Croker, Broxbourne; Paula Michelle Kelly, London, and Raymond David Burr, Surrey, all of England, assignors to Domino Printing Sciences Plc, England
Filed Apr. 4, 1996, Ser. No. 628,124
Claims priority, application United Kingdom, Apr. 18, 1995, 9507881
Int. Cl.^{6} C09D *11/02;11/14*
U.S. Cl. 106—31.35 **15 Claims**

1. An ink jet ink comprising a liquid vehicle, 1 to 20% by weight of a binder which is soluble in the liquid vehicle, a colorant which is soluble in the liquid vehicle and a surfactant comprising at least 95% of phosphatidylcholine or lysophosphatidylcholine, and the said surfactant being present in an amount such as to provide from 0.05 to 1.0% by weight phosphatidylcholine or lysophosphatidyl choline or mixtures thereof, the said surfactant being soluble in the liquid vehicle, the binder being selected from the group consisting of a sugar, a sugar alcohol and a mixture thereof.

5,711,792

FOUNDRY BINDER

Nigel David Miller, Cheshire, England, assignor to Borden Chemical UK Limited, Southampton, England
PCT No. PCT/GB94/02626, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO95/15230, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 30, 1994, Ser. No. 647,923
Claims priority, application United Kingdom, Nov. 30, 1993, 9324509
Int. Cl.^{6} B22C *1/18*
U.S. Cl. 106—38.22 **29 Claims**

1. A binder composition for binding a water-insoluble particulate material in the manufacture of a foundry mold or core which comprises a mixture of (1) an inorganic binder consisting of an aqueous solution containing at least one matrix former selected from the group consisting of polyphosphate chains derived from a water-soluble phosphate glass and borate ions and (2) a water-soluble surfactant in an amount of from 0.01 to 20% by weight of the inorganic binder.

5,711,793

LACQUER VEHICLES IN GRANULAR FORM AND FREE FROM EMULSIFYING AGENTS, AND THEIR PREPARATION

Wolfgang Dannhorn; Lutz Hoppe, both of Walsrode; Erhard Lühmann, Bomlitz, and Hans-Jürgen Juhl, Walsrode, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany
Continuation of Ser. No. 386,842, Feb. 10, 1995, abandoned. This application Dec. 4, 1996, Ser. No. 759,204
Claims priority, application Germany, Feb. 18, 1994, 44 05 210.3
Int. Cl.^{6} C09D *101/18*
U.S. Cl. 106—169.12 **5 Claims**

1. Cellulose nitrate granules, which are stabilized against explosion and which are preparable, without the use of solvents, emulsifying agents or monomers, by

a) mixing a suspension of cellulose nitrate with an aqueous emulsion of a self-emulsifying resin, a self-emulsifying plasticizer, or both, to form a suspension of cellulose nitrate granules, and separating said granules from said suspension, or

b) mixing a suspension of cellulose nitrate with an aqueous emulsion formed by mixing
  i) a non self-emulsifying resin having an acid number >10 mg KOH/g, a non self-emulsifying plasticizer having an acid number >10 mg KOH/g, or both, with
  (ii) water and
  (iii) a neutralizing agent selected from the group consisting of ammonia, ethylamine, diethylamine, triethylamine, triethanolamine, sodium acetate, calcium hydrogen carbonate, ammonium hydrogen phosphate, potassium hydroxide and sodium hydroxide, and then

acidifying the resulting mixture of said suspension and said aqueous emulsion, to form a suspension of cellulose nitrate granules, and separating said granules from said suspension, or

c) mixing a suspension of cellulose nitrate with an aqueous emulsion formed by
  mixing iv) a non self-emulsifying resin having an acid number between 0 and 10 mg KOH/g, a non self-emulsifying plasticizer having an acid number between 0 and 10 mg KOH/g, or both, with v) a self-emulsifying polymer, to form a mixture and mixing said mixture with vi) water and vii) a neutralizing agent selected from the group consisting of ammonia, ethylamine, diethylamine, triethylamine, triethanolamine, sodium acetate, calcium hydrogen carbonate, ammonium hydrogen phosphate, potassium hydroxide and sodium hydroxide, to form an emulsion, and then,

acidifying the resulting mixture of said suspension and said aqueous emulsion to form a suspension of cellulose nitrate granules, and separating said granules from said suspension.

5,711,794

METHOD FOR CONTINUOUS PRODUCTION OF VARNISH

Greg A. Laszewski, Wauwatosa, and Sunil M. Rao, Hubertus, both of Wis., assignors to Chemical Research Technology, Sussex, Wis.
Continuation of Ser. No. 278,403, Jul. 21, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,203
Int. Cl.^{6} C09D *191/00*
U.S. Cl. 106—244 **16 Claims**

1. A method for the production of varnish, said method comprising the steps of:
(a) continuously introducing resin, oil and a gelling agent into a mixing zone;
(b) heating the resin, oil, and gelling agent to an elevated temperature in the mixing zone;
(c) mixing the resin, oil, and gelling agent in the mixing zone for a period less than about 10 minutes to produce varnish; and
(d) continuously withdrawing the varnish from the mixing zone.

5,711,795

COMPRESSIBLE AND MOLDABLE TOY SAND COMPOSITION

James D. Browning, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio
Filed Aug. 23, 1996, Ser. No. 702,786
Int. Cl.^{6} L08L *91/06;91/08*
U.S. Cl. 106—271 **17 Claims**

1. A toy molding composition comprising an inert particulate material coated with a thin layer of a binder, said thin layer of binder comprising a wax material effective to permit said composition to be compressed from a free-flowing particulate form to a free-standing compressed form wherein said composition has a percent wax ratio of wax to wax-plus-sand on a per weight basis of from about 1.5% to about 15%.

5,711,796

BITUMINOUS COMPOSITIONS HAVING ENHANCED PERFORMANCE PROPERTIES

Kenneth Francis Grzybowski, Temple Terrace; David Reese Jones, IV, Tampa, both of Fla.; William Russell Welliver, Ship Bottom, N.J., and Timothy Jay Roth, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Oct. 16, 1995, Ser. No. 543,564
Int. Cl.^{6} C04B *18/06;* **C08L** *95/00*
U.S. Cl. 106—281.1 **46 Claims**

1. A bituminous composition of enhanced properties comprising:
(a) from about 0.1 to about 60 percent by weight of a solid residue combustion product from combustion of a naturally occurring asphalt from the Orinoco Belt of Venezuela; and
(b) from about 3 to about 99.9 percent by weight of bitumen base material.

5,711,797

SILANIZED SILICIC ACIDS

Manfred Ettlinger, Karlstein; Dieter Kerner, Hanau, and Jürgen Meyer, Rheinfelden, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany
Continuation of Ser. No. 731,023, Oct. 9, 1996, Pat. No. 5,665,156, which is a continuation of Ser. No. 379,694, Jan. 27, 1995, abandoned. This application Apr. 2, 1997, Ser. No. 831,947
Claims priority, application Germany, Jan. 27, 1994, 44 02 370.7
Int. Cl.^{6} C09C *1/30*
U.S. Cl. 106—287.14 **4 Claims**

1. Silanized, pyrogenically prepared silicic acids, produced by the process characterized in that the pyrogenically prepared silicic acids are placed in a mixer, and while being mixed the silicic acids are sprayed, optionally first with water and then with the compound $(RO)_3SiC_nH_{2n+1}$, where n=from 10 to 18 and R stands for an alkyl, with the proviso that the compound is not stearyltrimethoxysilane, and mixing is continued for from 15 to 30 minutes, and then temperature stabilization is done at a temperature of from 100° to 160° C. over a period of time from 1 to 3 h.

5,711,798

PIGMENT CONTAINING LOW-ORDER TITANIUM OXIDE AND METHOD OF MANUFACTURING THE SAME

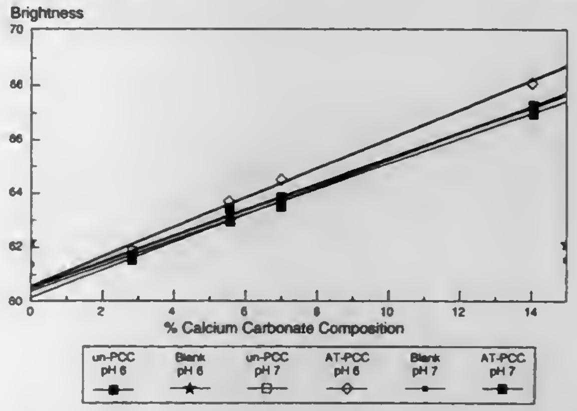
Shoichiro Shio, and Fukuji Suzuki, both of Yokohama, Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan
Filed Oct. 10, 1995, Ser. No. 541,867
Claims priority, application Japan, Oct. 11, 1994, 6-271679
Int. Cl.^{6} C04B *14/20*
U.S. Cl. 106—417 **27 Claims**

1. A TiO_x coated mica pigment comprising TiO_x, where $X<2$, silicon oxide and aluminum oxide in one composite layer wherein said silicon oxide and said aluminum oxide are end products of silicon and an aluminum compound used as reducing agents to convert TiO_2 to TiO_x, wherein said silicon and said aluminum compound are not oxide forms of silicon and aluminum.

5,711,799

ACID TOLERANT CALCIUM CARBONATE COMPOSITION AND USES THEREFOR

Kevin Snowden, Milledgeville; Jose M. Rodriguez, Eatonton, and Kuan-Ting Wu, Sandersville, all of Ga., assignors to ECC International Inc., Roswell, Ga.
Filed Mar. 13, 1996, Ser. No. 614,863
Int. Cl.^{6} C09C *1/02*
U.S. Cl. 106—465 **17 Claims**



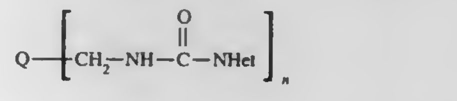
1. An acid tolerant calcium carbonate composition comprising a mixture of calcium carbonate with at least about 0.1 percent, based on the dry weight of the calcium carbonate, of sodium aluminate, together with at least about 0.1 percent, based on the dry weight of the calcium carbonate, of one or more weak acids.

5,711,800

ORGANIC PIGMENT COMPOSITIONS

Ibraheem T. Badejo, North Charleston; John F. Britanak, Summerville; Margot Campos; Daphne J. Rice, both of Charleston, all of S.C., and Niran Nugara, Shelton, Conn., assignors to Bayer Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1996, Ser. No. 777,863
Int. Cl.^{6} C08K *5/22*
U.S. Cl. 106—498 **15 Claims**

1. A pigment composition comprising an organic pigment treated with about 0.1 to about 20% by weight, based on the organic pigment, of an N-heteroarylamidomethyl pigment derivative having the formula



$$Q-\left[CH_2-NH-\overset{\overset{\displaystyle O}{\|}}{C}-NHet\right]_n$$

wherein

Q represents an organic pigment moiety,

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NHet represents a nitrogen-containing heteroaromatic group attached at a ring nitrogen atom to the carbonyl function of the amidomethyl linking group, and
n is from 1 to 4.

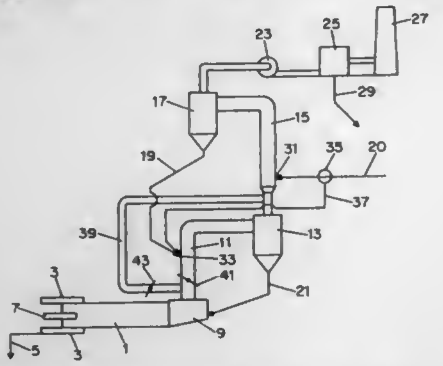
5,711,801
CEMENT COMPOSITIONS

Jiten Chatterji; James E. Griffith; Patty L. Totten, and Bobby J. King, all of P.O. Box 1431, Duncan, Okla. 73536
Division of Ser. No. 551,101, Oct. 31, 1995, Pat. No. 5,588,489. This application Sep. 25, 1996, Ser. No. 719,377
Int. Cl.^{6} C04B *7/14*
U.S. Cl. 106—789 **25 Claims**

1. A foamed cement composition comprising:
a slag cement;
a water-based fluid present in the range of from about 20% to about 180% by weight of said slag cement;
a gas present in an amount in the range of from about 5% to about 75% by volume of the foamed composition; and
a foaming agent present in an amount in the range of from about 0.5% to about 10% by weight of fluid in the composition.

5,711,802
HEAT TREATMENT OF LIME SLUDGE

Jorgen Theil, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark
PCT No. PCT/EP95/00652, § 371 Date Sep. 17, 1996, § 102(e) Date Sep. 17, 1996, PCT Pub. No. WO95/25699, PCT Pub. Date Sep. 28, 1995
PCT Filed Feb. 23, 1995, Ser. No. 704,718
Claims priority, application Denmark, Mar. 22, 1994, 0329/94
Int. Cl.^{6} C04B *2/02*
U.S. Cl. 106—792 **8 Claims**



1. A method for heat treatment of lime sludge ($CaCO_3$) material formed by causticizing process during manufacture of paper pulp, wherein a stream of moist lime sludge in a first process stage is transformed into a dry, pulverulent product ($CaCO_3$) by means of hot kiln-generated exhaust gas from which it is subsequently separated and thereafter preheated in a second process stage also by means of hot kiln-generated exhaust gas from which it is subsequently separated and thereafter directed to a kiln for formation of burned lime (CaO), the relationship between the amount of energy available in the exhaust gas for preheating in the second process stage and the amount of energy accumulated in the material which is to be preheated being so regulated that the temperature in the second process stage does not exceed a temperature lying within the range from 400°–600° C.; said method further comprising regulating the relationship between the amount of energy in the exhaust gas and the amount of energy in the material by dividing the stream of moist lime sludge which is to be treated into two substreams, of which one substream is introduced into the first process stage for drying and pulverizing and the second substream bypasses the first process stage and is introduced into the second process stage for preheating.

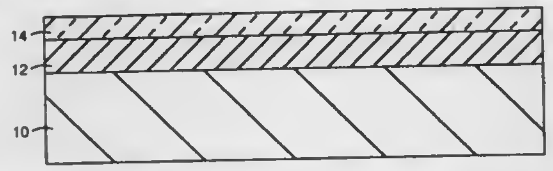
5,711,803
PREPARATION OF A SEMICONDUCTOR THIN FILM

Martin Pehnt, TüBingen, Germany; Douglas L. Schulz, Denver, Colo.; Calvin J. Curtis, Lakewood, Colo., and David S. Ginley, Evergreen, Colo., assignors to Midwest Research Institute, Kansas City, Mo.
Filed Sep. 29, 1995, Ser. No. 536,348
Int. Cl.^{6} C03B *1/02*
U.S. Cl. 117—4 **10 Claims**

1. A process for the preparation of a semiconductor film, the process comprising depositing nanoparticles of a semiconductor material onto a substrate whose surface temperature during nanoparticle deposition thereon is sufficient to cause substantially simultaneous fusion of the nanoparticles to thereby coalesce with each other and effectuate film growth.

5,711,804
METHOD OF FORMING A METALLIC OXIDE COATING WITH A DESIRED CRYSTALLOGRAPHIC ORIENTATION

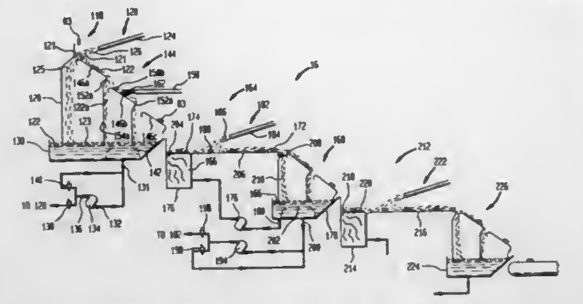
D. Morgan Tench, Ventura; Leslie F. Warren, Jr., Camarillo, and Young J. Chung, Calabasas, all of Calif., assignors to Rockwell International Corporation, Costa Mesa, Calif.
Filed May 3, 1996, Ser. No. 642,381
Int. Cl.^{6} C30B *1/10*
U.S. Cl. 117—4 **7 Claims**



1. A method of producing a nickel oxide coating, comprising the steps of:
providing a nickel substrate having crystallites with preferred orientations of Ni{100} and Ni{111}; and
forming said oxide coating on said nickel substrate using a sol-gel/thermal process;
said oxide coating tending to acquire crystallographic orientations other than Ni{110} due to the influence of said preferred substrate orientations.

5,711,805
APPARATUS FOR MAKING AND COATING EGG YOLKS AND OTHER ARTICLES

Eustathios Vassiliou, 12 S. Townview La., Newark, Del. 19711
Continuation of Ser. No. 403,424, Mar. 14, 1995, Pat. No. 5,589,208. This application Aug. 13, 1996, Ser. No. 689,503
Int. Cl.^{6} A23G *3/00*
U.S. Cl. 118—13 **11 Claims**

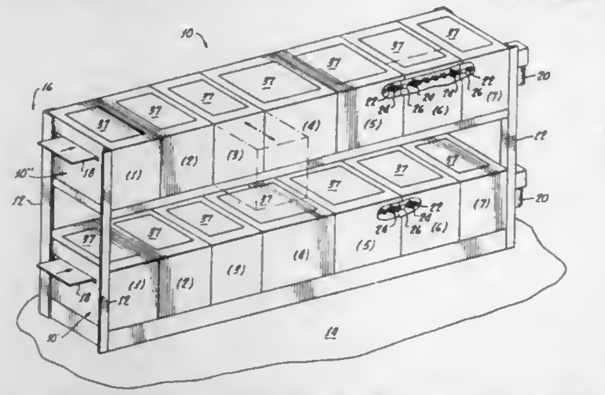


1. An apparatus for encapsulating an article with a restrictive barrier comprising:
(a) a first liquid wetting station for contacting the article with an excess of a first liquid, the first liquid containing a first reactant;

(b) a first separator for separating the article from the excess of the first liquid;
(c) a second liquid wetting station for treating the wetted article with an excess of a second liquid containing a second reactant, which second reactant reacts with the first reactant to form the restrictive barrier; and
(d) a second separator for separating the treated article from the second liquid;
wherein at least one of the first and second wetting stations is free of movement during operation, and free of mechanically moving parts.

5,711,806
PRINTED CIRCUIT BOARD PROCESSING APPARATUS

Eric F. Harnden, 1030 Berne Dr., Crestline, Calif. 92325
Filed Mar. 13, 1996, Ser. No. 615,723
Int. Cl.^{6} B05C *3/02;3/00;19/02*
U.S. Cl. 118—407 **16 Claims**

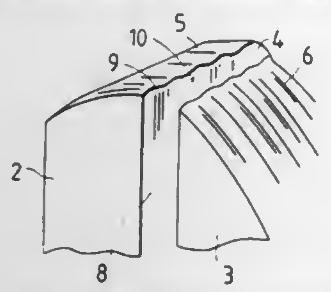


1. A machine for chemically treating the surfaces of a planar printed circuit board work piece by immersion in a liquid chemical bath, the work piece having one or more through holes or apertures therein, said machine comprising: a basin for containing a bath of chemical liquid for treating the surfaces of the work piece, a conveyor for moving the work piece in a horizontal orientation horizontally along an action line parallel to its own plane through said bath of chemical liquid, said conveyor including means for oscillating the work piece perpendicularly to its own plane simultaneously with motion along said action line, whereby said oscillating of said work piece causes surging of said chemical liquid through the apertures or through holes of the work piece.

5,711,807
COATING APPARATUS

Akihiro Suzuki; Norio Shibata; Shinsuke Takahashi, and Mikio Tomaru, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of Ser. No. 16,470, Feb. 11, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 304,238
Claims priority, application Japan, Feb. 13, 1992, 4-059421
Int. Cl.^{6} B05C *3/02*
U.S. Cl. 118—413 **10 Claims**

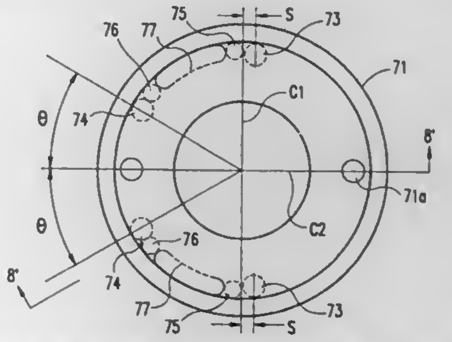
1. A coating apparatus having an extrusion head for applying a uniform thickness of a composition to a moving support, said coating head comprising:



a frontedge disposed on an upstream side of said coating head with respect to a direction of movement of said support, and
a backedge disposed on a downstream side of said coating head with respect to said direction of movement of said support, a slit being formed between said frontedge and said backedge through which said composition is extruded, said slit extending in a longitudinal direction, wherein at least one of said front and backedges has a surface adjacent said slit that includes a plurality of parallel, aligned filtration central line waves thereon extending in a direction perpendicular to said longitudinal direction, each of said filtration central line waves having a on average height greater than 0.03 μm and less than or equal to 0.2 μm.

5,711,808
BOAT FOR VERTICAL DIFFUSION FURNACE

Jong-moon Yang, Suwon; Chung-hwan Kwon, Yongin,; Sang-woon Kim, and Choung-bae Park, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea
Filed Nov. 25, 1996, Ser. No. 755,159
Claims priority, application Rep. of Korea, Nov. 28, 1995, 95-44267
Int. Cl.^{6} C23C *16/00*
U.S. Cl. 118—5 **13 Claims**



1. A boat for carrying semiconductor wafers and being suitable for use in a vertical diffusion furnace, comprising:
an upper disk and a lower disk spaced parallel from each other at a predetermined distance;
a pair of first bars connecting said upper disk and said lower disk, each of said first bars having a plurality of slots for receiving wafers, said pair of first bars being positioned at opposing ends of a first center plane extending along a diameter of said upper and lower disks;
a pair of second bars connecting said upper disk and said lower disk, each of said pair of second bars having a plurality of slots corresponding to said slots of said first bars, and each of said pair of second bars being positioned at a predetermined angle with respect to a second center plane orthogonal to said first center plane; and
a pair of first auxiliary bars connecting said upper disk and said lower disk, each of said pair of first auxiliary bars being positioned adjacent to respective of said pair of first bars.

5,711,809
COATING APPARATUS AND METHOD OF CONTROLLING THE SAME

Yoshio Kimura; Satoshi Morita, and Yuuji Matsuyama, all of Kumamoto-ken, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan
Filed Apr. 18, 1996, Ser. No. 634,739
Claims priority, application Japan, Apr. 19, 1995, 7-119335
Int. Cl.^{6} B05C *5/00*
U.S. Cl. 118—663 **14 Claims**

1. A coating apparatus, comprising;
a container;

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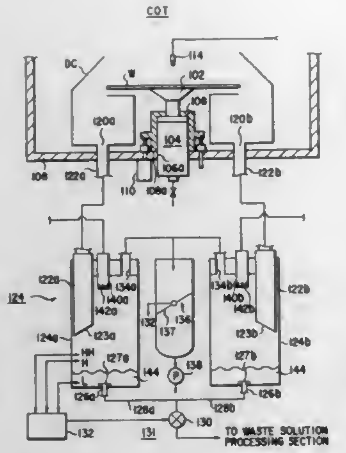


a rotatable support plate arranged within said container and movable in a vertical direction;

film forming means, coupled with said container, for supplying a predetermined coating solution onto a surface of an object disposed on said rotatable support plate, which is kept rotated, and for forming a coating film on the surface of said object;

discharge means, coupled with said container, for discharging the coating solution together with an exhaust gas from said container, said coating solution being scattered from the object and collected within said container;

storing means,coupled with said discharge means, for temporarily storing the waste solution coming from said discharge means;

gas-liquid separating means, coupled with said storing means, for separating the waste solution within said storing means into a waste solution and an exhaust gas; and

storing amount control means, coupled with said storing means and including a discharge valve for the waste solution, said storing amount control means for detecting a level of the waste solution in said storing means and controlling a storing amount of the waste solution in said storing means by open or close operation of the discharge valve to permit a predetermined amount of the waste solution to be stored in said storing means.

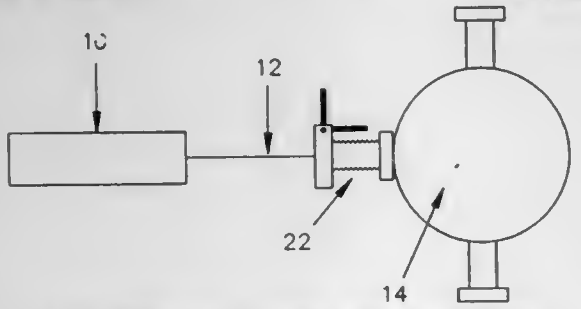
5,711,810
APPARATUS FOR VARIABLE OPTICAL FOCUSING FOR PROCESSING CHAMBERS

Somnath Sengupta, Warwick, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1996, Ser. No. 874,951

Int. Cl.^{6} C23C *14/00*

U.S. Cl. 118—722 **10 Claims**



1. A port assembly for a processing chamber, comprising:

a bellows;

a flange connected to one end of the bellows, for mounting the port assembly on the processing chamber;

a second flange connected to another end of the bellows, the second flange including mutually orthogonal x,y, and z direction verniers;

a third flange connected to the second flange; and

a lens disposed in the third flange.

3. An apparatus, comprising:

an energetic source;

a processing chamber; and

the port assembly of claim 1 mounted on the processing chamber;

wherein energy from the energetic source enters the processing chamber through the port assembly.

5,711,811
METHOD AND EQUIPMENT FOR GROWING THIN FILMS

Tuomo Suntola; Sven Lindfors, both of Espoo, and Pekka Soininen, Helsinki, all of Finland, assignors to Mikrokemia Oy, Espoo, Finland

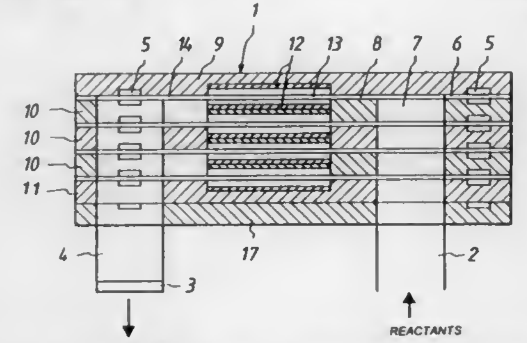
PCT No. PCT/F195/00659, § 371 Date Oct. 2, 1996, § 102(e) Date Oct. 2, 1996, PCT Pub. No. WO96/17969, PCT Pub. Date Jun. 13, 1996

PCT Filed Nov. 28, 1995, Ser. No. 682,703

Claims priority, application Finland, Nov. 28, 1994, 945612

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—711 **17 Claims**



1. An apparatus for growing thin films onto a substrate by subjecting the substrate to alternately repeated surface reactions of vapor-phase reactants to form a solid-state thin film on the substrate, said apparatus comprising:

a reaction space into which the substrate is disposed, said reaction space having a reaction chamber formed therein;

a plurality of inflow channels communicating with said reaction space, said inflow channels being suited for feeding the reactants employed in a thin-film growth process into said reaction space; and

a plurality of outflow channels communicating with said reaction space, said outflow channels being suited for the outflow of reaction products and excess amounts of reactants from said reaction space, wherein the apparatus comprises a plurality of vertically or horizontally stacked planar elements, of which at least two are mutually identical, and in which said reaction chamber is machined and said inflow and outflow channels are formed.

5,711,812
APPARATUS FOR OBTAINING DOSE UNIFORMITY IN PLASMA DOPING (PLAD) ION IMPLANTATION PROCESSES

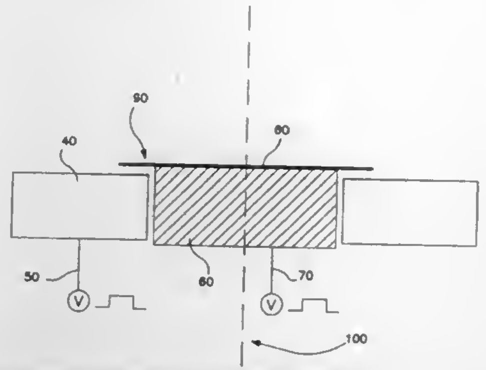
David LeRoy Chapek, Boise, Id.; Susan Benjamin Felch, Los Altos, Calif.; Michael William Kissick; Shamim Muhammad Malik, both of Madison, Wis., and Tienyu Terry Sheng, San Jose, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 6, 1995, Ser. No. 469,401

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—723 E **8 Claims**

1. Apparatus for accomplishing PLAsma Doping (PLAD) ion implantation comprising:



an electrode enclosed in a vacuum chamber;

a target disposed upon said electrode;

means for maintaining a plasma having dopant ions at an implantation surface of said target;

a concentric structure of suitably conductive material being electrically isolated from said target bearing electrode and disposed so as to surround said electrode while being sufficiently close to said target; and

means for separately biasing said electrode concurrently with said concentric structure in order to provide adjustable bias variation between said electrode and said structure capable of providing dose uniformity during said PLAD ion implantation of said target.

5,711,813
EPITAXIAL CRYSTAL GROWTH APPARATUS

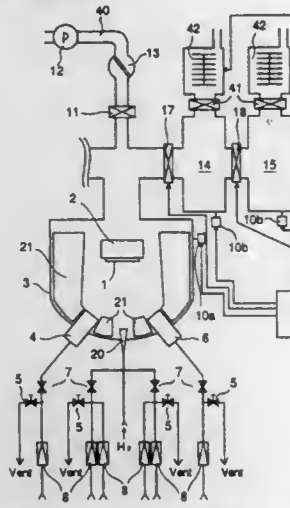
Kaoru Kadoiwa, and Takuji Sonoda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,283

Claims priority, application Japan, Sep. 29, 1994, 6-235020

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—723 VE **11 Claims**



1. An epitaxial crystal growth apparatus comprising:

a substrate heating member for mounting of a substrate and for heating the substrate;

a growth chamber containing the substrate heating member;

a molecular beam source fixed to the growth chamber for applying a molecular beam of crystal growth material to the substrate mounted on the substrate heating member;

a nozzle fixed to the growth chamber for ejecting a gaseous crystal growth material to the substrate mounted on the substrate heating member;

first and second gate valves;

an exhaust pipe connected to the growth chamber via the first gate valve;

a vacuum chamber connected to the growth chamber via the second gate valve;

a shroud located along an internal wall of the growth chamber for receiving a cryogenic liquid;

a shroud cover covering and spaced from the shroud;

means for filling a space between the shroud and the shroud cover with a cryogenic liquid; and

means for exhausting the cryogenic liquid from and evacuating the space.

5,711,814
METHOD OF AND APPARATUS FOR FORMING FILM WITH ROTARY ELECTRODE

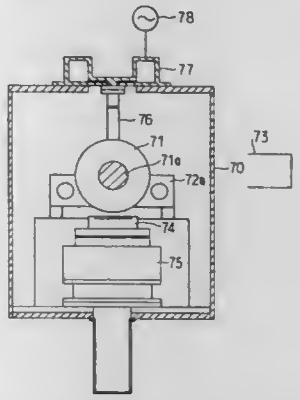
Yuzo Mori, 16-9, 8-chome Kisaichi, Katano-shi, Osaka 576, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, and Yuzo Mori, Katano, both of Japan

Filed Aug. 7, 1996, Ser. No. 691,027

Claims priority, application Japan, Aug. 8, 1995, 7-202295; Jul. 31, 1996, 8-201722

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—723 E **49 Claims**



1. A film forming method for forming a thin film on a substrate by chemical reaction, said method comprising the steps of:

arranging said substrate in a reaction vessel;

arranging a cylindrical rotary electrode having a continuous electrode surface adjacent a surface of said substrate;

supplying a reaction gas between said substrate surface and said rotary electrode by rotating said rotary electrode to make said electrode surface move and pass by said substrate surface; and

applying high-frequency power or dc power to said rotary electrode thereby generating a plasma between said substrate surface and said rotary electrode to form said thin film on said substrate by chemical reaction of said reaction gas being supplied into said plasma.

5,711,815
FILM FORMING APPARATUS AND FILM FORMING METHOD

Hideki Lee, Nirasaki, and Tomihiro Yonenaga, Yamanashi-ken, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Continuation of Ser. No. 292,256, Aug. 18, 1994, abandoned. This application Jun. 27, 1996, Ser. No. 669,802

Claims priority, application Japan, Aug. 18, 1993, 5-225211; Aug. 18, 1993, 5-225213

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—725 **10 Claims**

1. A film forming apparatus comprising:

a chamber for housing a target object having a surface on which a film is to be formed, and performing a film formation process with respect to said target object;

process gas supply means for supplying a process gas for forming said film onto said surface of said target object on which said film is to be formed;

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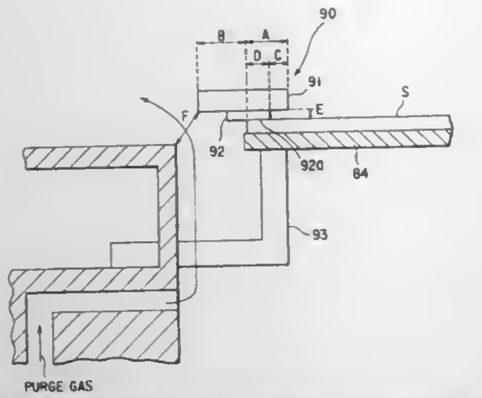


film forming means for performing film formation using the film forming gas with respect to said surface of said target object on which said film is to be formed;

purge gas supply means for supplying a purge gas from a side opposite to said surface of said target object on which said film is to be formed toward a peripheral edge portion of said target object; and

a ring member positioned at a position to cover a peripheral edge portion of said surface on which said film is to be formed when film formation is to be performed with respect to said target object, said ring member having an outer edge projecting from an outer edge of said target object in the film formation, and wherein a gap is provided between said ring member and said target object,

wherein said ring member defines a flow path which extends past said outer edge of said ring member in which at least substantially all the purge gas flows outward from said target object without passing through said gap, and wherein said gap has a width such that said film formed on said target object is not continuous with a film formed on said ring member, whereby said ring member functions to define said flow path which extends past said outer edge of said ring member for at least substantially all the purge gas for improved uniformity of said film formed on said surface of said target object and said gap functions to provide a discontinuity between the film formed on the target object and the film formed on said ring member.

5,711,816
SOURCE REAGENT LIQUID DELIVERY APPARATUS, AND CHEMICAL VAPOR DEPOSITION SYSTEM COMPRISING SAME

Peter S. Kirlin, Bethel; Robin L. Binder, Bethlehem; Robin A. Gardiner, Bethel; Peter Van Buskirk, Newtown; Gregory Stauf, New Milford, all of Conn., and Jiming Zhang, Cupertino, Calif., assignors to Advanced Technolgy Materials, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 280,143, Jul. 28, 1994, Pat. No. 5,536,323, which is a continuation of Ser. No. 927,134, Aug. 7, 1992, which is a continuation-in-part of Ser. No. 807,807, Dec. 13, 1991, Pat. No. 5,204,314, which is a continuation of Ser. No. 549,389, Jul. 6, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,025

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—726 **20 Claims**

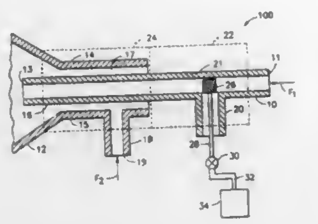
1. A high flux vaporizer apparatus for volatilization of a liquid-phase source reagent to produce source reagent vapor for flow to a chemical vapor deposition reactor coupled in vapor flow relationship to the vaporizer apparatus, said vaporizer apparatus comprising:

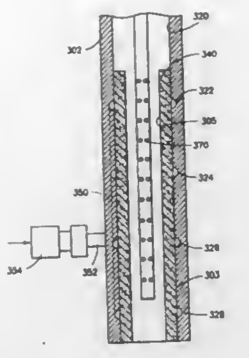
a gas flow passage including an interior volume therewithin which is bounded by a wall member having an inner surface, wherein the interior volume of said gas flow passage defines a gas flow path for vapor produced by volatilization of said liquid-phase source reagent;

a porous source reagent liquid vaporization element, having porosity constituted by pores of average pore size diameter in the range of from about 0.5 microns to about 200 microns with said porosity providing a void volume in said vaporization element of from about 10 to about 70 percent void volume, based on the volume of the vaporization element, said vaporization element being positioned in abutting relationship to said inner surface of the gas flow passage wall member and defining therewith a restricted vaporization region for generation of source reagent vapor from said liquid-phase source reagent;

a source reagent liquid feed passage having a terminus defining a source reagent liquid outlet, and arranged to discharge liquid in a direction transverse to a facing surface of the vaporization element so that liquid-phase source reagent liquid is distributed in a film across the area of said surface of the vaporization element through capillary wicking action on said liquid; and

a heating means disposed in heating relationship to the wall of the gas flow passage for heating of the vaporization element to a temperature for vaporization of said liquid-phase source reagent.





5,711,817
METHOD FOR THE CONTINUOUS CONVERSION OF CELLULOSIC MATERIAL TO SUGAR

James A. Titmas, Fairlawn, Ohio, assignor to Eau-Viron Incorporated, Hudson, Ohio

Filed May 1, 1996, Ser. No. 644,401

Int. Cl.^{6} C13K *1/02*

U.S. Cl. 127—37 **4 Claims**

1. A method of hydrolyzing cellulosic material comprising the steps of processing the cellulosic material into a continuous liquid stream, feeding the liquid stream to the top of a hydraulic downdraft column, heating the liquid stream, conducting the liquid stream from the bottom of the hydraulic downdraft column into a reaction area, lowering the pH of the liquid stream within the reaction area, thereby promoting the hydrolysis of the cellulosic material to form sugar, regulating the reaction time of the cellulosic material within the reaction area by accelerating the flow of the liquid stream through the reaction area thereby controlling the degree of hydrolysis so as to prevent the destruction of the sugar; conducting the liquid stream into a neutralization area wherein the hydrolysis of the cellulosic material is quenched thereby terminating the hydrolysis, and conducting the liquid stream containing the sugar from the neutralization area to the top of a hydraulic updraft column.

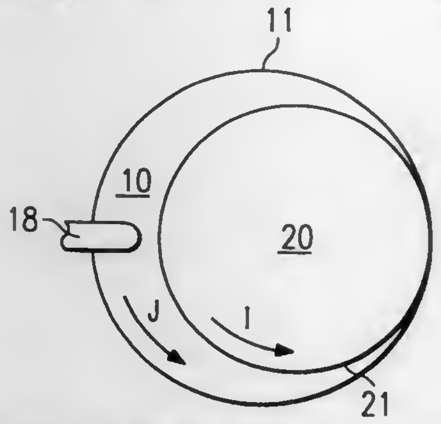
5,711,818
METHOD FOR REMOVING SUB-MICRO PARTICLES FROM A WAFER SURFACE USING HIGH SPEED MECHANICAL SCRUBBING

Manoj Kumar Jain, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 389,534, Feb. 15, 1995, abandoned. This application May 21, 1996, Ser. No. 651,020

Int. Cl.^{6} B08B *7/04*

U.S. Cl. 134—6 **20 Claims**



1. A method for removing particulate contaminants from a chemically-mechanically polished semiconductor wafer surface, said method comprising

contacting a first portion of said wafer surface with a cleaning pad having an outer edge

and supplying a rinse fluid to a second portion of said wafer surface,

while rotating said cleaning pad at a rotational velocity sufficient to provide a tangential velocity at said outer edge greater than 4 ft/sec.

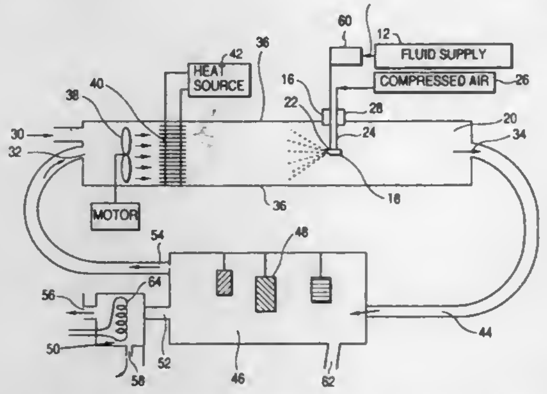
5,711,819
METHOD FOR CLEANING THE INTERIOR OF TANKS AND OTHER OBJECTS

Mace T. Miyasaki, 6203 Blackburn La., Baltimore, Md. 21212

Filed Apr. 24, 1996, Ser. No. 639,087

Int. Cl.^{6} B08B *9/08*

U.S. Cl. 134—11 **8 Claims**



1. A method for cleaning the interior of a container or objects therein comprising:

generating a fluid vapor column in a vaporization chamber by forming a air column having a direction of air flow, heating said air column, and injecting a cleaning fluid into said air column at an angle to said direction of air flow; flowing said fluid vapor column through an outlet of said vaporization chamber;

bringing said fluid vapor column from said outlet into contact with the interior of said container, and permitting a portion of said vapor to condense on said interior of said container and on any of said objects contained therein, so as to form a condensed mixture of said cleaning fluid and any contaminants within said container or on said objects;

recycling or recovering any uncondensed portion of said vapor column; and removing said condensed mixture from the interior of said container.

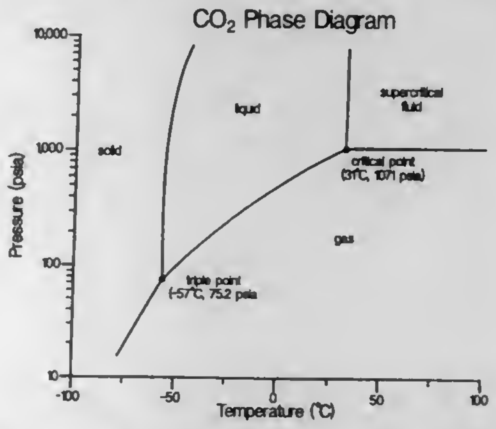
5,711,820
METHOD TO SEPERATE AND RECOVER OIL AND PLASTIC FROM PLASTIC CONTAMINATED WITH OIL

Henry M. Smith, Overland Park, Kans.; George W. Bohnert, Harrisonville, Mo.; Ronald B. Olson, Kansas City, Mo., and Thomas E. Hand, Lee's Summit, Mo., assignors to Allied Signal, Inc., Morristown, N.J.

Continuation of Ser. No. 359,590, Dec. 20, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 603,009

Int. Cl.^{6} C02F *1/46*

U.S. Cl. 134—12 **1 Claim**



1. A process for separating for recycling plastic containers contaminated with motor oil into motor oil and plastic, comprising the steps of:

contacting said plastic containers contaminated with said motor oil with carbon dioxide in the liquid or supercritical state, where the pressure of said carbon dioxide in the liquid or supercritical state is from about 800 to about 2000 psia and the temperature is from about 20 to about 35 degrees C. so as to dissolve said motor oil in said carbon dioxide but so as to not dissolve or leach out portions of said plastic;

separating said carbon dioxide in which a portion of said motor oil is dissolved from said plastic containers;

adjusting the temperature and pressure of said carbon dioxide sufficient to render said carbon dioxide a gas and to render said motor oil a liquid, thereby forming a two-phase system comprised of said carbon dioxide and said motor oil;

separating the resulting two-phase system into said carbon dioxide and said motor oil; and

recovering said plastic containers and said motor oil wherein said motor oil is not contaminated with plastic and said plastic containers are in an oil-free state and suitable for recycling.

5,711,821
CLEANSING PROCESS FOR WAFER HANDLING IMPLEMENTS

Virgil O. Turner, Sugarland; William D. Light, Richmond, and Hilario T. Trevino, Needville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 420,996, Apr. 13, 1995, abandoned. This application Mar. 7, 1997, Ser. No. 814,750

Int. Cl.^{6} B08B *5/04*

U.S. Cl. 134—21 **21 Claims**

1. A method for cleansing a substrate, comprising the following steps:

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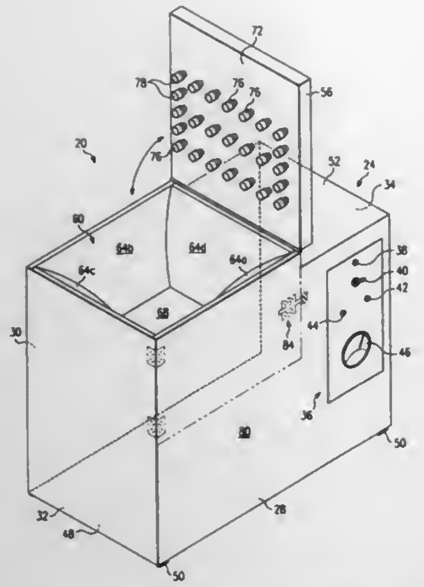


inserting a substrate into a processing chamber to substantially isolate the substrate from a surrounding environment;
applying a pressurized stream, received within said processing chamber, of a gaseous cleansing medium against at least one surface of the substrate;
simultaneously evacuating with negative pressure said cleansing medium from the chamber and disposing of said cleansing medium; and
obtaining from the cleansing medium evacuated from said chamber an indication of a number of particles removed from the substrate.

5,711,822

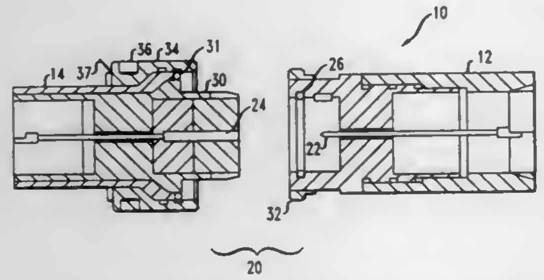
METHOD AND APPARATUS FOR CLEANING CONNECTORS

Mark Edward Burgett, High Point, N.C., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 346,663, Nov. 30, 1994, abandoned. This application Jul. 12, 1996, Ser. No. 683,523

Int. Cl.^{6} B08B *3/02*

U.S. Cl. 134—27 **25 Claims**



1. A method of cleaning a connector of the type having a male plug and a female receptacle joined together by a coupling ring, wherein the male plug and the female receptacle contain electrical contacts and each contains an O-ring set in a groove for sealing against the other, said method comprising the steps of:
cleaning the exterior of said connector;
separating said male plug and said female receptacle;
removing each said O-ring;
cleaning said electrical contacts with a grease solvent;
cleaning said electrical contacts with a salt solvent;
cleaning said electrical contacts with a compressed gas;
replacing each said O-ring; and
reconnecting said male plug and said female receptacle.

5,711,823

METHOD FOR WETTING CONTACT LENSES

Edward J. Ellis, and Jeanne Y. Ellis, both of Lynnfield, Mass., assignors to Wilmington Partners L.P., Wilmington, Mass.

Continuation of Ser. No. 80,429, Jun. 18, 1993, Pat. No. 5,401,327. This application Feb. 21, 1995, Ser. No. 391,748

Int. Cl.^{6} B08B *3/04;3/08*

U.S. Cl. 134—42 **11 Claims**

1. A method for wetting contact lenses which comprises the step of contacting a lens with an aqueous solution comprising a material composed of (a) a hydrophobic core having at least three carbon atoms and (b) at least three hydrophilic polyethylene oxide chains attached to the core, wherein the core excludes hydrophobic arms attached thereto.

5,711,824

SOLAR CELL

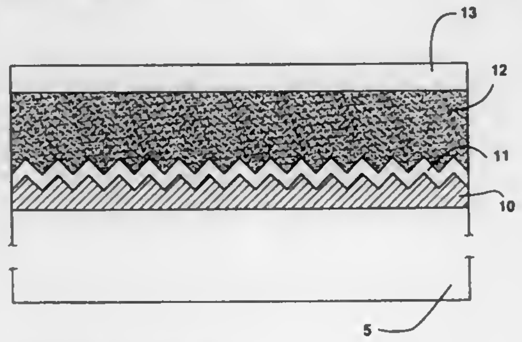
Hisato Shinohara; Hisao Morooka; Izumi Ikeo, all of Yamanashi; Akemi Takenouchi, Kanagawa; Setsuo Nakajima, Kanagawa, and Yasuyuki Arai, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, and TDK Corporation, Tokyo, both of Japan

Filed Dec. 27, 1995, Ser. No. 579,481

Claims priority, application Japan, Jan. 9, 1995, 7-017549; Jun. 19, 1995, 7-176731; Sep. 5, 1995, 7-252004

Int. Cl.^{6} H01L *31/04*

U.S. Cl. 136—259 **8 Claims**



1. A solar cell comprising:
a substrate;
a photoreflective electrode formed on the substrate;
a photoelectric conversion layer formed on the electrode; and
a transparent electrode formed on the layer,
wherein the photoreflective electrode has a first aluminum film containing at least one of silicon, nickel, and copper at 0.1 to 6.0 weight % and a second aluminum film formed on the first aluminum film and containing substantially no impurity element.

5,711,825

PROCESS FOR THE PRODUCTION OF GRAIN ORIENTED MAGNETIC STEEL SHEETS HAVING IMPROVED REMAGNETIZATION LOSSES

Fritz Bölling, Moers; Andres Böttcher, Duisburg; Manfred Espenhahn, Essen, and Christof Holzapfel, Düsseldorf, all of Germany, assignors to Thyssen Stahl AG, Duisburg, Germany

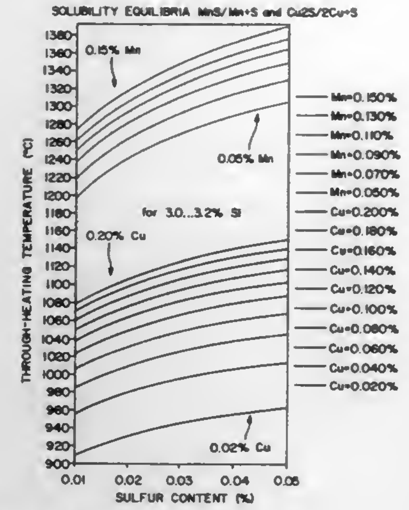
Filed Apr. 4, 1994, Ser. No. 222,627

Claims priority, application Germany, Apr. 5, 1993, 43 11 151.3

Int. Cl.^{6} C21D *8/12*

U.S. Cl. 148—111 **11 Claims**

1. A process for the production of grain-oriented magnetic steel sheets, comprising:
(1) through-heating a slab consisting of, in % by weight,



0.005 to 0.10% C
2.5 to 6.5% Si
0.03 to 0.15% Mn
0.010 to 0.050% S
0.010 to 0.035% Al
0.0045 to 0.0120% N
0.020 to 0.300% Cu
balance Fe and inevitable impurities

to a temperature which is lower than the solubility temperature T_1 of manganese sulfide and higher than the solubility temperature T_2 of copper sulfide;
(2) hot roughing and then hot finish rolling said through-heated slab at an initial temperature of at least 960° C. and a final temperature of 880° C. to 100° C. to produce a hot rolled strip having a thickness of 1.5 to 7 mm, during which at least 60% of the total nitrogen content in said slab is precipitated as coarse AlN particles and cooling said hot rolled strip at a temperature of less than 700° C.;
(3) annealing said hot rolled strip for 100 to 600 seconds at a temperature of 880° C. to 1150 ° C., followed by cooling at a cooling rate which is greater than 15 K/sec, during which additional nitrogen and copper is precipitated as coarse and fine AlN particles and fine copper sulfide particles to form a cooled strip;
(4) cold rolling said cooled strip in at least one cold rolling step to produce a cold rolled strip having a finished strip thickness of 0.1 mm to 0.5 mm;
(5) subjecting said cold rolled strip to recrystallization and decarburization annealing in a wet atmosphere containing H_2 and N_2;
(6) coating with a separating agent containing MgO as a main ingredient on both sides of said recrystallized and decarburized strip;
(7) heating said coated strip at a heating rate of 10 to 100 K./hr to an annealing temperature of at least 1150° C.; and
(8) after allowing said annealed strip to cool, applying an insulating coating to said annealed and cooled strip and subjecting said insulating coated strip to a final annealing.

5,711,826

FUNCTIONALLY GRADIENT CLADDING FOR NUCLEAR FUEL RODS

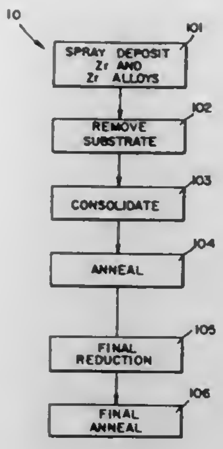
Neal C. Nordstrom, Poway, Calif., assignor to CRS Holdings, Inc., Wilmington, Del.

Filed Apr. 12, 1996, Ser. No. 631,374

Int. Cl.^{6} G21C *3/07*

U.S. Cl. 148—519 **19 Claims**

1. A process for fabricating a cladding for a nuclear fuel rod, said cladding having a functionally gradient structure and said process comprising the steps of:
(a) forming a porous preform by



(1) spray depositing a first metal layer on a cylindrical substrate, said first metal layer being formed of a metal selected from the group consisting of zirconium and low alloy zirconium alloys; and then
(2) spray depositing a second metal layer onto said first metal layer, said second metal layer being formed of a first zirconium alloy;
(b) removing the cylindrical substrate from said porous preform after the first and second metal layers have solidified;
(c) consolidating the porous preform to substantially full density to form a tube having a desired cross-sectional dimension; and then
(d) heat treating the tube to relieve stresses and to obtain a desired microstructure in each of said first and second metal layers.

5,711,827

SUPPORT FOR PLANOGRAPHIC PRINTING PLATE AND METHOD FOR PRODUCING THE SAME

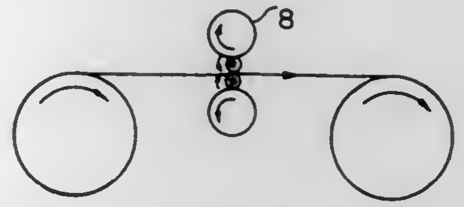
Hirokazu Sawada; Akio Uesugi, and Tsutomu Kakei, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 6, 1995, Ser. No. 399,039

Claims priority, application Japan, Mar. 17, 1994, 6-071264; Jun. 8, 1994, 6-148785

Int. Cl.^{6} C22F *1/04*

U.S. Cl. 148—552 **2 Claims**



1. A method for producing a support for a planographic printing plate having substantially no streaks or granular unevenness, which comprises the steps of:
a) melting and mixing at least 99.7 weight % aluminum with 0<Fe≦0.19 weight %, 0<Si≦0.12 weight %, and the balance of inevitable impurity elements to form an aluminum composition;
b) preparing a cast ingot from the aluminum composition with a fixed water-cooling mold;
c) subjecting the cast ingot to scalping to form a scalped ingot;
d) subjecting the scalped ingot to a soaking treatment at a temperature of 280° C. to 650° C. for 2 hours to 15 hours to form a treated cast ingot;

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e) rolling the treated cast ingot to a thickness of 0.5 to 0.1 mm to form a rolled material containing from about 10 to 800 ppm Fe in solid solution with no more heat treatment;
f) carrying out correction of the rolled material to prepare a support; and
g) subjecting the support to graining.

5,711,828
PNEUMATIC TIRES

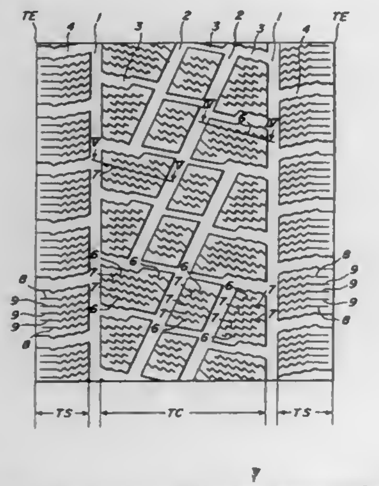
Yasuo Himuro, Tachikawa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed May 3, 1995, Ser. No. 434,269

Claims priority, application Japan, Jun. 21, 1994, 6-139136

Int. Cl.^{6} B60C *11/12*

U.S. Cl. 152—209 R **8 Claims**



1. A pneumatic tire comprising a tread pattern defined in a tread portion by a pair of circumferential grooves dividing the tread portion into a central region and two side regions, a plurality of slant grooves arranged in the central region at a predetermined interval in a circumferential direction of the tire and a plurality of zigzag sipes arranged at a predetermined interval in the circumferential direction in blocks defined by the circumferential grooves and the slant grooves, wherein,

(1) each of the circumferential grooves is arranged in a position corresponding to about ¼–⅓ of a tread width as measured from an equatorial line of the tire;
(2) the slant grooves comprise first slant grooves having an inclination angle of 20°–30° with respect to the circumferential direction, and second slant grooves having an inclination angle of 75°–85° with respect to the circumferential direction, the inclination of the first slant grooves is opposite to the inclination of the second slant grooves with respect to the circumferential direction, and a pitch length of the first slant grooves in the circumferential direction is larger than that of the second slant grooves; and
(3) the sipes has a width of not more than about 0.5 mm so that opposed sipe walls close to each other under loading, respectively, and are arranged in parallel to each other or substantially extend in parallel with each other in the same block at an inclination angle of 70°–90° with respect to the circumferential direction, at least one end of each of which sipes opens to the circumferential groove or one of the first slant grooves;

wherein a portion of a sipe adjacent to the second slant groove has a first sipe depth corresponding to about 35–60% of a second sipe depth in the vicinity of an opening end.

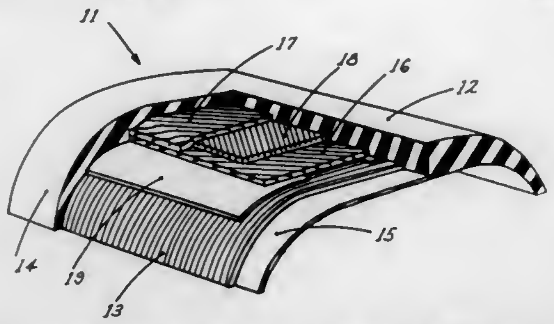
5,711,829
THREE- BELT TIRE

Andrew L. Pollard, and Michel A. deReynal, both of Greenville, S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Continuation of Ser. No. 935,686, Aug. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 587,416, Sep. 25, 1990, abandoned. This application Mar. 27, 1995, Ser. No. 585,255

Int. Cl.^{6} B60C *9/08;9/18;9/20;11/00*

U.S. Cl. 152—209 R **2 Claims**



1. A radial pneumatic tire having a carcass of at least one ply, a tread, two sidewalls extending from the edges of said tread, a respective bead at the radially inner edges of each of said sidewalls and a crown belt package adjacent both said tread and said carcass comprising three crown reinforcing plies with first and third plies each having textile multifilament or polymeric monofilament reinforcing members substantially parallel and disposed at a first angle in the range of approximately + 15 to + 20 degrees with respect to an equatorial plane of said tire, said first and third plies having essentially identical first angles, materials, and uncured widths, and a second ply adjacent both said first and third plies having second ply reinforcing members selected from either metallic cables, textile multifilament cords or monofilament material, and inclined oppositely to said textile multifilament or polymeric monofilament reinforcing members of said first and third plies and disposed at a second angle in the range of approximately −15 to −25 degrees with respect to the equatorial plane of said tire, said second ply of said crown reinforcing plies being centered relative to the equatorial plane and having a first width in a range of approximately 95 to 105 percent of an axial width of said tread in contact with a ground surface during rolling and said first and third plies being centered relative to said equatorial plane and having a second width extending axially beyond each edge of said second ply a distance of approximately 5 to 16 millimeters, wherein axial edge portions of the first and third plies have direct contact one with the other beyond each axial edge portion of said second ply resulting in the absence of any auxiliary belt edge protection plies;

wherein said first and third plies have a ply strength at 1.5 percent elongation of at least 12 daN/cm and no greater than 50 daN/cm and a ply strength at 3.0 percent elongation of at least 18 daN/cm and no greater than 70 daN/cm, and wherein said second ply has a ply strength at 1.5 percent elongation of at least 30 daN/cm with no upper limit, ply strength being defined at ET/(L/dL), where E= ply modulus, T= ply thickness, and (L/dL)= unit strain given by percent elongation/100; wherein said crown belt package further includes a first rubber portion being a shoulder wedge located adjacent said carcass, said first rubber portion having a thickness taken in a radial direction in the range of approximately 0.5 to 0.8 millimeter;

wherein said tread is defined by a tread rubber portion located radially outwardly of the crown belt package and having at least one groove therein, said tread rubber portion having a second rubber portion between the crown belt package and the radially innermost surface of said at least one groove with a thickness in the radial direction in the range of approximately 1.0 to 2.0 millimeters;

wherein said crown belt package further includes a rubber skim covering each of the top and bottom surface of the textile multifilament or polymeric monofilament reinforcing members and the second ply reinforcing members in said first,

second, and third plies, said rubber skim having a radial thickness in the range of approximately 0.10 to 0.25 millimeter.

5,711,830
PNEUMATIC VEHICLE TIRE WITH SPECIFIED BEAD CORE CROSS-SECTION

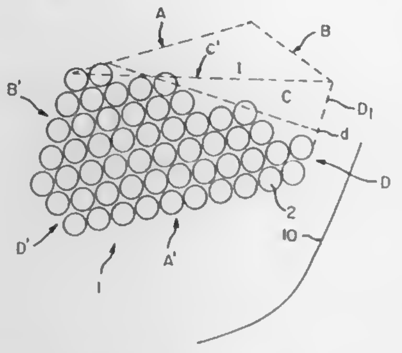
Thomas Neddenriep, Schwarmstedt, and Klaus Thielemann, Hildesheim, both of Germany, assignors to Continental Aktiengesellschaft, Hannover, Germany

Filed Mar. 24, 1995, Ser. No. 409,979

Claims priority, application Germany, Mar. 25, 1994, 44 10 368.9

Int. Cl.^{6} B60C *15/04*

U.S. Cl. 152—540 **5 Claims**



1. A pneumatic vehicle tire comprising:

an annular bead core comprised of multiple layers of wound wire;
wherein said bead core has a cross-section in which, based on a hexagonal cross-sectional area defined by a radially outer and a radially inner side, a radially outer and axially outer side, a radially outer and axially inner side, a radially inner and axially outer side, and a radially inner and axially inner side, a cross-sectional portion of said hexagonal cross-sectional area is free of wire windings, said cross-sectional portion having a triangular shape;
said cross-sectional portion delimited by said radially outer side and said radially outer and axially outer side and a connecting line between free ends of said radially outer side and said radially outer and axially outer side; and
wherein said cross-sectional portion is 10–25% of said hexagonal cross-sectional area.

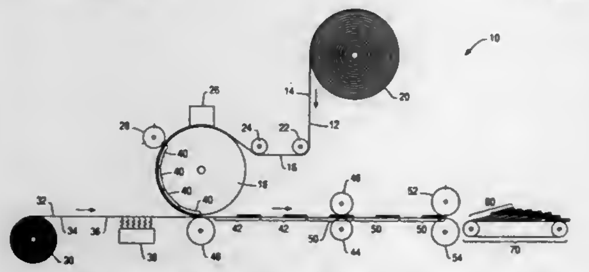
5,711,831
SYSTEM AND METHOD FOR CONTROLLING LABEL CURL

J. E. Gordon Taylor, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 4, 1996, Ser. No. 708,378

Int. Cl.^{6} B65C *5/04*

U.S. Cl. 156—64 **6 Claims**



1. A method of producing a form and label combination product having a reduced tendency to curl, comprising the steps of:

providing a liner having a front surface:
applying a hot melt pressure sensitive adhesive to the front surface of the liner;
providing a paper stock having a back surface;
drying the paper stock; then
attaching the liner and hot melt pressure sensitive adhesive to a predetermined portion of the paper stock on the back surface of the paper stock, wherein the predetermined portion of the paper stock forms a label portion; and
die-cutting the label portion to form at least one label.

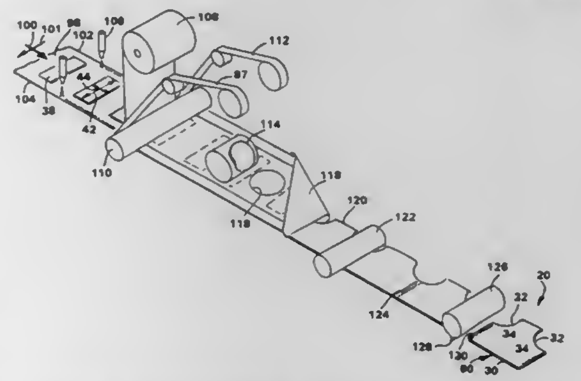
5,711,832
PROCESS FOR MAKING A TRAINING PANT HAVING A SEPARATE WAIST ELASTIC SYSTEM

Frank Steven Glaug, and Margaret Ann Kato, both of Appleton, Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed May 31, 1995, Ser. No. 456,239

Int. Cl.^{6} A41B *9/14;* **A61F** *13/15;* **B32B** *31/04;31/08*

U.S. Cl. 156—73.1 **8 Claims**



1. A process having a machine direction and a cross direction for making disposable absorbent articles, comprising the steps of:

continuously moving a first layer in a first direction, the first layer having opposite edge portions generally extending in the first direction,
continuously providing an elongate elastic member generally in the first direction to the first layer,
folding the first layer, in a direction generally transverse to the first direction, over the elongate elastic member,
continuously moving a continuously moving a second layer in a second direction, the second layer having opposite edge portions generally extending in the second direction,
continuously providing an elongate elastic member generally in the second direction to the second layer,
folding the second layer, in a direction generally transverse to the second direction, over the elongate elastic member,
continuously moving a base layer in a machine direction, the base layer having opposite edge portions generally extending in the machine direction,
continuously delivering the folded first layer to one of the edge portions of the base layer,
joining the folded first layer to the one edge portion of the base layer,
continuously delivering the folded second layer to the other edge portion of the base layer,
joining the folded second layer to the other edge portion of the base layer,
providing a plurality of absorbent structures having respective length dimensions greater than respective width dimensions,
positioning the absorbent structures at spaced apart locations between the opposite edge portions of the base layer,
folding the continuously moving base layer along a fold line generally parallel to the machine direction,
bonding the folded, continuously moving base layer along a plurality of bond lines generally transverse to the machine direction, and

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cutting the bonded, continuously moving base layer along a plurality of cut lines generally transverse to the machine direction and between the spaced apart absorbent structures to form a plurality of disposable articles.

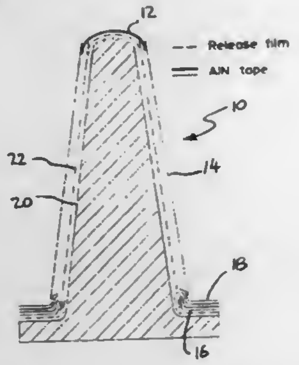
5,711,833
PROCESS FOR THE PRODUCTION OF THIN WALLED CERAMIC STRUCTURES

Prasad S. Apte, St. Albert; Ernesto S. Tachauer, Sherwood Park, and Travis Kyle Solomon, Edmonton, all of Canada, assignors to Thermicedge Corporation, Fort Saskatchewan, Canada

Filed Jul. 25, 1995, Ser. No. 506,495

Int. Cl.^{6} B32B *31/04;31/20;31/26*

U.S. Cl. 156—89 **10 Claims**



1. A process for the production of a thin walled, cavity containing ceramic structure, said structure being assemblable from a plurality of predetermined discrete planar and non-planar component parts, which comprises, in combination, the steps of: preparing a colloidal suspension of a ceramic powder, having a particle size in the range of about 0.2 to 2.0 microns, in admixture with a binder, a dispersant, a plasticizer and a solvent; casting said colloidal suspension into a thin sheet of preselected thickness; air drying said sheet to thereby form a tape having a preselected pliability properties; cutting planar, shaped pieces for planar and non-planar components from said tape; preforming under pressure from said planar, shaped tape pieces cut for the non-planar components, the non-planar component parts of said ceramic structure into predetermined three dimensional shapes; assembling, and optionally layering, the planar and non-planar components sequentially about a forming member, and compacting and forming said components at preselected pressures, and at temperatures ranging from between about 20° C. to 75° C. for a time effective to laminate said components and form a green body; heating said green body at a controlled rate, at temperatures effective to remove the pyrolysable suspension additives and form a brown body; and sintering said brown body at temperatures in the range of about 1400° to 2200° C. for a time in the range of about 0.5 to 3 hours to thereby form the unitary, thin walled, cavity containing ceramic structure.

5,711,834
METHOD OF REINFORCING CONCRETE SLAB

Makoto Saito, Saitama-ken, Japan, assignor to Tonen Corporation, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,175

Claims priority, application Japan, Oct. 28, 1994, 6-289292

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—153 **12 Claims**

1. A method of reinforcing a concrete slab comprising:

sanding an upper surface of a concrete slab by a thickness of 0.2 mm or more;

pouring a thermosetting resin on the upper surface;

laying a unidirectional reinforcing fibersheet over the top of the resin, and impregnating the resin into the reinforcing fiber sheet while maintaining the reinforcing sheet in a stretched state with their ends supported;

adhering the reinforcing fiber sheet to the upper surface of the slab; and then

hardening the impregnated resin, wherein said resin is selected from a group consisting of epoxy resin, unsaturated polyester resin and vinyl ester resin, and the resin has a viscosity of 5,000 cps or less at 20° C., a thixotropic index (TI) of 3 or less at 20° C., and a glass transition point (Tg) of 60° C. or above.

5,711,835
METHOD OF MACHINING A DRUM-SHAPED WORKPIECE FOR AN X-RAY DIAGNOSIS APPARATUS OR PHOTOCOPIER

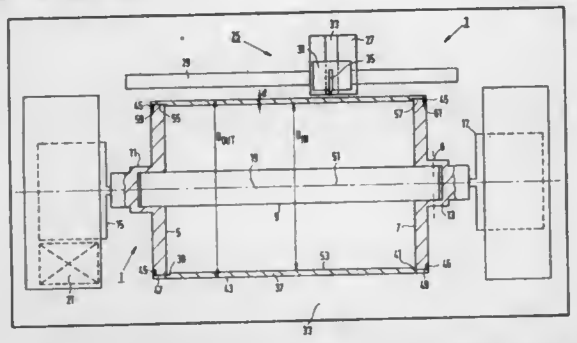
Marinus J. J. Dona; Hendrik Pranger; Louis A. Mensch, and Gilbert M. Verbeek, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1995, Ser. No. 561,965

Claims priority, application European Pat. Off., Nov. 24, 1994, 94203416

Int. Cl.^{6} B32B *31/40*

U.S. Cl. 156—154 **13 Claims**



1. A method of machining a workpiece, by which method the workpiece is fastened to a holder of a machine tool, which holder is rotatable about an axis of rotation, a centerline about which the workpiece is circularly symmetric coinciding substantially with the axis of rotation, and the workpiece is subsequently machined by means of a tool which is displaced at least in a direction parallel to the axis of rotation by means of a positioning device of the machine tool, wherein the workpiece is provided with two axially spaced apart circular-cylindrical support surfaces, each directed substantially parallel to the centerline, and is fastened to the holder by means of an adhesive which is provided exclusively between each of the two circular-cylindrical support surfaces and the holder, the workpiece being brought into connection with the holder exclusively by way of the adhesive.

5,711,836
METHOD OF MARKING AN OBJECT

Gerald Christopher Paul Hill, Swinden, England, assignor to Raychem Limited, Swindon, United Kingdom

PCT No. PCT/GB94/01322, § 371 Date Dec. 13, 1995, § 102(e) Date Dec. 13, 1995, PCT Pub. No. WO95/00940, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 20, 1994, Ser. No. 583,048

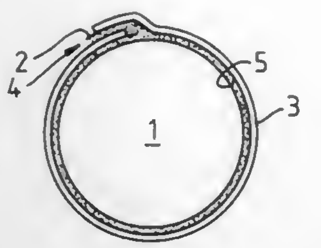
Claims priority, application United Kingdom, Jun. 12, 1993, 9312751

Int. Cl.^{6} B32B *31/26*

U.S. Cl. 156—215 **14 Claims**

1. A method of marking an object, comprising:

providing a flexible support sheet having, or capable of having, fixable indicia applied to an indicia-receiving coating of curable material carried on one of its main surfaces and having a pressure sensitive adhesive coating provided on part of the sheet,



wrapping the sheet around the object to be marked so as to bring the pressure-sensitive adhesive into adherent contact with part of the indicia-receiving coating with another part of the sheet, thus securing the sheet around the object,

applying the said indicia, if not already present, to the indicia-receiving coating,

subsequently treating to fix the indicia and to cure the indicia-receiving coating, thereby bonding the sheet to itself in the area of adherent contact;

wherein the pressure-sensitive adhesive is capable of reacting with the curing indicia-receiving coating material, and the curing of the indicia-receiving coating produces a bond of at least 25% greater strength than the pressure-sensitive adhesive bond prior to the curing.

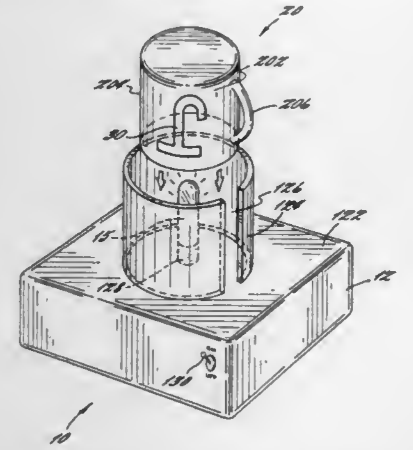
5,711,837
DEVICE AND METHOD FOR APPLYING AN IMAGE TO A CERAMIC MUG

Jack Kantrowitz, 7430 SW. 131st St., Miami, Fla. 33156

Filed Jan. 16, 1996, Ser. No. 585,949

Int. Cl.^{6} B32B *35/00*

U.S. Cl. 156—215 **2 Claims**



1. A method for creating a substantially permanent glossy image upon an exterior of a substantially cylindrical ceramic object, the method comprising the steps of:

providing an image;

imprinting a copy of the image onto a coated paper with toner, the coated paper comprising:

a sheet of base paper; and

a carrier coating affixed to a first side of the base paper sheet, the carrier coating comprising a material having physico-chemical characteristics for carrying an image imprinted thereon and for releasing the image to a substrate, with an application of heat and pressure, substantially without dissociating from the base paper sheet;

affixing the coated paper to an exterior of the object, the carrier coating against the object in a location where the image is desired to be placed;

applying sufficient heat and pressure to dissociate the toner image from the carrier coating and transfer the toner image to the object but retain the carrier coating on the base paper sheet; and

heating an interior of the object to a sufficiently high temperature that heat thereby transferred from the interior to the exterior of the object causes the toner image to adhere to the object and further causes a surface of the object to assume a glossy appearance.

5,711,838
METHOD OF AND DEVICE FOR CONTINUOUSLY OR DISCONTINUOUSLY MANUFACTURING FLAT SHEETS OF MULTIPLE-LAYER MATERIALS, LAMINATES OR SIMILAR ARTICLES

Werner Pankoke, Bielefeld, Germany, assignor to Firma Theodor Hymmen, Bielefeld, Germany

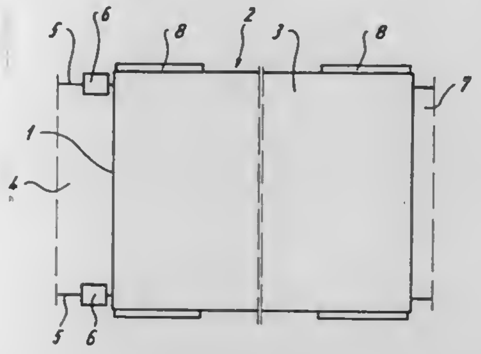
Continuation of Ser. No. 725,841, Jul. 3, 1991, abandoned.

This application Oct. 14, 1992, Ser. No. 961,046

Claims priority, application Germany, Jul. 4, 1990, 40 21 341.2

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—272.8 **4 Claims**



1. In a method of continuously manufacturing flat sheets of multiple-layer materials or laminates, wherein stacked layers of bonding material having edges are liquified by pressure and heat in a reaction zone of a double-belt press, the improvement comprising: welding only free edges of the stacked layers of bonding material together upstream of the reaction zone by laser beams and before transforming the material into a composite sheet or composite web by heat and pressure in the reaction zone.

5,711,839
PROCESS FOR THE PRODUCTION OF IN-LINE GRAVURE-PRINTED IN-MOLD LABELED BLOW MOLDED CONTAINERS

Peter J. Dronzek, Jr., Thornwood, N.Y., assignor to NorthStar Print Group, Watertown, Wis.

Continuation of Ser. No. 527,751, Sep. 13, 1995, abandoned.

This application Aug. 12, 1997, Ser. No. 909,663

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—277 **10 Claims**

1. A method of producing an in-line gravure printed in-mold labeled plastic container, said method comprising:

(a) providing a polymeric material selected from the group consisting of a polymeric sheet and a polymeric roll comprising:

(1) a layer of a substrate selected from the group consisting of transparent polymers, translucent polymers, contact clear substrates formed from a polymer and mixtures of said polymers, said layer also being selected from the group consisting of substrates which are surface printable and substrates which are capable of being rendered surface printable, and having a thickness between 0.002 and 0.008 inches, said layers having a specific gravity substantially the same as that of the substrate from which it is formed, and having a coefficient of thermal expansion under the

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conditions which the container sees which is substantially the same as that of the plastic from which said container is made;

(2) a print-receiving area on one of the two major faces of layer (1); and

(3) a non-print-receiving area on one of the two major faces of layer (1), said polymeric sheet being regrind compatible with the plastic containers which are to be blow molded around labels made from it; and, in line,

(b) gravure reverse printing indicia on said print-receiving area (2) of said substrate;

(c) gravure coating a heat activatable adhesive layer so as to cover whatever areas are to be permanently affixed to the container, said adhesive being adapted to form a bond with said substrate and said plastic container such that the strength of the substrate-adhesive interface and the plastic container-adhesive interface and the cohesive strength of the adhesive itself are all greater than the forces required for deformation and recovery of the film itself;

(d) gravure coating an anti-static composition on the non-print receiving area of the other one of the two major faces of layer (1);

(e) cutting said sheet or roll into smaller registered sheets, arranging them into a plurality of stacks of smaller sheets and jogging the stacks square to register the indicia;

(f) die cutting said stacks into a plurality of individual labels, each label bearing printed indicia;

(g) picking one of said labels and positioning it in a mold;

(h) blow molding a plastic container within said mold such that said label adheres to the outer surface of the blow molded container; and

(i) removing said container from the mold.

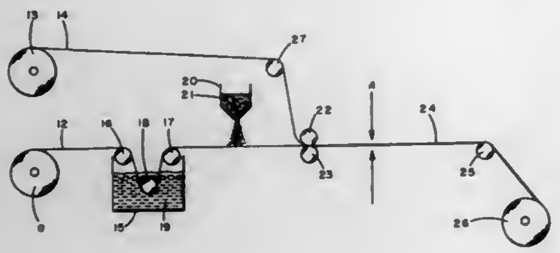
5,711,840
METHOD OF MAKING ABRASIVE ARTICLES

Jeffrey Steven Johnson, Ivoryton, Conn., assignor to Northeast Abrasives, Diamond and Tools Corp., Essex, Conn.

Division of Ser. No. 848,331, Mar. 9, 1992, Pat. No. 5,366,800. This application Sep. 2, 1994, Ser. No. 299,942

Int. Cl.^{6} B32B *7/14*

U.S. Cl. 156—291 **14 Claims**



1. A method of forming an abrasive article which comprises the steps of providing two strips of fiber, conveying a first of said strips through a binder, depositing abrasive particles of a major cross section dimension greater than the thickness of said strips on said first strip after said first strip is conveyed through the binder, said abrasive particle having interstices therebetween, providing a pair of nip rolls, directing said first strip through said nip rolls while directing said second strip through said nip rolls over the deposited abrasive particles whereby said first and second strips are compressed and adhered together with the abrasive particles between said first and second strip into a resulting third strip, separating said third strip into sections, and laminating a plurality said sections under sufficient pressure to force the abrasive particles of said plurality of sections into the interstices of the abrasive particles of an adjacent section.

5,711,841
METHODS OF MAKING AND USING NON-CONTAMINATING PROBES

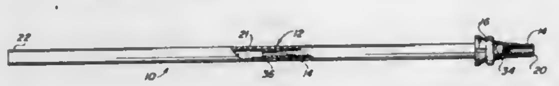
Marc L. Jaker, New Brighton, Minn., assignor to RTC, Inc., St. Paul, Minn.

Division of Ser. No. 384,571, Feb. 6, 1995, Pat. No. 5,531,717, which is a continuation-in-part of Ser. No. 157,145, Jan. 28, 1994, abandoned. This application Apr. 8, 1996, Ser. No. 629,109

Claims priority, application Italy, Jun. 7, 1991, PS910027 U

Int. Cl.^{6} A61M *25/01*

U.S. Cl. 156—308.4 **9 Claims**



1. A method of making an improved catheter comprising the steps of:

providing a catheter tube having first and second open ends and an axial lumen spanning therebetween;

providing a membrane formed of a modified polytetrafluoroethylene (PTFE) resin, said membrane having edges and a thickness,

forming said membrane by skiving a film off a sintered PTFE billet and heat sealing said edges of said membrane to form an elongated tube;

attaching said membrane to a guide; and

loading said membrane into said catheter, such that said guide is external to said axial lumen.

5,711,842
ADHESION PROCESS

David John Kemmish, Nr Preston, United Kingdom, assignor to Zeneca Limited, London, England

PCT No. PCT/GB94/01496, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/02649, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 11, 1994, Ser. No. 591,558

Claims priority, application United Kingdom, Jul. 14, 1993, 9314577

Int. Cl.^{6} C09J *4/00*

U.S. Cl. 156—332 **7 Claims**

1. A process of bonding two or more articles together using an adhesive composition comprising at least one polyhydroxyalkanoate (PHA) wherein the PHA is applied to one or more of the articles as a latex of particles of PHA in water, placed between the articles to be bonded and the articles are subjected to pressure to set the adhesive, said PHA being a polymer or copolymer of hydroxybutyric acid.

5,711,843
SYSTEM FOR INDIRECTLY MONITORING AND CONTROLLING A PROCESS WITH PARTICULAR APPLICATION TO PLASMA PROCESSES

Gary L. Jahns, San Diego, Calif., assignor to Orincon Technologies, Inc., San Diego, Calif.

Filed Feb. 21, 1995, Ser. No. 392,631

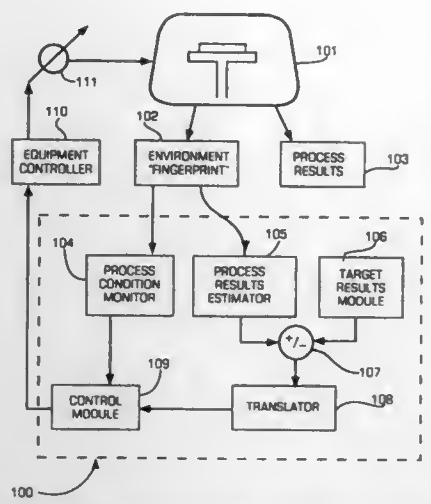
Int. Cl.^{6} H01L *21/66*

U.S. Cl. 156—345 **12 Claims**

1. A system for controlling a process implemented by a processing apparatus, the process being characterized by process state having a plurality of process properties, each process property having a process property value at each instant in time, comprising:

means for detecting a process fingerprint, the process fingerprint being indirectly representative of a plurality of process property values;

a process condition monitor for monitoring the process in real-time to ascertain whether a particular process condition exists;



a process property estimator for estimating a process property value at an instant in time based on the process fingerprint;

means for comparing the process property value estimate to a target process property value to produce a process property value difference; and

means for determining a control response as a function of the process property value difference, the control response adapted to change the process property value and the process state of the processing apparatus in real-time based on the process property value difference.

5,711,844

Patent Not Issued For This Number

5,711,845
DEVICE FOR GLUING AN ORNAMENTAL BODY

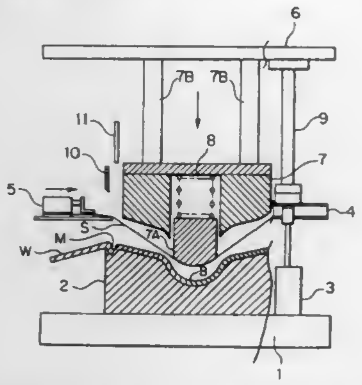
Fukuji Ozawa, Okazaki; Hisamoto Tsuiki, Hoi-gun, and Tetsu Yabuno, Tyokawa, all of Japan, assignors to Sintokogio, Ltd., Japan

Filed Mar. 28, 1996, Ser. No. 624,978

Claims priority, application Japan, Mar. 31, 1995, 7-100148

Int. Cl.^{6} B30B *5/00;* **B32B** *31/20*

U.S. Cl. 156—477.1 **4 Claims**



1. A device for gluing an ornamental body onto a shaped body, wherein the shaped body has an upper surface and a lower surface and is formed with a fitting groove, comprising:

a lower die fixedly mounted on an upper surface of a lower surface plate, the lower die having a die surface whose shape corresponds to the lower surface of the shaped body;

a vertically movable receiving plate disposed above the lower surface plate, the receiving plate having an opening therein, the opening having a periphery generally analogous to and slightly larger than the outline of the fitting groove;

a plurality of clampers movably mounted on an upper surface of the receiving plate around the periphery of the opening, wherein the clampers are configured to clamp the ornamental body and the clampers are directed towards the opening so as to be capable of moving towards and away from the opening;

a vertically movable upper surface plate disposed above the lower surface plate;

an upper die secured to the upper surface plate, the upper die having a die surface whose shape corresponds to that of the upper surface of the shaped body, the upper die having a first portion having an outer periphery which is generally analogous to and slightly smaller than the outline of the fitting groove, wherein the upper die also has a pre-pressing member vertically movable relative to the first portion of the upper die, wherein the pre-pressing member has a surface which is part of the die surface of the upper die; and

a pressing bar attached to the upper surface plate in a position so that the pressing bar engages and pushes the receiving plate when the upper surface plate moves toward said receiving plate.

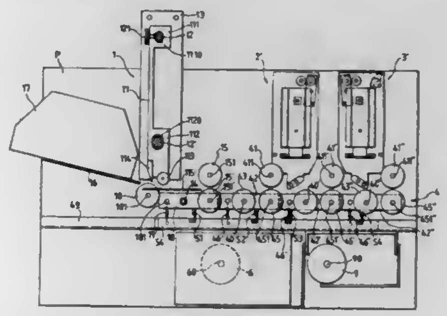
5,711,846
SELF MAILING APPARATUS

Carlos Alicea, Ronkonkoma, N.Y., assignor to Macro Technology International, Inc., Ronkonkoma, N.Y.

Filed Apr. 26, 1996, Ser. No. 638,333

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—556 **18 Clalms**



1. A self mailing apparatus comprising:

a pair of spaced main side plates;

a feeder module for feeding a stack of media being mounted between the main side plates;

a registration roller module disposed in front of the feeder module;

a tabbing mechanism disposed in front of the feeder module and being pivotable about a first pivot axis rotatably disposed on the main side plates;

a labeling mechanism disposed in front of the tabbing mechanism and being pivotable about a second pivot axis rotatably disposed between the main side plates;

a media transport mechanism comprising a first, a second, and a third roller modules disposed in front of the feeder module and being in alignment;

a first driving means for driving the feeder module and the registration roller module;

a second driving means for driving the tabbing mechanism;

a third driving means for driving the labeling mechanism; and

a fourth driving means for driving the media transport mechanism.

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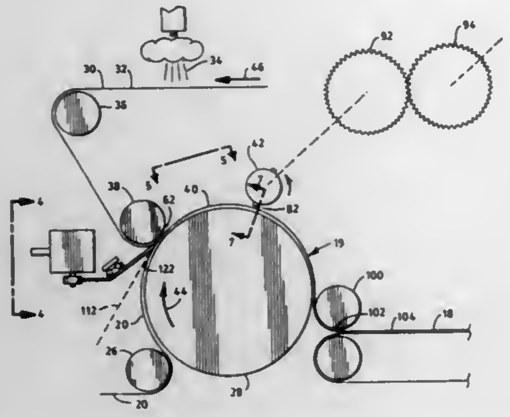
5,711,847
ROTARY ULTRASONIC APPARATUS AND SYSTEM

Gregory John Rajala, and Thomas David Ehlert, both of Neenah, Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 381,363, Jan. 31, 1995. This application May 30, 1995, Ser. No. 453,533

Int. Cl.^{6} B29C *65/08*

U.S. Cl. 156—580.2 **41 Claims**



1. A rotary ultrasonic horn having an axis of rotation, said rotary ultrasonic horn comprising:
- (a) a first inner core member having the axis of rotation extending therethrough, said first inner core member having a circumference comprising a base diameter coincident with an outer radial surface extending about the circumference of said first inner core member, said outer radial surface having a width, said first inner core member having a center of gravity disposed at said axis of rotation; and
- (b) at least one working protuberance having a mass, and extending outwardly from said outer radial surface; and
- (c) at least one non-working counterbalance spaced from, and separate and distinct from, said working protuberance, said at least one non-working counterbalance being effective to counterbalance the mass of said working protuberance such that the center of gravity of the combination of said at least one working protuberance and said at least one non-working counterbalance is coincident with the axis of rotation.

5,711,848
NON-PRODUCT PATTERNED PARTICLE TEST WAFER AND TESTING METHOD THEREFOR

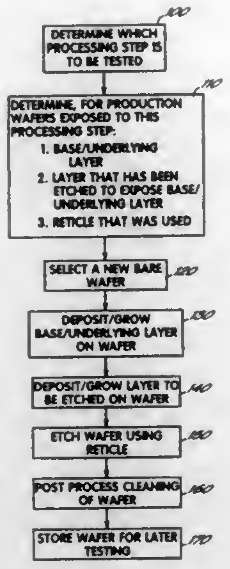
Armando Iturralde, San Antonio, Tex., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Jun. 6, 1995, Ser. No. 471,245

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 156—627.1 **11 Claims**

1. A method of testing and thereafter including a tested processing step into a semiconductor wafer manufacturing process, comprising:
- providing a bare wafer, then
- creating an overlying electrical structure from said bare wafer to form a test wafer, by applying to said bare wafer at least one existing semiconductor wafer processing step which will precede said tested processing step when manufacturing production wafers, then
- applying said tested processing step to said test wafer, and
- evaluating said test wafer to determine whether said test wafer has been subjected to damage by said tested processing step, and thereafter
- manufacturing a production wafer by first applying at least one additional processing step to a bare wafer to form an underlying electrical structure, then applying said at least one existing processing step to form said overlying electrical structure, and then applying said tested processing step.


100
DETERMINE WHICH PROCESSING STEP IS TO BE TESTED
110
DETERMINE, FOR PRODUCTION WAFERS EXPOSED TO THIS PROCESSING STEP:
1. BASE/UNDERLYING LAYER
2. LAYER THAT HAS BEEN ETCHED TO EXPOSE BASE/UNDERLYING LAYER
3. RETICLE THAT WAS USED
SELECT A NEW BARE WAFER
120
DEPOSIT/GROW BASE/UNDERLYING LAYER ON WAFER
130
DEPOSIT/GROW LAYER TO BE ETCHED ON WAFER
140
ETCH WAFER USING RETICLE
150
POST PROCESS CLEANING OF WAFER
160
STORE WAFER FOR LATER TESTING
170

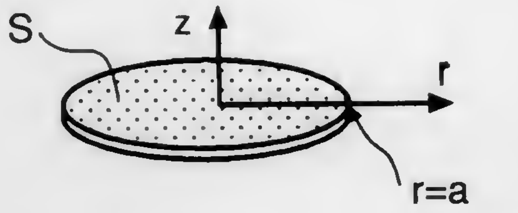
5,711,849
PROCESS OPTIMIZATION IN GAS PHASE DRY ETCHING

Daniel L. Flamm, 476 Green View Dr., Walnut Creek, Calif. 94596, and John P. Verboncoeur, Hayward, Calif., assignors to Daniel L. Flamm, Walnut Creek, Calif.

Filed May 3, 1995, Ser. No. 433,623

Int. Cl.^{6} H01L *21/3065*

U.S. Cl. 156—643.1 **29 Claims**



20. A substrate fabrication method, using a plasma etching apparatus, said method comprising:
- providing a substrate selected from a group consisting of a semiconductor wafer, a plate, and a flat panel display, said substrate comprising a top surface;
- forming a film overlying said top surface, said film comprising a top film surface;
- etching said top film surface to define a relatively non-uniform profile on said film, and defining etch rate data comprising an etch rate and a spatial coordinate which defines a position within said relatively non-uniform etching profile of said film on said substrate, said etching comprising a reaction between a gas phase etchant and said film; and
- extracting a surface reaction rate constant from said etch rate data, and using said surface reaction rate constant.

5,711,850
PLASMA PROCESSING APPARATUS

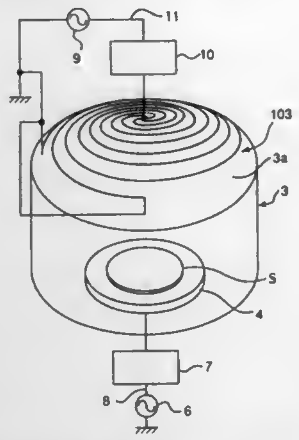
Tomohiro Okumura, Neyagawa; Ichiro Nakayama, Kadoma, and Yoshihiro Yanagi, Neyagawa, all of Japan, assignors to Matsuhita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 528,164, Sep. 14, 1995, Pat. No. 5,558,722. This application May 22, 1996, Ser. No. 651,606

Claims priority, application Japan, Sep. 14, 1994, 6-219323

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 156—643.1 **8 Claims**



1. A plasma processing method for processing a substrate disposed on a substrate electrode, said method comprising:
- applying a high frequency voltage to a discharge coil with a high frequency power source, wherein said discharge coil is wound in only one direction and is partially or wholly formed in a multiple spiral configuration;
- matching between said discharge coil and a connection cable by using a matching circuit which is connected to said discharge coil by a conductor wire and to said high frequency power source by a connection cable; and
- generating plasma in a vacuum vessel and processing the substrate.

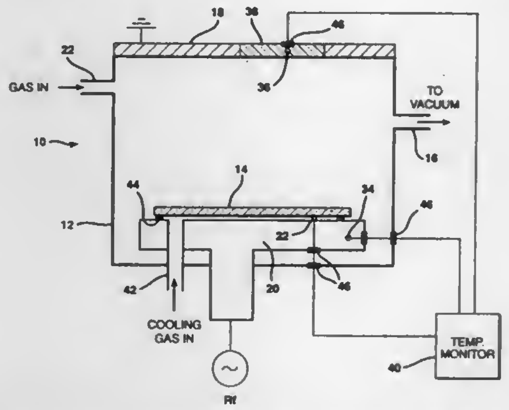
5,711,851
PROCESS FOR IMPROVING THE PERFORMANCE OF A TEMPERATURE-SENSITIVE ETCH PROCESS

Guy T. Blalock, and Bradley J. Howard, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 12, 1996, Ser. No. 679,295

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 156—643.1 **12 Claims**



1. A process for performing an etch comprising the steps of:
- a) providing a semiconductor substrate having at least one layer of material thereon to be etched in a chamber, said substrate having a temperature of at least about 50° C.;
- b) initiating plasma etching of one or more selected areas on said layer of material to be etched in said chamber;
- c) terminating the formation of said plasma prior to exceeding a predetermined maximum temperature of approximately 120° C. at at least one selected location in said chamber;
- d) reducing the temperature at said selected location; and
- e) resuming plasma etching of said layer of material.

5,711,852
METHOD AND DEVICE FOR MIXING OF A FLUID INTO A PULP-SUSPENSION

Rolf Ekholm; Ulf Jansson, both of Karlstad, Sweden, and Per Nyström, Charlotte, N.C., assignors to Kvaerner Pulping Technologies Aktiebolag, Karlstad, Sweden

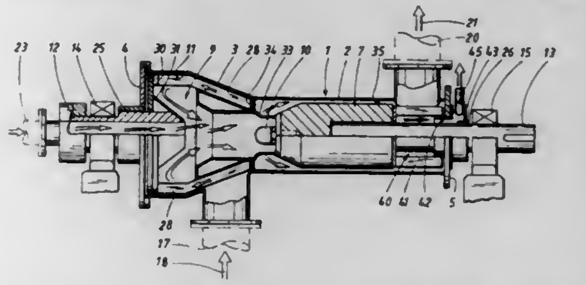
PCT No. PCT/SE94/00923, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/10350, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 4, 1994, Ser. No. 619,605

Claims priority, application Sweden, Oct. 13, 1993, 9303353

Int. Cl.^{6} D21C *3/22*

U.S. Cl. 162—57 **23 Claims**



1. Process for mixing fluid into a pulp suspension of cellulose-containing fibre material, comprising the steps of:
- feeding the pulp suspension in through a pulp inlet;
- rotating the pulp suspension; and
- mixing the fluid into the pulp at a desired reaction pressure while passing the pulp through a reaction sector comprising a stator shell, a rotor which is coaxial with the stator shell, and at least one fluid inlet, after which the pulp mixture leaves the reaction sector through a pulp outlet;
- wherein said mixing step comprises supplying the fluid, via the fluid inlet, to a supply zone which is located substantially in the center of rotation of the rotating pulp suspension, wherein a local pressure in the pulp suspension within the supply zone is lower, due to the centrifugal force of the rotating pulp suspension increasing radially outwards, than a pressure prevailing in the pulp suspension at the pulp outlet.

5,711,853
PAPER STRENGTHENED WITH SOLUBILIZED COLLAGEN AND METHOD

Kevin M. Virnelson, Mayfield Hts.; Kenneth E. Hughes, Gahanna; David C. Masterson, Grove City; David J. Fink, Shaker Heights; Barbara A. Metz, Baltimore; Gordon E. Pickett, Reynoldsburg; Paul M. Gemmer, Columbus, and Richard S. Brody, Worthington, all of Ohio, assignors to Ranpak Corp., Concord, Ohio

Continuation-in-part of Ser. No. 250,806, May 27, 1994, abandoned, and Ser. No. 78,932, Jun. 16, 1993, Pat. No. 5,316,942. This application Jun. 7, 1995, Ser. No. 479,696

Int. Cl.^{6} D21H *17/00;17/22*

U.S. Cl. 162—143 **23 Claims**

1. A method for using soluble collagen in a large scale papermaking process comprising:
- (A) providing a soluble collagen having a number average molecular weight of at least 300,000 daltons;
- (B) providing a cellulosic pulp slurry;
- (C) adding said soluble collagen to said pulp slurry in a paper machine;
- (D) mixing said soluble collagen with said pulp slurry;

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(E) forming a cellulosic product of desired shape from said mixture.

5,711,854

DIMENSIONING OF ROLLS IN WIDE NIP ROLL PRESS

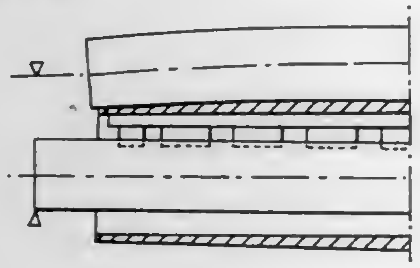
Christian Schiel, Heldenheim; Rainer Bentele, Friedrichshafen, and Wolf Gunter Stotz, Ravensburg, all of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Germany

Filed May 31, 1996, Ser. No. 657,803

Claims priority, application Germany, Jun. 3, 1995, 195 20 442.5

Int. Cl.^{6} D21F *3/04*

U.S. Cl. 162—358.3 **7 Claims**



1. A roll press for treating a web of material, comprising:
at least two rolls forming a press nip and including a press roll and a backing roll,
the press roll comprising a stationary roll shell support, a flexible roll shell which is rotatable around the stationary support, at least one support element mounting the shell on the support, the support element having a concave support surface, for forming a wide press nip with the backing roll;
the outer circumference of the shell of the press roll changing in dimension in the axial direction from the center of the press roll toward the ends of the press roll; and further wherein:
the backing roll includes a second roll shell with a circumference that changes in dimension in the axial direction from the center of the backing roll toward the ends of the backing roll, the circumference of the backing roll second shell changing in the same manner as the press roll shell;
the wall thickness of the shell of the press roll changing in dimension from the center of the press roll in the axial direction toward the ends of the press roll; and
the outer circumference of the press roll decreasing in the axial direction from the center of the roll to the ends of the press roll.

5,711,855

Patent Not Issued For This Number

5,711,856

ASPHALT EXTRACTING APPARATUS

Masahiro Nakajima, 46-401 Koudanjutaku, 3-2, Takaoka 5-chome, Okubo-cho, Akashi-shi, Hyogo 674, Japan

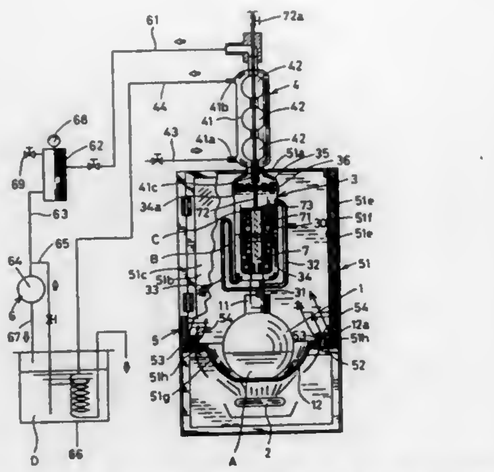
Filed Mar. 22, 1996, Ser. No. 620,657

Claims priority, application Japan, Jul. 26, 1994, 6-194802

Int. Cl.^{6} B01D *11/00;* C10C *1/18;* C10G *21/00*

U.S. Cl. 196—14.52 **23 Claims**

1. An extracting apparatus comprising:
a solvent container for housing an extracting solvent,
a heater for heating and evaporating said extracting solvent housed in the solvent container,
a filter device for holding a mixture,



a cooling device which communicates with the solvent container and the filter device and which is arranged to cool and condense solvent evaporated from the solvent container, whereby the solvent condensed by the cooling device is dropped into the filter device such that an extraction material in the mixture is extracted through the filter device, and
a decompressor for decompressing the inside of said solvent container and said filter device to a pressure less than a pressure immediately exterior to said extracting apparatus.

5,711,857

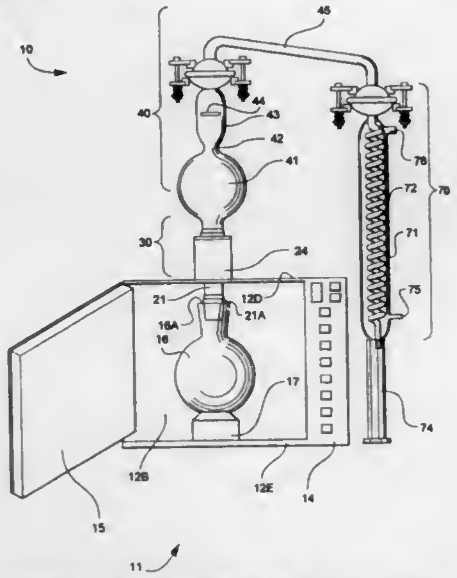
MICROWAVE DISTILLATION APPARATUS

Bernard Armstrong, 1716-2G Charleston Place La., Charlotte, N.C. 28212

Filed Oct. 12, 1995, Ser. No. 542,463

Int. Cl.^{6} B01D *3/00*

U.S. Cl. 202—235 **6 Claims**



1. A microwave distillation apparatus, comprising:
(a) a microwave heating chamber comprising a plurality of chamber walls;
(b) microwave generating means for introducing microwave energy into said heating chamber;
(c) a vessel located within said chamber for containing a liquid to be distilled, and having a mouth for receiving the liquid;
(d) a connecting tube extending through an opening formed in one of said plurality of chamber walls, and having a bottom end thereof for sealably engaging the mouth of said vessel, and a top end thereof extending outwardly from said chamber;
(e) a biasing assembly located outside of said chamber and engaging said connecting tube with a biasing force sufficient to maintain the seal between said connecting tube and the mouth of said vessel, said biasing assembly comprising:
  i. a housing surrounding the top end of said connecting tube, and mounted outside of said chamber adjacent to the opening formed in the chamber wall, said housing including an inwardly-extending top flange and an inside shoulder spaced apart from the top flange;
  ii. a vertically movable cylinder assembly located within said housing and surrounding the top end of the connecting tube, said cylinder assembly including a top ring engaging the connecting tube and an outwardly-extending bottom flange, the bottom flange of the cylinder assembly for contacting the inside shoulder of the housing to restrict movement of the cylinder assembly within said housing in a direction towards said vessel;
  iii. a coil spring surrounding the top end of the connecting tube, and located between and engaging the inwardly-extending top flange of the housing and the outwardly-extending bottom flange of the cylinder assembly, said spring normally urging the bottom flange of the cylinder assembly against the inside shoulder of the housing to thereby maintain the seal between the connecting tube and the mouth of the vessel; and
(f) distillate capture means connected to said connecting tube for receiving vapors emitted from the liquid when heated, and condensing the vapors into a liquid distillate for capture and storage, said distillate capture means comprising vapor transfer means connected to the top end of said connecting tube for receiving vapors emitted from the liquid contained in said vessel when heated in said chamber, said vapor transfer means comprising:
  i. a surge bulb mounted in linear registration with said connecting tube, and having an opening therein sealably connected to the top end of said connecting tube;
  ii. an integrally formed neck of reduced diameter provided opposite the opening of the surge bulb for limiting the passage of heated liquid outwardly from the surge bulb: and
  iii. a deflector cylinder integrally formed with the neck, and in linear registration with the surge bulb and connecting tube, said deflector cylinder including a deflector plate for blocking the passage of heated liquid outwardly from the deflector cylinder while permitting free passage of vapors therethrough.

5,711,858

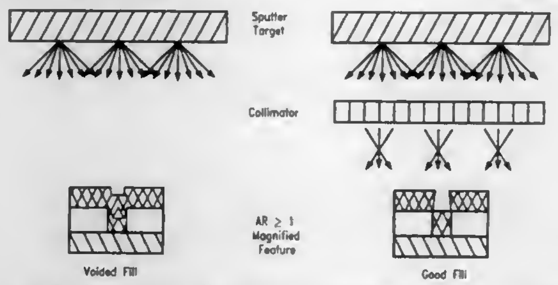
PROCESS FOR DEPOSITING A CONDUCTIVE THIN FILM UPON AN INTEGRATED CIRCUIT SUBSTRATE

Richard Steven Kontra, Burlington, Vt.; Thomas John Licata, Lagrangeville, N.Y.; James Gardner Ryan, Newtown, Conn., and Timothy Dooling Sullivan, Underhill, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 226,530, Apr. 12, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 496,999

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.15 **18 Claims**



1. In a process for depositing a metal film from a deposition source onto an integrated circuit substrate, said process comprising the step of using a means for collimating the direction of a metal striking the substrate, the improvement wherein said metal film comprises a magnesium-containing aluminum alloy film having greater than about 75 volume % of grains having a (111) orientation, and wherein greater than about 63% of said grains having a (111) orientation have a tilt angle of less than about 10 degrees.

5,711,859

PROCESS FOR PLASMA-CHEMICAL CONVERSION OF N_2 O INTO NO_X

André Caramel, Lyons, France; Albin Czernichowski, Orléans, France, and André Gorius, Cleveland, Ohio, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

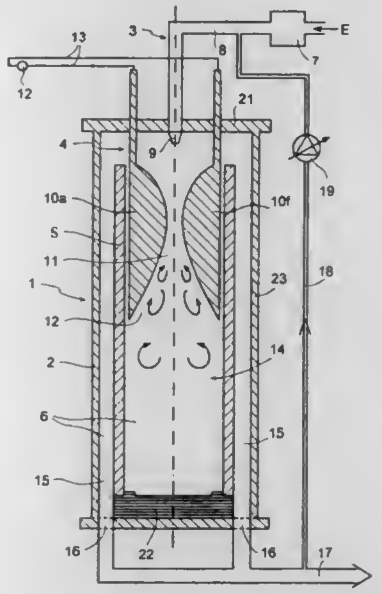
PCT No. PCT/FR94/01048, § 371 Date Jul. 14, 1995, § 102(e) Date Jul. 14, 1995, PCT Pub. No. WO95/07234, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 6, 1994, Ser. No. 432,163

Claims priority, application France, Sep. 10, 1993, 93 11016

Int. Cl.^{6} C01B *21/00*

U.S. Cl. 204—179 **18 Claims**



1. A process for the plasma-chemical conversion of N_2O gas into NO_x gas wherein x equals 1 or 2, said process comprising:
forming a jet of gas to be treated comprising N_2O,
directing said jet into an interstitial space of a least two divergent electrodes placed under an electric voltage, to create at least one electric discharge which is part of a plasma generator, said generator working by formation of electric discharges sliding between the electrodes, such that the jet of gas circulates along the electrodes from the discharge region where these electrodes are closest to each other,
and recovering a gas comprising the NO_x formed.

5,711,860

METHOD AND APPARATUS FOR PRODUCING A SUBSTRATE WITH LOW SECONDARY ELECTRON EMISSIONS

Kenneth A. Jensen, Bay Village; Arthur N. Curren, North Ridgeville, and Robert F. Roman, Brook Park, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 331,392, Oct. 26, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 591,125

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.11 **14 Claims**

1. A method of producing a textured surface in an ion texturing apparatus, said apparatus comprising a plasma chamber, an anode, a cathode, a copper support, a first power supply connecting said anode to said cathode, a second power supply connecting said

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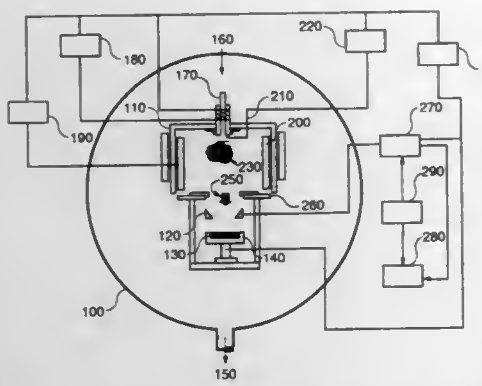


cathode to said copper support, a switch module connecting to said copper support, and a floating plate, said method comprising the steps of:

placing a substrate on said copper support,

positioning a target material above said substrate,

connecting said target material to said switch module,

evacuating air from said plasma chamber thereby creating a vacuum environment with a vacuum chamber pressure,

introducing argon gas including ions therein, into said plasma chamber,

producing an ion-beam in said plasma chamber by utilizing a negative potential difference across said target and said substrate to attract said ions in said argon gas,

simultaneously directing said ion-beam through said target material onto said substrate by using said floating plate to restrict said ion-beam and,

growing spires on said substrate by intermittently depositing said target material on said substrate by utilizing said switch module to intermittently apply and remove a potential difference across said target material while maintaining said potential difference across said substrate, thereby producing a textured surface.

5,711,861

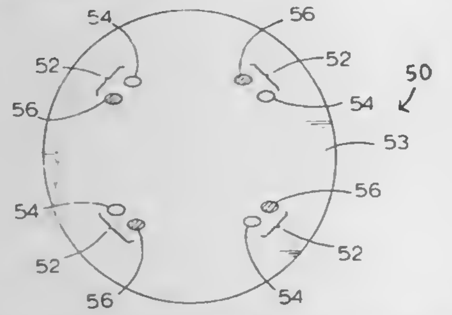
DEVICE FOR MONITORING CHANGES IN ANALYTE CONCENTRATION

W. Kenneth Ward, 365 SW. Breeze Ct., Portland, Oreg. 97225, and Eric S. Wilgus, 2207 NE. 12th Ave., Portland, Oreg. 97212

Filed Nov. 22, 1995, Ser. No. 561,972

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 204—403 **22 Claims**



1. A device for electrochemically sensing changes in the concentration of an analyte of interest comprising

an implantable sensor body having a pair of spaced facial expanses, each expanse of the body having at least one analyte-sensing electrode pair including an anode and a cathode spaced apart from each other and covered by a membrane which is semi-permeable to the analyte of interest, and

an enzyme composition covering each anode of each analyte-sensing electrode pair, wherein the enzyme composition reacts specifically with the analyte of interest.

5,711,862

PORTABLE BIOCHEMICAL MEASUREMENT DEVICE USING AN ENZYME SENSOR

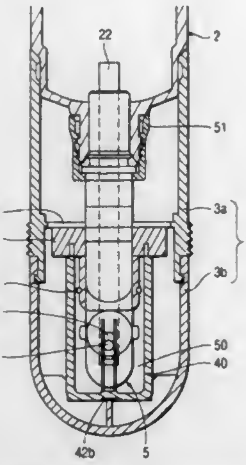
Yusaku Sakoda; Hideki Endo, and Satoshi Nakajima, all of Kyoto, Japan, assignors to OMRON Corporation, Kyoto-fu, Japan

Filed Mar. 15, 1996, Ser. No. 616,399

Claims priority, application Japan, Mar. 15, 1995, 7-054834

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 204—403 **12 Claims**



1. A portable biochemical device, comprising:

a measurement main body including a measurement circuit and a power supply;

an enzyme sensor holder projecting from said measurement main body and including an enzyme sensor thereon which is connected electrically to the measurement main body; and

a cover covering the enzyme sensor holder and the enzyme sensor, wherein the cover contains a cartridge filled with a medium to maintain moisture of the enzyme sensor.

5,711,863

MEASURING-PROBE ARRANGEMENT IN A GAS CONDUIT

Konrad Henkelmann, Friolzheim, and Romuald Fries, Ditzingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00536, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/28404, PCT Pub. Date Dec. 8, 1994

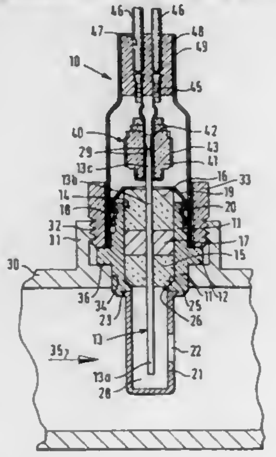
PCT Filed May 11, 1994, Ser. No. 530,163

Claims priority, application Germany, Jun. 1, 1993, 43 18 107.4

Int. Cl.^{6} G01N *27/46*

U.S. Cl. 204—428 **1 Claim**

1. A measuring arrangement for detecting gases flowing in a gas conduit, comprising:



a gas conduit for gases flowing in a given direction, and having an opening in its wall;

a measuring-probe having a housing with a collar, a measuring element having a first portion disposed within said housing and a second portion projecting from said housing into the opening of the gas conduit, a protective tube surrounding said second portion of said measuring element and separated from said second portion by a clearance, said protective tube having at least one gas opening, each of said gas openings positioned to face away from the direction of flow of gases in the gas conduit, and a marking on said housing outside the gas conduit indicating a position of the gas opening in said protective tube; and

a fastening means separate from said measuring-probe for securing the measuring-probe to the gas conduit such that the measuring-probe can move radially, said fastening means comprising a flange on the gas conduit at the opening therein having a thread into which a union nut is screwed to engage the collar on said housing and a sealing surface surrounding the opening in the gas conduit on which the collar of said housing rests such that the sealing surface forms a gastight seal at the point of contact with the collar.

5,711,864

Patent Not Issued For This Number

5,711,865

ELECTROLYTIC GAS PRODUCER METHOD AND APPARATUS

Mervyn Leonard Caesar, Runaway Bay, Australia, assignor to Rhyddings Pty Ltd, Robina, and Renjean Pty Ltd, Kenmore, both of Australia

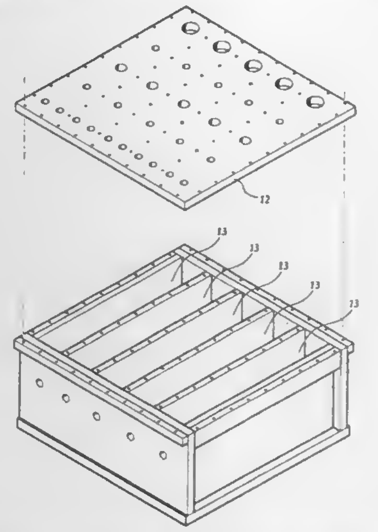
PCT No. PCT/AU94/00092, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/21844, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 2, 1994, Ser. No. 525,588

Claims priority, application Australia, Mar. 15, 1993, PL7825

Int. Cl.^{6} C25B *1/06;15/08;9/00*

U.S. Cl. 205—628 **20 Claims**



19. A method of producing mixed hydrogen and oxygen gas comprising the steps of:

providing a gas production apparatus comprised of a housing containing acidified water electrolyte and a plurality of substantially planar electrodes disposed in substantially parallel spaced relation in said electrolyte, the placement of the inter electrode being selected such that produced gases are constrained by an adjacent electrode, thereby causing turbulence in said electrolyte at the respective electrode, at a planar surface thereof;

connecting alternate electrodes to respective poles of a direct current supply of a potential difference sufficient to cause electrolysis of said electrolyte;

collecting produced gases from a top of said housing, and supplying make-up water to said housing to replace electrolyte that was electrolyzed to gas;

an integrated control means adapted to control at least one of an electrolyte level, a composition and a temperature, a voltage and a current consumption, and a produced gas delivery pressure,

wherein said control means comprises a programmable logic controller responsive to sensor inputs,

wherein collection means collecting the gas from the housing is adapted to extinguish ignition of the produced gas; wherein said collection means includes a flashback arrester comprising an arrestor housing packed with stainless steel wool and adapted to be partially filled with water, a gas inlet led by a conduit to a point below a surface of the water, and a gas outlet collecting from a headspace above said water.

5,711,866

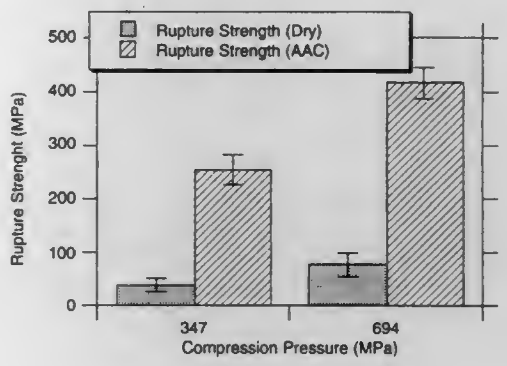
ACID ASSISTED COLD WELDING AND INTERMETALLIC FORMATION AND DENTAL APPLICATIONS THEREOF

David S. Lashmore, Lebanon, N.H.; Moshe P. Dariel, Rockville, Md.; Christian E. Johnson, Middletown, Md.; Menahem B. Ratzker, Silver Spring, Md.; Anthony A. Giuseppetti, Frederick, Md.; Frederick C. Eichmiller, Ijamsville, Md.; Glenn L. Beane, Plymouth, N.H., and David R. Kelley, Martinsburg, W. Va., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Division of Ser. No. 317,729, Oct. 4, 1994, which is a continuation-in-part of Ser. No. 133,316, Oct. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 802,420, Dec. 4, 1991, Pat. No. 5,318,746. This application May 9, 1995, Ser. No. 437,817

Int. Cl.^{6} C25F *1/00;* **B22P** *1/00;* **A61C** *5/04*

U.S. Cl. 205—687 **27 Claims**



1. A process for consolidating or cold-welding powders, particulates, foils or sheets of metal coated composites, elemental metallic, metallic alloy or intermetallic compounds into net shapes at or near ambient temperature comprising:

removing oxide or adsorbed gases from the surface of the metal coated composites, elemental metallic, metallic alloy or intermetallic compounds thereby forming surface oxide or surface gas free elemental metallic, metallic alloy or intermetallic compounds;

surrounding the surface of the powders, particulates, foils or sheets of the metal coated composite, elemental metallic, metallic alloy or intermetallic compound with an environment of a noble or more noble metal,

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treating the surrounded surface oxide or surface gas free metal coated composites, elemental metallic, metallic alloy or intermetallic compounds with an oxide removing agent; and

consolidating the treated metal coated composites, elemental metallic, metallic alloy or intermetallic compounds into a net shape at or near ambient temperature.

8. The process according to claim 1, wherein the surface oxide or surface gas is removed by anodically or cathodically treating the metal coated composite, elemental metallic, metallic alloy or intermetallic compounds in a dilute acid.

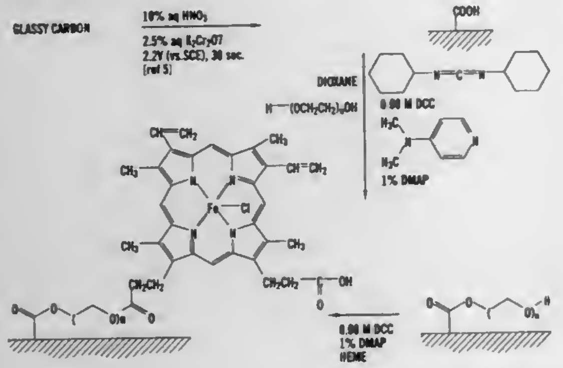
5,711,867
ELECTROCHEMICAL SEPARATION UTILIZING METALLOPORPHYRINS AND METALLOPHTHALOCYANINES

Todd M. Przybycien, West Stockbridge, Me.; Philippe Lam, Troy; Gary E. Wnek, Latham, both of N.Y., and Peter R. Elliker, Livermore, Calif., assignors to Rennselaer Polytechnic Institute, Troy, N.Y.

Filed Mar. 28, 1995, Ser. No. 413,877

Int. Cl.^{6} B01D *17/06;15/08;* **C25B** *11/00;* **B03C** *5/02*

U.S. Cl. 205—688 **57 Claims**



1. A method of separating a material from a liquid sample comprising:

providing a system for material separation having a stationary phase comprising a metalloporphyrin coordination compound;

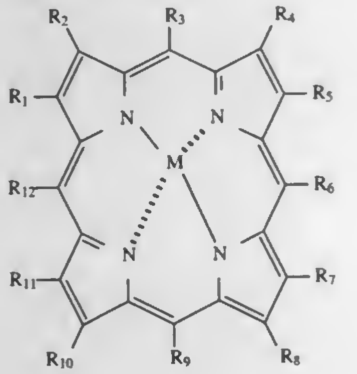
oxidizing or reducing the coordination compound, respectively, to an oxidized or reduced state at which the material will bind to the compound;

applying a source of electric potential to the system; and

contacting the oxidized or reduced coordination compound with a liquid sample containing the material under conditions effective to separate the material from the liquid;

wherein the material is a small organic compound or a higher molecular weight biological compound selected from the group consisting of peptides, carbohydrates, nucleic acids, and proteins; and

wherein the metalloporphyrin coordination compound has the general chemical formula:



wherein:

R_1–R_{12} are independently selected from the group consisting of hydrogen, methyl, vinyl, —CH_2CH_2COOH, tetrasulfonic acid(sodium salt), 4-pyrridyl, phenylthio, 4(trimethylammonio)phenyl, and 1-methyl-4-pyrridinyl tetratosylate;

provided that when each of R_3, R_6, R_9, and R_{12} is tetrasulfonic acid(sodium salt), 4-pyrridyl, phenylthio, 4-(trimethylammonio)phenyl, or 1-methyl-4-pyrridinyl tetratosylate, each Of R_1, R_2, R_4, R_5, R_7, R_8, R_{10}, and R_{11} is hydrogen; and

M is a divalent metal cation with stable redox states.

5,711,868
ELECTROCHEMICAL SENSORS MEMBRANE

Thomas C. Maley, Medway; Paul A. D'Orazio, Mendon; Bonnie C. Dalzell, Sherborn; Peter G. Edelman, Franklin; James E. Flaherty, Attleboro; Richard W. Mason, Millis, and Robert R. McCaffrey, Franklin, all of Mass., assignors to Chiron Diagnostics Corporatiion, E. Walpole

Division of Ser. No. 266,824, Jun. 27, 1994, Pat. No. 5,494,562. This application Sep. 15, 1995, Ser. No. 508,275

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 205—782.5 **7 Claims**

7. A method for prolonging the storage life or wet-up of an electrochemical sensor including a semi-permeable membrane, said method comprising treating the semi-permeable membrane after formation with a high boiling point, water soluble, hydrophilic polymer liquid anti-drying agent selected from the group consisting of surfactants having a molecular weight of at least about 300 and polyethylene glycols.

5,711,869
SYNTHETIC CRYSTALLINE ALUMINOSILICATE FOR THE CATALYTIC CONVERSION OF HYDROCARBONS IN PETROCHEMICAL PROCESSES

Arno Tissler, Tegernheim, Germany, assignor to Ecolith—Zeolithe GmbH, Schwandorf, Germany

Division of Ser. No. 469,872, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 549,185, Jul. 6, 1990, abandoned, and Ser. No. 422,513, Apr. 13, 1995, Pat. No. 5,578,195, which is a division of Ser. No. 725,809, Jul. 8, 1991, Pat. No. 5,407,654. This application Oct. 16, 1996, Ser. No. 733,018

Claims priority, application Germany, Jul. 11, 1990, 40 22 140.7

Int. Cl.^{6} C10G *11/02;11/05*

U.S. Cl. 208—121 **18 Clalms**

1. A process for the catalytic cracking of a petroleum fraction which comprises exposing said petroleum fraction to a cracking catalyst, under cracking conditions, wherein said cracking catalyst comprises a cracking catalyst composition comprising from about 80 to about 99.9 percent of a conventional cracking catalyst and from 0.1 to about 20 weight percent of a synthetic crystalline aluminosilicate, based on the total weight of the cracking catalyst;

wherein said aluminosilicate has the following chemical composition:

$$0\text{–}3\ M_2O:Al_2O_3:15\text{–}30\ SiO_2:0\text{–}40\ H_2O:$$

wherein M represents an alkali metal cation; and

an X-ray diffraction diagram with X-ray reflections having the following d Values:

d VALUES/INTERPLANAR	RELATIVE INTENSITY
11.2 + 0.3	strong
10.2 + 0.3	strong
9.8 + 0.2	weak
3.85 + 0.1	very strong
3.83 + 0.1	strong
3.75 + 0.1	strong
3.73 + 0.1	strong
3.60 + 0.1	strong
3.06 + 0.05	weak
3.00 + 0.05	weak
2.01 + 0.02	weak
1.99 + 0.02	weak.

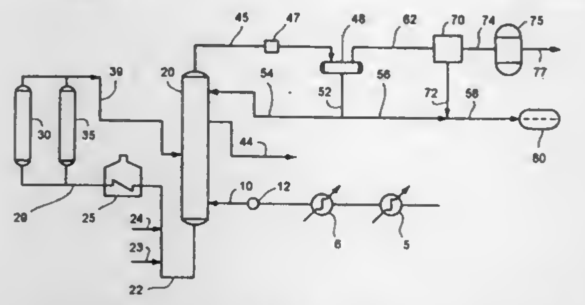
5,711,870
DELAYED COKING PROCESS WITH WATER AND HYDROGEN DONORS

David Anthony Storm, Montvale, N.J., and Peter Charles Ricci, Beacon, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 28, 1996, Ser. No. 654,485

Int. Cl.^{6} C10G *9/00*

U.S. Cl. 208—131 **22 Claims**



1. A delayed coking process for the conversion of a residual oil feedstock comprising carbon residue to produce coke, hydrocarbon liquid and gas, the process comprising the steps of:

a. measuring an amount of carbon residue in the residual oil feedstock according to ASTM D-4530 to produce a measurement,

b. admixing with the residual oil feedstock, water in an amount of 3 wt % to 70 wt % to produce an admixture,

c. subjecting the admixture to delayed coking reaction conditions; thereby yielding coke in an amount less than 1.6 times the measurement of carbon residue.

5,711,871
MAGNETIC SEPARATION APPARATUS

Stefan Miltenyi, Bergisch Gladbach, Germany, assignor to Miltenyi Biotec GmbH, Bergisch Gladbach, Germany

Continuation-in-part of Ser. No. 394,834, Feb. 27, 1995. This application Jun. 7, 1995, Ser. No. 487,277

Int. Cl.^{6} B01D *35/06*

U.S. Cl. 210—86 **8 Claims**

1. A separation system, comprising:

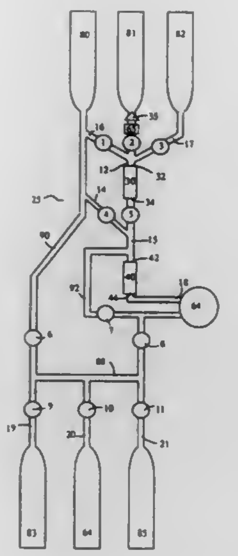
(a) a separation device comprising:

(i) a separation column that connects by a first fluid pathway to a sample container wherein said separation column comprises a non-magnetic housing having an inlet port connected to said first fluid pathway, an outlet port, and defining a separation chamber disposed between said inlet port and said outlet port, said separation chamber having a diameter to length ratio of at least 0.2 to 1, and a fluid permeable matrix of ferromagnetic spheres disposed within said chamber;

(ii) a distribution channel connected by a second fluid pathway to the outlet port of said separation chamber, wherein said distribution channel leads to

(iii) a product collection container by a third fluid pathway,

(iv) a wash waste container by a fourth fluid pathway, and



(v) an unlabeled sample container by a fifth fluid pathway; and

(vi) a buffer container connected to said first fluid pathway by a sixth fluid pathway, to said second fluid pathway by a seventh fluid pathway and to said distribution channel by an eight fluid pathway; and

(b) a separation instrument, comprising a housing including:

(i) a sample container holder;

(ii) one or more valve means positioned so as to control fluid flow through one or more of said fluid pathways;

(iii) a pump means to control the flow of fluid through said fluid pathways;

(iv) a separation column holder; and

(v) a magnetic field generating means for applying a magnetic field to said matrix of ferromagnetic spheres;

wherein said separation device may be installed upon said separation instrument by positioning said fluid pathways on said valve means and said separation column on said separation column holder for the performance of a separation process and upon completion of the separation process the separation device may be removed.

5,711,872
REUSABLE OIL FILTER ASSEMBLY

John A. Jones, 2246 Eagle Dr., La Verne, Calif. 91750, and Robert Kanovitz, 6433 Topanga Canyon Rd., Suite 133, Canoga Park, Calif. 91303

Continuation-in-part of Ser. No. 260,972, Jun. 15, 1994, abandoned. This application Jun. 12, 1995, Ser. No. 489,523

Int. Cl.^{6} B01D *35/147;35/153*

U.S. Cl. 210—130 **14 Clalms**

1. A reusable oil filter assembly adapted for use in filtering said lubricating oil of an engine configured to receive an oil filter, said assembly comprising:

a filter housing having an open end and a closed end;

inlet means for receiving unfiltered oil from said engine;

outlet means for returning filtered oil to said engine;

a filter mount, disposed between said filter housing and said engine, for receiving said unfiltered oil through said inlet means from said engine and returning filtered oil through said outlet means to said engine, wherein said filter mount further comprises:

a first plate;

a second plate; and

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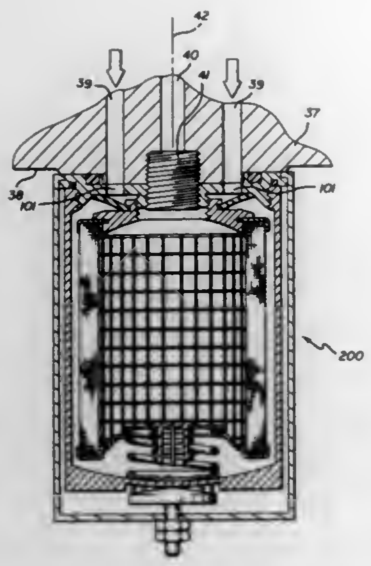


an anti-drain back seal disposed between said first plate and said second plate for preventing drainage of said oil back out of said engine and drainage of oil from said filter assembly back into said engine when said engine is turned off,
wherein said first plate further comprises an engine facing side and an anti-drain back seal facing side, said anti-drain back seal facing side further comprising a first surface of said first plate threaded for receiving a corresponding threading on said second plate, and
wherein said first plate, said second plate and said anti-drain back seal are fittingly mated together, thus facilitating service, repair and replacement of said assembly,
mounting means for removably mounting said filter housing on said filter mount, wherein said mounting means includes a threaded second surface on said first plate for threadedly receiving a threaded surface on said housing with said open end of said housing in sealing engagement with said filter mount to form a filter chamber between said housing and said filter side of said filter mount,
a filter cartridge sized and configured to register with said filter mount inside said filter chamber, said filter cartridge having a generally cylindrical configuration and being positioned relative to said filter mount to receive said unfiltered oil from regions exterior of said filter cartridge and to return said filtered oil from regions interior of said filter cartridge;
a filter element included in said filter cartridge and having said general configuration of a cylinder with a first end and a second opposing end;
means disposed on a first end of said filter cartridge for forming a seal between said filter element and said filter mount;
a closure cap included in said filter cartridge and disposed at said second end of said filter element said closure cap defining an opening extending between said regions interior of said filter cartridge and said regions exterior of said filter cartridge;
a relief valve permanently attached to said closure cap, said relief valve including a valve element movable between a first position inhibiting said flow of said oil through said opening and a second position permitting a flow of said oil through said opening when said filter is clogged;
means disposed in said regions exterior of said filter cartridge for biasing said relief valve to said first position; and
a bale pivotally connected to said filter mount and extending outwardly of said housing to engage said closed end of said housing and to lock said housing in sealing engagement with said filter mount at said open end of said housing.

5,711,873
PROCESS FOR SOLVENT RECOVERY AND APPARATUS SUITABLE THEREFOR

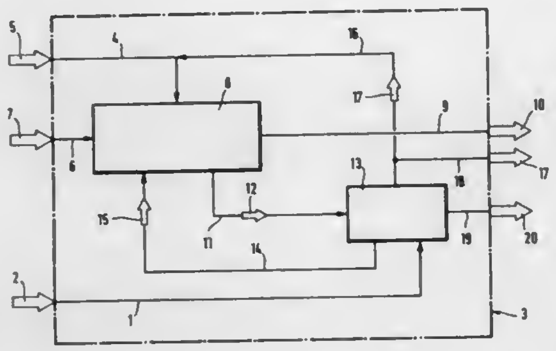
Siegfried Rewitzer, Ihrlerstein, and Peter Manfred Roth, Eppstein/Ts., both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 183,155, Jan. 18, 1994, Pat. No. 5,618,432. This application Sep. 20, 1996, Ser. No. 717,309

Claims priority, application Germany, Jan. 15, 1993, 43 00 921.2

Int. Cl.⁶ B01D *35/18*

U.S. Cl. 210—175 **7 Claims**



1. An apparatus for carrying out chemical reaction and/or processing of substances using solvent and diluent which is used for specific dilution of the solvent, comprising:
a processing plant,
a treatment apparatus in the processing plant, comprising
a fresh solvent feed line for introducing fresh solvent into the treatment apparatus,
a fresh diluent feed line for introducing fresh diluent into the treatment apparatus,
a reactant feed line for introducing into the treatment apparatus substances to be reacted and/or to be processed,
a discharge line for ejecting products from the treatment apparatus and said processing plant,
a solvent recovery apparatus in the processing plant, comprising
a used mixture feed line connected to the treatment apparatus for feeding a used mixture of solvent, diluent, and residues from the reaction and/or processing of the substances to the solvent recovery apparatus,
a recovered solvent return line for returning a solvent fraction primarily composed of solvent and which may contain an small proportion of diluent, from the solvent recovery apparatus to the treatment apparatus so that this fraction is again available for the reaction and/or processing of the substances,
a recovered diluent return line for returning a diluent fraction, which comprises diluent and which may contain a small proportion of solvent, from the solvent recovery apparatus to the treatment apparatus, so that this fraction is again available for the reaction and/or processing of the substances, and
and outlet line for removing waste substances from the solvent recovery apparatus, and wherein the solvent recovery apparatus is a rectification column where the separation of the used mixture into the solvent fraction and into the diluent fraction is carried out.

5,711,874
WATER TREATING APPARATUS

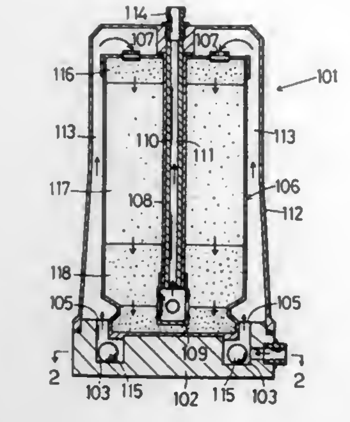
Takashi Kawata, Gamagori, Japan, assignor to I.B.E. Co., Ltd., Aichi, Japan

Filed Nov. 21, 1995, Ser. No. 561,359

Int. Cl.⁶ B01D *35/24*

U.S. Cl. 210—223 **1 Claim**

1. A water treating apparatus comprising a water path having entrance(s) and exit (s) and ceramic grains(s) movably inserted in said water path,



wherein the entrance(s) connect(s) to a column in which one or more kinds of water treating agent(s) is(are) packed, and wherein a tubular magnet connects to said column.

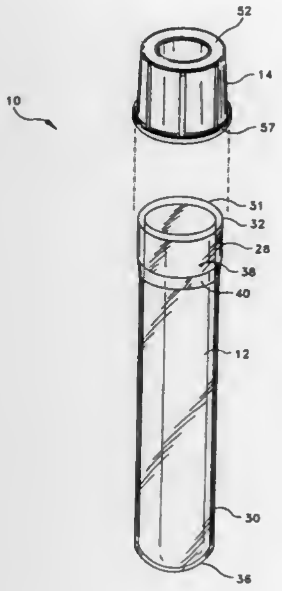
5,711,875
CELL STRAINER CAP

John J. Kayal, Wayne, N.J.; Seiji Fukushima, Chiba, Japan, and Thomas Fleming, St. Paul, Minn., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 565,468, Nov. 30, 1995, Pat. No. 5,601,728. This application Dec. 11, 1996, Ser. No. 763,599

Int. Cl.⁶ B01D *29/085*

U.S. Cl. 210—232 **1 Claim**



1. A cell strainer cap for filtering suspensions comprising:
a top portion, a bottom portion, an annular skirt extending from said top portion to said bottom portion and having an inner surface and outer surface, and inner surface inverted skirt portion surrounded by said inner surface of said annular skirt and extending from said top portion toward said bottom portion, an annular space between said inner surface of said annular skirt and said inverted skirt portion, and orifice in said bottom portion of said inverted skirt portion; means for filtering a suspension covering said orifice and protrusions on said inner surface of said annular skirt and said inverted skirt portion.

5,711,876
APPARATUS FOR REMOVING BUBBLES IN FILTER HOUSING OF COATING EQUIPMENT

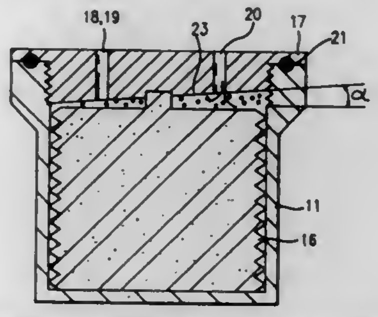
Keun Woung Lee, Kyungsangbuk-do, Rep. of Korea, assignor to L G Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jun. 6, 1996, Ser. No. 659,523

Claims priority, application Rep. of Korea, Feb. 23, 1996, 4295/1996

Int. Cl.⁶ B01D *35/00*

U.S. Cl. 210—436 **10 Claims**



1. An apparatus for removing bubbles in a filter housing of coating equipment, comprising:
a cover for coupling to the filter housing and including a bottom, an inlet portion, an outlet portion, and a drain portion, the bottom of the cover having an inclined surface at an angle;
wherein the drain portion is above the inlet portion and the outlet portion on the inclined surface, and wherein the drain portion has asymmetric conical-shaped lower portion and a cylindrical upper portion;
and wherein the angle of the inclined surface is approximately in a range of 5 to 20 degrees.

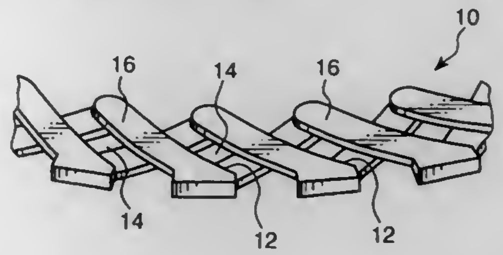
5,711,877
ETCHED DISC WITH CROSSHATCH PATTERN

Antonio E. Gonzalez, South El Monte, Calif., assignor to Vacco Industries, South El Monte, Calif.

Filed Nov. 12, 1996, Ser. No. 746,502

Int. Cl.⁶ B01D *29/46*

U.S. Cl. 210—488 **20 Claims**



1. A filter element comprising:
a sheet of material having an inner peripheral edge and an outer peripheral edge and an opposite pair of parallel surfaces, each of said surfaces having portions removed to define integral lands standing out in relief from opposite sides of a base portion;
said lands of one of said surfaces comprising a spaced series of first lands that extend from adjacent said inner edge to adjacent said outer edge, each adjacent pair of first lands defining a fluid flow channel therebetween on one side of said base portion;
said lands of the other of said surfaces comprising a spaced apart series of second lands, each of which extends from adjacent said inner edge to adjacent said outer edge, each adjacent pair of second lands defining a channel therebetween over the other side of said base portion, the first lands of the one side and the second lands of the other side being at least partially

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superimposed so as to cross over one another and further wherein at least some of said channels include at least one aperture defined through said base portion from the one side to the other.

5,711,878

CYLINDRICAL FILTER

Satoshi Ogata, and Shinichi Tokudome, both of Moriyama, Japan, assignors to Chisso Corporation, Osaka-Fu, Japan

Filed Oct. 29, 1996, Ser. No. 740,427

Claims priority, application Japan, Nov. 2, 1995, 7-285986

Int. Cl.^{6} B01D *27/14*

U.S. Cl. 210—490 **7 Claims**

1. A cylindrical filter comprising a wound up innermost layer, an outermost layer, each of said layers comprising a fibrous aggregate of melt-adhesive composite fibers bonded to each other through the melt of a melt-adhesive component in said composite fibers, and a layer of a non-woven fabric of glass fibers, said layer of the non-woven fabric of glass fibers being arranged between said innermost layer and said outermost layer and circumferentially wound up at a position of $\frac{1}{5}$ to $\frac{4}{5}$ in a thickness direction from an inner surface of said cylindrical filter, having a porosity of 96% or greater, and occupying 10 to 50% of the thickness of said cylindrical filter, and said glass fibers having a smaller diameter than that of said melt-adhesive composite fibers.

5,711,879

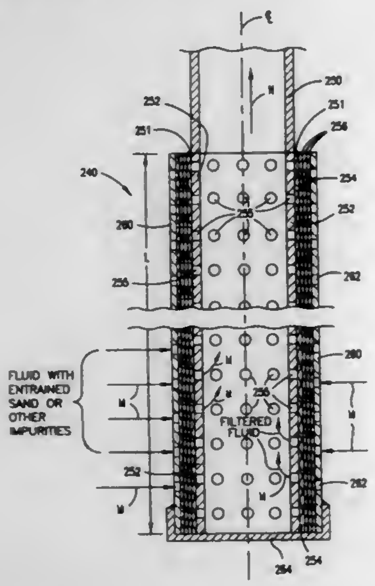
RADIAL-FLOW FILTER AND METHOD OF MANUFACTURE

Robert A. Carlson, Lake Forest, Ill., assignor to American Metal Fibers, Lake Bluff, Ill.

Filed Mar. 4, 1996, Ser. No. 610,459

Int. Cl.^{6} B01D *29/21*

U.S. Cl. 210—497.01 **12 Claims**



1. The method of manufacturing a radial-flow filter, suitable for use as an input filter for the production tubing of a subterranean fluid well, which production tubing has a predetermined outer diameter D, comprising the following steps:

A. providing a preselected length L of a multi-perforate pipe having an outer diameter D1 corresponding to that of the production tubing for a subterranean fluid well, L being at least five feet (152 cm);

B. mounting the length of multi-perforate pipe in a lathe with the length L of multi-perforate pipe between the headstock and the tailstock of the lathe;

C. aligning a strip of metal fiber wool with the length of the metal wool strip at a given acute angle X to the axis of the multi-perforate pipe;

D. affixing one end of the strip of metal fiber wool to one end of the length of pipe;

E. actuating the lathe to rotate the pipe and simultaneously moving the strip of metal wool along a path parallel to the pipe from the one end of the pipe length L to the other so that the metal wool strip is wound in helical relation on the pipe, at the angle X, from one end of the length L of pipe to the other, while maintaining the metal wool strip under tension; and

F. repeating and reversing step E to apply plural overlapping layers of metal wool to the exterior of the length L of pipe, with the strip forming alternate layers of metal wool angularly displaced from each other by an angle of 2X.

5,711,880

FILTERING MEANS FOR THE FILTRATION OF EXTRACTION BEVERAGES, IN PARTICULAR ESPRESSO

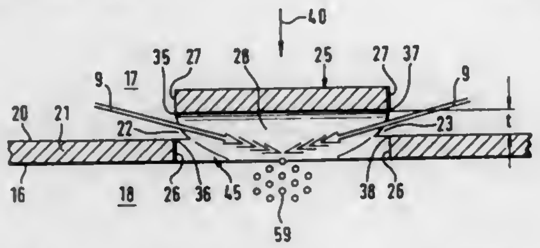
Dieter Friedrich, Vockenhausen; Gunther Seidel, Frankfurt am Main; Michael Machlitt, Schwalbach; Rolf Eimecke, Obertshausen; Dieter Koch, Pattensen; Christof Miltenberger, Schmitten, and Robert Wirsing, Dreieich, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 22, 1996, Ser. No. 701,750

Claims priority, application Germany, Sep. 2, 1995, 195 32 481.1

Int. Cl.^{6} B01D *39/14*

U.S. Cl. 210—498 **29 Claims**



1. A filter for filtration of extraction beverages, comprising:

a disk with a plurality of openings through which a brew extracted from a material to be extracted passes from an afflux side to an efflux side of the disk,

said disk including a plurality of deformed regions extending away from a surface of the disk, each said plurality of deformed regions forming a roof-shaped dome spanning a corresponding one of said plurality of openings, each of said plurality of roof shaped domes defining a first aperture in fluid communication with said one of said plurality of openings, said first aperture sized with an area of about 0.045 mm^2 to 0.125 mm^2 to cause a pressure drop as the brew passes therethrough.

5,711,881

HEMATOPOIETIC INHIBITING FACTOR CONTAINING COMPOSITIONS

Satoko Yamada, Kusatsu, and Hiroshi Kataoka, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP93/01766, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO94/13702, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 3, 1993, Ser. No. 284,477

Claims priority, application Japan, Apr. 12, 1992, 4-325453

Int. Cl.^{6} A61M *1/16;* **B01D** *13/00*

U.S. Cl. 210—500.21 **5 Claims**

1. A dialysis membrane which satisfies AI/AA$\geqq$1/50, wherein

AI is the height of the absorbency value of a hematopoietic inhibiting factor-containing composition obtained by separating a component having a molecular weight of 200,000 or more from a dialysate obtained by dialyzing blood with a dialysis membrane of albumin sieving coefficient of not less than 0.01, and

AA is the height of the maximum absorbency value in a gel filtration pattern of solutes of the dialysate expressed in terms of the absorbency at 280 nm.

5,711,882

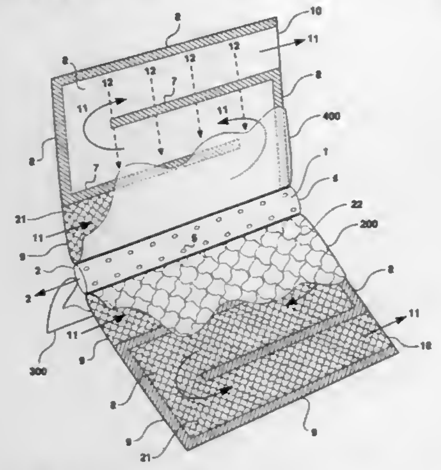
GAS SEPARATION MEMBRANE MODULE AND PROCESS

Thomas Hofmann, Sunnyvale, Calif.; Matthias Wessling, Enschede, Netherlands, and Richard W. Baker, Palo Alto, Calif., assignors to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Sep. 29, 1995, Ser. No. 536,633

Int. Cl.^{6} B01D *15/00*

U.S. Cl. 210—640 **40 Claims**



31. A pervaporation process, comprising:

(i) providing a spiral-wound membrane module, having at least one feed channel containing a mesh spacer and at least one permeate channel, and adapted, by providing one or more baffles, positioned substantially parallel to a longitudinal axis of the module, in each feed channel, to provide at least partially counter-current feed/permeate flow without a permeate sweep;

(ii) passing a feed liquid stream containing a first and second component along said at least one feed channel in a flow pattern that includes a flow vector that is radially outward with respect to said module;

(iii) withdrawing from said at least one feed channel a residue liquid stream depleted in said first component compared with said feed liquid stream;

(iv) withdrawing from said at least one permeate channel an undiluted permeate gas stream enriched in said first component compared with said feed gas stream.

5,711,883

METHOD FOR TESTING DIALYZER INTEGRITY PRIOR TO USE

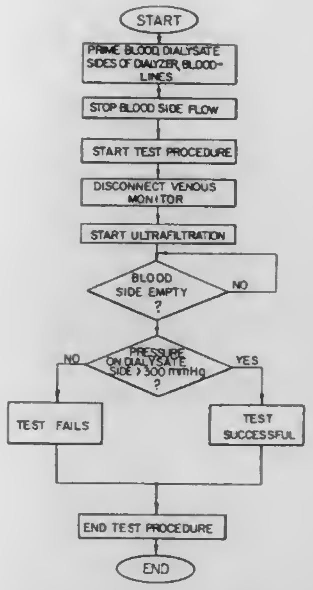
Thomas I. Folden, Alamo, Calif.; Hans D. Polaschegg, and Harald Peter, both of Oberursel, Germany, assignors to Fresenius USA, Inc., Lexington, Mass.

Filed Sep. 27, 1995, Ser. No. 534,375

Int. Cl.^{6} B01D *61/24;65/10*

U.S. Cl. 210—646 **8 Claims**

6. A method for testing a dialyzer for leaks comprising the steps of: engaging with a dialysis patient a hemodialysis delivery system having a dialysis control unit with means to test a transmembrane pressure, a dialyzer having a dialysate compartment, a blood compartment and a membrane therebetween, a venous bloodline having a first and second end, and an arterial bloodline having a first and second end; performing hemodialysis treatment on said patient; testing the dialyzer in the hemodialysis delivery system; and performing hemodialysis on a second patient using the same hemodialysis delivery system if the dialyzer passes the test; and before said testing step, priming the dialysate compartment and blood compartment with saline solution, using saline lines.



5,711,884

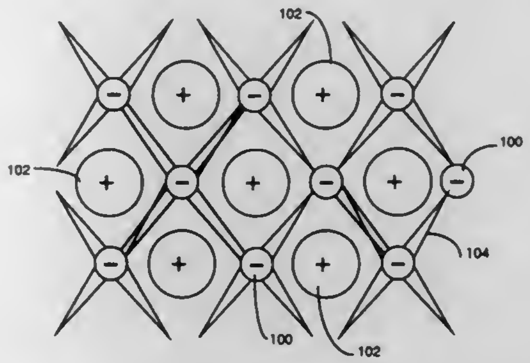
METHOD OF FILTERING SUBMICRON PARTICLES WITH GEL LATTICE MEMBRANE FILTER

Sanford A. Asher, Pittsburgh, Pa., and Jay Henis, St. Louis, Mo., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Continuation of Ser. No. 151,476, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 571,251, Aug. 22, 1990, Pat. No. 5,281,370. This application Nov. 21, 1995, Ser. No. 561,162

Int. Cl.^{6} B01D *69/00;61/14*

U.S. Cl. 210—650 **21 Claims**



1. A method of filtering submicron size material comprising:

establishing a self-supporting gel lattice membrane filter which is an ordered array of charged particles in a lattice;

establishing said membrane filter with an interstice size less than or equal to the material to be filtered; and

causing material containing said submicron size material to impinge upon said membrane filter, thereby resisting passage of said material through said membrane filter.

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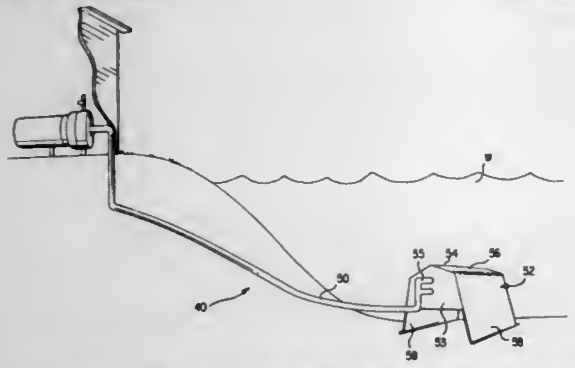
5,711,885

Patent Not Issued For This Number

5,711,886
APPARATUS AND METHOD FOR PREVENTING MOLLUSK INFESTATION IN RESIDENTIAL WATER SYSTEM

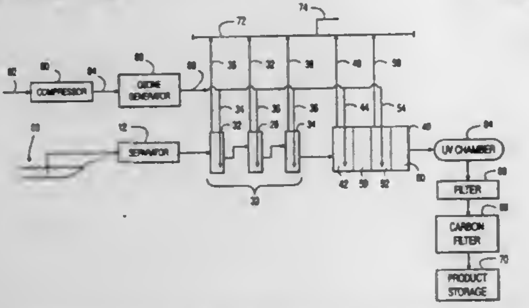
John Turner Long, 2011 Gibbs Rd., Penn Yan, N.Y. 14527
Continuation-in-part of Ser. No. 491,724, Jun. 19, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 665,733
Int. Cl.^{6} C02F *37/00*
U.S. Cl. 210—747 **5 Claims**



1. A process for preventing dreissena species infestation of a water intake system having piping for transporting water from at least one intake port in a source of water containing the dreissena species to a predetermined location, said process comprising providing a ceramic body having pores extending therethrough for the passage of water, each said pore having a width which is within the range of approximately 30–100 microns, and placing said ceramic body over said intake port so that all of the water entering said piping must pass through said ceramic body to prevent the dreissena species from entering the piping.

5,711,887
WATER PURIFICATION SYSTEM

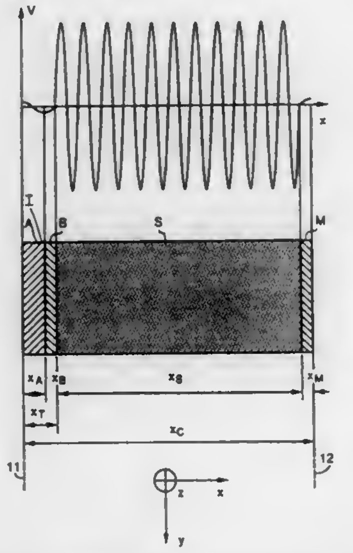
David L. Gastman, Snohomish, and Donald B. Ribelin, Everett, both of Wash., assignors to Global Water Industries, Inc., Aurora, Colo.
Filed Jul. 31, 1995, Ser. No. 509,519
Int. Cl.^{6} C02F *1/78;1/32*
U.S. Cl. 210—748 **18 Claims**



1. A continuous process for purification of contaminated water to produce potable water for human consumption, the process comprising:
(a) continuously flowing the contaminated water into a first vessel, of a series of sequential vessels, to a predetermined first liquid height in the first vessel;
(b) supplying ozone gas to the water in the first vessel, the water flowing under laminar flow conditions;
(c) continuously overflowing ozonated water, under gravitational motive force, into a last of the series of vessels, to a last predetermined liquid height, the last liquid height less than the first liquid height, the water flowing under laminar flow conditions in the last vessel;
(d) supplying additional ozone to the water in the last vessel;
(e) continuously removing water containing ozone from the last vessel;
(f) treating the removed water containing ozone to neutralize substantially all the ozone; and
(g) producing substantially pathogen-free potable water.

5,711,888
MULTILAYERED PIEZOELECTRIC RESONATOR FOR THE SEPARATION OF SUSPENDED PARTICLES

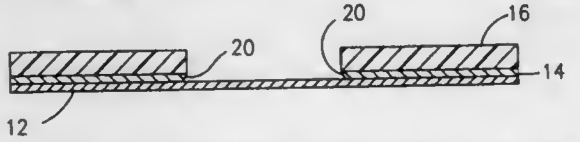
Felix Trampler, Hinterbrühl; Ewald Benes, Biedermannsdorf; Wolfgang Burger, and Martin Gröschl, both of Vienna, all of Austria, assignors to SonoSep Biotech, Inc., Vancouver, Canada
Division of Ser. No. 86,700, Jul. 2, 1993, Pat. No. 5,527,460. This application Apr. 4, 1996, Ser. No. 627,433
Claims priority, application Australia, May 11, 1993, 926/93
Int. Cl.^{6} C02F *1/36*
U.S. Cl. 210—748 **17 Claims**



1. A method of separating particles from a liquid, comprising:
passing the liquid containing the particles through an acoustic resonation chamber, the acoustic resonation chamber including an acoustic transducer and an acoustic mirror on opposite sidewalls; and
generating an acoustic standing resonance wave within the acoustic resonation chamber having a selected frequency that is different from an electrically excitable Eigen-frequency of the transducer by greater than an offset value, the offset value being greater than 10% divided by the quasiharmonic number of the Eigen-frequency.

5,711,889
METHOD FOR MAKING DICHROIC FILTER ARRAY

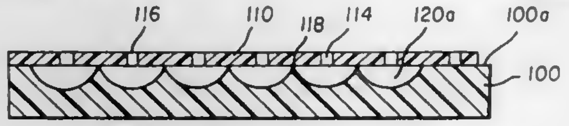
Philip E. Buchsbaum, 4973 Turtle Creek Trail, Oldsmar, Fla. 34677
Filed Sep. 15, 1995, Ser. No. 529,113
Int. Cl.^{6} F21P *5/02;* **G02B** *5/28*
U.S. Cl. 216—5 **12 Claims**



1. A method for manufacturing a dichroic filter array on a wafer, comprising the steps of:
applying a releasing agent to a clean wafer to form a release layer;
applying a photoresist to said release layer;
masking preselected areas of the photoresist;
developing unmasked areas of the photoresist to create a preselected space where the release layer is exposed;
over-etching the release layer to form an undercut in said release layer and to expose a predetermined section of the wafer;
depositing dichroic filter material on said predetermined section of the wafer;
removing the photoresist to expose the release layer; removing the release layer; and
repeating the foregoing steps to deposit a predetermined number of dichroic filters on said wafer in a predetermined array.

5,711,890
METHOD FOR FORMING CYLINDRICAL LENS ARRAYS FOR SOLID STATE IMAGER

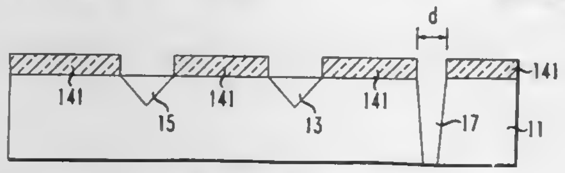
Gilbert Alan Hawkins, Mendon; Madhav Mehra, and Christopher Parks, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 11, 1996, Ser. No. 613,306
Int. Cl.^{6} H01L *27/14*
U.S. Cl. 216—24 **5 Claims**



1. A method of making an imager, comprising the steps of:
(a) providing a semiconductor substrate having a top surface;
(b) providing a plurality of spaced image pixels in the substrate, thereby forming a semiconductor portion;
(c) depositing a first transparent substantially inorganic support layer over the semiconductor portion;
(d) making the inorganic support layer optically planar by chemical mechanical polishing, thereby forming an optically flat top surface;
(e) forming a plurality of depressions in the optically flat top surface;
(f) uniformly depositing a substantially inorganic lens material on the optically flat top surface, entirely filling the depressions; and
(g) making the substantially inorganic lens material optically planar by chemical mechanical polishing, thereby forming an optically planar lens surface.

5,711,891
WAFER PROCESSING USING THERMAL NITRIDE ETCH MASK

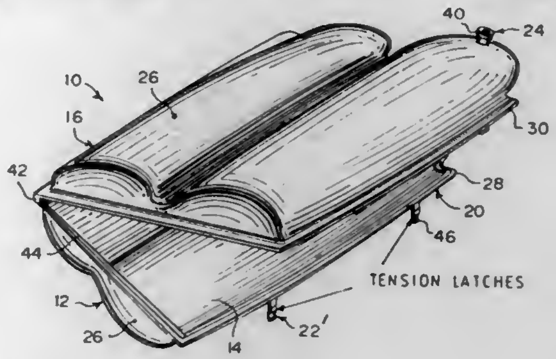
Charles Walter Pearce, Emmaus, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Sep. 20, 1995, Ser. No. 531,115
Int. Cl.^{6} H01L *21/033;* **B41J** *2/16*
U.S. Cl. 216—51 **8 Claims**



1. A method of wafer processing comprising:
forming a layer of silicon nitride $\leqq 50$ angstroms thick by a thermal nitridation process upon a silicon substrate;
patterning said layer of silicon nitride to expose portions of said substrate; and
etching said exposed portions of said substrate to produce at least one v-shaped groove.

5,711,892
ICE SCULPTURE MOLD

Luis Fernando Ramirez, 125 Union Ave., Center Moriches, N.Y. 11934
Filed Jul. 2, 1996, Ser. No. 674,529
Int. Cl.^{6} B22C *9/08*
U.S. Cl. 249—105 **1 Claim**



1. An ice sculpture mold comprising:
a) a bottom die half with three straight sides having multiple bottom die cavities in a row configured to produce first half portions of three-dimensional ice sculptures;
b) a top die half with three straight sides having top die cavities configured to produce second half portions of the three-dimensional ice sculptures;
c) means for sealing said top die half to said bottom die half comprising a first flange bordering a peripheral extremity of said bottom die half and a second matching flange bordering a peripheral extremity of said top die half, a leak-proof hinge integrally built into one straight side of said mold between said first flange and said second flange permitting said top die half to close with said bottom die half, and an interlocking freeze seal built into and extending uninterruptedly along all the other sides of said mold between said first flange and said second flange for automatically engaging when said top die half is closed over said bottom die half, said freeze seal comprising a raised portion in the flange of said top die half and a groove sized and shaped to receive said raised portion in the flange of said bottom die half, said raised portion fitting into said groove when said mold is closed thereby sealing said mold against leakage of water;
d) means comprising a tension latch opposite from said hinge for holding said top die half to said bottom die half in a tight and separable manner, so that said sealing means will prevent leakage therebetween; and
e) means comprising a one-way pour valve affixed in said top die half for filling water into said bottom die cavities in said bottom die half and into said top die cavities in said top die half, so that when placed into a very cold environment the water will freeze into ice to form the three-dimensional ice sculptures.

5,711,893
NI-CU-ZN FERRITE

Jonghak Park, Seoul, Rep. of Korea, assignor to Samsung Corning Co., Ltd., Suwon, Rep. of Korea
Filed Oct. 23, 1995, Ser. No. 546,928
Claims priority, application Rep. of Korea, May 31, 1995, 95-14262
Int. Cl.^{6} C04B *35/28*
U.S. Cl. 252—62.62 **5 Claims**

1. A magnetic material comprising:
(a) main components including in the range of from 14 to 19% by mol of NiO, 29 to 35% by mol of ZnO, 3 to 6% by mol of CuO, and a remainder of Fe_2O_3;
(b) sub-components including less than 0.02% by weight SiO_2 (not including 0%), less than 0.02% by weight CaO (not including 0%), and less than 0.1% by weight of Bi_2O_3 (not including 0%); and

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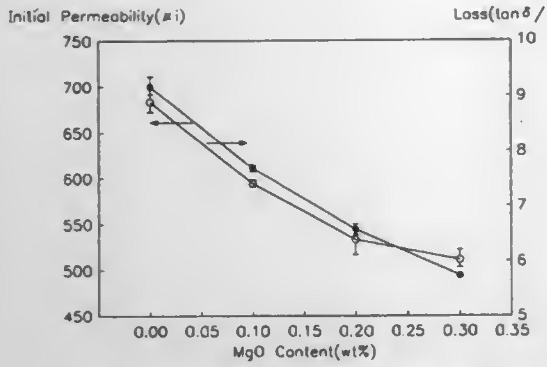


(c) additives including in the range of from 0.1 to 0.3% by weight MgO and greater than about 0.1 to about 0.4% by weight MnO.

5,711,894

ANTIFREEZE CONCENTRATE INCLUDING ALKOXYBENZOIC ACID

Yuji Miyake, and Yasuaki Mori, both of Gifu, Japan, assignors to CCI, Co., Ltd., Gifu, Japan

Filed Mar. 27, 1996, Ser. No. 622,309

Claims priority, application Japan, Mar. 29, 1995, 7-071646

Int. Cl.^{6} C09K *5/00*

U.S. Cl. 252—76 **1 Claim**

1. A coolant or antifreeze concentrate having corrosion inhibiting properties consisting essentially of:

a major amount of at least one glycol

(b) at least one ingredient selected from the group consisting of (1) benzoic acids, substituted by alkoxy of carbon number 1–5, (2) the amine salts thereof, (3) the alkali metal salts thereof and (4) the ammonium salts thereof in an amount of 0.05–8.0% by weight; and, (c) at least one in an amount of 0.05–1.0% by weight.

5,711,895

FLUID COMPOSITION FOR USE IN A REFRIGERATING MACHINE IN WHICH THE REFRIGERATING MACHINE OIL IS AT LEAST ONE HYDROCARBON COMPOUND OF A FORMULA CONSISTING OF TWO PHENYL GROUPS JOINED THROUGH AN ALKYLENE OR ALKENYLENE GROUP

Katsuya Takigawa; Umekichl Sasaki, and Satoshi Suda, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

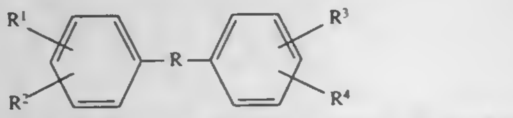
Filed Dec. 4, 1995, Ser. No. 566,620

Claims priority, application Japan, Dec. 12, 1994, 6-331367; Jan. 11, 1995, 7-018350; Jan. 11, 1995, 7-018351

Int. Cl.^{6} C09K *5/04;* **C10M** *105/06*

U.S. Cl. 252—68 **8 Claims**

1. A fluid composition for use in a refrigerating machine which comprises a refrigerant which consists essentially of a hydrofluorocarbon refrigerant and 1 to 500 parts by weight of a refrigerating machine oil per 100 parts by weight of the hydrofluorocarbon refrigerant, said refriderating machine oil comprising at least one hydrocarbon compound of the following formula (1)



(1)

wherein R is an alkylene or alkenylene group having 1 to 8 carbon atoms; and R^1, R^2, R^3 and R^4 are the same or different from each other and are each a hydrogen atom or an alkyl group having 1 to 4 carbon atoms with the proviso that the total number of carbon atoms of R, R^1, R^2, R^3 and R^4 is within a range of 1 to 8.

5,711,896

POLYOXYALKYLENE GLYCOL LUBRICATING OILS, WORKING FLUID COMPOSITIONS AND METHODS OF LUBRICATING

Takashl Kalmai, Toda, Japan, assignor to Japan Energy Corporation, Tokyo, and Nissan Motor Co., Ltd., Yokohama, both of Japan

Continuation of Ser. No. 333,334, Nov. 2, 1994, abandoned. This application Jul. 23, 1996, Ser. No. 681,491

Claims priority, application Japan, Nov. 5, 1993, 5-276916

Int. Cl.^{6} C09K *5/00;* **C10M** *105/08*

U.S. Cl. 252—68 **18 Claims**

1. A lubricating oil for a fluorinated hydrocarbon based refrigerant type compressor, said lubricating oil having a kinematic viscosity at 100° C. being 15 to 30 cSt and comprising, as a base oil, a mixture of at least one polyoxyalkylene glycol derivative represented by the following formula (I):

$$R_1\text{—O—((PO)p(EO}^1\text{)q)—(EO}^2\text{)r—}R_2 \qquad \text{(I)}$$

in which R_1 is an alkyl group having 1 to 4 carbon atoms, R^2 is a hydrogen atom, PO is an oxypropylene group, EO^1 and EO^2 are oxyethylene groups, p, q and r are average polymerization degrees of PO, EO^1 and EO^2, respectively, $((PO)_p(EO^1)_q)$ is a random copolymer group of PO and EO^1, $(EO^2)r$ is a block polymer group of EO^2, p/(p+q) is 0.70 to 0.95, and r/(p+q+r) is 0.03 to 0.30,

and at least one polyoxyalkylene glycol derivative (b) represented by the following formula (II), ratios of a:b being 95:5 to 5:95 in terms of weight,

$$R_3\text{—O—(PO)m(EO)n—}R_4 \qquad \text{(II)}$$

in which R_2 is an alkyl group having 1 to 4 carbon atoms, R^4 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, PO is an oxypropylene group, EO is an oxyethylene group, m and n are average polymerization degrees of PO and EO, respectively, (PO)m is a block polymer group of PO, (EO)n is a block polymer group of EO, n/(m+n) is 0.02 to 0.4,

and wherein said lubricating oil has a molecular weight of at least 1300.

5,711,897

ELECTRORHEOLOGICAL FLUIDS OF POLAR SOLIDS AND ORGANIC SEMICONDUCTORS

Kathleen O. Havelka, Mentor, and Joseph W. Pialet, Euclid, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 293,527, Aug. 19, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,368

Int. Cl.^{6} C10M *171/00;169/04*

U.S. Cl. 252—77 **26 Claims**

1. An electrorheological fluid of a particulate phase and a continuous phase, comprising:

(a) a hydrophobic liquid medium,

(b) a dispersed particulate phase comprising

(i) a polar solid material which is capable of exhibiting substantial electrorheological activity only in the presence of a low molecular weight polar material, wherein the polar solid material is a cellulosic material and

(ii) an organic semiconductor which exhibits a conductivity of about 10^3 to about 10^{-12} siemens/cm, wherein the organic semiconductor is a polyaniline, and

wherein the weight ratio of the polar solid material to the organic semiconductor is at least about 2:1, wherein the organic semiconductor and the polar solid material are present as mixed particles containing both components, and wherein the organic semiconductor is at least in part coated on particles of polar solid material; and

(c) a low molecular weight polar material.

5,711,898

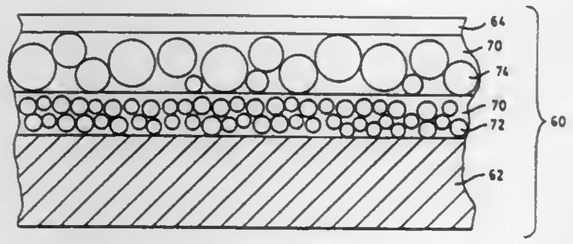
IMPROVED BLUE-GREEN EMITTING ZNS:CU,CL ELECTROLUMINESCENT PHOSPHOR AND METHOD OF MAKING SAME

Vaddi Butchi Reddy, Sayre, and Kenneth T. Reilly, Towanda, both of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Apr. 24, 1996, Ser. No. 637,023

Int. Cl.^{6} C09K *11/54;11/56*

U.S. Cl. 252—301.65 **14 Claims**



1. An electroluminescent phosphor having a general formula ZnS:Cu,Cl,Au, a halflife of at least about 470 hours, and x and y color coordinates where the x color coordinate is from about 0.156 to about 0.196 and the y color coordinate is from about 0.370 to about 0.410.

5,711,899

FREE FLOWING PEARLESCENT CONCENTRATE

Rolf Kawa, Monheim; Achim Ansmann, Erkrath, and Angelika Jung, Monheim-Baumberg, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 679,076, Jun. 21, 1991, abandoned. This application Aug. 19, 1996, Ser. No. 699,174

Claims priority, application Germany, Dec. 23, 1988, 38 43 572.1

Int. Cl.^{6} A61K *7/08;* **B01J** *13/00;* **C11D** *1/90:17/00*

U.S. Cl. 252—311 **10 Claims**

1. A peadescent free-flowing, aqueous concentrate consisting essentially of:

(A) 20% to 30% by weight of pearlescing components consisting of esters corresponding to formula (I)

$$R^1\text{—}(OC_nH_{2n})_x\text{—}OR^2 \qquad \text{(I)}$$

in which R^1 is a linear $C_{14\text{-}22}$ fatty acyl group. R^2 is hydrogen or a group R^1, n=2 or 3 and x is a number of from 1 to 4.

(B) 15% to 30% by weight of a component selected from the group of nonionic, ampholytic, and zwitterionic emulsifiers and mixtures thereof,

(C) 0.1% to 5% by weight of low molecular weight, polyhydric alcohols and

(D) the remainder, water, based on the weight of said dispersion.

5,711,900

GADOLINIUM COMPUNDS FOR USE AS OIL-SOLUBLE TRACERS

Timothy G. J. Jones, Bethel, Conn., assignor to Schlumberger Technology Corporation, Ridgefield, Conn.

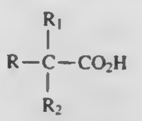
Filed Nov. 29, 1995, Ser. No. 564,000

Int. Cl.^{6} G01N *31/00;* **C09K** *7/00*

U.S. Cl. 252—408.1 **14 Claims**

1. A tracer solution comprising:

a) a gadolinium salt of a carboxylic acid of general formula



$$R\text{—}\overset{\displaystyle R_1}{\underset{\displaystyle R_2}{\overset{|}{\underset{|}{C}}}}\text{—}CO_2H$$

where R is an alkyl of not less than four carbon atoms, and R_1 and R_2 are selected from the group consisting of hydrogen and an alkyl group;

b) a free branched-chain carboxylic acid;

c) a non-polar solvent and

d) a viscosity stabilizer selected from the group consisting of tributyl citrate, oleyl alcohol, n-cyclohexyl-p-toluenesulfonamide and di(ethylene glycol) butyl ether.

5,711,901

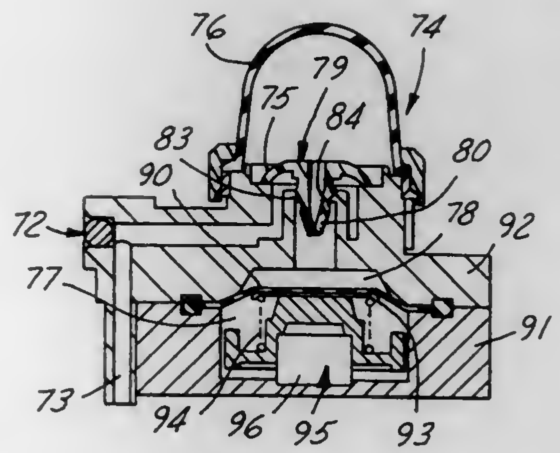
CARBURETOR HAVING TEMPERATURE-COMPENSATED PURGE/PRIMER

David L. Berg, Auburn; Matthew A. Braun, Caro, and Donald C. Ross, Cass City, all of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jun. 5, 1996, Ser. No. 658,761

Int. Cl.^{6} F02M *17/04*

U.S. Cl. 261—35 **7 Claims**



1. A carburetor for an engine, the carburetor comprising

a body having an air intake passage to the engine,

a fluid supply port,

a diaphragm chamber communicating with said fuel supply port for supplying fuel to the air intake passage,

a cavity in the body,

a movable partition extending across the cavity and dividing the cavity into a reservoir of variable volume for primer fuel at one side of the partition and a compartment at the other side thereof,

a manually-operable pump for drawing fuel from said diaphragm chamber into said reservoir,

an outlet passage leading from said reservoir to deliver primer fuel to the engine,

a normally closed manually-operable valve for opening said outlet passage, means for varying the volume of said reservoir as a function of ambient temperature comprising a temperature compensator mounted in said compartment,

a spring seat slidably guided in said compartment for movement toward and away from the partition and beating on said temperature compensator, and

a spring compressed between said partition and said seat.

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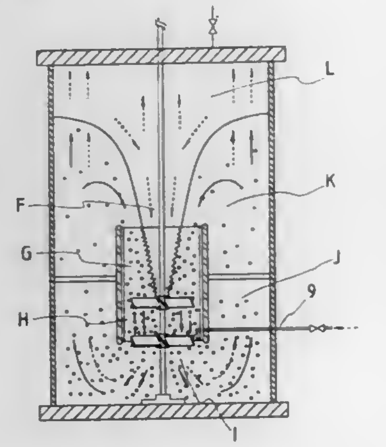
5,711,902
GAS-INDUCED REACTOR

Yung-chien Hsu, 3F, No. 147-2, Lane 100, Hu Lin Street, Taipei, Taiwan

Filed Nov. 15, 1996, Ser. No. 749,853

Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—91 **5 Claims**



1. A gas-induced reactor which creates a gas-induction phenomenon and enables bubbles to circulate in liquid phase through agitating at high rotating speed, comprising:
- an elongated cylindrical tank body without any baffle installed on an inner wall thereof,
- a flat bottom and a top cover respectively closing a bottom and a top of said tank body;
- a shaft perpendicularly extending through a longitudinal central axis of said tank body with a lower end thereof inserted into a support fixedly mounted to a center of said flat bottom, so that said shaft is coaxial with said tank body; said shaft being driven to rotate by an external motor;
- draft tube which is a hollow cylindrical tube being fixedly suspended in said tank body by brackets extending from said inner wall of said tank body toward a center of said draft tube so that said draft tube is concentric with said tank body; said draft tube being provided on an inner wall with a plurality of axially and parallelly extended, symmetrically arranged and equally spaced baffles;
- an upper and a lower turbines serially and fixedly mounted on said shaft and enclosed by said draft tube, each of said turbines having six 45° pitched, rectangular, flat blades, said turbines each having an overall diameter of 0.3 to 0.5 times of a diameter of said tank body, said blades each having a width of one eighth of said diameter of said turbines, and said lower turbine being located in a lower portion of said draft tube on a level with a lower end of said draft tube; and
- a gas input pipe extending from an outside of said tank body into said tank body;
- whereby when said upper and said lower turbines rotate at high speed along with said shaft driven by said external motor, a downward central regular gas vortex is formed at a center of a liquid surface in said tank body above said draft tube; said regular gas vortex being pulled inward to said draft tube by said two rotating turbines and being disturbed by said inner baffles to form an irregular gas vortex inside said draft tube; said regular and said irregular gas vortices creating a gas-induction phenomenon in said tank body to increase the length of flow paths of gas and liquid and the numbers of circulation of introduced reactive gas in said tank body.

5,711,903
METHOD OF MANUFACTURING A POROUS PREFORM FOR AN OPTICAL FIBER

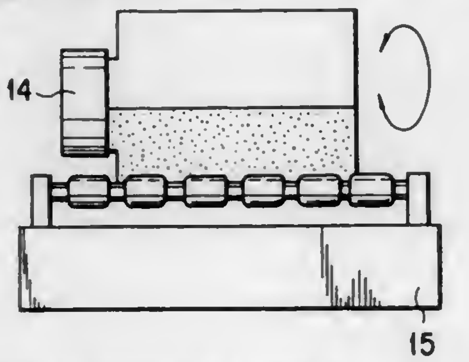
Takeshi Yagi; Masato Oku, both of Yokohama; Takayuki Morikawa, Tokyo; Tsuguo Sato, Souka, and Kazuaki Yoshida, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 336,781, Nov. 9, 1994, abandoned. This application Aug. 14, 1996, Ser. No. 698,287

Claims priority, application Japan, Nov. 15, 1993, 5-284714; Jun. 20, 1994, 6-137120; Aug. 31, 1994, 6-207756

Int. Cl.⁶ B29D *11/00;* **B27N** *3/00;* **B29C** *59/00*

U.S. Cl. 264—1.21 **17 Claims**



1. A method of manufacturing a porous preform for an optical fiber, comprising the steps of
- removing impurity particles from silica powder using repulsion of charges by the steps of stirring the silica powder in an alkaline liquid phase whereby repulsion of charges between the silica powder and the impurity particles separates the impurity particles from the silica particles and maintains the impurity particles in suspension in the alkaline liquid phase;
- separating the silica powder from the liquid phase suspension of the impurity particles; and
- obtaining said porous preform for an optical fiber by applying a powder forming method to said silica powder used as a main material.

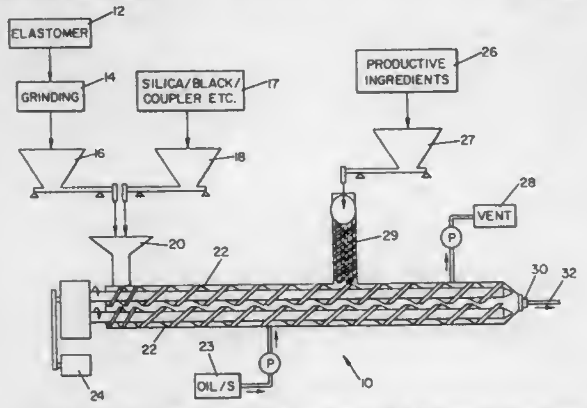
5,711,904
CONTINUOUS MIXING OF SILICA LOADED ELASTOMERIC COMPOUNDS

Vetkav Rajagopalan Eswaran, Houston, Tex.; Christopher Kiehl, Akron, Ohio; Fredrick Lewis Magnus, Mogadore, Ohio, and Pawan Kumar Handa, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 5, 1995, Ser. No. 523,458

Int. Cl.⁶ B29C *47/60;47/92*

U.S. Cl. 264—40.7 **8 Claims**



1. A method for the continuous mixing of elastomer compounds comprising the sequential steps of
- a) providing a twin screw extruder comprising a housing containing a pair of screws, the housing containing feed openings and a discharge opening,
- b) feeding an elastomer and 30 to 110 phr silica and at least one silica coupler into a feed opening,
- c) mixing said elastomer, silica and couplers at a temperature sufficient and for a time sufficient to permit a chemical reaction between said couplers and silica,
- d) adding curatives and accelerators that promote vulcanization in said elastomer,
- e) maintaining said mixture at a Mooney viscosity ASTM-D1646 (ML (1+4) 100C) between 20 to 250 units during mixing,
- f) continuing said mixing for a time sufficient to thoroughly mix said curatives into said elastomer, and
- g) extruding elastomer mixture from said twin screw extruder.

5,711,905
PROCESS FOR PRODUCING MOLDED ARTICLES FROM FOAMED PLASTIC AND A MOLD FOR PERFORMING THE PROCESS

Erhard Behl, Faulbach, Germany, assignor to Ph. Kurtz Eisenbammer GmbH & Co., Haslock/Main, Germany

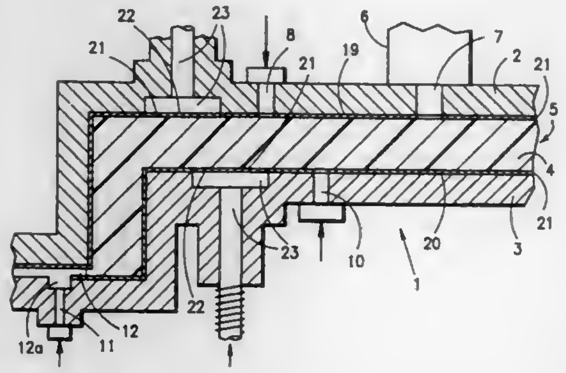
PCT No. PCT/DE93/00783, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/09973, PCT Pub. Date May 11, 1994

PCT Filed Aug. 27, 1993, Ser. No. 424,355

Claims priority, application Germany, Oct. 26, 1992, 42 36 081.1

Int. Cl.⁶ B29C *44/02;* **B28B** *7/36*

U.S. Cl. 264—51 **15 Claims**



1. Process for producing a molded part of expanded plastic, comprising the steps of:
- Using a mold with at least two parts having walls which form a mold cavity and are made impermeable to gas and which have surfaces facing the mold cavity which are made of material that conducts heat poorly;
- Closing the mold to close the mold cavity;
- Applying a partial vacuum to the mold for evacuating the mold cavity and applying a partial vacuum to the mold outside of the area of the mold cavity to evacuate points of separation between the mold parts;
- Filling the mold cavity with a heat-expandable molding compound through a filling opening via at least one filling injector at a pressure above atmospheric pressure;
- Closing the filling opening or shutting off the filling injector;
- Steam treating the evacuated mold cavity
- Shutting off the partial vacuum by closing partial vacuum valves while vapor is being supplied to expand the molding compound;
- Cooling a molded part made in the mold cavity exclusively by applying partial vacuum to the mold during a stabilization phase;
- Opening the mold after the stabilization phase and ejecting the molded part produced.

5,711,906
METHOD OF MANUFACTURING A BLACK ZIRCONIA-BASED ARTICLE AND BLACK ZIRCONIA-BASED DECORATIVE ARTICLE NOTABLY OBTAINED BY THIS METHOD

Renaud Briod, Yverdon, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Apr. 17, 1995, Ser. No. 423,212

Claims priority, application Switzerland, Apr. 19, 1994, 01 182/94

Int. Cl.⁶ C04B *35/64*

U.S. Cl. 264—63 **16 Claims**

1. A method of making a black zirconia-based article, said method comprising successive steps of:
- producing a first mixture comprising a zirconia powder, 3% to 70% by weight of a stabilizer selected from the group of oxides consisting of yttrium oxide, magnesium oxide, cerium oxide and calcium oxide, and 1% to 10% by weight of a pigment formed by a cobalt oxide and iron oxide powder or by a spinel $CoFe_2O_4$ powder;
- producing a second mixture comprising said first mixture and a binder;
- producing a granulated mixture by granulating said second mixture;
- forming a moulded model by giving said granulated mixture the shape of the desired article by moulding;
- sintering said moulded model in air for at least 30 minutes at a temperature less than 1,400° C. when said pigment is a cobalt oxide and iron oxide powder and less than 1,600° C. when said pigment is a spinel $CoFe_2O_4$ powder to provide a sintered model; and
- polishing said sintered model.

5,711,907
METHOD FOR PRODUCING A WEATHER STRIP FOR A MOTOR VEHICLE

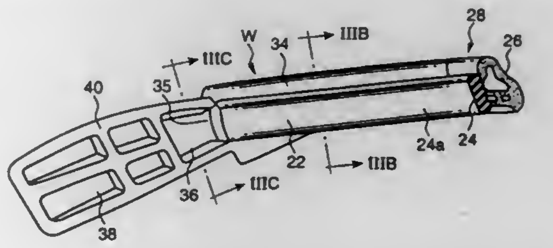
Masahiro Nozaki, Tsushima, and Tatsuhiko Nagata, Kounan, both of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Feb. 16, 1996, Ser. No. 602,446

Claims priority, application Japan, Feb. 22, 1995, 7-58099

Int. Cl.⁶ B29C *33/46;45/43;* **B28B** *21/52*

U.S. Cl. 264—138 **4 Claims**



1. A method for producing a weather strip having a molded end portion which is joined to an end of an extruded weather strip having a base portion and a tubular seal portion, the method including:
- cutting-off a portion of the tubular seal portion from an end of said extruded weather strip to form a cut-off portion, the base portion thereof remaining uncut defining an uncut base portion and a remaining tubular seal portion;
- placing said uncut base portion of the end of the extruded weather strip in a cavity of a mold, and placing a core along said uncut base portion within the cavity;
- injecting a molding material into the cavity to mold a tubular part around the core integrally with an outwardly extending end part which extends longitudinally from an end of the tubular part, the tubular part having a configuration conforming to the cut-off portion of the tubular seal portion and being

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joined to said uncut base portion and having an opening at said end of said tubular part adjacent said outwardly extending end part; and

opening the mold and removing the core from the tubular part through said opening and along a face of said outwardly extending end part.

5,711,908
PROCESS FOR MANUFACTURING COMPOSTIBLE THIN-WALLED MOLDED ARTICLES BASED ON STARCH

Karl Tiefenbacher; Franz Haas, Sr., both of Vienna, and Johann Haas, Klosterneuburg, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Vienna, Austria

PCT No. PCT/AT94/00187, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/15698, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 6, 1994, Ser. No. 652,542

Claims priority, application Austria, Dec. 6, 1993, 2466/93

Int. Cl.^{6} B29C *39/02;71/00*

U.S. Cl. 264—232 **12 Claims**

1. A process of manufacturing biodegradable, thin-walled baked shaped bodies in a multi-part baking mold, comprising the steps of

(a) baking an essentially fat-free baking composition in the mold, the baking composition being composed of
  (1) 42.0–60.0%, by weight, of water,
  (2) 36.0–56.5%, by weight, of a starch product comprised of 0.0–54.5%, by weight, of a first starch base selected from at least one member of the group consisting of starch, various starches, a mixture of various starches, flour, various flours and a mixture of various flours, and 2.0–56.5%, by weight, of a second starch product selected from at least one member of the group consisting of a starch esterified with organic acids, a starch esterified with phosphoric acid, an etherified starch, a cross-linked starch and a starch modified by ionic interaction with an added salt,
  (3) 0.04–11%, by weight, of a release agent selected from at least one member of the group consisting of medium-chain and long-chain fatty acids and their salts, derivatives and amides, medium-chain and long-chain substituted fatty acids and their salts, derivatives and amides, and 0.5–6.5, by weight, of polymethylhydrogen siloxanes,
  (4) fibrous materials,
  (5) non-fibrous fillers,
  (6) colorants,
  (7) preservatives, and
  (8) antioxidants, and

(b) conditioning the baked shaped bodies after baking to obtain a moisture content of 6–22%, by weight.

5,711,909
INTRAVASCULAR CATHETER AND METHOD OF MANUFACTURING

Susana M. Gore, Fort Lauderdale; Mark Mueller, Miramar, both of Fla.; Nicholas Green, Kinnelon, N.J.; Jeffrey G. Gold, Parkland, Fla., and Peter P. Soltesz, San Jose, Calif., assignors to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 409,973, Apr. 4, 1995, Pat. No. 5,662,622. This application May 9, 1996, Ser. No. 647,205

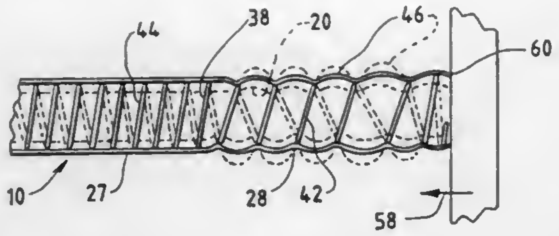
Int. Cl.^{6} B29C *53/08*

U.S. Cl. 264—320 **8 Claims**

1. A method of increasing the flexibility of at least a section of an intravascular catheter, in which said intravascular catheter is defined by a tubular plastic wall, at least a portion of said tubular plastic wall carrying a helical reinforcement member embedded within said tubular plastic wall, wherein coils of said helical reinforcement member in said portion are spaced from each other, comprising the steps of:

longitudinally compressing at least said portion of said tubular plastic wall, thereby causing said tubular plastic wall between the spaced coils to bow radially forming helical circumferentially-extending portions of longitudinal bending weakness; and

thereafter removing said intravascular catheter from said longitudinal compressing.



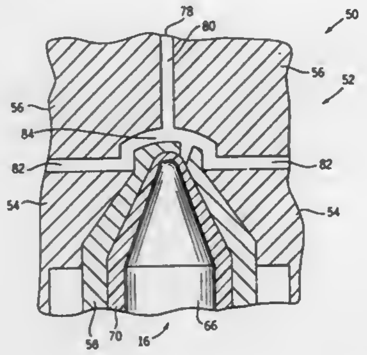
5,711,910
METHOD FOR MAKING A STACKABLE CONTAINER FORMED BY A NOZZLE HAVING AN OFFSET GATE

Charles W. Kostrivas, Wauwatosa, and Bernard N. Spiegelberg, Germantown, both of Wis., assignors to Tulip Corporation, Milwaukee, Wis.

Filed Nov. 16, 1995, Ser. No. 558,408

Int. Cl.^{6} B29C *45/32*

U.S. Cl. 264—328.16 **6 Claims**



1. A method for making a thermoplastic injection molded stackable article, having at least one recessed region to facilitate stacking of the article on a next adjacent article, comprising the steps of:

forming a mold including a bottom plate and a plurality of core segments and side segments, the bottom plate having a raised section designed to form the recessed region of the stackable article, the bottom plate and plurality of core and side segments defining a cavity;

locating an injection nozzle centrally within the raised section, the injection nozzle having a center line coincident with a center of the raised section;

providing a gate offset from the center line of the nozzle to permit flow of a plastic into the cavity at a point offset from the center of the raised section;

injecting the cavity with plastic through the gate; and

forming a gate remnant offset from the center of the recessed region.

5,711,911
METHOD OF AND APPARATUS FOR MAKING A THREE-DIMENSIONAL OBJECT BY STEREOLITHOGRAPHY

Charles W. Hull, Santa Clarita, Calif., assignor to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 121,846, Sep. 14, 1993, Pat. No. 5,609,812, which is a continuation of Ser. No. 906,207, Jun. 25, 1992, Pat. No. 5,256,340, which is a continuation of Ser. No. 702,031, May 17, 1991, Pat. No. 5,182,055, which is a continuation-in-part of Ser. No. 516,145, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 429,435, Oct. 30, 1989, Pat. No. 5,130,064, which is a continuation-in-part of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359, said Ser. No. 429,435is a continuation-in-part of Ser. No. 339,246, Apr. 17, 1989, Pat. No. 5,104,592, which is a continuation-in-part of Ser. No. 182,823, Apr. 18, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 473,834

Int. Cl.^{6} B29C *35/08;41/02*

U.S. Cl. 264—401 **23 Claims**

1. A method for forming at least a portion of a three-dimensional object on a layer-by-layer basis from a medium solidifiable upon selective exposure to synergistic stimulation according to data representations corresponding to said three-dimensional object, comprising the steps of:

a) applying a layer of flowable material capable of solidification upon exposure to synergistic stimulation onto any previously solidified layer of the three-dimensional object;

b) selectively exposing said layer to synergistic stimulation to form a layer of said three-dimensional object;

c) repeating steps a) and b) for subsequent layers until at least the portion of said three-dimensional object is formed and wherein the steps of exposing said layers further comprise exposing at least a portion of at least one layer with interrupted, non-overlapping points of exposure to synergistic stimulation such that said at least portion is solidified as substantially discrete and non-overlapping regions.

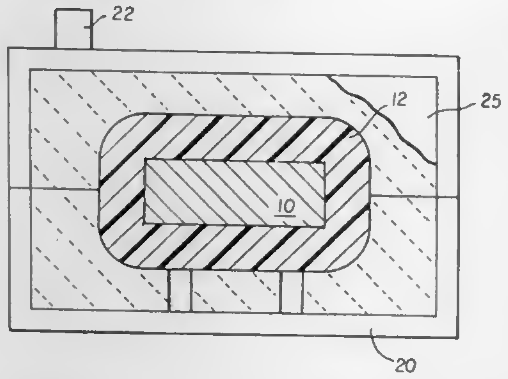
5,711,912
METHOD FOR ENCAPSULATING ELEMENTS SUCH AS MAGNETS IS SINTERED CERAMIC MATERIALS

Dilip K. Chatterjee, Rochester; Edward Paul Furlani, Lancaster, and Syamal K. Ghosh, Rochester, all of N.Y., assignors to Estman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1996, Ser. No. 665,027

Int. Cl.^{6} C04B *33/32*

U.S. Cl. 264—428 **2 Claims**



1. A method for ceramic coating a magnet comprising the steps of:

a) encapsulating the magnet with a sacrificial material;

b) encapsulating the magnet and the sacrificial material with a ceramic material;

c) heating the encapsulated magnet of step b to a temperature that burns the sacrificial material; and

d) sintering the ceramic material so as to permit the permeation of the burned sacrificial material through the ceramic material.

5,711,913
BIAXIAL ORIENTATION BLOW MOLDING METHOD AND PREFORM HOLDING JIG

Nobuichi Seki; Masanori Kimura; Yoshiyuki Ichizawa, all of Tokyo, and Yukio Koshidaka, Matsudo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

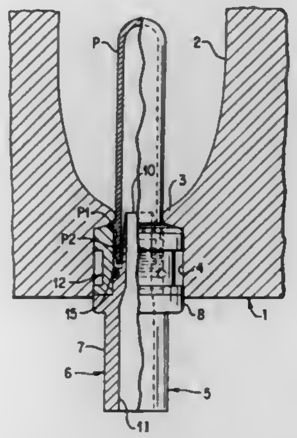
PCT No. PCT/JP95/00853, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/29804, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 28, 1995, Ser. No. 564,192

Claims priority, application Japan, Apr. 28, 1994, 6-092358

Int. Cl.^{6} B29C *49/28*

U.S. Cl. 264—532 **9 Claims**



1. A method for forming a resin bottle, said method comprising the steps of:

inserting a synthetic preform having a bottom, a neck portion and a cylindrical mouth portion into an opening of a metal mold;

inserting a holding cylinder into said opening of said metal mold that contacts the preform within the metal mold;

inserting a cylindrical jig body into the opening within the holding cylinder and beyond the neck portion of the preform;

forming the bottle by biaxial orientation blow molding the preform, said blow molding step including applying blow pressure to the preform; and

evenly applying the blow pressure to at least an inside and an outside of the cylindrical mouth portion of the preform.

5,711,914
RAIL STEEL

Wilhelm Heller, Duisburg, Germany, assignor to NMH Stahwerke GmbH, Sulzbach-Rosenberg, Germany

Continuation of Ser. No. 138,239, Oct. 15, 1993, abandoned. This application Nov. 18, 1994, Ser. No. 341,833

Claims priority, application Germany, Oct. 15, 1992, 42 34 815.3

Int. Cl.^{6} C22C *38/60;* **C21D** *8/00*

U.S. Cl. 420—84 **8 Claims**

1. Steel for rails, check rails and railroad rolling components consisting of 0.5 to 0.75% carbon, 0.10 to 0.50% silicon, greater than 0.90 and up to 1.70% manganese, less than 0.025% aluminum, not more than 0.05% phosphorus, a tellurium content of less than 0.004%, and a sulfur content such that the tellurium/sulfur

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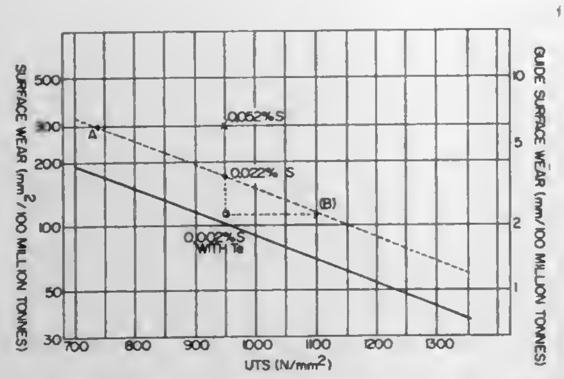


ratio is from 0.1 to 0.6, the balance being iron and impurities resulting from melting.

5,711,915

OPTICAL SOLID-PHASE BIOSENSOR BASED ON POLYIONIC LAYERS LABELLED WITH FLUORESCENT DYES

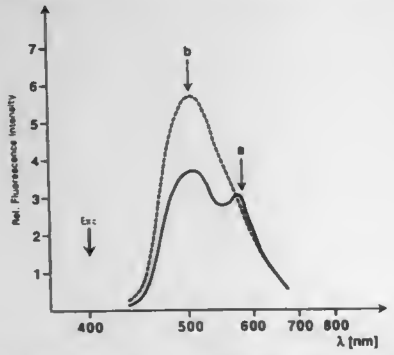
Hans-Ulrich Siegmund, Krefeld; Ludger Heiliger, Leverkusen; Boudewijn van Lent, Bergisch Gladbach, and Arno Becker, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 28,858, Mar. 10, 1993, abandoned. This application Oct. 24, 1995, Ser. No. 547,272

Claims priority, application Germany, Mar. 18, 1992, 42 08 645.0

Int. Cl.^{6} C12M *1/40;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 422—68.1 **8 Claims**



1. An optical solid-phase biosensor which is labelled with a dye F_1 and with a receptor molecule for the detection of analyte molecules in liquid phase, which is labelled with a dye F_2 utilising the Förster energy transfer between F_1 and F_2, which consists of

a) an optionally optically transparent support,

b) a multilayer located thereon, made from polymers containing ionically charged groups, where each layer contains ions of the same charge, said ions of the first layer having the opposite charge of the optionally modified support and, in case of further layers, each further layer having a charge opposite that of the previous layer,

c) wherein said multilayer forming polymers, in addition to the charged groups, contain covalently bonded in the uppermost layer or one of the uppermost layers the fluorescent dye F_1 as doner dye and

d) an antibody or antigen as receptor covalently or ionically bonded to the uppermost layer, to which

e) an antigen or antibody is bound as analyte molecule which is in turn labelled with the fluorescent dye F_2, where the spacing between the dye molecules permits a radiationless Förster energy transfer, wherein at least one layer of polyanions and at least one layer of polycations are used and wherein, when more than one of each are used, the polyanion layers and polycation layers alternate with respect to each other, one after the other, and wherein the concentration of the bound analyte molecule is measured as a function of the increase in the fluorescence intensity of F_1 or the decrease in the fluorescence intensity F_2 or the change in the ratio of the two intensities.

5,711,916

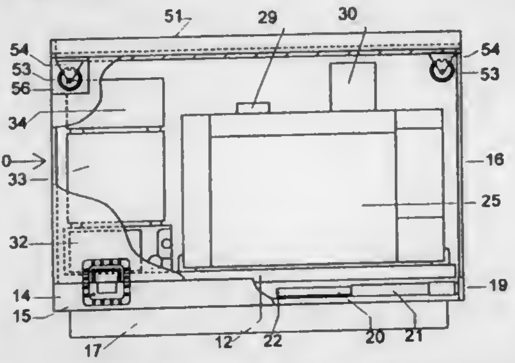
AIR-TRANSPORTABLE MODULAR ANALYTICAL LABORATORY

Patti J. Riggs, 2116 Laurel Brook Rd., Fallston, Md. 21047; Monica J. Heyl, 9 Neptune Dr., Joppa, Md. 21085; Rodney D. Hudson, 1203 Schucks Rd., Bel Air, Md. 21015, and Dennis J. Reutter, 2110 Brookhaven Ct., Fallston, Md. 21047

Continuation of Ser. No. 326,338, Oct. 20, 1994, abandoned. This application Jun. 3, 1996, Ser. No. 657,433

Int. Cl.^{6} G01N *30/02*

U.S. Cl. 422—83 **11 Claims**



1. A self contained, air transportable, analytical laboratory comprising:

a plurality of modules, each said module having a base member adapted for the mounting of components thereon, and a removable, protective case, each said case having an open bottom, closed side walls and a top, and arranged to lock to said base member to enclose said mounted components thereby forming a closed container for air transport of said module, said case sized and arranged so that, when inverted, said base member fits on the open bottom of said inverted case, said inverted case forming a platform to securely support said module during operation of said analytical laboratory; a first of said modules comprising an analytical device, and a second of said modules comprising an engine and generator assembly sized to produce sufficient electrical energy to power said first module; and

means for operably interconnecting said modules.

5,711,917

LABORATORY REACTOR APPARATUS

David L. Juranas, Bahama; Donald D. Munn, and Harry A. Anderson, both of Raleigh, all of N.C., assignors to Tecan U.S., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 584,660, Jan. 11, 1996. This application Jun. 17, 1996, Ser. No. 665,959

Int. Cl.^{6} B01L *3/00*

U.S. Cl. 422—99 **8 Claims**

1. Apparatus for chemical synthesis comprising:

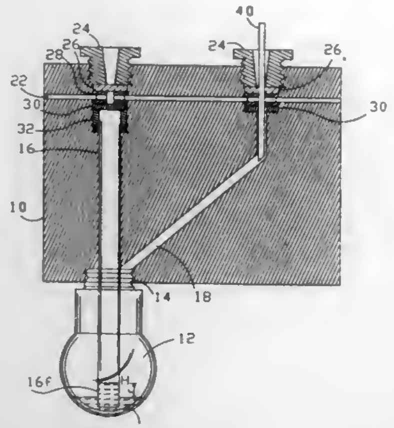
(a) a reactor block with a first channel and a second substantially straight channel each channel passing through said block from an upper block surface to a lower block surface, said second channel having a first inside diameter at a first end and a second inside diameter different than said first inside diameter at a second end thereof said second end being adjacent said lower block surface;

(b) a reactor vessel removably connected to said reactor block in fluid communication with said first and second channels;

(c) a suction tube sized internally to slidingly receive a liquid transfer needle and sized externally to fit in said second channel and having a filtration medium connected to a lower end thereof wherein an upper end of said suction tube is received within said second channel and said lower end is positioned within said reactor vessel;

(d) a first and a second spaced apart parallel penetrable sealing means removably mounted in said first channel wherein said first sealing means is in contact with said upper end of said suction tube; and

(e) a third and a fourth spaced apart parallel penetrable sealing means removably said second channel.



5,711,918

Patent Not Issued For This Number

5,711,919

DEVICE FOR CATALYTIC DEHYDROGENATION A C_{2+} PARAFFINIC CHARGE COMPRISING A SELF-COOLING SYSTEM

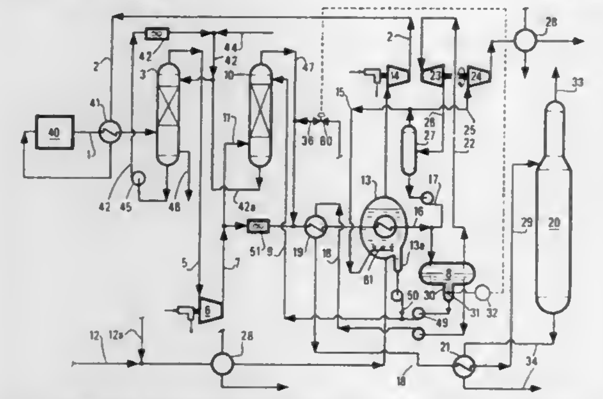
Ari Minkkinen, Saint Nom La Breteche, and Jean-Pierre Burzynski, Saint-Foy-Les Lyon, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison cedex, France

Division of Ser. No. 148,267, Nov. 8, 1993, Pat. No. 5,491,274. This application Jun. 7, 1995, Ser. No. 475,436

Claims priority, application France, Nov. 6, 1992, 92/13.515

Int. Cl.^{6} B01J *8/04*

U.S. Cl. 422—190 **8 Claims**



1. A catalytic dehydrogenation unit comprising in combination a dehydrogenation reactor (**40**), means for feeding a hydrocarbon gas charge and optionally means for feeding hydrogen, connected to a reactor input (**40**), at least one means (**41**) for cooling an effluent connected to an output of the reactor, means (**6**) for compressing the effluent connected to the means for cooling, means (**10**) for eliminating water contained in the effluent connected to the compression means, cooling means (**13**) for cooling the compressed effluent connected to the means for eliminating water, separating means (**8**) for separating the cooled effluent connected to the cooling means, means (**22**) for recovering a hydrogen-rich phase and means (**18**) for recovering an olefinic hydrocarbon-rich phase, wherein the cooling means (**13**) comprise a dual-chamber indirect heat exchanger having a first and a second chamber, the first chamber thereof having an input connected to means (**12**) for feeding a liquid charge and an output connected to the means (**41**) for cooling, said heat exchanger of the cooling means (**13**) being means for evaporated the charge in said first chamber, evacuating it by said output and cooling the effluent by indirect heat exchange in the second chamber, said second chamber being connected to separating means (**8**).

5,711,920

LAVATORY CLEANSING BLOCKS

Eric Dennis Barford, Bury St. Edmunds; Daniel John Jeffrey, Thetford; John Marshall, Norwich, and Paul Anthony Raynor, Thetford, all of Great Britain, assignors to Jeyes Limited, Norfolk, Great Britain

Continuation of Ser. No. 345,797, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 206,227, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 86,230, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 964,558, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 798,866, Nov. 22, 1991, abandoned, which is a continuation of Ser. No. 336,066, Apr. 11, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 467,901

Claims priority, application United Kingdom, Apr. 13, 1988, 8808663; Dec. 22, 1988, 8829904

Int. Cl.^{6} C09K *3/32*

U.S. Cl. 422—282 **4 Claims**

1. A solid lavatory cleansing block for positioning standing free or in a container in a cistern of a lavatory or urinal or in a container in the path of flushing water and formed of a composition consisting of a mixture of (A) a surface active component comprising one or more anionic surface active agents; (B) a chlorine release agent component consisting of one or more chlorinated cyanuric acid derivatives; and (C) a water-soluble salt having its anion selected from the group consisting of sulphate and chloride and its cation selected from the group consisting of barium, cadmium, calcium, copper, iron, magnesium, manganese and nickel.

5,711,921

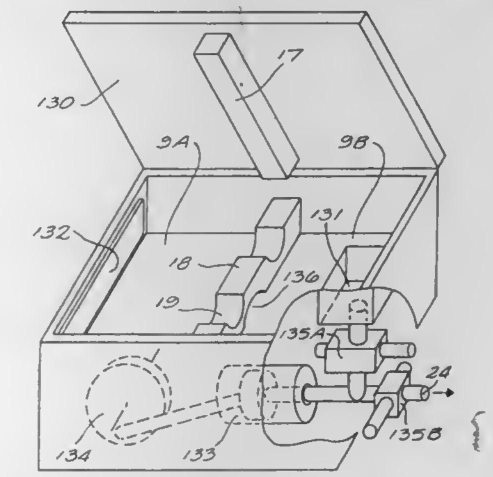
MEDICAL CLEANING AND STERILIZING APPARATUS

Terrence R. Langford, Tucson, Ariz., assignor to Kew Import/Export Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 582,849, Jan. 2, 1996. This application Aug. 14, 1996, Ser. No. 698,392

Int. Cl.^{6} A61L *2/00*

U.S. Cl. 422—292 **15 Claims**



1. A medical apparatus cleaning mechanism comprising:

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- a) a container having a first chamber and a second chamber, said container adapted to accept a medical instrument such that a first portion of said medical instrument lies in said first chamber and a second portion of said medical instrument lies in said second chamber;
- b) a liquid medium contained within said container; and,
- c) pumping means for increasing pressure within said first chamber of said container, said pumping means including a reciprocating piston having a first cylinder and a second cylinder adapted such that said first cylinder and said second cylinder have substantially equal displacement and wherein said first cylinder communicates with said first chamber of said container and said second cylinder communicates with said second chamber of said container for repetitively,
  - 1) simultaneously, increasing fluid pressure within the first chamber of said container while decreasing fluid pressure within the second chamber of said container; and,
  - 2) simultaneously, increasing fluid pressure within the second chamber of said container while decreasing fluid pressure within the first chamber of said container.

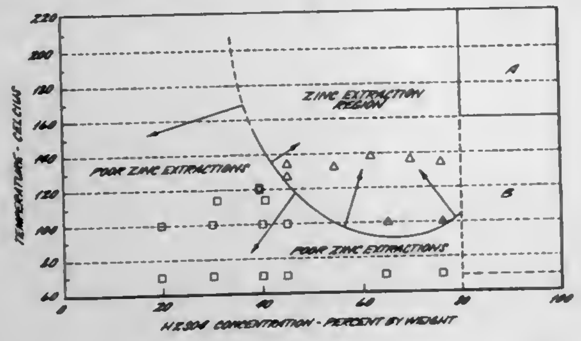
5,711,922
PREFERENTIAL HYDROMETALLURGICAL CONVERSION OF ZINC SULFIDE TO SULFATE FROM ZINC SULFIDE CONTAINING ORES AND CONCENTRATES

Robert N. O'Brien, 2614 Queenswood Drive, Victoria, British Columbia, Canada, V8N 1X5, and Ernest Peters, 2708 W. 33rd Avenue, Vancouver, British Columbia, Canada, V6N 2G1

Continuation of Ser. No. 290,206, Aug. 15, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,024

Int. Cl.^{6} C22B *19/02*

U.S. Cl. 423—106 **8 Claims**



1. In a hydrometallurgical process for converting zinc sulfide in an ore containing zinc sulfide, said zinc sulfide being chemically converted at elevated temperatures to form $ZnSO_4.xH_2O$ which crystallizes substantially in the monohydrate for as $ZnSO_4.H_2O$ in a conversion solution having a high concentration of H_2SO_4, the improvement comprising:

- i) selecting an ore which contains both zinc sulfide and copper sulfide, said ore containing greater than 1% by weight of copper.
- ii) contacting said zinc sulfide/copper sulfide ore with a conversion solution comprising a concentration of sulfuric acid selected from the range of about 45% by weight up to about 70% by weight of said conversion solution and at said elevated temperature in the range of 90° C. to less than boiling point of said conversion solution for said selected concentration of sulfuric acid with the proviso that said less than boiling temperature is less than 130° C. for an acid concentration of 45% and less than 140° C. for an acid concentration of 70%;
- iii) ensuring a reducing condition in the conversion solution, by virtue of the concentration of H_2SO_4, temperature, and maintenance of atmospheric pressure, to produce continuously sufficient H_2S to preclude oxidation of the copper sulfide,
- iv) maintaining said conversion solution at said elevated temperature and at said range of concentration of said sulfuric acid to ensure continued formation of said crystals of $ZnSO_4.H_2O$ until substantially all available ZnS is chemically converted where by virtue of temperature selection and ensuring a reducing condition, said chemical conversions avoids chemical conversion of copper sulfide; and
- v) separating said $ZnSO_4.H_2O$ crystals and remaining solids of said ore from said conversion solution at said elevated temperature.

5,711,923
HYDROXYMETHYL DIPHOSPHONATED POLYACRYLATES FOR RED MUD TREATMENT

Paul J. Harris, Orland Park; Robert P. Mahoney, Warrenville, and Manian Ramesh, Lisle, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

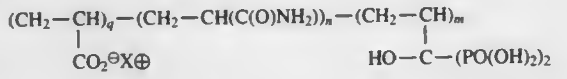
Continuation-in-part of Ser. No. 523,993, Sep. 5, 1995, Pat. No. 5,534,235, which is a continuation-in-part of Ser. No. 217,906, Mar. 25, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 675,135

Int. Cl.^{6} C01F *7/00;* **B01D** *21/00*

U.S. Cl. 423—121 **26 Claims**

1. A process for treating Bayer process red mud-containing liquor comprising the steps of:

- a) adding to the red mud-containing liquor a water-soluble hydroxymethyl diphosphonated polymer of the formula



$$\underset{\displaystyle CO_2^{\ominus}X^{\oplus}}{(CH_2-CH)_q}-(CH_2-CH(C(O)NH_2))_n-\underset{\displaystyle HO-C-(PO(OH)_2)_2}{(CH_2-CH)_m}$$

wherein n is an integer from 1 to 100, m is an integer from 1 to 100, q is an integer from 1 to 100 and X is selected from the group consisting of sodium, potassium, and ammonium;

- b) separating the treated red mud-containing liquor into a red mud phase and a clarified liquor phase wherein the polymer is added in an amount sufficient to form a red mud phase having a concentration of solids that is at least about 150% of the initial concentration of solids in the red mud-containing liquor; and
- c) recovering the clarified liquor phase.

5,711,924
PROCESS FOR ELIMINATING ORGANIC POLLUTANT RESIDUES IN SYNTHESIS GAS OBTAINED DURING REFUSE GASIFICATION

Günter H. Kiss, Minusio, Switzerland, assignor to Thermoselect AG, Liechtenstein

Filed Mar. 22, 1995, Ser. No. 409,261

Claims priority, application European Pat. Off., Nov. 13, 1995, 95101914

Int. Cl.^{6} C01B *7/00;7/07*

U.S. Cl. 423—240 R **3 Claims**

1. A process for eliminating organic pollutant residues in the synthesis gas occurring during refuse gasification by the addition of oxygen, said process comprising:

- a: feeding compressed, prepyrolyzed, carbon-containing refuse into a high temperature reactor having a top area whereby a loosely heaped gasification bed is formed;
- b: initiating gasification by oxygen addition below the bed;
- c: drawing off the resulting synthesis gas in the top area of the reactor after an adequate residence time; and
- d: jetting additional oxygen into a free gas zone in the top area of the reactor in temperature controlled, partial quantities whereby the synthesis gas at least partially combusts with the additional oxygen, the temperature above the gasification bed is constant at approximately 1000° C. and a complete homogeneous gas mixing in the top area is ensured.

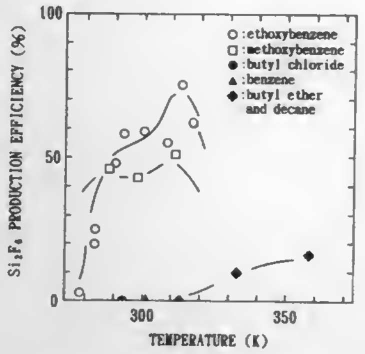
5,711,925
SYNTHESIS OF PURE DISILICON HEXAFLUORIDE

Tetsuiji Noda; Hiroshi Suzuki, and Hiroshi Araki, all of Tsukuba, Japan, assignors to National Research Institute for Metals, Tsukuba, Japan

Filed Sep. 12, 1995, Ser. No. 526,919

Int. Cl.^{6} C01B *33/08*

U.S. Cl. 423—341 **2 Claims**



1. A method of synthesizing pure disilicon hexafluoride containing impurities in an amount of less than 1%, comprising the steps of adding disilicon hexachloride to a suspension in which a fluorination agent is suspended in ethoxybenzene or methoxytoluene, and causing said disilicon hexachloride to react with said fluorination agent in a nitrogen gas flow under atmospheric pressure.

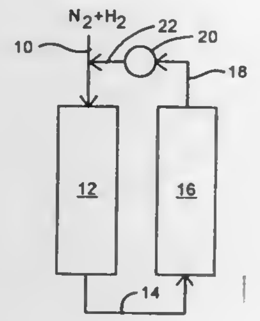
5,711,926
PRESSURE SWING ADSORPTION SYSTEM FOR AMMONIA SYNTHESIS

Kent S. Knaebel, 8000 McKitrick Rd., Plain City, Ohio 43064

Filed May 14, 1996, Ser. No. 649,122

Int. Cl.^{6} B01D *53/047;* **C01C** *1/04*

U.S. Cl. 423—359 **6 Claims**



1. In a catalytic process for the synthesis of ammonia in an ammonia synthesis reactor wherein a dilute ammonia stream is withdrawn from said reactor and subjected to a treatment step to concentrate ammonia in said dilute ammonia stream, the improvement in said ammonia concentration treatment step which comprises the steps of:

- (a) passing said dilute ammonia stream into an adsorber in which is housed particulate adsorbent bed effective in adsorbing ammonia from said dilute ammonia stream passed through said adsorber;
- (b) withdrawing from said adsorber an effluent stream diminished in ammonia content; and
- (c) recovering ammonia from said adsorber by:
  - (1) rinsing said adsorber with substantially pure ammonia to recover residual dilute ammonia in said adsorber;
  - (2) followed by a blow-down step wherein the pressure in said adsorber is released to vent product ammonia therefrom.

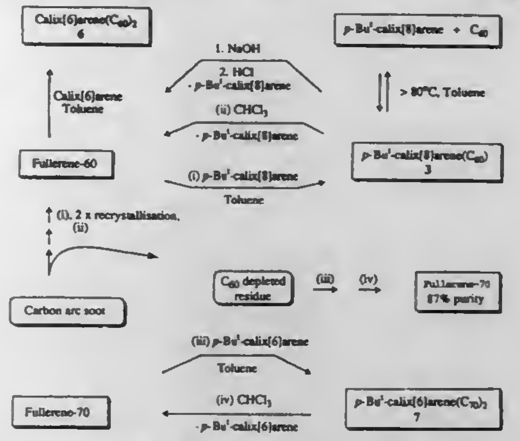
5,711,927
METHOD FOR THE PURIFICATION AND SEPARATION OF FULLERENES

Jerry L. Atwood, 1204 Indian Hills, Tuscaloosa, Ala. 35406, and Colin L. Raston, 42 Lancelot St., Tennyson, Qld, 4105, Australia

Continuation of Ser. No. 213,696, Mar. 16, 1994, abandoned. This application Mar. 27, 1995, Ser. No. 411,073

Int. Cl.^{6} C01B *31/02*

U.S. Cl. 423—445 B **33 Claims**



1. A process for the purification of C_{60} and high fullerenes comprising

- (a) contacting a crude fullerene mixture in a first solvent with a complexing agent selected from the group consisting of a calixarene, an oxacalixarene, a homooxacalixarene, a cyclotriveratrylene, and a cyclotetraveratrylene to form a fullerene-complexing agent guest-host complex.
- (b) recrystallizing said fullerene-complexing agent complex from an organic solvent,
- (c) separating said fullerene from said fullerene-complexing agent complex; and
- (d) isolating said fullerene.

5,711,928
PROCESS FOR PRODUCING HIGH-PURITY SULFURIC ACID

Akira Morisaki, Sodegaura, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

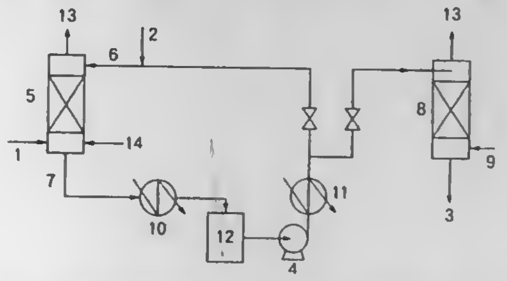
PCT No. PCT/JP96/01649, § 371 Date Feb. 13, 1997, § 102(e) Date Feb. 13, 1997, PCT Pub. No. WO97/00228, PCT Pub. Date Jan. 3, 1997

PCT Filed Jun. 17, 1996, Ser. No. 776,914

Claims priority, application Japan, Jun. 15, 1995, 7-149033

Int. Cl.^{6} C01B *17/74;17/90*

U.S. Cl. 423—522 **6 Claims**



1. A process for producing sulfuric acid, comprising:

an absorption step of causing water to contact sulfuric acid anhydride which may contains sulfurous acid gas as an impurity, so as to cause the sulfuric acid anhydride to be absorbed into the water, thereby to provide sulfuric acid;

a stripping step of subjecting the sulfuric acid to stripping by use of air, thereby to separate and remove the sulfurous acid gas in the sulfuric acid; and

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a transport step of subjecting at least a portion of the sulfuric acid to liquid transportation by means of a circulating pump;
wherein the temperature of the liquid at the inlet port of the circulating pump is 0°–30° C.

5,711,929
PURIFICATION OF ELEMENTAL SULPHUR

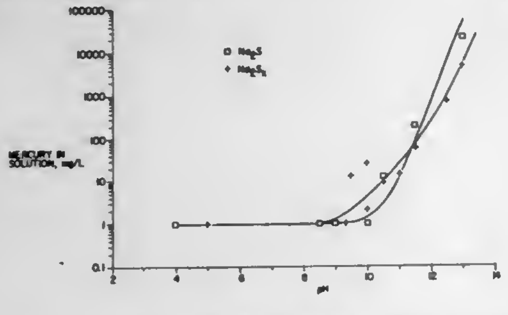
Michael E. Chalkley, St. Albert; Michael J. Collins, Fort Saskatchewan; Manher M. Makwana, Edmonton; Ian M. Masters, Fort Saskatchewan, and John Stiksma, St. Albert, all of Canada, assignors to 698638 Alberta Ltd., Alberta, Canada

Continuation-in-part of Ser. No. 700,149, Apr. 4, 1991, Pat. No. 5,403,571. This application Apr. 3, 1995, Ser. No. 416,013

Claims priority, application United Kingdom, May 6, 1989, 8912861

Int. Cl.^{6} C01B *17/02*

U.S. Cl. 423—567.1 **8 Claims**



SOLUBILITY OF MERCURIC SULPHIDE IN SODIUM SULPHIDE AND POLYSULPHIDE SOLUTION

1. A process for the liquid-liquid extraction of dissolved mercury from molten elemental sulphur contaminated by said dissolved mercury comprising contacting the molten elemental sulphur with an aqueous solution containing dissolved sulphide and polysulphide ions in an amount sufficient to provide a molar ratio of sulphide and polysulphide in the aqueous solution to mercury in the contaminated sulphur of at least about 400:1 in the agitated pressure vessel, at a temperature in the range of about 120° to about 155° C., for a period of 1 to 10 minutes, maintaining an aqueous solution pH in the range of about 9 to about 10 by periodically adding sodium hydroxide into the elemental sulphur, and separating the mixture into a heavier molten product sulphur phase containing less than three grams/ton of mercury and a lighter aqueous phase product solution enriched in dissolved mercury.

5,711,930
PROCESS FOR IMPROVING THE PHYISCAL PROPERTIES OF FORMED PARTICLES

Edwin W. Albers, Severna Park, and Harry W. Burkhead, Jr., Arbutus, both of Md., assignors to Thiele Kaolin Company, Sandersville, Ga.

Continuation-in-part of Ser. No. 276,318, Jul. 15, 1994, which is a continuation of Ser. No. 904,336, Jun. 25, 1992, Pat. No. 5,330,943, which is a continuation of Ser. No. 562,905, Aug. 6, 1990, Pat. No. 5,135,756, which is a continuation-in-part of Ser. No. 321,355, Mar. 10, 1989, Pat. No. 4,946,814. This application Aug. 10, 1994, Ser. No. 288,504

Int. Cl.^{6} C01F *7/02*

U.S. Cl. 423—625 **1 Claim**

1. A process for producing alumina comprising:
mixing an effective concentration of anionic fluorohydrocarbon surfactant into an aqueous alum solution having 8.2 weight percent of aluminum oxide;
feeding with agitation said mixed anionic fluorohydrocarbon surfactant and aqueous alum solution into water heated to 45° C. to obtain a pH of 3.0 to 3.5
feeding with agitation aqueous sodium aluminate, having 18.3 percent sodium oxide and 20 percent aluminum oxide, into said mixed anionic fluorohydrocarbon surfactant and aqueous alum solution to obtain a pH of 9.0 of a combined slurry;
filtering said combined slurry to obtain a filter cake;
washing said filter cake with ammoniated water at 60° C. and at a pH of 8;
slurrying said filter cake; and
drying said slurried filter cake to form a free-flowing powder.

5,711,931
TECHNETIUM-99M LABELLED PEPTIDES FOR IMAGING INFLAMMATION

Richard T. Dean, Bedford, and Scott Buttram, Derry, both of N.H., assignors to Diatide, Inc., Londonberry, N.H.

Division of Ser. No. 266,178, Jun. 27, 1994, which is a continuation of Ser. No. 851,074, Mar. 13, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 472,535

Int. Cl.^{6} A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **17 Claims**

1. A reagent for preparing a radiolabeled peptide for imaging sites of intimation within a mammalian body, comprising a specific binding peptide having an amino acid sequence wherein the peptide binds to leukocytes, and a radiolabel-binding moiety selected from the group consisting of moieties of formula

Cp(aa)Cp

wherein Cp is a protected cysteine and (aa) is any primary α- or β-amino acid; and a radiolabel binding moiety comprising a single thiol-containing moiety having the formula

$$A—CH(B)—(C(RR'))_n—X$$

wherein
A is H, HOOC, H_2NOC, or —NHOC;
B is H, SH or NHR", where R" is H, lower alkyl or —C=O;
X is SH or NHR", where R" is H, lower alkyl or —C=O;
R and R' are independently H or lower alkyl;
n is 0, 1 or 2;

and
where B is NHR", where R" is H, lower alkyl or —C=O, X is SH and n is 1 or 2;
where X is NHR", where R" is H, lower alkyl or —C=O, B is SH and n is 1 or 2;
where B is H, A is HOOC, H_2NOC, or —NHOC, X is SH and n is 0 or 1;
and wherein the thiol moiety is in the reduced form;
and wherein the radiolabel-binding moiety is covalently linked to the specific binding peptide.

5,711,932
SCREENING PROCEDURE FOR NEUROACTIVE AGENTS

Jay Hirsh, 1905 Pheasant La., Charlottesville, Va. 22901, and Chris Martin Yellman, 609 Locust Ave., Charlottesville, Va. 22902

Filed Sep. 20, 1996, Ser. No. 718,281

Int. Cl.^{6} A61K *49/00;* **G01N** *31/00*

U.S. Cl. 424—9.1 **4 Claims**

1. A method of screening for neuroactive agents which modulate a behavior mediated by cellular receptors, comprising the steps of:
(a) decapitating an invertebrate;
(b) applying a reagent to the exposed nerve cord on the decapitated invertebrate; and
(c) observing the effect of the reagent on the behavior mediated by cellular receptors, wherein modulation of said behavior indicates that said reagent is a neuroactive reagent.

5,711,933
METHOD OF MAKING POLYMERIC GAS OR AIR FILLED MICROBALLOONS FOR ULTRASONIC ECHOGRAPHY

Daniel Bichon, Montpellier; Philippe Bussat, Collonges S/Saleve, both of France, and Michel Schneider, Troinex, Switzerland, assignors to Bracco International B.V., Netherlands

Division of Ser. No. 33,435, Mar. 18, 1993, abandoned, which is a continuation of Ser. No. 695,343, May 3, 1991, abandoned. This application Aug. 10, 1994, Ser. No. 288,550

Claims priority, application European Pat. Off., May 18, 1990, 90810367

Int. Cl.^{6} A61K *9/14*

U.S. Cl. 424—9.52 **16 Claims**

1. A method of making air or gas filled microballoons suitable for administration to human or animal patients for ultrasonic echography, said method comprising the successive steps of:
(a) emulsifying a hydrophobic organic phase into a water phase so as to obtain droplets of said hydrophobic phase as an oil-in-water emulsion in said water phase;
(b) adding to said emulsion a solution of at least one polymer in a volatile solvent insoluble in the water phase, so that said polymer forms a layer around said droplets;
(c) evaporating said volatile solvent so that the polymer deposits by interfacial precipitation around the droplets which then form beads with a core of said hydrophobic phase encapsulated by a membrane of said polymer, said beads being in suspension in said water phase; and
(d) removing said encapsulated hydrophobic phase by evaporation by subjecting said suspension to reduced pressure;
wherein said hydrophobic phase is selected so that in step (d) it evaporates substantially simultaneously with said water phase and is replaced by air or gas, whereby dry, free flowing, readily dispersible microballoons having an elastic polymeric membrane 50 to 500 nm thick and baving a mean size in the range of 0.5 to 1000 microns are produced.

5,711,934
PROCESS FOR THE CONTINUOUS MILLING OF AEROSOL PHARMACEUTICAL FORMULATIONS IN AEROSOL PROPELLANTS

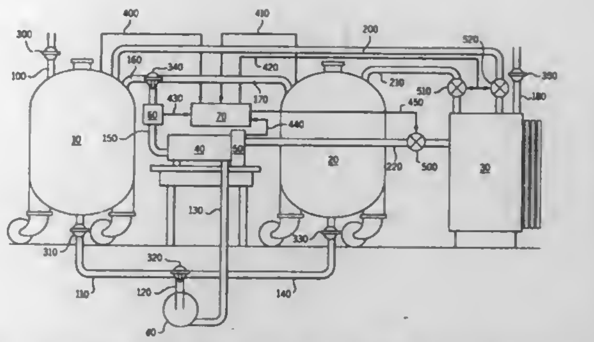
Akwete L. Adjei, Wadsworth; Dennis Y. Lee, Highland Park, and Anthony J. Hlinak, Lindenhurst, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 11, 1994, Ser. No. 226,132

Int. Cl.^{6} A61K *9/12*

U.S. Cl. 424—45 **6 Claims**

1. A process for preparing an aerosol pharmaceutical formulation containing a solid therapeutic agent comprising the steps of



a) mixing the solid therapeutic agent with a liquid propellant having a boiling point of less than about 25° C. to form a mixture comprising up to 99.9% weight of said liquid propellant;
b) repeatedly passing the mixture formed in step a) between a first refrigerated supply tank and a second refrigerated receiving tank through a milling machine until the particle size of solids contained in the mixture is reduced to less than about 10μ, said first refrigerated supply tank and said second refrigerated receiving tank being kept at a temperature between about −80° C. and about 10° C.; and
c) thereafter charging the mixture of solid therapeutic agent and propellant into aerosol canisters.

5,711,935
DENTAL FLOSS

Ira D. Hill, Locust, N.J., and Michael R. Schweigert, Missouri City, Tex., assignors to WhiteHill Oral Technologies, Inc., Hazlet, N.J.

Filed May 10, 1994, Ser. No. 240,149

Int. Cl.^{6} A61C *15/00;15/04;* **A61K** *7/16*

U.S. Cl. 424—49 **46 Claims**

1. An improved method of adding chemotherapeutic preparations to dental floss containing several multi-fiber bundles, comprising:
expanding the interstitial space between said fibers, and
introducing said chemotherapeutic preparations into said expanded interstitial space;
while maintaining dental floss integrity.

5,711,936
ULTRAMULSION BASED INGESTIBLE COMPOSITIONS

Ira D. Hill, Locust; Peter P. Walters, Neshanic, both of N.J., and Dale G. Brown, Wharton, Tex., assignors to WhiteHill Oral Technologies, Inc., Chadds Ford, Pa.

Filed Jun. 5, 1995, Ser. No. 464,403

Int. Cl.^{6} A61K *7/16;31/74*

U.S. Cl. 424—49 **22 Claims**

1. A treatment composition selected from the group consisting of mouth treatment compositions, throat treatment compositions, esophagus treatment compositions, stomach and intestine treatment compositions, wherein said composition contains an aqueous-free high shear or ULTRAMULSION™ dispersion, formed by heating a mixture of surfactant and silicone, followed by high shear mixing wherein:
a. the silicone is insoluble in said surfactant, has a viscosity greater than about 100,000 cs and a mean particle size up to about 10 microns;
b. the surfactant to silicone ratio in the ULTRAMULSION dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,
c. the ULTRAMULSION dispersion forms stable dispersions in aqueous containing treatment compositions, and
d. said treatment composition exhibits enhanced substantivity to mouth, throat, esophagus, stomach and intestine surfaces ULTRAMULSION coating functions as a reservoir for vari-

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ous lipid soluble and lipid dispersible treatment composition ingredients, which are available for release from said coating reservoir on to the surface being treated.

5,711,937
ORAL COMPOSITION

Yasukuni Nishida; Midori Morishima; Maiml Ohta, all of Odawara; Tetsuo Gomi, Tokyo, and Yoshihiro Harada, Odawara, all of Japan, assignors to Lion Corporation, Tokyo, Japan

PCT No. PCT/JP94/01019, § 371 Date Dec. 27, 1995, § 102(e) Date Dec. 27, 1995, PCT Pub. No. WO95/00110, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 24, 1994, Ser. No. 571,914

Claims priority, application Japan, Jun. 28, 1993, 5-181970; Dec. 24, 1993, 5-348108

Int. Cl.^{6} A61K *7/16;7/26;7/28*

U.S. Cl. 424—49 **10 Claims**

1. An oral composition characterized in that a flavor component selected from the group consisting of cineole, methyl salicylate, ethyl butyrate, and cinnamic aldehyde, and l-menthol are blended in a weight ratio of from 1:9 to 8:2 in an oral composition containing an antibody selected from the group consisting of a serum antibody, egg yolk antibody and milk antibody.

5,711,938
ORAL HYGIENE COMPOSITION

Olle Larm, Bromma, Sweden, assignor to Medicarb AB, Bromma, Sweden

PCT No. PCT/SE95/00476, § 371 Date Oct. 31, 1996, § 102(e) Date Oct. 31, 1996, PCT Pub. No. WO95/30403, PCT Pub. Date Nov. 16, 1995

PCT Filed Apr. 28, 1995, Ser. No. 737,010

Claims priority, application Sweden, May 4, 1994, 9401540

Int. Cl.^{6} A61K *7/16;9/14;9/90;31/725*

U.S. Cl. 424—49 **16 Claims**

1. A method for the treatment of periodontitis, plaque or dental caries, said method comprising topically exposing the teeth or gums of a mammal in need of such treatment to an oral hygiene composition comprising chitosan in combination with a sulphated, negatively charged polysaccharide and dentally acceptable carrier, wherein the amount of said composition is effective to treat periodontitis, plaque or dental caries.

5,711,939
USE OF ESTERS OF BRANCH-CHAIN CARBOXYLIC ACIDS WITH BRANCH-CHAIN ALCOHOLS AS INGREDIENTS OF COSMETIC AGENTS

Ernst-Joachim Brunke; Willi Rojahn, and Gerhard Spirik, all of Holzminden, Germany, assignors to Dragoco Gerberding & Co., GmbH, Germany

Continuation of Ser. No. 926,730, Mar. 20, 1986, which is a continuation of Ser. No. 589,107, Feb. 23, 1984, abandoned. This application May 29, 1990, Ser. No. 529,930

Claims priority, application Germany, Aug. 26, 1982, 3231704.2; Aug. 26, 1982, 3231705.0; Aug. 26, 1982, 3231706.2

Int. Cl.^{6} A61K *7/42*

U.S. Cl. 424—59 **1 Claim**

1. A cosmetic composition which comprises an ester derived from 2-ethylhexanol and 2-ethylhexanoic acids and a cosmetic agent.

5,711,940
STABLE MICRODISPERSIONS AND MICROGELS BASED ON ACRYLIC POLYMERS, METHOD FOR OBTAINING THEM AND COMPOSITIONS, PARTICULARLY COSMETIC COMPOSITIONS, CONTAINING THEM

Annie Kuentz; Henri-Gérard Riess, both of Mulhouse; Alain Meybeck, Courbevole, and Jean-François Tranchant, Boigny sur Bionne, all of France, assignors to LVMH Recherche, France

PCT No. PCT/FR94/01145, § 371 Date Jun. 12, 1996, § 102(e) Date Jun. 12, 1996, PCT Pub. No. WO95/09874, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 30, 1994, Ser. No. 619,751

Claims priority, application France, Oct. 1, 1993, 93 11705

Int. Cl.^{6} A61K *9/10;* **C08L** *53/00;33/06*

U.S. Cl. 424—61 **24 Claims**

1. In a method of preparing a stable microdispersion of particles of acrylic polymers in an organic solvent in the presence of a stabilizer the improvement comprising: forming said acrylic polymer by a free-radical polymerization of at least one acrylic monomer in the presence of a block copolymer as said stabilizer, wherein said block copolymer is a copolymer of polymethyl methacrylate (PMMA) and polytert-butyl acrylate (PtBuA) and said solvent solubilizes said PtBuA chain of said copolymer and precipitates both said PMMA chain of said copolymer and said acrylic polymer.

5,711,941
PERFUMED UNDERARM HYGIENE PRODUCTS

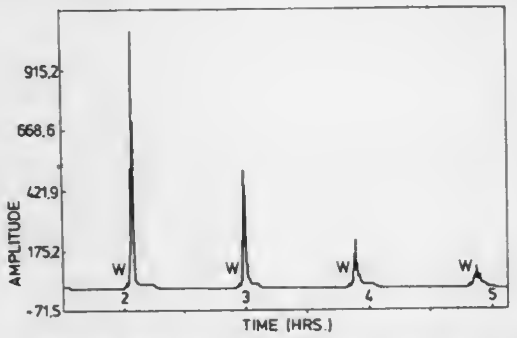
John Martin Behan, Ashford; Richard Arthur Birch, Hythe, and Kathleen Mary Tuck, Ashford, all of Great Britain, assignors to Unilever Patent Holdings, B.V., Rotterdam, Netherlands

Continuation of Ser. No. 773,331, Oct. 11, 1991, abandoned. This application Aug. 29, 1996, Ser. No. 705,909

Claims priority, application United Kingdom, Oct. 11, 1990, 9022147

Int. Cl.^{6} A61K *7/32;7/00*

U.S. Cl. 424—65 **5 Claims**



1. A perfumed underarm hygiene product comprising 0.05–10% w/w of perfume encapsulates containing 15–65% w/w perfume encapsulated by a self-emulsifying film-forming encapsulation material, which encapsulates the perfume without the addition of an emulsifying agent, said encapsulates being such that they release said perfume on wetting by perspiration but re-encapsulate on drying after release of perfume, said perfumed underarm hygiene product, when compared with a similar perfumed underarm hygiene product containing an equivalent amount of free perfume of identical composition as the perfume in the perfume encapsulate, satisfying the following criteria:

a) the ratio of the gas chromatography integrated areas from the underarm hygiene product containing the perfume encapsulates to the underarm hygiene product containing the free perfume is at least 6 at a first wetting, at least 4 at a second wetting and at least 2 at a third wetting; and

b) the ratio of the gas chromatography integrated area of the underarm hygiene product containing the perfume encapsulates at a first wetting to the gas chromatography integrated area at a second wetting of the same material, is less than 2.

5,711,942
STORAGE STABLE HAIR CARE EMULSION CONTAINING ONLY NATURAL SUBSTANCES, THEIR MIXTURES AND/OR THEIR REACTION PRODUCTS

Ulrich Eicken, Fribourg, Switzerland, and Thomas Stiehm, Bielefeld, Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

Filed Oct. 30, 1996, Ser. No. 739,164

Claims priority, application Germany, Dec. 20, 1995, 195 47 679.4

Int. Cl.^{6} A61K *7/035*

U.S. Cl. 424—70.1 **8 Claims**

1. A hair care emulsion consisting only of at least one of natural substances, mixtures of said natural substances and reaction products of said natural substances, and said hair care emulsion containing

from 0.5 to 5 percent by weight of at least one ester compound selected from the group consisting of monoglycerides of saturated or unsaturated C_6- to C_{22}-fatty acids, polyglycerylmonofatty acid esters of saturated or unsaturated C_6- to C_{22}-fatty acids having from 2 to 10 glyceryl groups, polyglycerylpolyfatty acid esters of saturated or unsaturated C_6- to C_{22}-fatty acids having from 2 to 10 glyceryl groups, esters of monosaccharides with saturated or unsaturated C_6- to C_{22}-fatty acids and esters of disaccharides with saturated or unsaturated C_6- to C_{22}-fatty acids;

from 0.5 to 5 percent by weight of at least one member selected from the group consisting of trimethylglycine and panthenol,

from 0.5 to 8 percent by weight of at least one saturated or unsaturated C_6- to C_{22}-fatty acid;

and free of any surfactant compounds in addition to those included in said at least one ester compound.

5,711,943
TOPICAL HAIR THICKENER OF GELATIN, FILM-FORMING POLYMER AND THICKENER

Leslie Grossman, 3449 S. Uravan Way, Unit 2, Apt. 303, Aurora, Colo. 80013

Continuation-in-part of Ser. No. 457,610, Jun. 1, 1995, Pat. No. 5,601,812. This application Feb. 11, 1997, Ser. No. 799,106

Int. Cl.^{6} A61K *07/06*

U.S. Cl. 424—70.15 **9 Claims**

1. A hair thickening composition for topical application comprising an aqueous solution of gelatin at a concentration between about 0.30 and about 15% by weight and a water-soluble cosmetic film-forming polymer at a concentration greater than 60% that of said gelatin and between about 0.10 and about 15% by weight, a thickening agent, and an acid neutralizing agent in an amount effective to maintain said solution at a pH range between about 6.0 and about 9.5, within which said gelatin and said film-forming polymer are stable together at their respective concentrations.

5,711,944
INTERFERON POLYMER CONJUGATES

Carl W. Gilbert, Basking Ridge, and Myung-Ok Cho, Highland Park, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 150,643, Nov. 10, 1993, abandoned. This application Nov. 10, 1994, Ser. No. 337,567

Int. Cl.^{6} A61K *38/21*

U.S. Cl. 424—85.7 **28 Claims**

1. A process for preparing a long-acting alpha-interferon-containing composition, comprising contacting an alpha interferon with from about a 1 to about an 8-fold molar excess of an activated polyalkylene oxide containing an alkyl terminal in the presence of a surfactant under conditions sufficient to form conjugates of said alpha interferon and said polyalkylene oxide having an alkyl terminal and thereafter fractionating the conjugates to isolate the conjugates containing about 1–4 polyalkylene oxide strands per alpha-interferon molecule.

5,711,945
PITCH DEGRADATION WITH *PSEUDOMONAS FLUORESCENS*

Robert A. Blanchette, Shoreview; Todd A. Burnes, St. Paul, both of Minn., and Roberta L. Farrell, Groton, Mass., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed May 11, 1995, Ser. No. 438,823

Int. Cl.^{6} A01N *63/00;* **C12N** *1/20*

U.S. Cl. 424—93.47 **23 Claims**

1. A process for reducing the pitch content of pulpwood or of pulp comprising applying to the pulpwood or pulp an inoculum of a bacterium of *Pseudomonas fluorescens*, the inoculum being in an amount sufficient upon bacterial growth from the inoculation to reduce the pitch content of the pulpwood or pulp, and maintaining the inoculated pulpwood or pulp under conditions which allow bacterial growth from the inoculation for a time sufficient to effect a reduction of the pitch content of the pulpwood or pulp by such inoculated bacterial growth.

5,711,946
CONTROL OF POST-HARVEST FUNGAL DISEASE USING SAPROPHYTIC YEAST

Tara Chand-Goyal, Riverside, Calif., and Robert A. Spotts, Hood River, Oreg., assignors to The State of Oregon Acting by and through the State Board of Higher Education on behalf of Oregon State University, Corvallis, Oreg.

Filed Feb. 17, 1995, Ser. No. 392,551

Int. Cl.^{6} A01N *63/00;63/04;25/00;* **C12N** *1/16*

U.S. Cl. 424—93.51 **23 Claims**

1. A composition for biological control of a fungal disease of an agricultural commodity comprising an effective amount of a biologically pure yeast strain selected from the group consisting of *Cryptococcus infirmo-miniatus* Pfaff and Fell isolate YY-6, *Cryptococcus laurentii* (Kufferath) Skinner isolate HRA-5, *Rhodotorula glutinis* Harrison isolate HRB-6, and mixtures thereof.

5,711,947
METHOD TO INDUCE CYTOTOXIC T LYMPHOCYTES SPECIFIC FOR A BROAD ARRAY OF HIV-I ISOLATES USING HYBRID SYNTHETIC PEPTIDES

Jay A. Berzofsky, Bethesda, Md.; Hidemi Takahashi, Tokyo, Japan, and Ronald N. Germain, Potomac, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Wahington, D.C.

Continuation of Ser. No. 760,530, Sep. 19, 1991, which is a continuation-in-part of Ser. No. 148,692, Jan. 26, 1988. This application Jul. 23, 1993, Ser. No. 95,332

Int. Cl.^{6} A61K *39/21;39/12;* **C12P** *21/06;* **C07K** *1/00*

U.S. Cl. 424—188.1 **6 Claims**

1. A method of inducing cytotoxic T lymphocyte activity in a subject comprising a first administration with a recombinant viral vector expressing HIV envelope glycoprotein and an at least second administration with at least one chimeric synthetic polypeptide.

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5,711,948

PLANT-DERIVED, BIOLOGICALLY ACTIVE POLYSACCHARIDES AND METHOD OF PREPARING SAME

Olga L. Pospelova, Ul. Aivazovskogo 6-1-497; Anatoly G. Grizenko, 1st Vrazhsky Per. 4-43; Valery V. Soloviev, Ul. Snaiperskaya S-52; Andrey I. Kozhushkov, Ul. Aivazovskogo 6-1-497, and Mikhail N. Starikov, Profsoyuznaya Ul. 29-1-47, all of Moscow, Russian Federation

Filed May 29, 1996, Ser. No. 654,545

Int. Cl.^{6} A61K *35/78*

U.S. Cl. 424—195.1 **11 Claims**

1. A method of preparing a biologically active polysaccharide, the method comprising the steps of:

a. obtaining a tuberous root sprout of *Solanum tuberosum*, family Solanaseae;
b. grinding the root sprout;
c. extracting with water to produce an extractant;
d. incubating the extractant; and
e. fractionating the extractant to exclude species having molecular weights less than about 50,000 daltons, thereby isolating a polysaccharide having a molecular weight of at least 50,000 daltons.

5,711,949

VISION IMPROVING EYE SOLUTION

Eitan Balassyano, 86-05 60th Rd., Apt. 3C, Elmhurst, N.Y. 11373-5515

Filed Aug. 19, 1996, Ser. No. 699,419

Int. Cl.^{6} A61K *35/78*

U.S. Cl. 424—195.1 **3 Claims**

1. An eye solution comprising:

A) H_2O containing NaCl;
B) panax ginseng extractum; and
C) microorganisms selected from the group consisting of bacteria, virus, and fungi.

5,711,950

PROCESS FOR PREPARING MICROCLUSTERED WATER

Lee H. Lorenzen, P.O. Box 405, Trabuco Canyon, Calif. 92678

Continuation of Ser. No. 990,357, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 670,032, Mar. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 463,988, Jan. 12, 1990, abandoned. This application Mar. 9, 1994, Ser. No. 208,799

Int. Cl.^{6} A16K *31/695*

U.S. Cl. 424—401 **15 Claims**

1. Microclustered water produced from a starting water by a method consisting essentially of the following steps performed sequentially:

(a) boiling said starting water to produce steam;
(b) passing said steam across a magnetic field;
(c) exposing said steam to light having a wavelength of between approximately 610 nanometers to 1 millimeter;
(d) condensing said steam at a temperature greater than 0° C. to produce condensed steam;
(e1) adding at least one stabilizer said condensed steam, wherein the stabilizer comprises a metasilicate salt;
(e2) adding yeast cells or an antiviral pharmaceutical agent at a concentration of 1% or less to said condensed steam, wherein steps (e1) and (e2) are performed in either order;
(f) exposing the condensed steam to a pressure greater than 1 atmosphere; and
(g) depressurizing said condensed steam, thereby producing said microclustered water,

wherein the microclustered water produces an ^{17}O NMR resonance signal less than 115 Hz, has a conductivity of at least 3.7 μs/cm, and has a surface tension of less than 61 dynes/cm.

5,711,951

AQUEOUS PRODUCT COMPRISING DISCRETE, STABILIZED, MICRODROPLETS OF AN OIL AND AN IN SITU POLYMERIZED VINYL MONOMER, CONTAINING A THICKENING AGENT TO HOMOGENEOUSLY SUSPEND THE MICRODROPLETS THROUGHOUT THE MEDIUM

Stephen L. Kopolow, Plainsboro, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Mar. 13, 1996, Ser. No. 596,896

Int. Cl.^{6} A61K *7/075;9/50;* **B01J** *13/18*

U.S. Cl. 424—401 **14 Claims**

1. An aqueous product consisting essentially of discrete, stabilized microdroplets of an oil and an in situ polymerized water-soluble vinyl monomer, and a thickening agent in an amount of about 0.1–1% by weight to suspend the stabilized microdroplets homogeneously throughout the product at a bulk viscosity of about 25,000 to about 60,000 cps.

3. A product according to claim **1** wherein said oil is a cosmetically-active material.

5,711,952

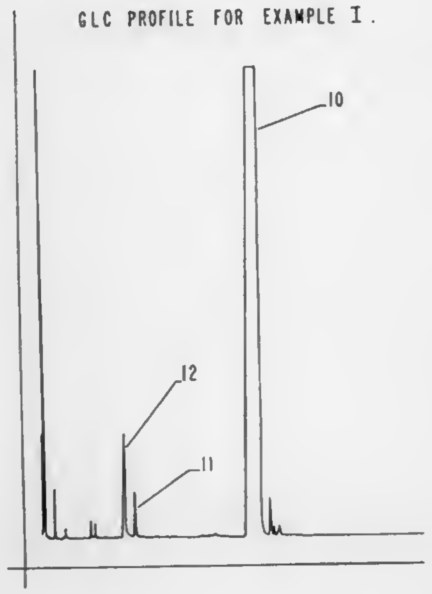
USE OF 7-ISOPROPYL - -8, 8-DIMETHYL-6, 10-DIOXASPIRO-C10 AND C11 ALKANE DERIVATIVES FOR THEIR ORGANOLEPTIC PROPERTIES AND SYNTHESIS PROCESS FOR PREPARING SUCH DERIVATIES

Richard M. Boden, Ocean; Irene Burtyk, Clifton, both of N.J.; Jan Van Elst, Bilthoven, Netherlands; Marie R. Hanna, Hazlet, and Charles E.J. Beck, Summit, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

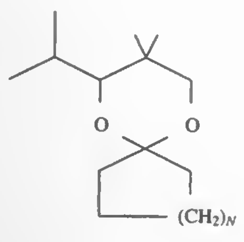
Filed Mar. 6, 1997, Ser. No. 812,040

Int. Cl.^{6} A61K *6/00*

U.S. Cl. 424—401 **27 Claims**



1. A process for imparting, augmenting or enhancing the aroma of a substance selected from the group consisting of perfume compositions, perfumed polymers, soaps, anionic, nonionic, cationic or zwitterionic detergents, fabric softener articles, fabric softener compositions and bleach compositions consisting essentially of the step of adding to said substance an aroma imparting, augmenting or enhancing quantity and concentration of at least one of 7-isopropyl-8,8-dimethyl-6,10-dioxaspiro-C_{10} and C_{11} alkane derivative defined according to the structure:



wherein N is 1 or 2.

5,711,953

INSECT REPELLANT

John M. Bassett, 5490 13 Mile Rd., Rockford, Mich. 49341

Filed Aug. 26, 1996, Ser. No. 703,384

Int. Cl.^{6} A01N *25/02*

U.S. Cl. 424—405 **17 Claims**

1. An insect repellant comprising about 90–95% by volume of carrier, about 0.5–5% of a garlic extract component, about 0.5–5% of a hot pepper extract component, and at least about 0.5% of a surfactant component.

5,711,954

STABLE IMIDAZOLE ANTI-FUNGAL POWDER COMPOSITIONS

Don C. Beer, Cordova, and Vijay B. Surpuriya, Germantown, both of Tenn., assignors to Schering-Plough HealthCare Products, Inc., Memphis, Tenn.

PCT No. PCT/US93/05176, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO93/25238, PCT Pub. Date Dec. 23, 1993

Continuation-in-part of Ser. No. 894,896, Jun. 8, 1992, abandoned. This PCT application Jun. 7, 1993, Ser. No. 347,412

Int. Cl.^{6} A01N *25/26*

U.S. Cl. 424—409 **13 Claims**

1. A dry, free flowing, stabilized powder composition comprising:

a) an imidazole antifungal compound selected from clotrimazole, miconazole, terconazole, econazole, isoconazole, tioconazole, sulconazole, butoconazole, oxiconazole, bifonazole, fenticonazole, omoconazole, parconazole, ketoconazole, metronidazole, itraconazole or mixtures thereof; and
b) talc coated with a hydrophobic coating, wherein the amount of hydrophobic coating in the powder composition can range from about 0.5 to about 5% by weight of the powder composition, wherein said powder composition is obtained by either:
  i) mixed talc coated with the hydrophobic coating and the imidazole antifungal compound; or
  ii) coating talc with the hydrophobic coating, followed by preparing a mixture of the imidazole antifungal compound with the coated talc.

5,711,955

INSECT COMBATANT CONTROLLED/PROLONGED DELIVERY DEVICE

Jörn E. Karg, Kaiserslautern, Germany, assignor to Celaflor GmbH, Ingelheim am Rhein, Germany

Continuation-in-part of Ser. No. 234,417, Apr. 28, 1994, abandoned. This application Mar. 27, 1995, Ser. No. 411,169

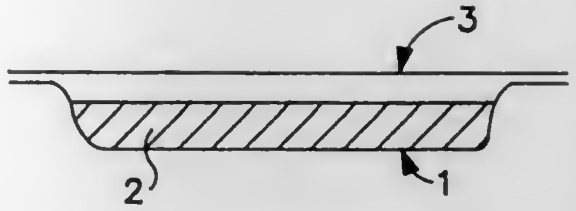
Claims priority, application France, Sep. 28, 1993, 93 11762

Int. Cl.^{6} A01N *25/08*

U.S. Cl. 424—409 **10 Claims**

1. A device suitable for combating insects, comprising:

a transparent plastic container in the form of a dish whose open face has a flat flange;



a polyethylene sheet or membrane impervious to liquids and permeable to the vapors of essential oils at ambient temperature, said sheet or membrane being attached to said flat flange of the transparent container and adhering to said transparent container, said sheet or membrane having a thickness of 50 to 300 microns;

a protective cover sheet made of polypropylene, also arranged on the face of the transparent container, said cover sheet adhering to the permeable sheet by adhesive bonding; and

an insecticidal and/or insect repellent composition, said composition being liquid or capable of evaporating completely at ambient temperature and having an insecticidal and/or insect repellent activity in the vapor state, and containing 20 to 85% of an essential oil selected from cedar wood essence, cedar foliage essence, thuya essence, lavender essence, lavender essence, lemon tree essence, Litsea cubeba essence. Verty essence and mixtures thereof and 15 to 80% of a diffusion or evaporation agent in the form of a liquid chemical selected from hexyl acetate, isobutyl acetate, cyclohexyl acetate, prenyl acetate, isononyl acetate, isobornyl acetate, linalyl acetate, benzyl acetate, ethyl butyrate, camphor, ethyl caproate, methyl caproate, carene, limonene, (or terpene essence derived of orange), allyl heptanoate, methyl hexeoate, ethyl isobutyrate, methyl pentylketone, myrcene, phaellandrene, pinene, butyl valerianate, terpinolene, paraffin oils, and mixtures thereof, and optionally containing 2 to 40% of an aromatic compound;

wherein the effective area for permeation is between 5 and 35 cm^2, and wherein the membrane will permit 0.8 g of the oil to evaporate after six months when said container is filled with 10 g of cedar wood essence and with a free face applied against a vertical membrane to provide an effective area for permeation of 14 cm^2.

5,711,956

SOLID INSECTICIDAL FORMULATION

David John Wedlock, Tarporley, and Jonathan Mark Woodburn, Sittingbourne, both of England, assignors to American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 351,964, Dec. 8, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,893

Int. Cl.^{6} A01N *25/10;25/12*

U.S. Cl. 424—409 **44 Claims**

1. A formulation which contains a melt extrudate consisting essentially of polyvinylpyrrolidone homopolymer having a K value of about 20 to 40 and an insecticidally effective amount of a pyrethroid insecticide, wherein the polyvinylpyrrolidone in the extrudate is present in the amount of from about 50 to 90 percent w/w and wherein a solid solution of pyrethroid in said polyvinylpyrrolidone is formed.

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5,711,957

USE OF A POROUS CALCIUM CARBONATE BASED MATERIAL AS SUPPORT OF A GROWTH FACTOR IN THE PREPARATION OF A BIOABSORBABLE IMPLANT

Jean-Louis Patat, and Jean-Pierre Ouhayoun, both of Paris, France, assignors to Inoteb, Saint-Gonnery, France

PCT No. PCT/FR94/00565, § 371 Date Feb. 2, 1995, § 102(e) Date Feb. 2, 1995, PCT Pub. No. WO94/26322, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 360,801

Claims priority, application France, May 13, 1993, 93 05783; Nov. 17, 1993, 93 13740

Int. Cl.^{6} A61F *13/00*

U.S. Cl. 424—422 **24 Claims**

1. A method of treating a living organism comprising fitting in said living organism a bioabsorbable implant having a support of porous calcium carbonate based material supporting at least one growth factor, said support being free of collagen in a case when said growth factor is an osteoinductive factor and wherein said calcium carbonate based material comprises an external wall.

5,711,958

METHODS FOR REDUCING OR ELIMINATING POST-SURGICAL ADHESION FORMATION

Daniel Cohn, Jerusalem, Israel, and Eli Pines, Watchung, N.J., assignors to Life Medical Sciences, Inc., Edison, N.J.

Filed Jul. 11, 1996, Ser. No. 678,762

Int. Cl.^{6} A61B *19/00*

U.S. Cl. 424—423 **45 Claims**

1. A method for reducing or preventing adhesions in a patient comprising exposing tissue which has been subjected to tissue damage and is at risk for the formation of adhesions to a polymeric composition comprising polymers which are chain-extended, substantially non-water soluble poly(hydroxy-carboxylic acid)/poly(oxyalkylene) ABA triblocks, where A is an aliphatic polyester and B is a polyoxyalkylene polymer unit, said polymeric composition comprising no more than about 1.0% by weight crosslinking and having an EO/LA ratio ranging from about 0.5 to 5.0.

5,711,959

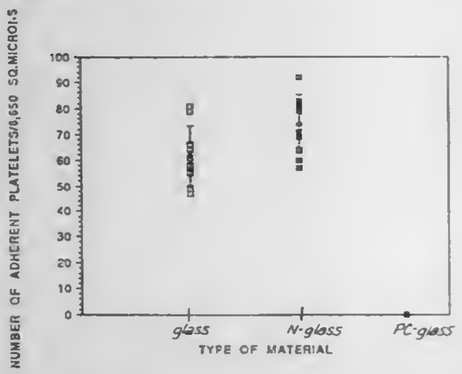
BIOCOMPATIBLE MATERIALS

Anja S. Kohler, Stillwater; Daniel L. Mooradian, Eagan, and Leo T. Furcht, Minneapolis, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

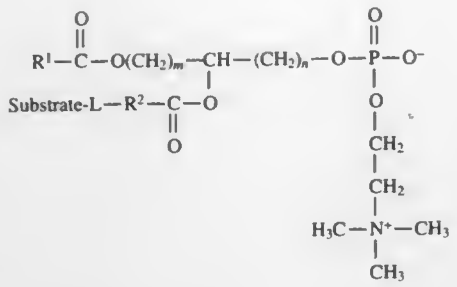
Continuation of Ser. No. 406,124, Mar. 17, 1995, abandoned. This application Sep. 10, 1996, Ser. No. 707,954

Int. Cl.^{6} A61F *2/02*

U.S. Cl. 424—423 **13 Claims**



1. A biocompatible material comprising a substrate and a phospholipid moiety covalently attached thereto in an amount and orientation effective to provide an improved nonthrombogenic surface relative to the substrate without the phospholipid moiety covalently attached thereto, wherein the biocompatible material has the following structure:



wherein:

(a) R^1 is a $(C_1–C_{30})$alkyl group;
(b) R^2 is a $(C_1–C_{30})$alkylene group;
(c) m is 1–4;
(d) n is 1–4; and
(e) L is $—C(O)—NH—(CH_2)_p—$ wherein p is 0–20.

5,711,960

BIOCOMPATIBLE IMPLANT MATERIAL COMPRISING A TRI-AXIAL OR MORE THREE-DIMENSIONAL FABRIC

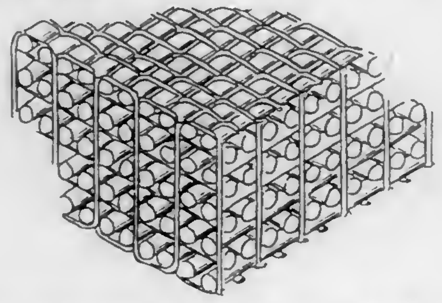
Yasuo Shikinami, Osaka, Japan, assignor to Takiron Co., Ltd., Osaka, Japan

Filed May 24, 1995, Ser. No. 449,560

Claims priority, application Japan, Sep. 24, 1993, 5-261582

Int. Cl.^{6} A61F *2/28;* B32B *1/08*

U.S. Cl. 424—426 **16 Claims**



1. An implant material which comprises, as a base material, a biocompatible bulk structure of a tri-axial or more three-dimensionally woven fabric of organic fibers, a tri-axial or more three-dimensionally knitted fabric of organic fibers or a combination thereof.

5,711,961

PHARMACEUTICAL COMPOSITIONS BASED ON CHEWING GUM AND A METHOD FOR THE PREPARATION THEREOF

Alberto Reiner, Como, and Alessandro Seneci, Milan, both of Italy, assignors to APR Applied Pharma Research S.A., Stabio, Switzerland

PCT No. PCT/EP95/02816, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO96/03111, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 15, 1995, Ser. No. 619,459

Claims priority, application Italy, Jul. 26, 1994, MI94A1586

Int. Cl.^{6} A61K *9/68*

U.S. Cl. 424—441 **43 Claims**

1. Chewing gum tablet comprising:

a mixture of a chewing gum base and sugary microgranules;

a component adsorbed onto said sugary microgranules selected from the group consisting of an additive agent and an active ingredient; and

a lacquer coating on the tablet selected from the group consisting of pharmaceutically acceptable celluloses and polyethylene glycols.

5,711,962

TRANSDERMAL THERAPEUTIC SYSTEM FOR APPLICATION OF PHARMACEUTICALS ONTO THE SKIN

Günter Cordes, Leichlingen, Germany, and Lucio C. Rovati, Monza, Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

PCT No. PCT/EP94/03269, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/09618, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 30, 1994, Ser. No. 619,555

Claims priority, application Germany, Oct. 1, 1993, 43 33 595.0

Int. Cl.^{6} A61L *15/16;* A61F *13/02*

U.S. Cl. 424—447 **6 Claims**

1. A transdermal therapeutic system, which comprises;

a backing sheet having deposited thereon a matrix which is an acrylate-based adhesive, said adhesive having dissolved therein as active therapeutic ingredients

(a) oestradiol and norethisterone acetate; and
(b) octyldodecanol;

said adhesive having been prepared by free-radical copolymerization of

(i) 50 to 70 percent by weight of 2-ethylhexyl acrylate;
(ii) 20 to 40 percent by weight of methyl acrylate;
(iii) 2 to 8 percent by weight of acrylic acid;
(iv) 2 to 10 percent by weight of vinyl acetate; and
(v) 0.5 to 3 percent by weight of hydroxyethyl acrylate.

5,711,963

Patent Not Issued For This Number

5,711,964

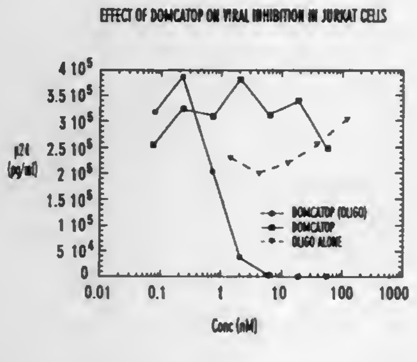
METHOD FOR THE INTRACELLULAR DELIVERY OF BIOMOLECULES USING LIPOSOMES CONTAINING CATIONIC LIPIDS AND VITAMIN D

Nanibhushan Dattagupta; Aditya Ranjan Das, both of San Diego; C. Nagaraja Sridhar, Simi Valley, and Jasmin R. Patel, San Diego, all of Calif., assignors to United States of America, Washington, D.C.

Filed Jun. 7, 1995, Ser. No. 480,622

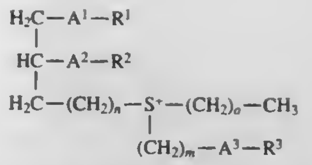
Int. Cl.^{6} A61K *9/127*

U.S. Cl. 424—450 **18 Claims**



1. A method for introducing at least one biomolecule into a cell, said method comprising the steps of:

a) providing a formulation comprising a liposome, said liposome comprising Vitamin D, a pH sensitive amphiphile, a biomolecule and a thiocationic lipid of the general formula:



and optical isomers and/or salts thereof wherein:

A^1 and A^2 are the same or different and are —O—CO—, —O—, —S—CO— or —S—;

A^3 is —O—, —O—CO—, —CO—O—, —S—, —S—CO—, —CO—S—, —O—CS—, —CS—O—, —CO—NH—, —NH—CO—, —CS—NH—, —NH—CS—, —NH—CO—O—, —NH—CO—NH—, —O—CO—NH—, or is absent;

R^1 and R^2 are the same or different and are H, or C_1 to C_{23} saturated or partially unsaturated alkyl or aralkyl, with the proviso that at least one of R^1 and R^2 is not H;

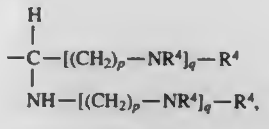
R^3 is a C_1 to C_{12} alkyl, aralkyl, alkaryl, heterocyclyl or heteroaryl; or

R^3 is an amino acid, a dipeptide, a tripeptide, a tetrapeptide or a pentapeptide; or

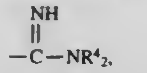
R^3 is

$-[(CH_2)_p-NR^4]_q-R^4$,

$-(CH_2)_p-NR^4{}_3{}^+$,



$$-\overset{\displaystyle H}{\underset{\displaystyle NH-[(CH_2)_p-NR^4]_q-R^4}{C}}-[(CH_2)_p-NR^4]_q-R^4, \quad \text{or}$$



$$-\overset{\displaystyle NH}{\overset{\|}{C}}-NR^4{}_2,$$

wherein p is an integer from 1 to 5, q is an integer from 0 to 4, and R^4 is H or a C_1 to C_4 alkyl, and each of m, n and o is an integer from 0 to 8, with the provisos that m≧1 and (m+n+o)≧3; and

b) contacting a cell with said formulation, whereby said thiocationic lipid facilitates the entry of said biomolecule into said cell.

5,711,965

ALCOHOLIC AQUEOUS GEL-TYPE PHOSPHOLIPID COMPOSITION, ITS USE AND TOPICAL PREPARATION CONTAINING IT

Miklos Ghyczy, Köln; Joachim Roding, Wiesbaden; Hans Lautenschläger; Walter Hameister, both of Pulheim, and Jörg Hager, Köln, all of Germany, assignors to A. Natterman & Cie. GmbH, Cologne, Germany

Continuation of Ser. No. 340,457, Nov. 14, 1994, abandoned, which is a continuation of Ser. No. 917,052, Aug. 7, 1992, abandoned. This application Feb. 21, 1996, Ser. No. 604,355

Claims priority, application Germany, Feb. 8, 1990, 40 03 782.7; Feb. 8, 1990, 40 03 783.5

Int. Cl.^{6} A61K *9/127;9/700*

U.S. Cl. 424—450 **11 Claims**

1. A liposomal gel composition comprising an aqueous phospholipid composition which comprises:

(a) 15–30 parts by weight of a phospholipid concentrate, consisting of
  (i) 70–80 parts by weight of phosphatidylcholine,
  (ii) 15–5 parts by weight of at least one acidic phospholipid selected from the group consisting of phosphatidylethanolamine, phosphatidic acid, N-acylphosphatidylethanolamine and mixtures thereof,
  (iii) 5–25 parts by weight of at least one other phospholipid selected from the group consisting of lysophosphatidylcholine, phosphatidylinositol and mixtures thereof, and

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(iv) 1–15 parts by weight of at least one phosphorus-free lipid per 100 parts by weight of (i), (ii) and (iii);
(b) 20–14 parts by weight of at least one alcohol and
(c) 50–71 parts by weight of an aqueous solution.

5,711,966
METHOD OF TREATING MALARIA WITH DESBUTYLHALOFANTRINE

Raymond Woosley, 2720 Chain Bridge Rd., NW., Washington, D.C. 20016; David L. Wesche, 1618 Tilton Dr., Silver Spring, Md. 20902, and Brian G. Schuster, 1620 Crowell Rd., Vienna, Va. 22182

Filed Aug. 23, 1996, Ser. No. 703,595
Int. Cl.^{6} A61K *9/48*

U.S. Cl. 424—451 **7 Claims**

1. A method of preventing malaria or treating patients suffering from malaria whilst avoiding cardiac arrhythmias, the improvement thereof comprising the administration of desbutylhalofantrine in an anti-malarial effective amount in place of halofantrine.

5,711,967
ORAL DICLOFENAC PREPARATION

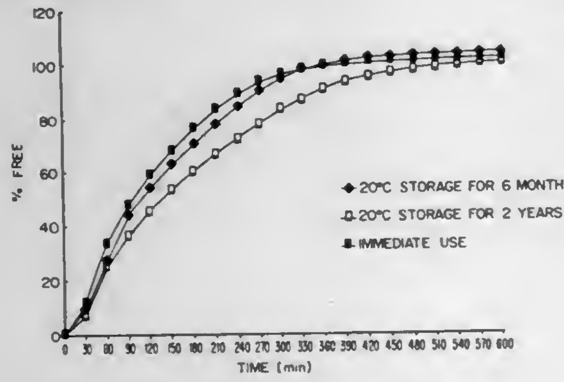
Rolf-Dieter Juch, Wangen, Switzerland, assignor to Spirig AG, Pharmazeutische Praeparate, Switzerland

Continuation of Ser. No. 899,500, Jun. 16, 1992, abandoned. This application Apr. 21, 1994, Ser. No. 231,458

Claims priority, application European Pat. Off., Jun. 17, 1991, 91810460.5

Int. Cl.^{6} A61K *9/16;9/58;9/62*

U.S. Cl. 424—462 **47 Claims**



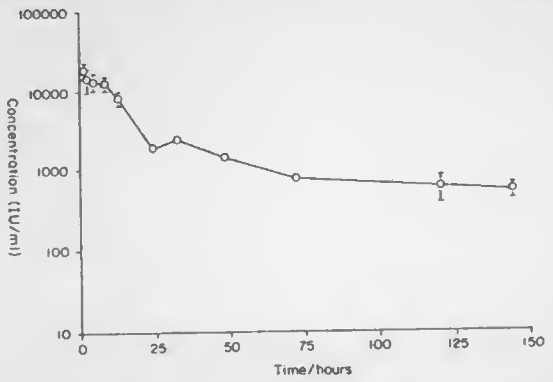
1. A pelleted oral drug preparation comprising:
an active ingredient layer including an active ingredient consisting of diclofenac or one of its salts, with controlled release of the active ingredient, the active ingredient layer surrounding an inert pellet;
an inner diffusion membrane layer absent water-soluble cellulose derivatives containing
(i) 35–65% by weight of a pH independent water-insoluble polymer,
(ii) 5–20% by weight of at least one pore-forming agent, and
(iii) 20–50% by weight of adjuncts,
wherein said inner diffusion membrane layer surrounds said active ingredient layer and further wherein said inner diffusion membrane layer is built to determine the releasc of said active ingredient; and
an outer film coating resistant to gastric juice, the film coating surrounding said inner diffusion membrane layer and comprising 5–20% by weight based on the final pellet, wherein said film coating is soluble above a pH of 5.5, said film coating further comprising at least one acid insoluble polymer and adjuncts, the at least one acid insoluble polymer selected from the group consisting of methacrylic acid/methacrylic acid ester copolymers, methacrylic acid/acrylic acid ester copolymers, carboxy methyl ethyl cellulose, cellulose acetate phthalate, and mixtures thereof.

5,711,968
COMPOSITION AND METHOD FOR THE CONTROLLED RELEASE OF METAL CATION-STABILIZED INTERFERON

Mark A. Tracy, Arlington; Howard Bernstein, Cambridge, both of Mass., and M. Amin Khan, Dowingtown, Pa., assignors to Alkermes Controlled Therapeutics, Inc., Cambridge, Mass.

Filed Jul. 25, 1994, Ser. No. 279,784
Int. Cl.^{6} A61K *9/10;9/16*

U.S. Cl. 424—487 **29 Claims**



1. A composition for the controlled release of interferon from a polymeric matrix, comprising:
a) a biocompatible polymer; and
b) particles of metal cation-complexed interferon, wherein said particles are dispersed within the biocompatible polymer and are in the substantial absence of protamine.

5,711,969
LARGE AREA SUBMUCOSAL TISSUE GRAFT CONSTRUCTS

Umesh H. Patel, W. Lafayette; Michael C. Hiles, Indianapolis; Bryan Whitson, West Lafayette, all of Ind.; Boyle Cheng, Greeley, Colo.; Stephen F. Badylak, W. Lafayette, and Klod Kokini, Lafayette, both of Ind., assignors to Purdue Research Foundation, West Lafayette, and Methodist Hospital of Indiana, Indianapolis, both of Ind.

Filed Apr. 7, 1995, Ser. No. 418,515
Int. Cl.^{6} A61K *35/38*

U.S. Cl. 424—551 **5 Claims**

1. A unitary heterolaminar tissue graft construct consisting essentially of multiple strips of intestinal submucosa tissue fused to one another by compressing the strips under dehydrating conditions, said heterolaminar construct having a variable number of layers of intestinal submucosa tissue superimposed at different

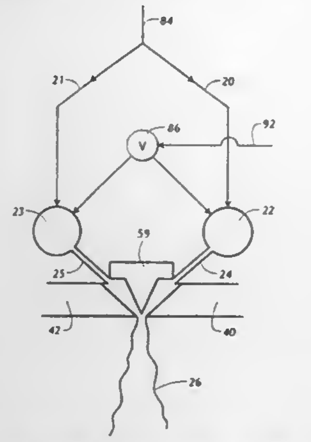
points on the construct and the construct has a surface area greater than any one of the individual strips used to form said construct.

5,711,970
APPARATUS FOR THE PRODUCTION OF FIBERS AND MATERIALS HAVING ENHANCED CHARACTERISTICS

Jark Chong Lau, Roswell, and Bryan David Haynes, Alpharctta, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Aug. 2, 1995, Ser. No. 510,354
Int. Cl.^{6} D01D *5/00*

U.S. Cl. 425—72.2 **40 Claims**



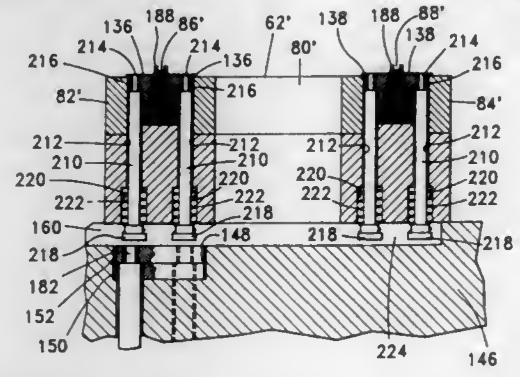
1. Apparatus for forming artificial fibers from a liquefied resin comprising:
means for generating a substantially continuous steady state fluid stream flow along a primary
a first extrusion die for extruding the liquefied resin, said die located adjacent to the fluid stream for injecting said liquefied resin in the fluid stream along said primary axis to form fibers; and
perturbation means for selectively perturbing the flow of fluid in the fluid stream by superimposing alternating pressure perturbations on said steady state flow by varying the fluid pressure on either side of the primary axis of said steady state fluid flow.

5,711,971
RECONFIGURABLE MOLD HAVING TRAVELING EJECTOR SYSTEM

Louis vanderSanden, Hertogenbosch, Netherlands, assignor to The Whitaker Corporation, Wilmington, Del.

Filed May 20, 1996, Ser. No. 650,405
Int. Cl.^{6} B29C *45/40*

U.S. Cl. 425—183 **8 Claims**



1. Apparatus for selectively molding one of a plurality of different molded parts, comprising:
(a) a mold frame, an A-side frame coupled to said mold frame, and a B-side frame coupled to said mold frame;
(b) a first mold body having a first mold cavity therein, and a second mold body having a second mold cavity and a third mold cavity therein,
one of said first and second mold bodies being selectably movable with respect to the other to a first position where said second mold cavity is in communication with said first mold cavity and to a second position where said third mold cavity is in communication with said first mold cavity, and
both said first and second mold bodies being split along a part line so that each has a portion on one side of said part line coupled to said A-side frame and another portion on the other side of said part line coupled to said B-side frame, one of said A-side frame and B-side frame arranged to move in a direction toward said part line into a closed position wherein respective portions of said first and second mold bodies are in mutual mated engagement, and in an opposite direction away from said part line to an open position wherein said respective portions are separated;
(c) a first actuator for effecting said movement of said movable mold body and a second actuator for effecting said movement of said one of said A-side frame B-side frame;
(d) a traveling ejector arranged in said portion of said movable mold body coupled to said B-side frame and operable to eject said molded part only when said one of said A-side frame and B-side frame has moved to said open position, said traveling ejector operable when said movable mold body is in both said first and second positions; and
(e) a powered linear actuator for effecting said operation of said traveling ejector.

5,711,972
DEVICE FOR BOARD MANUFACTURE

Kurt Schedin, Sundsvall; Vincent Pihlström, Bergeforsen, and Fredrik Nilsson, Ankarsvik, all of Sweden, assignors to Sunds Defibrator Industries AB, Sweden

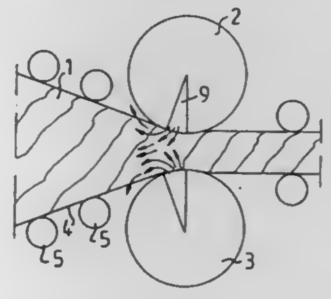
PCT No. PCT/SE95/00353, § 371 Date Oct. 8, 1996, § 102(e) Date Oct. 8, 1996, PCT Pub. No. WO95/31318, PCT Pub. Date Nov. 23, 1995

PCT Filed Apr. 3, 1995, Ser. No. 722,257

Claims priority, application Sweden, May 13, 1994, 9401648

Int. Cl.^{6} B29C *43/24;43/46*

U.S. Cl. 425—363 **10 Claims**



1. Apparatus for compressing a mat of lignocellulose-containing material during the manufacture of board material therefrom comprising at least one rotary compression roll including a circumferential surface and first and second end walls, said at least one rotary compression roll including a perforated shell forming said circumferential surface, a plurality of axially oriented ducts disposed within said rotary compression roll adjacent to said surface, and a shoe disposed adjacent to said first end wall of said rotary compression roll, said shoe including a channel for injecting a processing medium into at least one of said plurality of axially oriented ducts whereby said processing medium is directed onto said mat in a processing section during compression of said mat by said rotary compression roll.

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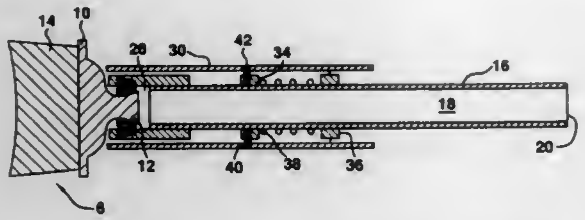
5,711,973
APPARATUS FOR MAKING A PROSTHETIC SOCKET

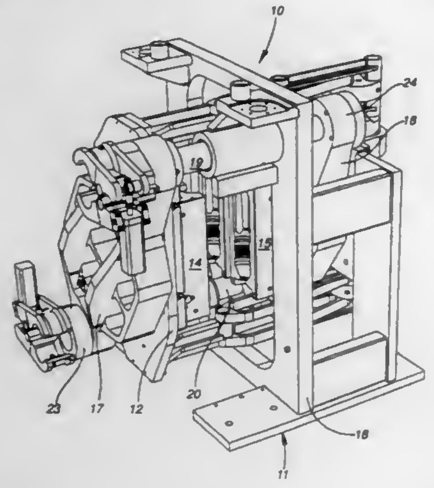
Vernon R. Rothschild, Berlin; John R. Fox, Trappe, and Russell J. Rothschild, Kent Island, all of Md., assignors to Rothschild's Orthopedics, Salisbury, Md.
Filed Apr. 24, 1996, Ser. No. 637,041
Int. Cl.^{6} B29C *51/12;* **A61F** *2/80*
U.S. Cl. 425—504 **9 Claims**



1. A vacuum tube assembly for vacuum sealing a plastic layer on a prosthetic socket, comprising:
- a cylindrical shaft for providing an air path for the vacuum tube assembly;
- connecting means attached to one end of said cylindrical shaft; said connecting means being further attachable to an attachment means in the prosthetic socket; and
- cover means attached to said cylindrical shaft′ for covering said connecting means.

5,711,974
BLOW-MOLDING PRESS

Dominique Poncet, Peron, France, assignor to Jean Gallay S.A., Plan-les-Ouates, Switzerland
Filed Sep. 23, 1996, Ser. No. 717,863
Claims priority, application France, Sep. 29, 1995, 95 11748
Int. Cl.^{6} B29C *49/56*
U.S. Cl. 425—541 **10 Claims**



1. A press for blow-molding thermoplastic containers, comprising two movable plates (**12**, **13**) each supporting a half-mold (**14**, **15**) and an actuator mechanism for opening and closing the mold consisting of two half-molds, characterized in that each plate is attached to a diagonal beam (**17**, **18**) attached to two fixed axles (**19**, **20**) which are parallel to each other, said beams sliding along these axles between two positions corresponding to the mold opening and closing positions, and in that opening and closing of the mold is controlled by a mechanism consisting of two pairs (**31**) of connecting rods, each connecting rod (**33**, **36**) in each pair (**31**) having one extremity attached to a pivot (**34**, **37**) of a rotating transmission block (**29**), and the other extremity respectively attached to a pivot (**35**, **38**) which is respectively connected to the two plates (**13**, **12**).

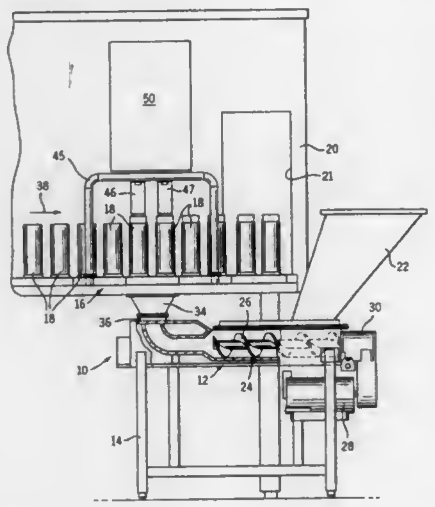
5,711,975
STARCH COMPOSITION FOR SUGAR-FREE CONFECTIONERY

Michel Henri André Gonze, Brussels; Freddy Maurits Luc Van Der Schueren, Aalst, and Jozef Frans Victor Goossens, Korbeek-lo, all of Belgium, assignors to Cerestar Holding B.V., Netherlands
Filed Mar. 5, 1996, Ser. No. 610,958
Claims priority, application United Kingdom, Mar. 9, 1995, 9504732
Int. Cl.^{6} A23L *1/09*
U.S. Cl. 426—3 **12 Claims**

1. A composition suitable for use as a basis for sugar-free confectionery products which comprises a mixture of a thinned, hydroxypropyl tapioca starch, gelatin and a polyol.

5,711,976
CHEESE MOLDING APPARATUS

Joseph H. Abler, Brookfield, Wis., assignor to Stainless Steel Fabricating, Inc., Columbus, Wis.
Filed May 22, 1996, Ser. No. 651,600
Int. Cl.^{6} A01J *25/00;* **A23C** *19/00*
U.S. Cl. 426—36 **14 Claims**



1. An apparatus for filling a mold with cheese, wherein the mold has an opening and a moveable wall; said apparatus comprising:
- a filling device which injects cheese through the opening into the mold;
- a sensor to measure force exerted by the cheese against the moveable wall;
- a mechanism which stops injection of cheese from the filling device into the mold in response to a control signal; and
- a controller connected to the sensor to generate the control signal when the force measured by the sensor reaches a predetermined level.

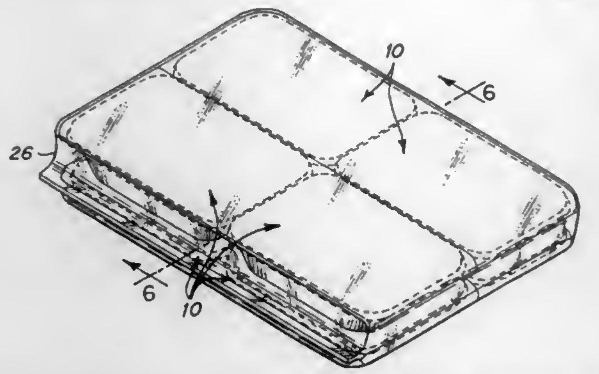
5,711,977
BIFIDOBACTERIA STRAINS WITH ACID, BILE SALT AND OXYGEN TOLERANCE AND THEIR CULTURE METHOD

Yuann-Shiuann Yang; Mel-Ching Chen, and Chii-Cherng Liao, all of Hsinchu, Taiwan, assignors to Food Industry Research and Development Institute, Hsinchu, Taiwan
Filed Oct. 22, 1996, Ser. No. 735,263
Claims priority, application Taiwan, May 6, 1996, 85106752
Int. Cl.^{6} A23C *9/12;* **A01N** *63/02;* **C12N** *1/00;1/38*
U.S. Cl. 426—61 **12 Claims**

1. An isolated strain of bacteria, which is *Bifidobacterium longum* Y1 (ATCC 55813).

5,711,978
FRESH MEAT PACKAGING

Dennis J. Breen, Pleasant Hill, and Lawrence Wilson, Dixon, both of Calif., assignors to Transhumance, Davis, Calif.
Division of Ser. No. 543,886, Oct. 16, 1995, Pat. No. 5,667,827. This application Dec. 6, 1996, Ser. No. 761,783
Int. Cl.^{6} B65D *85/00*
U.S. Cl. 426—129 **11 Claims**



1. In combination with an oxygen barrier outer bag having an interior volume that is first evacuated of residual atmosphere and then filled with a preservation-enhancing gas, a retail case-ready packaging for fresh meat which is received within said barrier bag during storage, said packaging comprising:
- a) a tray formed of a non-oxygen retaining material and having a base, opposed upstanding end walls, and opposed upstanding side walls and an outwardly projecting upper perimeter lip which extends in continuous fashion along upper free ends of said upstanding side and end walls, said side walls, end walls and base of said tray together defining an upwardly open hollow interior sufficient to receive a piece of meat of a specified cut therewithin;
- b) a flexible web of clear plastic wrapping material surrounding said tray and meat to provide a plastic overwrapped tray having two enclosed regions, including:
  - i) a first enclosed region defined by a portion of said plastic wrapping material which spans across and covers said hollow interior of said tray; and
  - ii) a second generally annular-shaped enclosed region defined by a perimeter overwrap portion of said plastic wrapping material which extends from said outwardly projected perimeter lip to said base;
- c) first perforation means disposed along upper portions of said tray for allowing gas exchange between said first and second enclosed regions without clogging due to run-off juices from the meat or due to shifting of the meat within the tray; and
- d) second perforation means disposed in said plastic wrapping material to permit gas exchange between said second enclosed region and a region outside of said overwrapped tray.

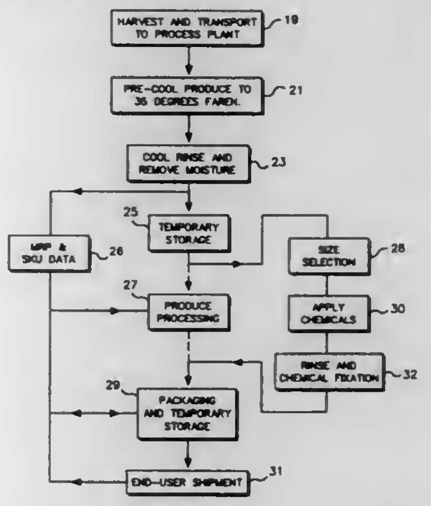
5,711,979
PROCESS FOR PREPARING A MEAT PRODUCT SUITABLE TO BE COOKED IN A MICROWAVE OVEN

Iris Marcela Molinero, Estancia La Blanca-Luan Toro, La Pampa-6317, Argentina
Filed May 15, 1996, Ser. No. 647,868
Claims priority, application Argentina, Jan. 9, 1996, 0334972
Int. Cl.^{6} A23L *1/00*
U.S. Cl. 426—243 **19 Claims**

1. A process for preparing and microwaving a meat product having an exterior surface and a nucleus, comprising the steps of:
- A. freezing said meat product;
- B. partially thawing said meat product whereby the exterior surface is thawed and the nucleus remains frozen;
- C. sealing the surface of said partially thawed meat product by conventionally heating the thawed surface on a metallic surface heated to a temperature ranging from 400° C. to 600° C.;
- D. re-freezing said sealed surface of said meat product; and
- E. microwaving said re-frozen meat product using a two step process comprising:
  - 1. regulating microwave energy to thaw the meat product; and
  - 2. upon adequate thawing, increasing said energy to cook said meat product.

5,711,980
PROCESSING AND PACKAGING METHOD FOR COMBINED PRODUCE TYPES

Mark Terry, Fresno, Calif., assignor to Cal-State Material Handling Systems, Inc., Fresno, Calif.
Filed Apr. 24, 1996, Ser. No. 637,039
Int. Cl.^{6} B65B *55/00;* **A23B** *7/00*
U.S. Cl. 426—392 **7 Claims**


HARVEST AND TRANSPORT TO PROCESS PLANT
19
PRE-COOL PRODUCE TO 35 DEGREES FAREN.
21
COOL RINSE AND REMOVE MOISTURE
23
25
TEMPORARY STORAGE
MRP & SKU DATA
26
SIZE SELECTION
28
27
PRODUCE PROCESSING
APPLY CHEMICALS
30
RINSE AND CHEMICAL FIXATION
32
29
PACKAGING AND TEMPORARY STORAGE
END-USER SHIPMENT
31

1. A method for improving the shelf life of harvested produce against decay and premature ripening, comprising the steps of:
- reducing the temperature of the harvested produce to approximately 35 degrees Fahrenheit;
- maintaining the produce substantially at the reduced temperature during processing subsequent to reducing the temperature of the produce;
- temporarily storing, at substantially the reduced temperature and about 90% humidity, segregated volumes of selected types of the produce, for selection and subsequent processing;
- selecting types of produce from storage for subsequent processing and packaging together for shipment at substantially the reduced temperature; and
- transferring the packaged produce at substantially the reduced temperature to a mobile environment at substantially the reduced temperature for shipment to a remote location.

5,711,981
METHOD FOR STEAM PASTEURIZATION OF MEAT

Robert C. Wilson, Redmond, Wash.; Jerome D. Leising, Shorewood, Minn.; John Strong, Kirkland, Wash.; Jon Hocker, Bothell, Wash., and Jerry O'Connor, Issaquah, Wash., assignors to Frigoscandia Inc., Redmond, Wash.
Continuation-in-part of Ser. No. 335,437, Nov. 7, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 553,852
Int. Cl.^{6} A23B *4/005;* **A23L** *3/18*
U.S. Cl. 426—511 **37 Claims**

1. A method for destroying pathogens on meat comprising the steps of:
- (a) rapidly removing surface water from the meat at a rate greater than by natural evaporation; then
- (b) rapidly heating the surface of the meat by exposing the meat to steam at a pressure above atmospheric pressure, wherein the temperature of the interior of the meat remains substantially unaffected by the application of the steam to the meat

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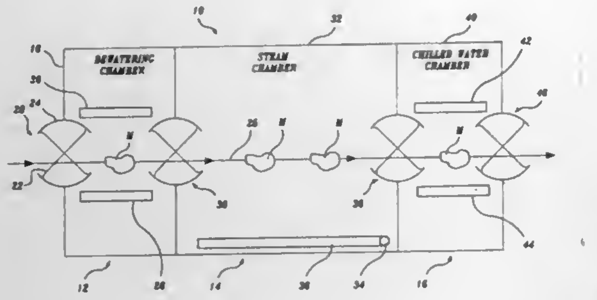


surface, the meat being exposed to the steam after the removing of surface water from the meat; and then
(c) rapidly chilling the surface of the meat.

5,711,982

DE-LACTOSE MILK AND DE-LACTOSE MILK POWDER, AND FOODSTUFFS CONTAINING THE SAME AND PROCESS THEREFOR

Toshio Takemori, Tokyo; Masahiro Takagi, Saitama; Masanori Ito, Saitama; Tatsuya Kamiwaki, Saitama; Kiyoyasu Tsukada, Ibaraki, and Ryohei Yamabe, Saitama, all of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan ..

Filed Jan. 21, 1997, Ser. No. 785,763

Claims priority, application Japan, Jan. 18, 1996, 8-006912; Jul. 25, 1996, 8-196687

Int. Cl.^{6} A23C *15/00;9/00;* **C12C** *7/28;* **A23D** *7/00*

U.S. Cl. 426—580 **20 Claims**

1. A process for preparing a de-lactose milk with
(a) a fat comprising one or more milk fats selected from the group consisting of fresh cream, butter and butter oil, wherein the lactose content is less than 2%, and
(b) a protein comprising one or more milk proteins selected from the group consisting of TMP (total milk protein), MPC (milk protein concentrate), casein, casein salts and WPC (whey protein concentrate), comprising the step of:
(c) homogenizing the fat and the protein in an aqueous solution to a range from 0.33 to 3.0 of ratio of the fat to the protein (F/P) to emulsify the fat with the protein thereby forming a stable oil/water O/W emulsion.

5,711,983

DINOFLAGELLATE BIOMASS, METHODS FOR ITS PRODUCTION, AND COMPOSITIONS CONTAINING THE SAME

David John Kyle, Catonsville; Sue Ellen Reeb, and Valerie Jacqueline Sicotte, both of Baltimore, all of Md., assignors to Martek Biosciences Corporation, Columbia, Md.

Division of Ser. No. 386,079, Feb. 9, 1995, Pat. No. 5,492,938, which is a division of Ser. No. 916,874, Aug. 13, 1992, Pat. No. 5,397,591, which is a continuation-in-part of Ser. No. 479,135, Feb. 13, 1990, Pat. No. 5,407,957. This application Jan. 11, 1996, Ser. No. 583,845

Int. Cl.^{6} A23K *1/00;1/18;* **C12N** *1/12*

U.S. Cl. 426—635 **10 Claims**

1. A biomass consisting essentially of cells of microorganisms, said cells being produced by
cultivating heterotrophic microalgae of the class Dinophyceae in a fermentor to achieve a cell density of at least about 10 grams biomass per liter of nutrient solution, by maintaining in the fermentor a dissolved oxygen level of at least about 10% of air saturation, inducing, by imposition of a stationary phase with a limiting nitrogen source in the nutrient solution, production of a single cell oil containing at least 20% docosahexaenoic acid (DHA) in the triglyceride form at a concentration of at least about 1.5 grams per liter of nutrient solution, and
harvesting said biomass from said fermentor.

5,711,984

TREATMENT OF AN EDIBLE PRODUCT WITH HUMECTANTS

Susan Isabel Woodward, Winmallee, and Theresa May Len Wong, Kings Langley, both of Australia, assignors to Gazelle Foods Pty, Ltd., Pendle Hill, Australia

PCT No. PCT/AU94/00400, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/02335, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 15, 1994, Ser. No. 569,231

Claims priority, application Australia, Jul. 15, 1993, PL9972

Int. Cl.^{6} A23L *1/212;1/09;* **A23B** *7/08;7/14*

U.S. Cl. 426—640 **10 Claims**

1. A method of reducing an equilibrium relative humidity level in an edible product comprising:
applying a solution, incorporating a first humectant in a liquid form, to said product which results in a part of the first humectant being absorbed into said product;
applying a second humectant, in a solid form, to said product with said second humectant absorbing residual moisture and with said second humectant being absorbed into said product; and
wherein both said first humectant and said second humectant are effective in reducing the equilibrium relative humidity of said product to a predetermined level.

5,711,985

COMPOSITIONS TO ENHANCE TASTE OF SALT USED IN REDUCED AMOUNTS

Arturo Guerrero; Steven Soon-Young Kwon, and Dharam Vir Vadehra, all of New Milford, Conn., assignors to Nestec S.A., Vevey, Switzerland.

Continuation-in-part of Ser. No. 228,703, Apr. 15, 1994, abandoned. This application Aug. 22, 1995, Ser. No. 517,753

Int. Cl.^{6} A23L *1/237;1/221;1/23*

U.S. Cl. 426—649 **28 Claims**

1. A composition for enhancing a taste provided by salt in foods and beverages comprising, by weight based upon composition weight:
dehydrated proteolyzed protein selected from the group consisting of proteolyzed egg white and proteolyzed gelatin in an amount of from 42% to about 95% including, based upon the composition weight, from about 0.2% to about 3% free lysine and from about 0.2% to about 3% free arginine; and
ammonium salt in an amount of from about 5% to 58%.

5,711,986

METHOD OF REPLACING FATS WITH SHORT CHAIN AMYLOSE

Chung-Wai Chiu, Westfield, and William R. Mason, Somerville, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 42,935, Apr. 5, 1993, abandoned, and Ser. No. 79,961, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 615,570, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 258,231, Oct. 14, 1988, Pat. No. 4,971,723, said Ser. No. 42,935is a continuation-in-part of Ser. No. 615,570, which is a continuation-in-part of Ser. No. 258,231. This application Feb. 24, 1995, Ser. No. 394,929

Int. Cl.^{6} A23G *3/00*

U.S. Cl. 426—658 **21 Claims**

1. A method of replacing one or more fat(s) in a liquid-containing food, which comprises the steps of (a) formulating the food in such a way that up to 100%, by weight, of the total fat(s) in

the food are omitted and (b) substituting for the fat(s) an enzymatically debranched waxy starch consisting essentially of at least about 50% by weight short chain amylose and up to 50% by weight of debranched amylopectin, in powdered form or as a dispersion in the liquid, which debranched waxy starch, when dispersed in the liquid, is capable of imparting a lubricating, fat-like, creamy, spreadable texture to the liquid.

5,711,987

ELECTRONIC COATINGS

Clayton R. Bearinger; Robert C. Camilletti; Loren A. Haluska, and Keith W. Michael, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 4, 1996, Ser. No. 725,787

Int. Cl.^{6} B05D *5/12*

U.S. Cl. 427—7 **24 Claims**

1. A method for forming a tamperproof coating on an electronic device comprising:
(A) forming a protection layer on the electronic device by applying on the electronic device a composition comprising a preceramic silicon-containing material and a filler to a surface of the electronic device and thereafter heating the composition to a temperature sufficient to convert the preceramic silicon-containing material into a silica-containing ceramic having filler dispersed therein; and
(B) forming a resin sealer coat over the protection layer by applying a sealer resin selected from the group consisting of colloidal inorganic-based siloxane resins, benzocyclobutene based resins, a polyimide polymers, a siloxane polyimides and parylenes and thereafter curing the sealer resin to produce the resin sealer coat.

5,711,988

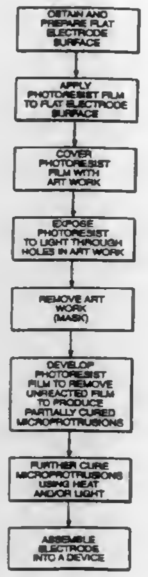
ENERGY STORAGE DEVICE AND ITS METHODS OF MANUFACTURE

K. C. Tsai, Saratoga; Gary E. Mason, Sunnyvale, and Mark L. Goodwin, Santa Cruz, all of Calif., assignors to Pinnacle Research Institute, Inc., Los Gatos, Calif.

Continuation-in-part of Ser. No. 947,414, Sep. 18, 1992, Pat. No. 5,384,685, Ser. No. 947,294, Sep. 18, 1992, Pat. No. 5,464,453, and Ser. No. 345,086, Nov. 28, 1994, Pat. No. 5,584,671, which is a continuation-in-part of Ser. No. 958,506, Oct. 7, 1992, abandoned, and Ser. No. 219,965, Mar. 30, 1994. This application Jan. 23, 1995, Ser. No. 377,121

Int. Cl.^{6} B05D *5/12*

U.S. Cl. 427—80 **17 Claims**


OBTAIN AND PREPARE FLAT ELECTRODE SURFACE
APPLY PHOTORESIST FILM TO FLAT ELECTRODE SURFACE
COVER PHOTORESIST FILM WITH ART WORK
EXPOSE PHOTORESIST TO LIGHT THROUGH HOLES IN ART WORK
REMOVE ART WORK (MASK)
DEVELOP PHOTORESIST FILM TO REMOVE UNREACTED FILM TO PRODUCE PARTIALLY CURED MICROPROTRUSIONS
FURTHER CURE MICROPROTRUSIONS USING HEAT AND/OR LIGHT
ASSEMBLE ELECTRODE INTO A DEVICE

1. A method of producing an array of substantially uniform microprotrusions on a surface as a separator useful in the construction of single or multiple layer electrical charge storage devices, which method comprises:
(a) obtaining an electrically insulating material which is essentially inert to electrolyte conditions to produce a thixotropic composition at between ambient temperature to about 75° C. and ambient pressure;
(b) obtaining a thin electrode material comprising a thin flat electrically conducting metal sheet center coated on one or both sides with electrically conducting carbon, porous metal oxide, porous mixed metal oxide or other porous coating and securing the flat electrode in a suitable holder;
(c) placing a thin flat screen or stencil having small openings over the flat thin electrode;
(d) contacting the top exterior thin screen surface with the flowable composition of step(a) so that small portions of the composition extrude through the pattern and contact the exterior surface of the thin electrode and optionally penetrate the exterior surface of the porous electrode coating, when a squeegee is brought across the screen surface to cause contact of the screen with the electrode surface;
(e) removing the sample from the screen printer; and
(f) curing the applied material whereby the discrete microprotrusions essentially retain their shape and dimensions.

5,711,989

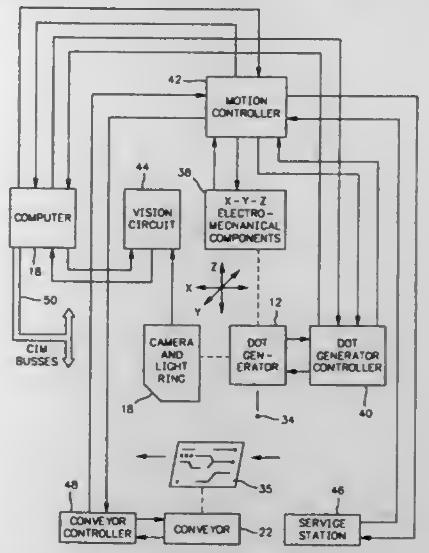
COMPUTER CONTROLLED METHOD FOR DISPENSING VISCOUS FLUID

Robert L. Ciardella, Encinitas; Philip P. Maiorca, Poway; Alec J. Babiarz, Encinitas; Duong La, San Diego; Carlos E. Bouras, Encinitas; Mark S. Meier, Encinitas; John L. Christofferson, Encinitas; Ronald N. Abernathy, Vista; Stanley C. Aguilar, La Mesa, and James C. Smith, San Marcos, all of Calif., assignors to Nordson Corporation, Westlake, Ohio

Division of Ser. No. 192,709, Feb. 7, 1994, Pat. No. 5,505,777, which is a continuation-in-part of Ser. No. 978,783, Nov. 19, 1992, Pat. No. 5,320,250. This application Mar. 7, 1996, Ser. No. 612,179

Int. Cl.^{6} B05D *5/12;* **B05C** *5/00*

U.S. Cl. 427—96 **12 Claims**



1. A viscous fluid dispensing method, comprising the steps of:
providing a viscous fluid dot generator for rapidly ejecting jets of a viscous fluid to form dots on a surface of a circuit board substrate positioned adjacent the dot generator without wetting the surface;
moving the dot generator transversely adjacent the surface of the substrate; and
controlling the dot generator so that it repeatedly ejects jets of the viscous fluid during its transverse movement to form dots

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on the surface of the substrate at a plurality of predetermined locations by pre-triggering the dot generator to eject the jets before the dot generator is directly over the corresponding predetermined locations where the dots are to be formed on the surface of the substrate.

5,711,990

METHOD OF COATING SHEET METAL

Philippe Guesdon, Paris, and Jacques Houziel, Montataire, both of France, assignors to Sollac, Puteaux, France

Filed Oct. 16, 1996, Ser. No. 733,071

Claims priority, application France, Oct. 19, 1995, 95 12273

Int. Cl.^{6} B05D *1/36;* **C23C** *2/26*

U.S. Cl. 427—201 **7 Claims**

1. A method of treating a metal layer present as a coating on a sheet metal substrate comprising:

applying a metal coating as a layer on a sheet metal substrate;

while the metal coating is at least partially in a liquid state, atomizing a powder and applying the atomized powder to said metal coating by propulsive means;

wherein said atomized powder is in the form of agglomerates which are comprised of a plurality of elementary powder particles, said agglomerates being propelled against the surface of the metal coating while the metal coating is in the liquid state, the agglomerates being broken apart upon impact with the surface into the elementary powder particles which are dispersed and/or dissolved in the metal coating, and wherein the mean diameter of said agglomerates is greater than the thickness of the metal coating in the liquid state.

5,711,991

PROCESS FOR MAKING LITHOGRAPHIC SHEET MATERIAL HAVING A THERMOPLASTIC ADHESIVE LAYER

Edward C. Robinson, New Kensington; Robert E. Bombalski, Brackenridge; Jean Ann Skiles, Gibsonia; Thomas L. Levendusky, Greensburg, and Mark L. Weaver, Allison Park, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 20, 1995, Ser. No. 559,670

Int. Cl.^{6} B05D *1/36;3/02;* **B41N** *1/08*

U.S. Cl. 427—202 **19 Claims**

1. A process for making a lithographic sheet material, comprising:

(a) providing a substrate comprising a metal sheet,

(b) coating said substrate with a an adhesive layer comprising a thermoplastic polymer having a lower melting point than said metal sheet,

(c) maintaining said adhesive layer at one or more temperatures within about 15° F. above or below its melting point, and

(d) while maintaining said adhesive layer at said one or more temperatures, adhering to said adhesive layer a particle layer comprising a plurality of particles selected from the group consisting of alumina, silica, zinc oxide, titanium oxide, magnesia, aluminum and zinc, said particles having an average particle size of less than about 30 microns and less than the thickness of said adhesive layer.

5,711,992

ENVIRONMENTALLY SAFER PROCESS OF MANUFACTURING HONEYCOMB PRODUCTS FOR USE IN COMPOSITE MATERIALS USING A WATER-BASED PHENOLIC THERMOSETTING RESIN AND THE PRODUCTS MADE THEREBY

Richard R. Heitkamp, Long Beach; Thomas H. Iler, Tustin, both of Calif.; Dale Danver, Miami, Fla.; Liqun Cao, Fullerton, Calif., and Ronald Boyer, Miramar, Fla., assignors to Hexcel Corporation, Pleasanton, Calif.

Continuation-in-part of Ser. No. 210,978, Mar. 21, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,766

Int. Cl.^{6} B05D *5/00*

U.S. Cl. 427—243 **15 Claims**

1. An environmentally improved and safer process for the manufacture of a honeycomb core where the conventional steps in said manufacture are (1) printing node lines of adhesive onto a sheet of base substrate material; (2) stacking a number of sheets from step (1) on top of one another; (3) placing a block of stacked sheets from step (2) between platens and subjecting to heat and pressure to cause sheet adhesion at the location of the node lines of adhesive and adhering a backing material to the block ends for use in expansion; (4) expanding (pulling) the block of sheets where the adhesive is fully cured to the desired length and width dimensions thus creating the honeycomb with the desired cell size and geometry; (5) heat setting the block from step (4) when needed to give the block its permanent dimensions; (6) coating the expanded block from step (4) or (5) with a resin and curing said resin to give a honeycomb core of desired strength and density; and (7) finally sawing horizontally the cured resin coating block from step (6) into honeycomb core sheets, wherein the improvement comprises

employing a waterborne, water-dilutable phenolic thermosetting resin formulation to resin coat the honeycomb core or to precoat the base substrate, which resin formulation consists essentially of (with each component percent based on the total resin formulation)

(a) about 40–70% by weight of a phenol-formaldehyde phenolic resin solids,

(b) about 0–5% by weight of free formaldehyde,

(c) about 0–20% by weight of free phenol, and

(d) about 60–15% by weight of demineralized water,

so that the amount of volatile organic compounds emitted during the resin cure cycle is 10% or less by weight of the total resin entering said cycle and so that the density of the core will increase from 1.0 PCF to 15.0 PCF or any fractional increment therebetween by dipping the core into the waterborne, water-dilutable resin formulation one or more times till the desired core density is achieved, and which allows at least a 50% reduction in VOC's (volatile organic compounds) as compared to the use of an organic solvent phenolic resin.

5,711,993

RADIATION CURED ISLAND COATING SYSTEM

Maureen M. Lein, Chester; Mark E. Dukeshire, New Durham, both of N.H.; Richard W. Finch, Northford, Conn.; Alfred T. Poliquin, Dover, and Gerard L. Vachon, Somersworth, both of N.H., assignors to Textron Automotive Interiors Inc., Troy, Mich.

Continuation of Ser. No. 426,101, Apr. 21, 1995, abandoned. This application Dec. 18, 1996, Ser. No. 774,858

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 427—250 **18 Claims**

1. A process for manufacturing a metallized substrate comprising the steps of:

providing a substrate;

depositing a first coating layer containing a radiation curable non-volatile film former;

vacuum depositing a layer of metal material to form a discontinuous film covering the first coating layer including a plurality of discrete islands of a metal material appearing macroscopically as a continuous film of such metal and having a plurality of macroscopically unobservable channels between the islands to maintain the film electrically non-conductive over the first coating layer; and

depositing a layer of clear resinous protective dielectric topcoat containing a radiation curable non-volatile film former to completely cover the layer of vacuum deposited corrosive metal material and filling the channels for bonding the metal material to the first coating layer throughout the bottom of the channels.

5,711,994

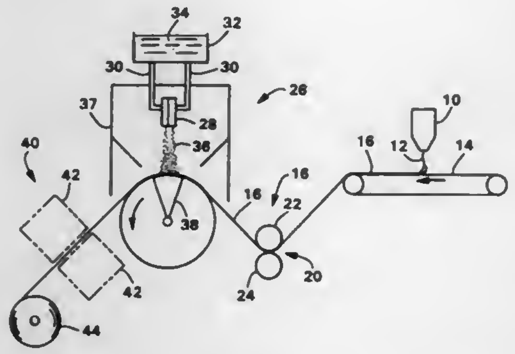
TREATED NONWOVEN FABRICS

Michael David Powers, Canton, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 8, 1995, Ser. No. 569,763

Int. Cl.^{6} B05D *1/02;3/12*

U.S. Cl. 427—255.6 **6 Claims**



1. Method of treating a web with a treatment agent to impart a desired property selected from the group consisting of wettability, conductivity, and repellency to said web comprising the steps of:

a. providing a source of said web;

b. providing said treatment agent at a treating station;

c. forming a mist of said treatment agent of at least 80% atomization and mist particle size up to about 100 microns at said treating station;

d. exposing said web to said mist at said treating station for a time period sufficient to add an amount of said treatment agent at a concentration of no more than 10% by weight solvent effective to impart said desired property to said web;

e. applying a vacuum to draw said particles into said web; and

f. removing said web from said treating station.

5,711,995

ANGLE SPRAYING OF COOKWARE

Kenneth Batzar, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 362,079, Dec. 22, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 481,682

Int. Cl.^{6} B05D *1/38;5/02;3/02*

U.S. Cl. 427—258 **7 Claims**

1. A method for making a coated substrate comprising in sequence:

applying at least one fluoropolymer-containing primer layer onto a substrate,

applying at least one fluoropolymer-containing intermediate layer upon said primer layer,

drying said at least one fluoropolymer-containing intermediate layer, and;

spraying at an angle of 30 to 75 degrees at least one fluoropolymer-containing discontinuous layer comprising raised globules over less than about 80% of the dried at least one fluoropolymer-containing intermediate layer, and

applying at least one fluoropolymer-containing topcoat.

5,711,996

AQUEOUS COATING COMPOSITIONS AND COATED METAL SURFACES

William J. Claffey, Novelty, Ohio, assignor to Man-Gill Chemical Company, Cleveland, Ohio

Filed Sep. 28, 1995, Ser. No. 535,753

Int. Cl.^{6} B05D *3/00;1/36*

U.S. Cl. 427—388.4 **12 Claims**

1. A method of increasing the corrosion resistance of iron, steel and zinc-coated surfaces which comprises contacting the surface with an aqueous coating composition to provide a first coating on the surface, wherein the aqueous coating composition comprises:

(A) at least one cyclic hydroxy compound selected from the group consisting of cyclic polyhydroxy compounds and substituted phenols;

(B) phosphate ions;

(C) at least one organic oxidizer-accelerator; and

(D) water.

5,711,997

SEMIFLUID MIX AND ASSOCIATED ENVIRONMENTAL RESTORATION METHOD

Piero Alberto Bruno Perani, Vertova, Italy, assignor to Limestone di Perani Piero Alberto Bruno, Casnigo, Italy

Filed Mar. 28, 1996, Ser. No. 625,444

Claims priority, application Italy, Apr. 5, 1995, MI95A0686

Int. Cl.^{6} B05D *1/36;* **C04B** *16/02*

U.S. Cl. 427—403 **10 Claims**

6. A method for environmental restoration, including the steps of:

spraying a semifluid mixture consisting essentially of 10 to 60% by weight of peat, 5 to 65% by weight of water, 3 to 60% by weight of cement, and 0.01 to 5% by weight of a hydrophilic resin, directly onto surfaces that have suffered environmental degradation, to give a layer having a porous structure, and

spraying onto said layer a water-based mixture including 30 to 60% by weight of peat, 5 to 40% by weight of cement, 0.5 to 2% by weight of a hydrophilic resin, 5 to 65% by weight of water and plant seeds in an amount effective to give a vegetative layer.

5,711,998

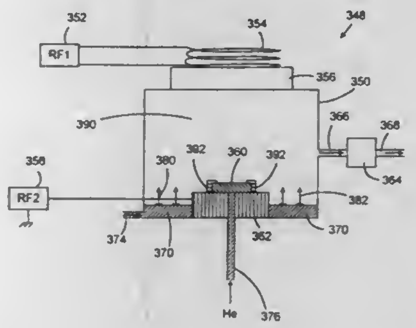
METHOD OF POLYCRYSTALLINE SILICON HYDROGENATION

Paul Kevin Shufflebotham, San Jose, Calif., assignor to Lam Research Corporation, Fremont, Calif.

Filed May 31, 1996, Ser. No. 656,673

Int. Cl.^{6} B05D *3/06*

U.S. Cl. 427—535 **38 Claims**



1. A method of hydrogenating silicon in an electrical device, said method comprising the following steps:

placing a substrate having a silicon component in a radio frequency induced low pressure, inductively coupled plasma reactor;

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introducing into said radio frequency induced low pressure, inductively coupled plasma reactor a gas including at least hydrogen or deuterium; and

striking a plasma in said radio frequency induced low pressure, inductively coupled plasma reactor under conditions that promote hydrogenation of said silicon component.

5,711,999

METHOD FOR MODIFYING THE FILM OF A PHOTOSENSITIVE CHEMICAL MATERIAL

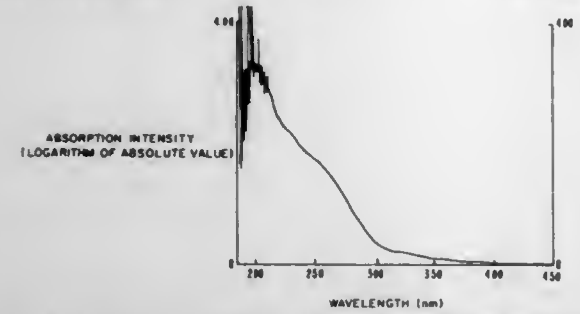
Fumiaki Yamada, Kanagawa-ken, and Yoichi Taira, Tokyo-to, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1996, Ser. No. 697,658

Claims priority, application Japan, Aug. 28, 1995, 7-218681

Int. Cl.^{6} B05D *3/00*

U.S. Cl. 427—555 **11 Claims**



1. A method for selectively modifying the pre-tilt angle of a liquid crystal oriented film in accordance with a pattern, comprising the steps of:

providing a liquid crystal oriented film of a photosensitive chemical material, the photosensitive chemical material reacting with light having a wavelength within the range of 200 nm to 300 nm to modify the pre-tilt angle of the liquid crystal oriented film; and

selectively irradiating said liquid crystal oriented film with a pattern of light emitted from a light source having a line spectrum of substantially a single wavelength, said substantially single wavelength being between 200 nm and 300 nm,

thereby selectively modifying the pre-tilt angle of said liquid crystal oriented film in accordance with said pattern.

5,712,000

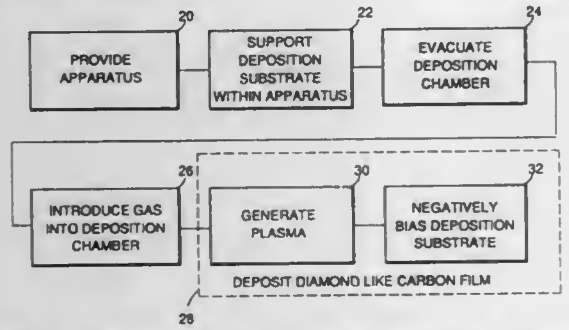
LARGE-SCALE, LOW PRESSURE PLASMA-ION DEPOSITION OF DIAMONDLIKE CARBON FILMS

Ronghua R. Wei, Calabasas, and Jesse N. Matossian, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 12, 1995, Ser. No. 542,468

Int. Cl.^{6} B05D *3/06*

U.S. Cl. 427—573 **26 Claims**


20
PROVIDE APPARATUS
22
SUPPORT DEPOSITION SUBSTRATE WITHIN APPARATUS
24
EVACUATE DEPOSITION CHAMBER
26
INTRODUCE GAS INTO DEPOSITION CHAMBER
30
GENERATE PLASMA
32
NEGATIVELY BIAS DEPOSITION SUBSTRATE
DEPOSIT DIAMOND LIKE CARBON FILM
28

18. A method of depositing a solid film containing carbon, or carbon and hydrogen, and having an amorphous structure onto a deposition substrate, comprising the steps of:

providing a deposition apparatus comprising

a deposition chamber having a deposition chamber wall,

a vacuum pump controllably communicating with the deposition chamber,

a source of a carbonaceous gas controllably communicating with the deposition chamber, the carbonaceous gas being decomposable to produce carbon ions or activated gaseous carbon,

means for generating a plasma in a gas contained within the deposition chamber, the means for generating a plasma including

a filament,

a filament current source controllably connected across the filament, and

a discharge voltage source controllably connected between the filament and the deposition chamber wall,

a deposition substrate support within the deposition chamber, and

a bias voltage/current source controllably connected between the deposition substrate support and the wall of the deposition chamber;

providing a deposition substrate on the deposition substrate support;

evacuating the deposition chamber;

introducing a carbonaceous gas into the deposition chamber from the source of a carbonaceous gas, a partial pressure of the carbonaceous gas within the deposition chamber being from about 0.01 to about 10 millitorr; and

depositing the film onto the substrate at a temperature of no more than about 300° C. the step of depositing including the steps of

generating a plasma in the carbonaceous gas within the deposition chamber, the step of generating a plasma including the steps of

passing a sufficient current through the filament with the current source to heat the filament to a thermionic temperature, and

negatively biasing the filament with respect to the deposition chamber wall with a voltage of from about 30 to about 150 volts, and

negatively biasing the deposition substrate relative to the deposition chamber wall with the bias voltage/current source at a voltage of from 0 to about 3000 volts.

5,712,001

CHEMICAL VAPOR DEPOSITION PROCESS FOR PRODUCING OXIDE THIN FILMS

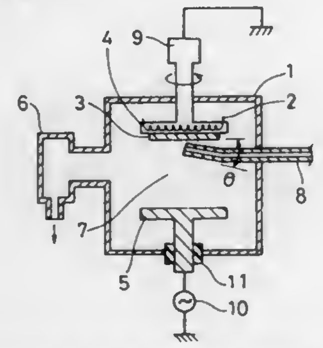
Eiji Fujii; Atsushi Tomozawa; Hideo Torii, and Ryoichi Takayama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 20, 1996, Ser. No. 619,076

Claims priority, application Japan, Mar. 20, 1995, 7-060331

Int. Cl.^{6} B05D *3/06*

U.S. Cl. 427—576 **7 Claims**



1. A process for producing an oxide thin film, comprising:

holding a substrate on a rotatable substrate holder at a predetermined temperature in a reaction chamber provided with an exhaust, the substrate holder acting as a first electrode;

supplying a material gas comprising a metal complex gas, oxygen gas and a carrier gas to the reaction chamber between the substrate holder and a second electrode in the reaction chamber while the substrate holder is rotating, the material gas being supplied from a material gas supplier located in the vicinity of the substrate between the substrate holder and the second electrode and positioned at a predetermined tilt angle with respect to the substrate holder so that a portion of the substrate is contacted by the material gas and a portion of the substrate is not contacted by the material gas at a given time, with a film being formed on the portion of the substrate contacted by the material gas and the film being annealed when in a position not contacted by the material gas;

providing electric power between the second electrode and the substrate holder to produce plasma from the material gas supplied to the reaction chamber, the plasma being deposited on the substrate.

5,712,002

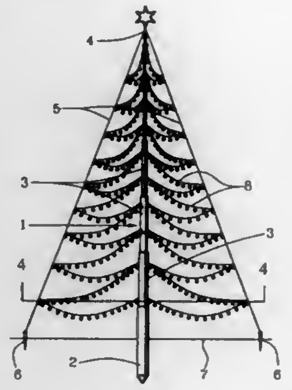
TELESCOPIC DECORATIVE TREE

William P. Reilly, III, 11601 Camp Dr., Dunnellon, Fla. 34432

Filed May 24, 1996, Ser. No. 656,011

Int. Cl.^{6} A47G *33/06*

U.S. Cl. 428—20 **28 Claims**



1. A telescopic decorative tree comprising:

a telescopic pole sized and shaped as a representation of a desired tree trunk and having a base telescopic section into which a design plurality of trunk sections with successively smaller diametrical peripheries fit and from which the design plurality of trunk sections with successively smaller diametrical peripheries are extendible telescopically intermediate the base telescopic section and a top telescopic section;

a plurality of guy lines extended from the top telescopic section in an extended mode to surface anchor means;

a desired plurality of pole attachments positioned in design separation vertically on the telescopic pole; and

a desired plurality of strands of decorative items extendible intermediate desired pole attachments at desired telescopically extended positions and desired guy lines at desired positions.

5,712,003

BLOW-MOLDED ARTICLES FOR AUTOMOBILE EXTERIOR PARTS AND THE PROCESS THEREFOR

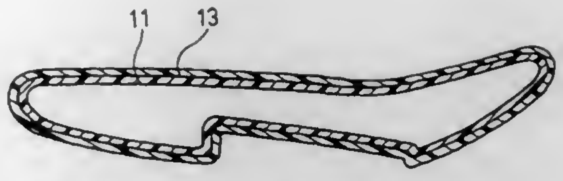
Kiyoshi Suenaga, Inazawa; Syojirou Miyamoto, Aichi-ken, and Koichi Ogiso, Gifu, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Oct. 20, 1995, Ser. No. 545,931

Claims priority, application Japan, Oct. 24, 1994, 6-258204

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—31 **27 Claims**



1. A blow-molded article made from a multi-layer parison that includes a discrete base layer and a discrete surface layer,

said base layer being formed from a first thermoplastic resin material having a melt index of about 0.05–2.0 and a modulus of elasticity in bending of at least about 1,470 MPa (15,000 kgf/cm^2),

said surface layer being formed from a second thermoplastic resin material having a melt index of about 1–30, wherein the melt index of said surface layer is higher than the melt index of said base layer, wherein said first and second thermoplastic resin materials contain at least one common resin component or common monomer unit component and are adhered together.

5,712,004

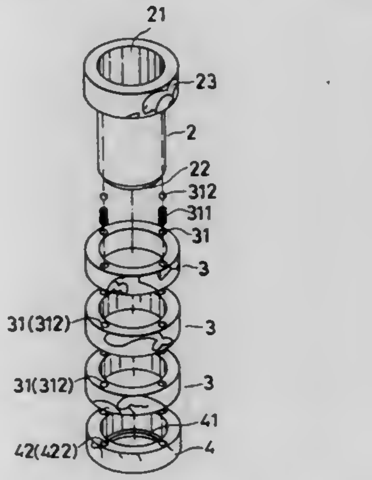
CONTAINER WITH ORNAMENTAL OUTER SWIVELS

Rick Lin, Tainan, Taiwan, assignor to Juei Chyuan Enterprise Co., Ltd., Tainan, Taiwan

Filed Jan. 17, 1996, Ser. No. 587,499

Int. Cl.^{6} B32B *1/02*

U.S. Cl. 428—33 **1 Claim**



1. A container having ornamental swivels, comprising:

a hollow main body open on one end thereof, said main body having an outer annular lip formed adjacent said open end and an annular recess formed in an opposing end thereof, said outer annular lip having a bottom edge with a plurality of bead holes formed therein and an outer circumferential surface with a first indicia pattern formed thereon;

a bottom ringed element coupled to said main body, said bottom ringed element having an annular wall with a rim formed on an internal edge thereof adjacent a bottom end of said bottom ringed element, said rim being joined to said annular recess of said main body, said bottom ringed element having an upper end with a plurality of elongated holes formed therein and an outer circumferential surface with a second indicia pattern formed thereon;

a plurality of outer swivels rotatably disposed on said main body intermediate said annular lip and said bottom ringed element, each of said plurality of outer swivels being formed by an annular wall having an upper end with a plurality of elongated holes formed therein and a bottom end with a plurality of bead holes formed therein, each of said plurality of outer swivels having an outer circumferential surface with a third indicia pattern formed thereon;

a plurality of springs disposed in said plurality of elongated holes of said bottom ringed element and each of said plurality of outer swivels; and,

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a plurality of bead members, each of said plurality of bead members being disposed at least partially in a respective one of said plurality of elongated holes of said bottom ringed element and each of said plurality of outer swivels on a respective one of said plurality of springs, wherein said plurality of bead members respectively engage said plurality of bead holes of said annular lip and said plurality of outer swivels when said third indicia patterns are aligned with said first and second indicia patterns to form a predetermined ornamental design, said engagement of said bead members with said bead holes providing a resistance to rotative displacement of said plurality of outer swivels relative to said main body.

5,712,005

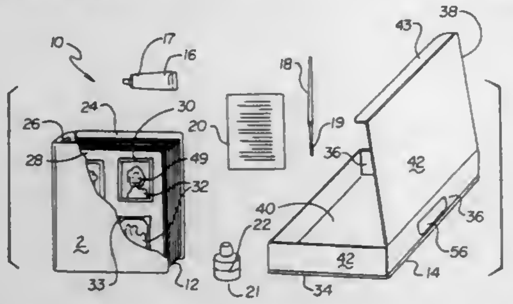
MEMORY BOX FOR STORING PHOTO AND THE LIKE

Lawrence H. Monn, 1838 Carroll Ave. Apt. 2, St. Paul, Minn. 55104

Filed May 11, 1995, Ser. No. 439,298

Int. Cl.^{6} B65D *69/00*

U.S. Cl. 428—34.1 **8 Claims**



1. A kit to enable a user to decorate a storage box so as to identify the contents of the box, comprising:

a) a storage box of a sufficient size for holding and storing sheet objects, the box being stiff and self-supporting and having an outside surface, said storage box having a cover that can be opened and closed to permit insertion or removable of an article therefrom;

b) an adhesive, said adhesive spreadable with a brush, said adhesive adherable to the outside surface of the box and to photocopy paper for securing the photocopy paper to the outside surface of the box; and

c) means for instructing on the steps of making a photocopy with a front side and a back side from at least one of the sheet objects intended to be stored in the box, applying adhesive to the back side of the photocopy and the outside surface of the box, and then pasting the photocopy to the outside surface of the box whereby the box is turned into an aesthetic visual indicator for identifying the contents of the box.

5,712,006

NON-FOIL POLYMER COATED CARTON FOR PACKAGING FOOD AND NON-FOOD PRODUCTS

G. A. Marano; Allan A. Whillock, and Charles E. Gibbons, all of Mobile, Ala., assignors to International Paper Company, Tuxedo Park, N.Y.

Filed Sep. 13, 1995, Ser. No. 527,620

Int. Cl.^{6} B29D *22/00*

U.S. Cl. 428—34.2 **21 Claims**

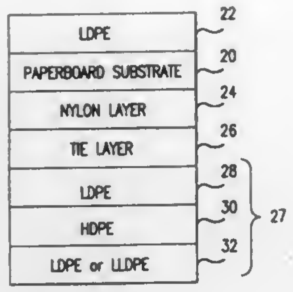
1. A laminated packaging material comprising:

a paperboard substrate, having an inner surface and an outer surface;

an outer layer of heat-sealable low density polyethylene polymer coated on said outer surface of said paperboard substrate;

a nylon layer coated on said inner surface of said paperboard substrate;

a tie layer coated on an inner surface of said nylon layer;



a sandwich layer comprising a layer of low density polyethylene polymer, a layer of high density polyethylene polymer, and an innermost layer of low density polyethylene polymer, said sandwich layer being coated on an inner surface of said tie layer.

5,712,007

TUBULAR CASING FOR FOOD PRODUCTS

Enrico Mercuri, 2 Penna Avenue, Glynde, Australia

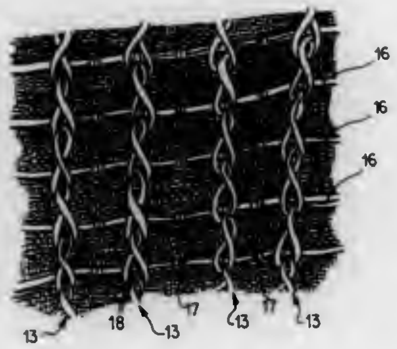
PCT No. PCT/AU94/00076, § 371 Date Oct. 31, 1995, § 102(e) Date Oct. 31, 1995, PCT Pub. No. WO94/18843, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 18, 1994, Ser. No. 501,105

Claims priority, application Australia, Feb. 19, 1993, PL7378

Int. Cl.^{6} B65D *81/34;* A22C *13/00*

U.S. Cl. 428—34.8 **5 Claims**



1. A tubular casing for location around food products prior to cooking or curing comprising,

a first knitted tubular portion produced in continuous lengths that forms a first cylindrical wall, said first tubular portion knitted so that it is stretchable and so that it is substantially impermeable to said food products, and

circumferential threads and longitudinal threads secured to and spaced along and around an outside surface of said first tubular portion that become taut while said first tubular portion remains stretchable as said food product is located within said first tubular portion so that said circumferential threads and longitudinal threads press into the surface of said food product so that a quilted surface pattern is applied to the surface of said food product, one of said circumferential threads comprising at least one thread secured to said first tubular portion by a plurality of spaced loop stitches that extend out of said first tubular portion and are looped around said circumferential thread to hold said circumferential thread on said outer surface of said first tubular portion and said longitudinal threads comprising a plurality of loop stitches linked together where each loop stitch extends from said circumferential thread to and around a loop stitch on an adjacent circumferential thread.

5,712,008

WRAP MATERIAL WITH WOVEN FABRIC

Gregory L. Todt, Union, Mich., assignor to Transhield Technology Co., L.L.C., Elkhart, Ind.

Filed Feb. 12, 1996, Ser. No. 599,783

Int. Cl.^{6} B65B *53/00;* B32B *3/26*

U.S. Cl. 428—349 **6 Claims**

1. Material for shrink wrapping articles comprising a shrinkable, stretchable film first layer having a predetermined shrink response in response to heat applied to the film and a woven fabric second layer engaging said first layer, said second layer being secured to said first layer by intermittent bonds distributed across the engaging surfaces of the film, said first layer shrinking at a greater rate than said second layer whereby said second layer bunches up to form pockets providing a cushion between said first layer and the article being wrapped.

5,712,009

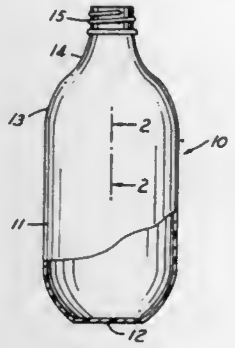
COEXTRUDED MULTILAYER PLASTIC CONTAINER UTILIZING POST CONSUMER PLASTIC

Duane H. Moore, Easton, Pa., and Richard W. M. Ritter, Jr., Perrysburg, Ohio, assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Sep. 16, 1993, Ser. No. 122,842

Int. Cl.^{6} C08L *23/06*

U.S. Cl. 428—35.7 **26 Claims**



1. A multilayer coextruded and blow molded hollow plastic container which has a side wall consisting essentially of

a thin outer plastic layer comprising a fusion blend of virgin plastic resin and an appearance enhancing additive,

said appearance enhancing additive being selected from the group consisting of pigments providing bright attractive colors, flakes for providing pearlescent effects, fluorescent dyes of pigments which absorb light of one wave length and polymers of selected molecular weights which provide a high gloss appearance, or mixtures thereof,

a thin intermediate opaque plastic layer comprising a fusion blend of post consumer resin with colorants heat bonded to the outer layer during coextrusion without adhesives,

a relatively thick inner plastic layer having a thickness greater than the thickness of the outer plastic layer and the intermediate opaque plastic layer comprising post consumer resin heat bonded to the intermediate layer during coextrusion without adhesives,

said post consumer resin comprising the major portion by weight of the container, and

said thin intermediate plastic layer masking the post consumer resin in said relatively thick inner plastic layer.

5,712,010

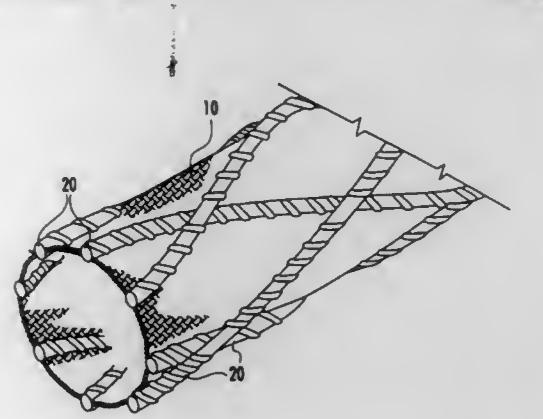
BRAIDED SLEEVING WITH RIB STRANDS

Jaime Ellstein Russek, and Marcelo Mejia Garcia, both of Mexico City, Mexico, assignors to Vitrica, S.A. de C.V., Mexico City, Mexico

Continuation of Ser. No. 223,557, Apr. 6, 1994, abandoned. This application May 22, 1996, Ser. No. 650,258

Int. Cl.^{6} B29D *22/00;* B32B *1/08*

U.S. Cl. 428—36.3 **7 Claims**



1. Tubular sleeving cut in a predetermined length and having a hollow cylindrical collar disposed at one end, said tubular sleeving comprising a principal braid of strands of flexible filaments having at least two braided multifilament rib strands braided into and around the circumference of the principal braid in opposite helical directions from each other, said rib strands being of larger diameter than the diameter of the strands of the principal braid.

5,712,011

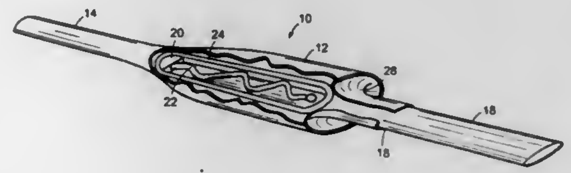
TUG-RESISTANT LINK

Thomas A. McMahon, Wellesley, Mass.; Stephen N. Robinovitch, San Francisco, Calif., and Wilson C. Hayes, Lincoln, Mass., assignors to Beth Israel Deaconess Medical Center, Inc., Boston, and President and Fellows of Harvard College, Cambridge, both of Mass.

Filed Jun. 6, 1996, Ser. No. 660,759

Int. Cl.^{6} B32B *3/00;* A41F *1/00*

U.S. Cl. 428—36.9 **57 Claims**



1. A tug-resistant unit comprising:

a first member having an inextensible portion and a surface;

a second member having an inextensible portion overlapping the surface of said first member and arranged for translational movement substantially parallel to the surface of said first member; and

a shear-thickening composition disposed between said first member and said second member so as to apply a variable resistance to translational movement of said second member relative to said first member as a function of shear forces exerted upon said shear-thickening composition.

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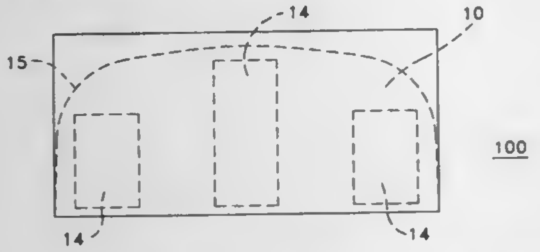
5,712,012
ADAPTABLE DISPOSABLE PLACEMAT

David S. Forman, and Lisa R. Forman, both of 2 Midbridge Dr., Medford, N.J. 08055

Continuation-in-part of Ser. No. 318,486, Oct. 5, 1994, abandoned, which is a continuation of Ser. No. 012,509, Feb. 2, 1993, abandoned. This application Feb. 22, 1996, Ser. No. 605,766

Int. Cl.^{6} B32B *29/06;7/14*

U.S. Cl. 428—43 **9 Claims**



1. An adaptable, disposable placemat comprising a sheet of cellulosic material having a top and bottom planar surface and a peripheral edge having at least four sides, said top planar surface comprising a moisture-resistant coating and said bottom planar surface having a pressure sensitive releasable adhesive applied thereto for fixing said placemat to a dining surface, said placemat having tear facilitating means for providing an arcuate shape to at least one of said sides for permitting said placemat to more readily fit on a baby tray.

5,712,013

Patent Not Issued For This Number

5,712,014
METAL MATRIX COMPOSITIONS FOR SUBSTRATES USED TO MAKE MAGNETIC DISKS FOR HARD DISK DRIVES

Robin A. Carden, Costa Mesa, Calif., assignor to Alyn Corporation, Irvine, Calif.

Filed Jul. 1, 1996, Ser. No. 674,140

Int. Cl.^{6} G11B *5/82*

U.S. Cl. 428—65.6 **9 Claims**

1. A substrate for magnetic disk recording media, comprising:

a boron carbide-metal matrix composite disk having a density ranging from about 2.5 to 2.8 g/cm^3 and a composition ranging from about 1 to 40 weight % of boron carbide and about 60 to 99 weight % of metal matrix, wherein

the metal matrix is comprised of aluminum or an aluminum alloy,

the boron carbide-metal matrix composite disk has a thickness less than about 1 mm, and

the boron carbide-metal matrix composite is formed by a process that does not require melting of the aluminum or aluminum alloy metal matrix.

5,712,015
FILLING BODY

Jose Guillem, Valencia, Spain, assignor to Illbruck GmbH, Leverkusen, Germany

Filed May 1, 1995, Ser. No. 432,226

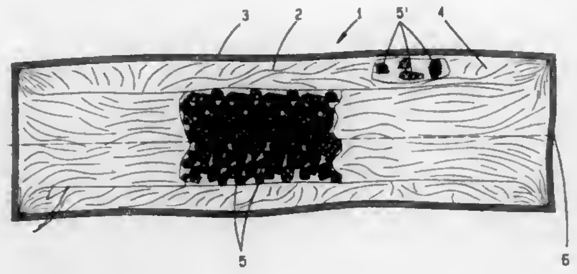
Claims priority, application Spain, May 6, 1994, 9401240 U

Int. Cl.^{6} B29C *67/22;* **G10K** *11/16*

U.S. Cl. 428—70 **14 Claims**

1. A filling body for introduction into a hollow space in an automobile body, comprising a polymeric foam filling material which is surrounded by a plastic film, the foam filling material being reduceable in size for introduction into the hollow space and being adapted to be held fast in the hollow space by a release of restoring forces of the foam filling material, the foam filling material having flakes of foam which are displaceable relative to each other wherein the foam filling material comprises exclusively the flakes of foam, the flakes having a length of less than approximately 2 cm and a width of less than approximately 1 cm; and

wherein the filling body, as a result of the foam flakes which are held together merely by a shaping action of the plastic film can be permanently deformed in an evacuated condition by a displacement of the flakes of foam with respect to each other, which displacement can be obtained by means of external action.



5,712,016

Patent Not Issued For This Number

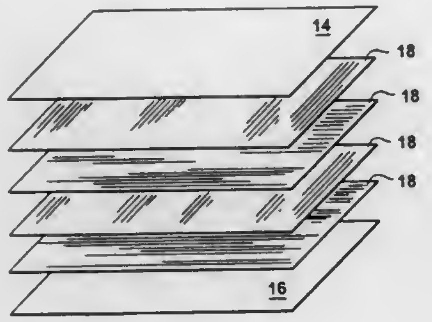
5,712,017
COMPOSITE MATERIALS COMPRISING A PLURALITY OF RESIN IMPREGNATED FELT LAYERS

Roland Jordan, N. Attleboro, Mass., assignor to Albany International Research Co., Mansfield, Mass.

Continuation-in-part of Ser. No. 177,562, Jan. 5, 1994, Pat. No. 5,527,598, which is a continuation-in-part of Ser. No. 57,620, May 5, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 394,469

Int. Cl.^{6} B32B *5/12*

U.S. Cl. 428—113 **14 Claims**



1. A composite material comprising a reinforcing polymeric resin, and a plurality of felt layers impregnated with said reinforcing polymeric resin, each felt layer comprising a plurality of fibers having a predominant fiber direction, said felt layers being arranged so that said predominant fiber direction of each layer is at a transverse angle with respect to the predominant fiber direction of the immediately adjacent layers, at least one of said felt layers comprising a needle entangled web.

5,712,018
EMBOSSING COMPOSITION FOR PREPARING TEXTURED POLYMERIC MATERIALS

Rudolf Frisch, Yardley, Pa., assignor to Congoleum Corporation, Mercerville, N.J.

Continuation of Ser. No. 289,003, Aug. 9, 1994. This application Jul. 1, 1996, Ser. No. 671,306

Int. Cl.^{6} B32B *3/12*

U.S. Cl. 428—158 **8 Claims**

1. A transfer printing sheet comprising a support sheet and adhered to the surface thereof in a predetermined pattern a dried form of a water-based embossing composition having a blowing agent incorporated therein and comprising:

(A) a film-forming resin dissolved or dispersed in said water-based composition;

(B) a modifier which is effective in modifying the activity of the blowing agent and which comprises particulate solids which are substantially insoluble and uniformly dispersible in the liquid medium of the composition and which have an average particle size of no greater than about 100 microns, said modifier being present in the composition in an amount of at least about 3 wt. %; and

(C) optionally, a colorant or a softening agent for the modifier solids or a mixture thereof;

said support sheet being capable of being stripped from the dried form of the composition.

5,712,019
BLIND COMPRISING A WOVEN OR KNITTED STRIP OF MATERIAL

Edgar Driessen, Bruchwiesenweg 8, Schlitz, Germany, D-36110

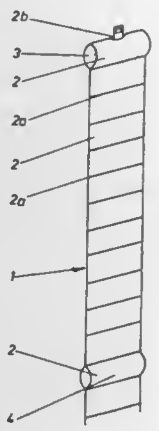
PCT No. PCT/DE94/00204, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/23170, PCT Pub. Date Oct. 13, 1994

PCT Filed Feb. 25, 1994, Ser. No. 532,770

Claims priority, application Germany, Apr. 1, 1993, 9304940 U; Jun. 17, 1993, 43 20 007.9

Int. Cl.^{6} B32B *3/28;* **A47H** *1/00*

U.S. Cl. 428—178 **3 Claims**



1. Blind comprising a woven or knitted strip of material, characterized by a plurality of pockets (**2**) which are separated from each other by bridges (**2***a*), which are designed to be fitted with suspension devices (**3**) or tensioning weights (**4**), and which are woven or knitted parallel to each other with inlaid yarn into the blind which is in the form of a woven or knitted strip of material.

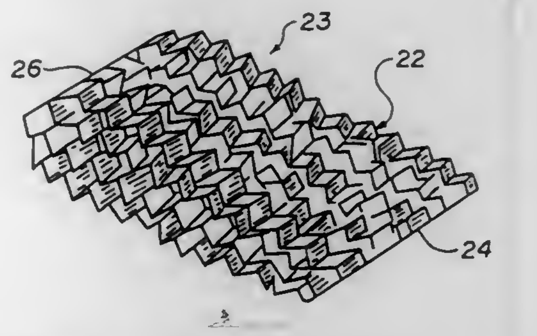
5,712,020
RESILIENT PACKING PRODUCT AND METHOD AND APPARATUS FOR MAKING THE SAME

Johnny M. Parker, Vashon, Wash., assignor to Ranpak Corp., Concord Township, Ohio

Continuation of Ser. No. 360,384, Dec. 21, 1994, Pat. No. 5,573,491, which is a continuation of Ser. No. 171,344, Dec. 21, 1993, Pat. No. 5,403,259, which is a continuation of Ser. No. 971,046, Nov. 3, 1992, abandoned, which is a division of Ser. No. 538,181, Jun. 14, 1990, Pat. No. 5,173,352. This application Jun. 2, 1995, Ser. No. 458,971

Int. Cl.^{6} B32B *3/28;* **D04H** *1/04*

U.S. Cl. 428—182 **4 Claims**



1. A packing product comprising a strip segment;

the strip segment comprising a plurality of strips made from a paper sheet material;

the paper sheet material having a natural resilience;

at least some of the strips having a compressed zig-zag shape formed from a plurality of transverse folds against the natural resilience of the material; and

the strips being attached together to form the strip segment;

wherein the plurality of strips are positioned side by side in the strip segment.

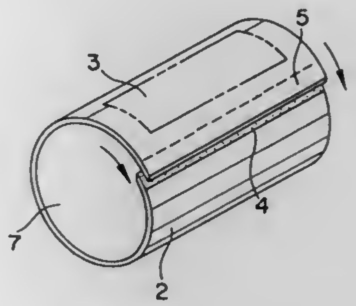
5,712,021
DECALS FOR ALL OCCASIONS

Yadira L. Hernandez, 910 Robert E. Lee Blvd., New Orleans, La. 70124

Filed Nov. 26, 1996, Ser. No. 753,488

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—192 **12 Claims**



1. A decal adapted to be attached to a drinking vessel, comprising:

means for placing a design on the exterior of a material,

said material having inner and outer surfaces and longitudinal parallel edges,

means on said edges for securing said edges together, and

means on said inner surface for affixing said decal to said drinking vessel.

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5,712,022

PRINTED THERMOPLASTIC RESIN PRODUCTS AND METHOD FOR PRINTING SUCH PRODUCTS

Ban Tanaka, Toyota; Hiroki Nii; Kosaku Yamada, both of Fukuyama; Hideo Kushida, Yachiyo; Takashi Miya, Kamagaya; Shuichi Koshio, Sakura, and Tadashi Hayakawa, Chiba, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, and Hayakawa Rubber Co., Ltd., Hiroshima, both of Japan

Continuation-in-part of Ser. No. 111,559, Aug. 25, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 488,408

Claims priority, application Japan, Sep. 14, 1992, 4-269142

Int. Cl.^{6} B32B *27/00*

U.S. Cl. 428—195 **36 Claims**

1. A printed thermoplastic resin product which is (I) printed on a surface with a radiation-curable printing ink which comprises a vehicle mixture comprising:

(A) at least one ingredient selected from the group consisting of a linear polyester oligomer substantially free of an acid group and free of a polymerizable double bond on the linear polyester chain, wherein 1 to 10 double bonds are pendent from the linear polyester chain; a linear polyester polymer substantially free of an acid group and free of a polymerizable double bond on the linear polyester polymer chain, wherein 1 to 10 double bonds are pendent from the linear polyester polymer chain; and mixtures thereof,

(B) at least one ingredient having at least one acid group and being selected from the group consisting of a one double bond-containing carboxylic acid, a carboxylic ester of said acid, a carboxylic amide of said acid, and mixtures thereof,

(C) a double bond-containing polycarboxylic ester wherein 2 to 10 acid groups are present and at least 2 double bonds are pendent from the carboxylic ester having 2 to 10 acid groups,

(D) at least one ingredient selected from the group consisting of a double bond-containing fluorinated carboxylic ester, a block copolymer comprising a fluorinated alkyl group-containing polymer segment and a methacrylic or acrylic polymer segment, a block copolymer comprising a siloxane group-containing polymer segment and a methacrylic or acrylic polymer segment, and mixtures thereof, provided that when said ingredient (D) is said double bond-containing fluorinated carboxylic ester, said ingredient is contained in an amount of from 1 to 20 parts by weight per 100 parts by weight of said vehicle mixture,

(E) a double bond-containing carboxylic ester, having at least 2 double bonds and free of an acid group, provided that it is excluded from the above-mentioned ingredient (A) and

(F) at least one ingredient selected from the group consisting of a one double bond-containing carboxylic ester free of an acid group; a one double bond-containing carboxylic amide free of an acid group; a one double bond-containing carboxylic imide free of an acid group; and mixtures thereof,

wherein the acid value of the vehicle mixture is from 5 to 100 and the double bonds of said components (A) to (F) are carbon-carbon double bonds, and (II) treated with radiation on the printed surface thereof to cure the printing ink.

5,712,023

THERMOPLASTIC RESIN STRETCHED FILM LAMINATE HAVING EXCELLENT PRINTABILITY

Mitsuo Nakajima; Kenji Nakajima, both of Ibaraki, and Masayuki Inoue, Tokyo, all of Japan, assignors to Oji-Yuka Synthetic Paper Co., Ltd., Tokyo, Japan

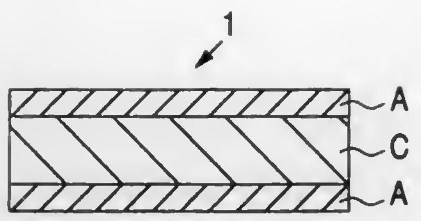
Filed Mar. 6, 1996, Ser. No. 611,676

Claims priority, application Japan, Apr. 4, 1995, 7-101576

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—195 **12 Claims**

1. A thermoplastic resin stretched film laminate comprising a biaxially stretched thermoplastic resin film base layer having provided on one or both sides thereof a surface layer, said surface layer comprising a uniaxially stretched thermoplastic resin film containing 3 to 30% by weight of a petroleum resin, 30 to 65% by weight of precipitated calcium carbonate having a particle size of 0.1 to 3 μm, and 32 to 67% by weight of a thermoplastic resin and having a thickness of not less than 2 μm.



5,712,024

ANTI-REFLECTOR FILM, AND A DISPLAY PROVIDED WITH THE SAME

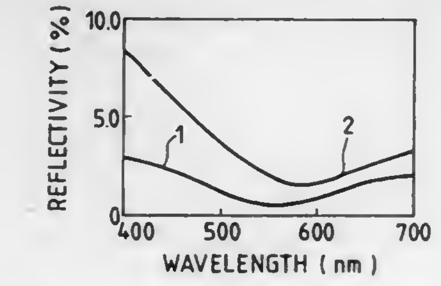
Sachiko Okuzaki; Tomoji Oishi; Takao Ishikawa; Daigoro Kamoto, all of Hitachi; Ken Takahashi, Tokai-mura; Masahiro Nishizawa, and Norikazu Uchiyama, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 611,859

Claims priority, application Japan, Mar. 17, 1995, 7-059099

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—195 **29 Claims**



1. Anti-reflection film having a multi-layer structure including at least two layers, the at least two layers including an uppermost layer and a layer next to the uppermost layer, wherein each of the uppermost layer and the layer next to the uppermost layer is colored with coloring matter, wherein the coloring matter of the uppermost layer and the coloring matter of the layer next to the uppermost layer have different optical absorbing peaks, and wherein the uppermost layer and the layer next to the uppermost layer have a refractive index dispersion such that the refractive index of the uppermost layer is smaller than the refractive index of the layer next to the uppermost layer.

5,712,025

MONOCHROME AND POLYCHROME COLOR PROOFS WITH LOW OPTICAL DOT GROWTH AND A PROCESS AND MEANS FOR THEIR PREPARATION

Bernhard Metzger, Darmstadt; Ursula Annerose Kraska, Weiterstadt, and Mario Grossa, Dreieich, all of Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 323,302, Oct. 14, 1994, Pat. No. 5,635,284. This application Aug. 28, 1996, Ser. No. 705,096

Claims priority, application Germany, Nov. 2, 1993, 4337379.8; Mar. 31, 1994, 4411224.6

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—195 **12 Claims**

1. A color proof comprising, in order:

(a) a substrate having an image-side surface;

(b) a Layer A containing a polyolefin present on the image-side surface of the substrate;

(c) a Layer B containing at least one light absorbing pigment, at least one light reflecting white pigment, and at least one binder; and

(d) at least one layer bearing a coloring agent.

5,712,026

IMAGE-RECEIVING SHEET FOR MELT THERMAL TRANSFER RECORDING

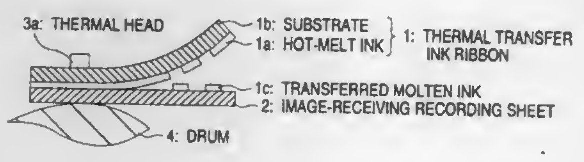
Hironobu Amagai; Takatoshi Nishizawa, and Motoshi Henbo, all of Ibaraki, Japan, assignors to Oji-Yuka Synthetic Paper Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1996, Ser. No. 694,113

Claims priority, application Japan, Sep. 12, 1995, 7-234172

Int. Cl.^{6} B41M *5/38*

U.S. Cl. 428—212 **21 Claims**


3a: THERMAL HEAD
1b: SUBSTRATE
1a: HOT-MELT INK
1: THERMAL TRANSFER INK RIBBON
1c: TRANSFERRED MOLTEN INK
2: IMAGE-RECEIVING RECORDING SHEET
4: DRUM

1. An image-receiving sheet for melt thermal transfer recording, prepared by a process which comprises:

providing a support (I) comprising a substrate layer (A) made of a stretched film having microvoids formed therein, said stretched film of substrate layer (A) is obtained by stretching a propylene resin film comprising a propylene resin in an amount of from 65 to 95% by weight and inorganic fine powder having a specific surface area of from 10,000 to 40,000 cm^2/g and an average grain diameter of from 0.5 to 2.3 μm in an amount of from 5 to 35% by weight, a surface layer (B) made of a stretched propylene film comprising a propylene resin in an amount of from 35 to 65% by weight and inorganic fine powder having a specific surface area of from 25,000 to 300,000 cm^2/g and an average grain diameter of from 0.07 to 0.9 μm in an amount of from 35 to 65% by weight laminated on one side of said substrate layer (A) and a back surface layer (C) made of a stretched propylene film comprising a propylene resin in an amount of from 35 to 90% by weight and inorganic fine powder having a specific surface area of from 10,000 to 40,000 cm^2/g and an average grain diameter of from 0.5 to 2.3 μm in an amount of from 10 to 65% by weight laminated on the opposite side of said substrate layer (A);

applying an aqueous solution of a nitrogen-containing high molecular compound primer on the surface layer (B) side of the support (I) or on both sides of the support (I);

drying the applied material to form one or more primer layers (IIa, IIb); and then

laminating a pulp paper layer (IV) having a thickness of from 40 to 250 μm and a Taber stiffness of from 1 to 60 g·f·cm on the back surface layer (C) side of the support (I) via an adhesive layer (III),

wherein the nitrogen-containing high molecular compound primer comprises:

(a) a tertiary or quaternary nitrogen-containing acryl polymer;

(b) a polyimine compound selected from the group consisting of polyethyleneimine, poly(ethyleneimine-urea), ethyleneimine adduct of polyamine polyamide, and an alkyl modification, alkenyl modification benzyl modification or alicyclic hydrocarbon modification product thereof in an amount of from 20 to 300 parts by weight per 100 parts by weight of (a); and

(c) an epichlorohydrin adduct of polyamine polyamide in an amount of from 20 to 300 parts by weight per 100 parts by weight of (a).

5,712,027

INK-RECEPTIVE SHEET

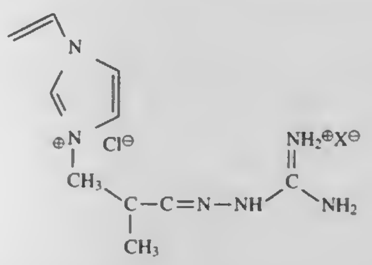
Mahfuza B. Ali, Mendola Heights; Omar Farooq, Woodbury, both of Minn.; Mohammed Iqbal, and Alan G. Miller, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 428,276, Apr. 25, 1995, Pat. No. 5,589,269, which is a continuation-in-part of Ser. No. 204,354, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 30,811, Mar. 12, 1993, Pat. No. 5,342,688. This application Dec. 9, 1996, Ser. No. 761,920

Int. Cl.^{6} B41M *5/00*

U.S. Cl. 428—212 **12 Claims**

1. An ink-receptive sheet comprising a substrate bearing on at least one major surface thereof, an ink-receptive layer comprising an ink receptive polymer and an effective amount of at least one polymeric mordant comprising a guanidine functionality having the formula



wherein X—is selected from the group consisting of Cl^-, CF_3COO^-, phenyl-$CH_3SO_3^-$, BF_4^-, $CH_3SO_3^-$, NO_2^-, Br^- and $CF_3SO_3^-$.

5,712,028

MAGNETIC RECORDING MEDIUM

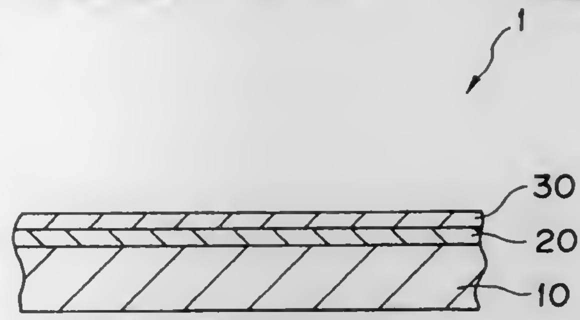
Akihiko Seki; Akira Saitoh, and Satoru Tsuchida, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 18, 1996, Ser. No. 618,260

Claims priority, application Japan, Mar. 23, 1995, 7-090297

Int. Cl.^{6} G11B *05/70*

U.S. Cl. 428—216 **5 Claims**



1. A magnetic recording medium comprising:

a flexible substrate;

an undercoating layer formed on said substrate; and

a single magnetic layer formed on said undercoating layer,

wherein said undercoating layer contains a binder and nonmagnetic particles having an average particle size in the range of 0.01 to 0.20 μm, said undercoating layer containing therein said nonmagnetic particles in the range of 40 to 85% by weight, and

wherein said magnetic layer contains ferromagnetic powder, a binder and an abrasive having an average particle size in the range of 0.10 to 0.40 μm, said magnetic layer having a thickness in the range of 0.10 to 0.30 μm and containing said abrasive in the range of 1 to 5 parts by weight relative to 100 parts by weight of said ferromagnetic powder, and

wherein said magnetic layer is applied on said undercoating layer, after said undercoating layer has been applied on said substrate and dried.

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5,712,029
FRICTION MATERIAL

Kazuo Tsugawa; Seiji Suzuki, and Hidekazu Kubono, all of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 365,607, Dec. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 234,114, Apr. 28, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 706,967

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—323 **10 Claims**

1. A friction apparatus comprising (1) an element comprising an aluminum alloy reinforced with at least one hard ceramic material, and (2) a friction material for friction coupling with said element and containing at least one hard material additive,

wherein said aluminum alloy contains 65 volume % to 98 volume % of aluminum, and 0.5 volume % to 35 volume % of hard reinforcing material selected from the group consisting of Si_3N_4, TiN, TiC, Al_2O_3, SiC, ZrO_2, and SiO_2, and

wherein said friction material contains 0.1 volume % to 30 volume % of a hard inorganic material selected from the group consisting of SiC, Al_2O_3, ZrO_2, B_4C, c-BN and WC.

5,712,030
SINTERED BODY INSERT FOR CUTTING AND METHOD OF MANUFACTURING THE SAME

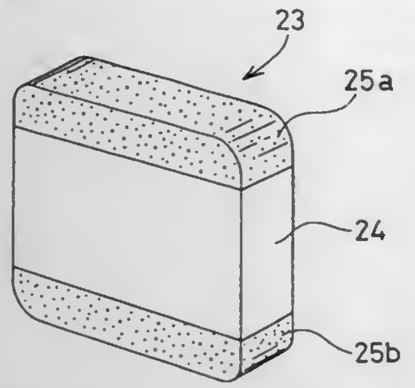
Mitsuhiro Goto; Satoru Kukino; Kenichi Kikutani, and Tetsuo Nakai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Nov. 29, 1995, Ser. No. 563,936

Claims priority, application Japan, Dec. 1, 1994, 6-298498; Nov. 1, 1995, 7-285019

Int. Cl.^{6} B23B *27/16*

U.S. Cl. 428—332 **20 Claims**



1. A composite sintered body insert for cutting, comprising:

an intermediate layer consisting of a material selected from the group consisting of cemented carbide, ferrous metals and high melting point metals, and

a first layer and a second layer, each consisting of respective hard sintered bodies containing cubic boron nitride or diamond,

wherein said first and second layers are arranged respectively above and below said intermediate layer with said intermediate layer therebetween and are bonded with said intermediate layer by sintering,

wherein said sintered body insert has a configuration including at least one nose and at least one flank adapted for carrying out cutting, and including front and rear surfaces that each respectively extend across said first layer, said intermediate layer and said second layer, and that define respective cutting faces,

wherein all of said at least one nose and said at least one flank are located on at least one of said first and second layers, and

wherein respective centers of gravity of said cutting faces and a center of gravity of said insert are located in said intermediate layer.

5,712,031
PLASTIC ADHESIVE LABELS FOR GLASS SUBSTRATES

Robert H. Kelch, Granville, and Harvey C. Tung, Newark, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 6, 1996, Ser. No. 610,560

Int. Cl.^{6} B32B *7/12*

U.S. Cl. 428—355 **14 Claims**

1. A multilayer film, comprising:

i) an ink-printable base layer having a 1% secant modulus of at least 200,000 psi as measured by ASTM D-882, said base layer having a water vapor transmission rate of less than about 3.0 g-mil/100 in^2-24 hr as measured by ASTM F-1249;

ii) an optional intermediate layer for improving interlayer bonding between said base layer and said adhesive layer; said intermediate layer, when present, is bonded directly to said base layer; and

iii) an adhesive layer, said adhesive layer consisting essentially of a terpolymer of ethylene, 3–10 weight percent of an ethylenically unsaturated carboxylic acid, and 3–25 weight percent of an unsaturated ester, said adhesive layer bonded directly to said intermediate layer when said intermediate layer is present, said adhesive layer bonded directly to said base layer when said intermediate layer is not present, said adhesive layer being sufficiently nontacky at room temperature such that the multilayer film does not exhibit significant blocking at room temperature,

wherein the multilayer film, upon contacting said adhesive layer to a glass substrate heated to at least about 200° F. and thereafter cooling, exhibits a dry adhesion peel strength of at least about 750 grams/inch and a wet adhesion peel strength of at least about 450 grams/inch.

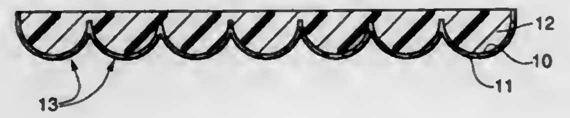
5,712,032
PATTERNED HEAT WELDING ROD FOR SEAMING RESILIENT FLOORING

Richard H. Balmer, Manheim, and Donald L. Kurtz, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 21, 1995, Ser. No. 561,102

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—364 **12 Claims**



1. A thermoplastic welding rod consisting essentially of a first thermoplastic layer, a second transparent thermoplastic layer and a print layer disposed between the first and second layers.

5,712,033
ASPHALT-CONTAINING ORGANIC FIBERS

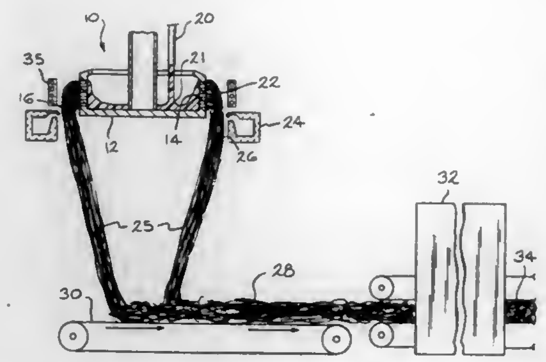
Kevin P. Gallagher, Pataskala, and Donn R. Vermilion, Newark, both of Ohio, assignors to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.

Filed Aug. 5, 1996, Ser. No. 689,198

Int. Cl.^{6} D02G *3/00;* **C08J** *3/04*

U.S. Cl. 428—364 **15 Claims**

1. A fiber product comprising monofilaments each having an average diameter of about 60 microns or less and being made from a mixture comprising (a) from about 30 percent by weight to about 85 percent by weight of a polymeric material having a melt flow index of about 35 grams/10 minutes or below and (b) from about 15 percent by weight to about 70 percent by weight of an asphaltic material.



5,712,034
CABLES PROTECTED AGAINST CORROSION FOR A RUBBER ARTICLE

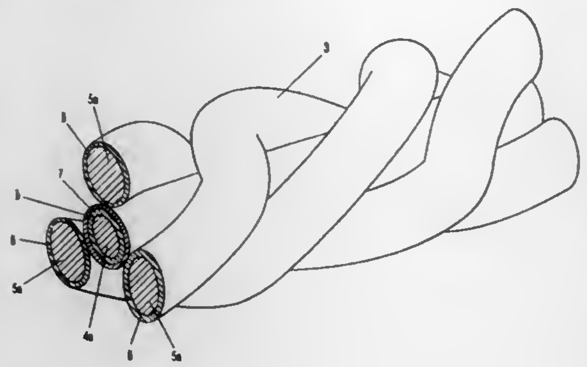
Hendrik Stevens; Bernd Kaiser, both of Hanover, and Klaus Kleinhoff, Rodenberg, all of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

Filed Jun. 26, 1996, Ser. No. 671,399

Claims priority, application Germany, Jun. 27, 1995, 195 23 256.9

Int. Cl.^{6} D02G *3/00;* **B60C** *9/00;* **F16G** *1/00;* **B32B** *15/00*

U.S. Cl. 428—375 **5 Claims**



1. A cable comprising:

at least one inner layer, wherein said inner layer comprises one or more first filaments;

an outermost layer, wherein said outermost layer comprises one or more second filaments;

at least one of said first filaments consists of a metallic alloy and at least one of said second filaments consists of a metallic alloy;

said second filaments are capable of adhesion to rubber;

all of said first filaments that consist of a metallic alloy comprise a corrosion-protective coating;

all of said second filaments that consist of a metallic alloy comprise a corrosion-protective coating;

said corrosion-protective coating of at least one of said first filaments that consist of a metallic alloy contains an intrinsically conductive polymer but said corrosion-protective coating of said second filaments does not contain an intrinsically conductive polymer.

5,712,035
LIQUID CURABLE RESIN COMPOSITION

Tohru Ohtaka, Kawasaki; Shinichirou Iwanaga, Yokkaichi; Tsuyoshi Watanabe, and Katutoshi Igarashi, both of Yokohama, all of Japan, assignors to DSM N.V., Heerlan, Netherlands

PCT No. PCT/US93/02037, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO93/21248, PCT Pub. Date Oct. 28, 1993

Continuation of Ser. No. 318,874, Feb. 17, 1995, abandoned. This PCT application Mar. 9, 1993, Ser. No. 603,681

Claims priority, application Japan, Apr. 20, 1992, 4-99595

Int. Cl.^{6} C08G *18/04*

U.S. Cl. 428—378 **25 Claims**

1. An optical fiber having a primary coating thereon wherein the coating is formulated from an ultra-violet light curable resin composition comprising:

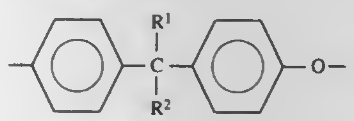
(A) a polyether polyol compound containing, as structural units, groups represented by the following formulas (1), (2), and (3),

(1) —CH_2CH_2O—

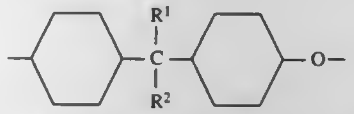
(2) —$CH_2CH(R)O$—, and

(3) one or more groups selected from groups (a), (b), and (c) below,

—$CH_2CH_2CH_2CH_2O$— (a)



(b)



(c)

wherein R represents an alkyl group containing two or more carbon atoms, and R^1 and R^2 are independently selected from a hydrogen atom or a methyl group;

(B) a polyisocyanate compound; and

(C) a (meth)acrylate compound having a hydroxy group,

and wherein said coating, after curing, has a Young's modulus at 23° C. in a range of from about 0.06 kg/mm^2 to about 0.13 kg/mm^2.

5,712,036
HIGH SOLUBILITY SIZE COMPOSITON FOR FIBERS

Willy H. Piret, Xhendelesse, Belgium, assignor to N.V. Owens-Corning S.A., Battice, Belgium

Filed May 8, 1996, Ser. No. 646,606

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—378 **22 Claims**

1. A size composition for treating glass fibers useful to reinforce polymeric materials comprising:

a) a first film former comprising a polyester-based thermoplastic polyurethane formed from a saturated polyester which does not crosslink;

b) a second film former comprising i) a vinyl acetate glycidyl methacrylate copolymer or ii) a mixture of a vinyl acetate glycidyl methacrylate copolymer and a vinyl acetate homopolymer;

c) a silane coupling agent; and

d) water.

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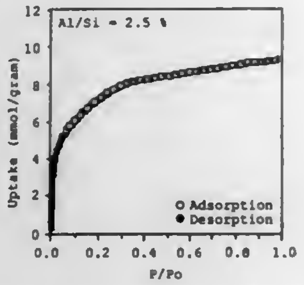
5,712,037
SUBSTITUTED SILICA GEL

Marc A. Anderson, and Lixin Chu, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 196,341, Feb. 14, 1994, Pat. No. 5,439,624. This application Jun. 2, 1995, Ser. No. 459,887

Int. Cl.^{6} B32B *5/16;* **B01J** *13/00;21/12*

U.S. Cl. 428—404 **6 Claims**



1. A porous gel formed according to a process comprising the steps of:

providing an acidified silica sol at a pH value no higher than 3, the sol comprising non-polymeric particles of silicon dioxide, each of said particles having a core and a surface surrounding the core, the core consisting of silicon dioxide, the surface comprising silicon atoms and oxygen atoms;

combining the acidified sol with a sufficient amount of a solution comprising atoms of a metal at a pH value no higher than 3 such that a portion of the silicon atoms at the surface of each of the silicon dioxide particles is replaced by atoms of the metal to form a substituted sol; and

drying the substituted sol for several days to form a porous non-polymeric gel comprising the particles and having therebetween a plurality of pores, the gel having micropores having a mean pore size of about 20 Angstroms or less.

5,712,038
VIBRATION DAMPER MATERIAL

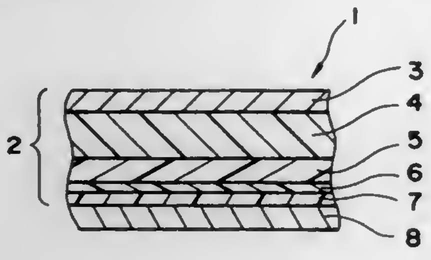
Motoki Yamazaki, Hamamatu; Toshio Sugizaki, Ohmiya; Masao Kogure, Saitama-ken, and Takanori Saitoh, Misato, all of Japan, assignors to Lintec Corporation, Japan

Filed Dec. 22, 1994, Ser. No. 361,829

Claims priority, application Japan, Dec. 28, 1993, 5-350599

Int. Cl.^{6} B32B *27/00;11/00;25/00*

U.S. Cl. 428—411.1 **14 Claims**



1. A vibration damper material, comprising a laminated sheet, said laminated sheet including:

at least a flexible base stock layer;

a resilient layer comprising a vehicle and synthetic resin powder, said vehicle comprising at least one material selected from the group consisting of asphalt, rubber, carboxymethyl cellulose and hydroxyethyl cellulose; and

an adhesive layer;

wherein these layers are arranged in this order, and the damper material is imparted with vibration damping properties by the existence of the resilient layer.

5,712,039
EPOXY ADHESIVES WITH DITHIOOXAMIDE ADHESION PROMOTERS

Virginia C. Marhevka, Maplewood; Allen L. Griggs, St. Paul, and Kent S. Tarbutton, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 11, 1995, Ser. No. 420,087

Int. Cl.^{6} B32B *27/28;* **C08G** *8/28;* **C08F** *283/00*

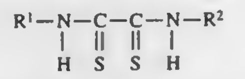
U.S. Cl. 428—414 **13 Claims**

1. A curable, structural epoxy adhesive composition for bonding to oily metal comprising:

(a) an epoxy resin;

(b) a phenalkylene amine curing agent for the epoxy resin; and

(c) a compound of the formula I



$$R^1-\underset{H}{\underset{|}{N}}-\underset{S}{\underset{\|}{C}}-\underset{S}{\underset{\|}{C}}-\underset{H}{\underset{|}{N}}-R^2 \qquad (I)$$

in which R^1 and R^2, which may be the same or different, are selected from an alkyl group, a hydroxyalkyl group, a cycloalkyl group, an aryl group, an arylalkyl group, or a heterocyclic group in which the one to three non-carbon atoms in the ring are independently selected from S, N, and O, wherein said compound of formula I is soluble in the adhesive composition and wherein said composition has a greater amount of cohesive failure when bonded to a steel surface coated with 150 mg/ft^2 of oil than an otherwise identical composition without component (c).

5,712,040
FLUORINE-CONTAINING RESIN MOLDED ARTICLES

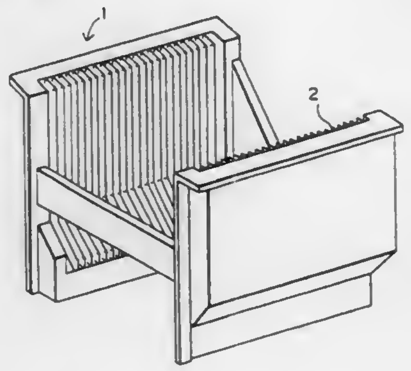
Akihiko Nakahara; Junichiro Nakashima; Shinji Tokunaga, and Tatsuo Esaki, all of Tokuyama, Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Jun. 26, 1996, Ser. No. 672,034

Claims priority, application Japan, Jun. 26, 1995, 7-159671

Int. Cl.^{6} B32B *27/14;7/00*

U.S. Cl. 428—421 **11 Claims**



1. A fluorine-containing resin molded article having, on the surface of a base material composed of a fluorine-containing resin without substantially containing ion-exchange group and being impermeable for ions, an antistatic surface layer composed of a fluorine-containing resin of which the surface resistivity is adjusted to be not larger than $10^{13}\Omega$ by making the presence of ion-exchange groups.

5,712,041
PACKAGING MATERIAL COMPRISING A SILICON OXIDE LAYER AND A POLYOLEFIN LAYER

Patrice Breant, Serquigny, and Philippe Tordjeman, Billere, both of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jan. 25, 1996, Ser. No. 591,873

Claims priority, application France, Jan. 26, 1995, 95 00879

Int. Cl.^{6} B32B *27/30;27/32;27/34;27/36*

U.S. Cl. 428—451 **11 Claims**

1. Material comprising a film covered with silicon oxide and a polyolefin film such that the binder arranged between the silicon oxide and the polyolefin film is a thermoplastic resin containing at least one hydroxyl functional group.

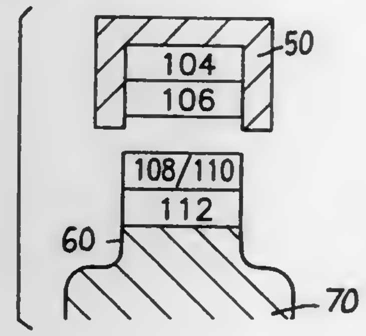
5,712,042
SECOND SEAL FOR CLOSURE LINERS

Michael R. Cain, Lancaster, Pa., assignor to Kerr Group Inc., Lancaster, Pa.

Filed Apr. 17, 1995, Ser. No. 422,460

Int. Cl.^{6} B65D *53/00*

U.S. Cl. 428—458 **8 Claims**



1. A closure and container combination each having a laminated air-impermeable liner for sealing the container neck, comprising:

(a) a container having a neck, the neck being sealed by a first seal laminate thereon which serves as a barrier against escape of gas and moisture vapor from the container neck, the first seal laminate consisting of:

a layer of heat sealing material disposed on the container neck;

a layer of paper disposed on the layer of heat sealing material; and

a layer of wax absorbed into the layer of paper; and

(b) a closure having therein a second seal laminate which serves as a barrier against escape of gas and moisture vapor from the container neck to reseal the container neck, the second seal laminate consisting of comprising a layer of metal foil adjacent the first seal laminate, and a layer of pulp adhesively secured to the layer of metal foil on the surface opposite the first seal laminate.

5,712,043
THERMOPLASTIC POLYOLEFIN RESIN COMPOSITION AND LAMINAR ARTICLES HAVING IMPROVED BARRIER PROPERTIES PREPARED

Wen-Jer Chen, Kaohsiung; Hsin-Herng Wang, Taichung; Der-Tarng Su; Bin-Yuan Lin, both of Hsinchu, and Hsien-Mhing Chen, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 26, 1995, Ser. No. 494,338

Int. Cl.^{6} C08L *23/06;77/02;77/04;77/06*

U.S. Cl. 428—500 **15 Claims**

1. A polyolefin based composition comprising:

90 to 97 percent by weight of a polyolefin; and

3 to 10 percent by weight of a polyamide which is a blend of

(i) from 75 to 94 percent by weight of an aliphatic polyamide or a semiaromatic polyamide or a mixture thereof; and

(ii) from 6 to 25 percent by weight of a compatibilizer which comprises from 15 to 100 percent by weight of a polyether ester amide block copolymer and from 0 to 85 percent by weight of an alkylcarboxyl-substituted polyolefin.

5,712,044
MEDICAL DEVICE ASSEMBLIES CONSTRUCTED FROM MULTILAYERED FILMS

Dan L. Fanselow, White Bear Lake; Raymond L. Ferguson; Walton J. Hammar, both of St. Paul; Lester B. Odegaard, Afton; Daryl D. Dressler, St. Paul; Jon M. Nornberg, Woodbury; Ching-Long Tsai, Woodbury; John H. Ko, Woodbury; Craig S. Chamberlain, Woodbury, and Charlotte M. Palmgren, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 103,082, Aug. 6, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,407

Int. Cl.^{6} B32B *27/00*

U.S. Cl. 428—515 **16 Claims**

1. A film based assembly comprising:

a molded structure having two sides, each side being comprised of a film having outside and inside surfaces comprising:

a) a core layer of at least one chlorine-free first thermoplastic polymer having a flexibility, measured by its Young's modulus, less than about 60 megaPascals;

b) an outside surface layer of at least one chlorine-free second thermoplastic polymer having a Young's modulus up to about ten times the Young's modulus of the core layer thermoplastic polymer and being capable of non-stick release from a heated surface; and

c) an inside surface layer of at least one chlorine-free third thermoplastic polymer having a Young's modulus up to about ten times the Young's modulus of the core layer thermoplastic polymer and being capable of heat self-sealing before the core and outside surface layers become substantially deformed under heat;

wherein the film is capable of being expanded at least in part under heat and pressure without failure of film integrity, flexibility and resilience wherein at least one of the sides being at least in part expanded; and wherein the molded structure is a cassette having molded-in fluid channels and pumping bubbles therein.

5,712,045
PRESSURE-SENSITIVE MAGNETIC TRANSFER RECORDING MEDIUM

Kazuo Miyai, Osaka, Japan, assignor to Fujicopian Co., Ltd., Japan

Filed Aug. 9, 1996, Ser. No. 700,673

Claims priority, application Japan, Aug. 11, 1995, 7-206212

Int. Cl.^{6} B41M *5/26*

U.S. Cl. 428—522 **4 Claims**

1. A pressure-sensitive magnetic transfer recording medium comprising a support and a pressure-sensitive transferable magnetic ink layer provided directly or indirectly on the support, the pressure-sensitive transferable magnetic ink layer comprising a particulate magnetic substance, a titanate coupling agent having a solubility parameter of 8.8 to 10.6 (cal/cm^3)$^{0.5}$ and a cellulose acetate butyrate resin.

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5,712,046

TITANIUM RING FOR AN ELECTRODEPOSITION DRUM AND A METHOD FOR ITS MANUFACTURE

Toru Kamidaira, Joetsu; Seishi Ishiyama, Amagasaki; Noriyasu Ikeda, and Daiharu Doi, both of Joetsu, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jul. 3, 1996, Ser. No. 675,482

Claims priority, application Japan, Jul. 4, 1995, 7-191111; Jul. 4, 1995, 7-191113

Int. Cl.^{6} C21D *9/08*

U.S. Cl. 428—586 **7 Claims**

1. A titanium ring for use in forming an outer surface of an electrodeposition drum for electrodeposition of metal foil, the ring having a thickness of 4–30 mm and a surface hardness after being polished to an average surface roughness Ra of at most 0.3 μm such that the difference between the maximum and minimum Vickers hardness measured with a load of at most 1 kg at 10 or more points disposed at a pitch of 0.3–1 mm along a line in an arbitrary direction along the surface is at most 10, the surface of the ring being without polished surface patterns.

5,712,047

COPPER FOIL FOR PRINTED WIRING BOARD

Kazuyoshi Aso; Masami Noguchi; Katsumi Kobayashi, and Takeshi Yamagishi, all of Shimodate, Japan, assignors to Nippon Denkai, Ltd., Tokyo, Japan

Division of Ser. No. 393,496, Feb. 24, 1995, Pat. No. 5,534,128. This application Mar. 11, 1996, Ser. No. 613,624

Claims priority, application Japan, Feb. 24, 1994, 6-049972

Int. Cl.^{6} B32B *15/20*

U.S. Cl. 428—607 **20 Claims**

1. A copper foil for a printed wiring board comprising a copper foil and a carbon-containing copper-zinc coating on at least one surface of the copper foil, the carbon-containing copper-zinc coating comprising 40 to 90 atomic % of copper, 5 to 50 atomic % of zinc and 0.1 to 20 atomic % of carbon, the carbon-containing copper-zinc coating being deposited from a plating solution containing a hydroxycarboxylic acid or a salt thereof and an aliphatic dicarboxylic acid or a salt thereof in aqueous solution.

5,712,048

PARTIALLY HOT-TIN-PLATED STRIP AND A METHOD AND APPARATUS FOR ITS MANUFACTURE

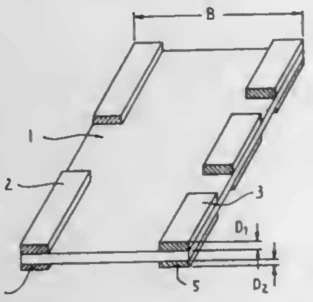
Isabell Buresch, Illertissen; Traugott Schneider, Ulm, and Hermann Sturm, Bellenberg, all of Germany, assignors to Wieland-Werke AG, Ulm, Germany

Filed Mar. 22, 1996, Ser. No. 620,505

Claims priority, application Germany, Mar. 30, 1995, 195 11 656.9

Int. Cl.^{6} B32B *15/00;15/01;3/00*

U.S. Cl. 428—615 **16 Claims**



1. In a strip partially hot-tin-plated with a coatable material, the strip having on at least one of a top and bottom surface thereof at least one metallic coating track thereon with a smaller width than the strip width, the metallic coating track extending in longitudinal direction, wherein between the strip material and the metallic coating track there exists an intermetallic phase, and wherein the longitudinal extent of the metallic coating track includes at least one spacing which is free of metallic coating.

5,712,049

SLIDING ELEMENT AND PROCESS FOR PRODUCING THE SAME

Hans-Ulrich Huhn, Schlangenbad, and Klaus Muller, Wiesbaden, both of Germany, assignors to Glyco-Metall-Werke Glyco B.V. & Co. KG, Wiesbaden, Germany

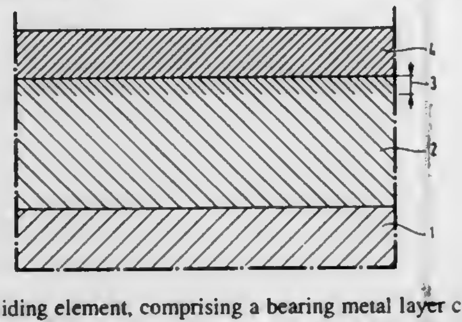
PCT No. PCT/DE93/01131, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO94/12688, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 24, 1993, Ser. No. 436,417

Claims priority, application Germany, Nov. 27, 1992, 42 39 851.7; Nov. 24, 1993, 43 40 073.6

Int. Cl.^{6} B32B *15/20;* **C25D** *5/30;5/44;* **F16C** *33/12*

U.S. Cl. 428—646 **18 Claims**



1. A sliding element, comprising a bearing metal layer comprising aluminum and an electroplated tin layer bonded to the bearing metal layer by an alkaline, halogen-free immersion deposition containing zinc, copper, nickel and iron from an immersion bath containing 10 to 20 g/l zinc, 5 to 10 g/l nickel, 1 to 2 g/l copper and a small amount of iron, mainly in the form of cyanide-based salts.

5,712,050

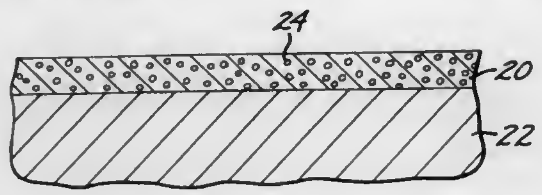
SUPERALLOY COMPONENT WITH DISPERSION-CONTAINING PROTECTIVE COATING

Edward Harvey Goldman, Cincinnati; Ramgopal Darolia, West Chester, and David John Wortman, Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 185,775, Jan. 24, 1994, which is a continuation of Ser. No. 956,515, Oct. 5, 1992, which is a continuation-in-part of Ser. No. 756,947, Sep. 9, 1991, abandoned. This application Mar. 28, 1995, Ser. No. 411,919

Int. Cl.^{6} B32B *15/04*

U.S. Cl. 428—680 **9 Claims**



1. A coated superalloy component, comprising:
a substrate article formed of a superalloy; and
an adherent environmentally-resistant coating applied directly to the substrate, the coating being a nickel-base superalloy with a nominal composition consisting essentially of, in weight percent, about 20 to 23 percent cobalt, 18 percent chromium, 12.5 percent aluminum, 0.3 percent yttrium, between about 0.01 and 0.07 percent carbon, between about 0.005 and 0.030 percent zirconium, and between about 0.005 and 0.030 percent boron, the balance nickel, and additionally containing dispersoids of from 0.3 to 2.0 volume percent of dispersed oxide particles formed of an element selected from the group consisting of yttrium, hafnium, rare earth metals, and combinations thereof.

5,712,051

ELECTROLUMINESCENT DEVICE AND METHOD FOR FABRICATING SAME

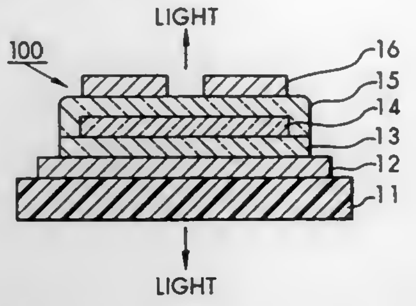
Kazuhiko Sugiura, Nagoya; Masayuki Katayama, Handa; Nobuei Ito, Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 21, 1995, Ser. No. 531,384

Claims priority, application Japan, Sep. 22, 1994, 6-254393

Int. Cl.^{6} H05B *33/00*

U.S. Cl. 428—690 **10 Claims**



1. An electroluminescent device comprising sequentially stacked layers having an optically transparent material on at least a viewing side thereof, said electroluminescent device comprising a luminescent layer based on a Group II-III-VI compound host material with an element acting as a luminescent center added therein, said luminescent layer further containing an auxiliary Group II element having an ion radius differing from that of a main Group II element constituting said Group II-III-VI compound host material.

5,712,052

FUEL CELL GENERATOR AND METHOD OF THE SAME

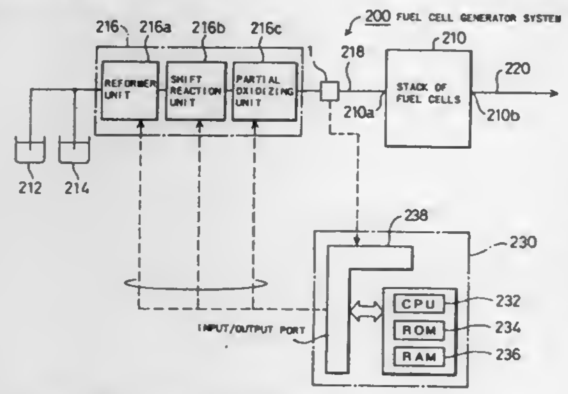
Shigeyuki Kawatsu, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 2, 1995, Ser. No. 552,120

Claims priority, application Japan, Nov. 2, 1994, 6-293808; Mar. 31, 1995, 7-100313; Sep. 22, 1995, 7-269245

Int. Cl.^{6} H01M *8/00;8/04;8/18*

U.S. Cl. 429—13 **16 Claims**



1. A fuel cell generator comprising:
a reformer for reforming an original fuel to generate a hydrogen-containing gaseous fuel,
a fuel cell comprising a pair of electrodes with a catalyst carried thereon, said fuel cell receiving said gaseous fuel fed to said electrodes thereof and generating an electromotive force through an electrochemical reaction of said gaseous fuel,
carbon monoxide measurement means for measuring concentration of carbon monoxide included in said gaseous fuel;
reformer operation control means for controlling operation of said reformer according to the concentration of carbon monoxide measured by said carbon monoxide measurement means, to decrease the concentration of carbon monoxide included in said gaseous fuel,
a first flow path for supplying said gaseous fuel to said fuel cell,
a second flow path for discharging a residual gas of said gaseous fuel from said fuel cell; and
wherein said carbon monoxide measurement means comprises:
a carbon monoxide sensor disposed in said second flow path.

5,712,053

BIOCHEMICALLY-POWERED SELF-EXCITING ELECTRIC POWER SOURCE

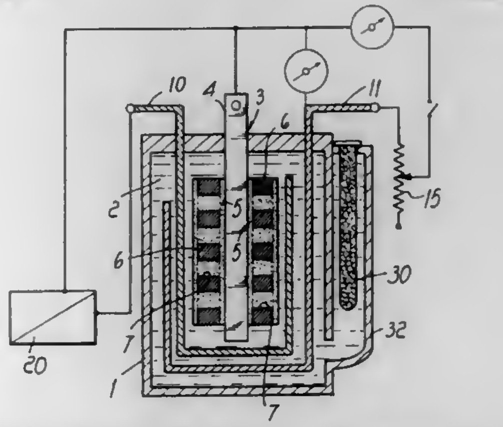
Renato Alessandro Oliveti, Rome, Italy, assignor to Ing. Alessandro Oliveti S.r.l., Milan, Italy

Filed Jul. 15, 1994, Ser. No. 272,979

Claims priority, application Italy, Jul. 19, 1993, RM93A0484; Sep. 16, 1993, MI93A2002

Int. Cl.^{6} H01M *8/16*

U.S. Cl. 429—2 **23 Claims**



1. Biological electric power source, comprising, inside a container for containing an electrolyte, an anode, a first electrode and a second electrode, which are electrically separated from one another and are immersed in said electrolyte, an electrical stimulator being furthermore provided which is connected between said anode and said first electrode, electric power being generated between said second electrode and said anode, said anode being constituted by a pure nickel plate coated with a gummy biochemical compound, said gummy biochemical compound being constituted by spurge latex brought to a gummy state in a colloid with 10% alumina and 30% pure nickel acetate, said spurge latex being obtained from plant products of the Euphorbiaceae family.

5,712,054

RECHARGEABLE HYDROGEN BATTERY

Joseph B. Kejha, Meadowbrook, Pa., assignor to Electrion, Inc., Meadowbrook, Pa.

Continuation-in-part of Ser. No. 345,471, Jan. 6, 1994, abandoned. This application Jan. 3, 1996, Ser. No. 582,383

Int. Cl.^{6} H01M *8/06*

U.S. Cl. 429—21 **25 Claims**

1. A hydrogen ion based battery cell which comprises:
two electrodes containing metal current collectors and porous carbons with a catalyst, in which said carbons are saturated, one with hydrogen and the other with oxygen,
an ion conducting membrane of sandwich construction, having a liquid electrolyte trapped between two porous, electrically non conductive sheets, which are ionically permeable, but not liquid permeable and said membrane is located substantially in vertical position between said electrodes,

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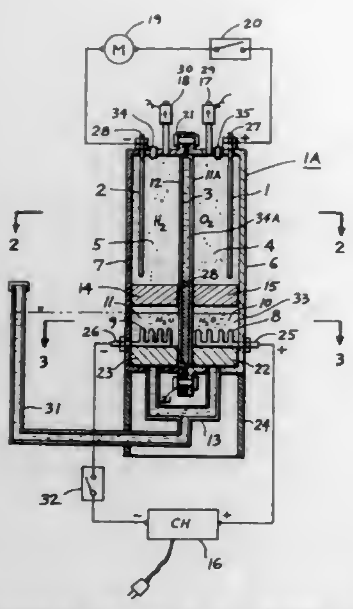


a liquid electrolyte contained in two separate chambers under said electrodes and said chambers are connected by a tube or tunnel to keep said electrolyte in substantial equilibrium in both chambers,

two horizontal filters permeable by liquids and gases located under said electrodes and separating said carbons and catalyst of the electrodes from said electrolyte,

two additional electrodes submerged in said electrolyte separately in said electrolyte chambers,

and an electrically insulating, gas and liquid sealing housing, which encompasses all said components and is divided by said membrane into two halves and said halves are hermetically sealed to said membrane.

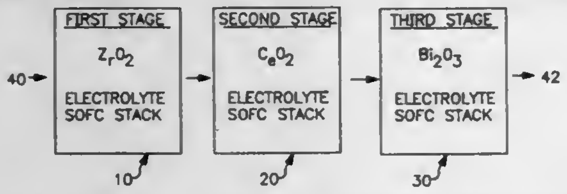
5,712,055
MULTI-STAGE FUEL CELL ARRANGEMENT

Ashok C. Khandkar, Salt Lake, Utah, and Singaravelu Elangovan, Sandy, Utah, assignors to Gas Research Institute, Chicago, Ill.

Filed Feb. 28, 1997, Ser. No. 808,123

Int. Cl.^{6} H01M *8/10*

U.S. Cl. 429—31 **17 Claims**



1. A multi-stage fuel cell arrangement of dissimilar solid state electrolyte elements in an electrochemical power system utilizing a reactant gaseous fuel comprising:

a first fuel cell stage having a plurality of spaced apart first cell electrolyte elements, said first cell elements consisting of thin flat first plates having a pair of opposing first flat surfaces, said first plates being constructed from a first solid state electrolyte material having a low ion conductivity and having a first electrode material adherent to at least one of said first flat surfaces, said first fuel cell stage positioned and arranged within said electrochemical power system to initially receive a flow of said gaseous fuel through the spaces between said spaced apart first cell electrolyte elements; and

a second fuel cell stage having a plurality of spaced apart second cell electrolyte elements, said second cell elements consisting of thin flat second plates having a pair of opposing second flat surfaces, said second plates being constructed from a second solid state electrolyte material having an ion conductivity greater than the ion conductivity of said first electrolyte material, and having a second electrolyte material adherent to at least one of said second flat surfaces, said second fuel cell stage positioned and arranged adjacent to said first fuel cell stage within said electrochemical power system to receive said flow of said gaseous fuel subsequent to said gaseous fuel being discharged from said first fuel cell stage.

5,712,056
SEALED BATTERY

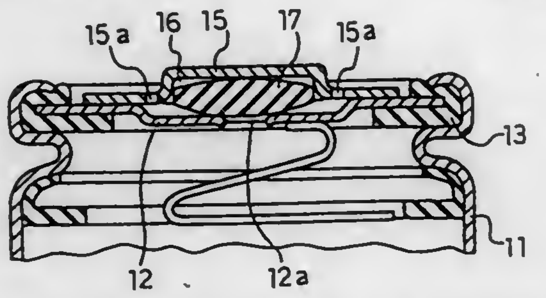
Yoshitaka Matsumasa, Chigasaki; Jiro Konagawa, Naga-gun; Mitsuru Naniwa, Chigasaki; Norio Suzuki, Chigasaki, and Toshihisa Hiroshima, Chigasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed Dec. 4, 1996, Ser. No. 758,830

Claims priority, application Japan, Feb. 28, 1996, 8-041591; Feb. 28, 1996, 8-041592

Int. Cl.^{6} H01M *2/12*

U.S. Cl. 429—54 **11 Claims**



1. A sealed battery comprising a battery case containing a cell element, and a safety valve device installed at an opening part of said battery case in which said safety valve device includes:

a dish-shaped seal plate having a gas vent hole at a central part,

a cap-shaped terminal having a gas exhaust hole fixed to said dish-shaped seal plate at a peripheral edge thereof, and

an elastic valve element provided in a valve chamber formed in a space between said dish-shaped seal plate and said cap-shaped terminal, said valve element being in a compressed state, wherein

said elastic valve element comprises an ethylene-propylene elastomer and thermoplastic resin particles dispersed in said ethylene-propylene elastomer,

said thermoplastic resin particles have a softening point lower than that of said ethylene-propylene elastomer, and

said thermoplastic resin particles contained in said elastic valve element occupy from 5 to 30% by weight of the whole elastic valve element.

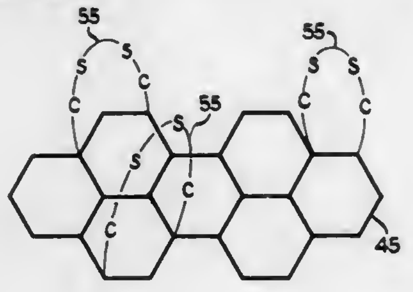
5,712,057
POLY-SULFIDE AND CARBON ELECTRODE MATERIAL AND ASSOCIATED PROCESS

Denis G. Fauteux, Acton, Mass., assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 569,668

Int. Cl.^{6} H01M *4/36*

U.S. Cl. 429—105 **14 Claims**



1. A secondary cell comprising:

a liquid electrolyte;

a first electrode and a second electrode, wherein one of the first or second electrodes is a cathode;

means for increasing the reversible capacity of the secondary cell to a reversible capacity greater than or equal to 200 mAh/g, the reversible capacity increasing means including;

- an electronically conductive layer and a poly-sulfide operatively associated with the cathode,
- means for precluding the poly-sulfide from becoming soluble in the electrolyte, wherein the solubility preclusion means comprises the poly-sulfide being non-releasably anchored to the electronically conductive layer,
- means for activating the poly-sulfide into an electronically conductive state, and
- means for breaking one or more of the poly-sulfide bonds.

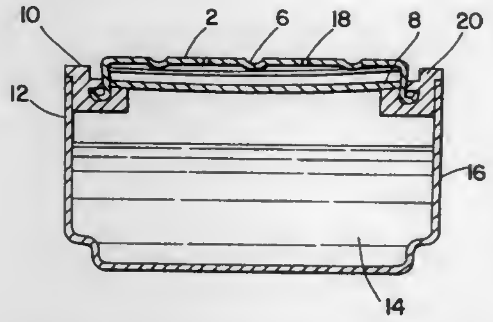
5,712,058
MINIATURE GALVANIC CELL HAVING OPTIMUM INTERNAL VOLUME FOR THE ACTIVE COMPONENTS

Manuel R. Malay, Brunswick, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Sep. 27, 1996, Ser. No. 722,754

Int. Cl.^{6} H01M *6/46*

U.S. Cl. 429—162 **14 Claims**



1. A galvanic cell having a negative electrode; a positive electrode; a separator between said negative and said positive electrode; and an electrolyte dispersed within a two-part conductive housing, the first part of the conductive housing being a cylindrical cupped container having an edge and being electrically connected to one of the electrodes and the second part of the housing being a circular cover having a peripheral flange, said cover being electrically connected to the other electrode and wherein said first part container and said second part cover are electrically insulated from each other by an insulating gasket disposed between and compressed between the edge of the container and the peripheral flange of the cover, thereby defining an enclosed volume within said housing; the improvement wherein the height of the cylindrical cupped container is greater than 4 times the height of the circular cover and wherein the thickness of the gasket is no greater than 1.3 times the height of the cover.

5,712,059
CARBONACEOUS ELECTRODE AND COMPATIBLE ELECTROLYTE SOLVENT

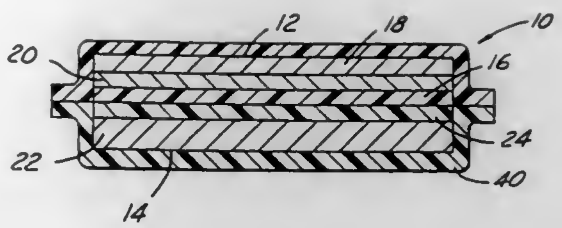
Jeremy Barker, and Feng Gao, both of Henderson, Nev., assignors to Valence Technology, Inc., Henderson, Nev.

Continuation-in-part of Ser. No. 630,402, Apr. 10, 1996, Pat. No. 5,643,695, which is a continuation-in-part of Ser. No. 533,882, Sep. 26, 1995, Pat. No. 5,660,948. This application Nov. 1, 1996, Ser. No. 740,765

Int. Cl.^{6} H01M *10/40*

U.S. Cl. 429—197 **25 Claims**

1. An electrochemical cell which comprises a first electrode, a counter electrode which forms an electrochemical couple with said first electrode, and an electrolyte:



a. said first electrode consisting essentially of graphite particles and a binder, where on the basis of 100 parts by weight, said binder constitutes up to about 15 parts and said graphite particles constitute at least about 85 parts; said graphite particles having an interlayer distance spacing of 002 planes (d_{002}) as determined by x-ray diffraction of 0.330 to 0.340 nanometers (nm), a crystallite size in the direction of c-axis (L_c) being at least about 90 nanometers (nm) and less than about 1000 nanometers (nm), a BET surface area of greater than about 4 square meters per gram (m^2/g) and up to about 16 square meters per gram (m^2/g), and at least 90 percent by weight of said graphite particles having a size less than 25 microns (μm); and said electrolyte comprising a solute and a solvent mixture; said solute consisting essentially of a salt of a metal; said solvent mixture consisting essentially of propylene carbonate (PC), vinylene carbonate (VC) or a substituted derivative thereof, and optionally one or more other organic solvents; with the propylene carbonate being present in an amount by weight which is not greater than the combined amount of said vinylene carbonate or its derivative and any said other solvent.

5,712,060
ALKALINE STORAGE CELL

Ljudmila Konstantinovna Grigorieva; Vladimir Nikolaevich Medvedkov, both of Moscow; Alexandr Petrovich Pavlov, Moskovskaya; Vladimir Andreevich Soldatenko, Moscow; Vitaly Khristoforovich Stankov, Moscow, and Semen Petrovich Chizhik, Moscow, all of Russian Federation, assignors to Aktsionernoe Obschestvo Zakrytogo Tipa "Avtouaz", Moscow, Russian Federation

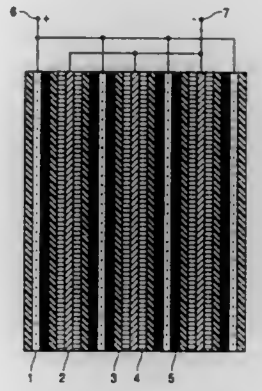
PCT No. PCT/RU94/00264, § 371 Date Apr. 8, 1996, § 102(e) Date Apr. 8, 1996, PCT Pub. No. WO96/05627, PCT Pub. Date Feb. 22, 1996

PCT Filed Nov. 28, 1994, Ser. No. 624,641

Claims priority, application Russian Federation, Aug. 9, 1994, 94028153

Int. Cl.^{6} H01M *10/24;2/16*

U.S. Cl. 429—206 **6 Claims**



1. An alkaline storage cell comprising a casing, an electrolyte, a positive electrode, a negative electrode, and a multilayer separator interposed between these electrodes, characterized in that said cell further comprises a porous metallic foil inserted between said electrodes.

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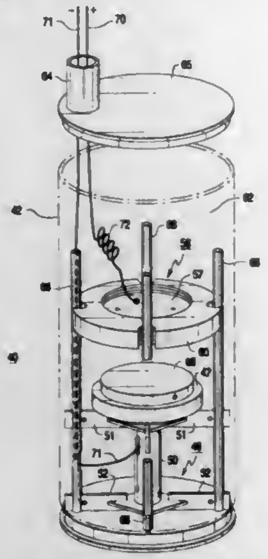
5,712,061

ELECTRODE ARRANGEMENT FOR USE IN A BATTERY HAVING A LIQUID ELECTROLYTE

Daniel J. Spak, Cuyahoga Falls; Nicholas Shuster, Madison, and David E. Harney, Twinsburg, all of Ohio, assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Nov. 14, 1995, Ser. No. 557,441
Int. Cl.^{6} H01M *12/06;2/10*
U.S. Cl. 429—208 **10 Claims**



1. An electrode arrangement for use in a battery having a liquid electrolyte, comprising:

a) an electrode having first, second and peripheral wall surfaces;

b) an electrode holder completely immersed in said electrolyte and having an open end and closed end defining a cavity for receiving said electrode such that said electrode has a major surface portion exposed to said electrolyte;

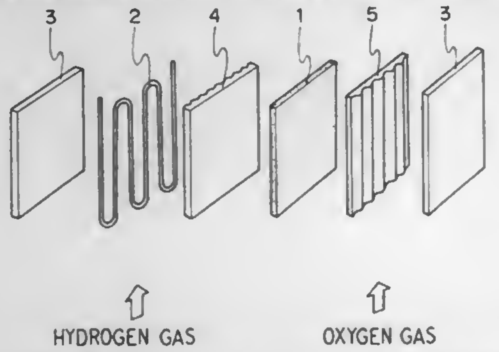
c) sealing means positioned between the interior of said cavity and said electrode for excluding said electrolyte from the unexposed portion of said electrode when said electrode is positioned within said holder and immersed in said electrolyte; and

d) an electrical lead connected to said electrode.

5,712,062

CARBON FLUORIDE PARTICLES, PREPARATION PROCESS AND USES OF THE SAME

Masayuki Yamana; Takahiro Kitahara, and Tomohiro Isogai, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 256,239, Jul. 1, 1994, abandoned.
This application Apr. 4, 1997, Ser. No. 832,848
Claims priority, application Japan, Nov. 6, 1992, 4-297450; Dec. 25, 1992, 4-347165; Jan. 21, 1993, 5-008188
Int. Cl.^{6} H01M *4/58*
U.S. Cl. 429—218 **18 Claims**



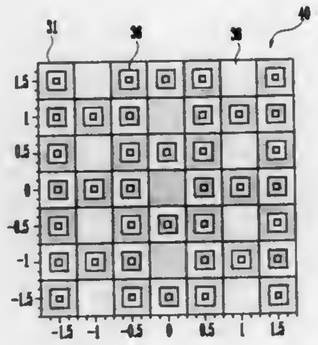
1. Carbon fluoride particles in which a number-average particle size is 0.01 to 50 μm, a content of particles having such a diameter that the particle size distribution thereof falls within the range of the number-average particle size ±20% amounts to at least 50% of the whole, a true specific gravity is 1.7 to 2.5, when representing an atomic ratio of fluorine atom to carbon atom as F/C, a F/C of the particle as a whole is 0.001 to 0.2, and a F/C of the particle at the surfaçe is always larger than the F/C as a whole and is 0.3 to 2.0.

13. Composite materials in which the carbon fluoride particles of claim 1, are added and dispersed into liquid materials of oils, organic solvents, water or aqueous solutions.

5,712,063

PHASE SHIFT MASK COMPRISING LIGHT SHIELDING REGIONS HAVING A MULTIPLE BOX STRUCTURE

Chang Nam Ahn, and Young Sik Kim, both of Ichon, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichon, Rep. of Korea
Filed Oct. 3, 1996, Ser. No. 729,675
Claims priority, application Rep. of Korea, Oct. 4, 1995, 95-33880
Int. Cl.^{6} G03F *9/00*
U.S. Cl. 430—5 **19 Claims**



1. A phase shift mask comprising:

a transparent substrate;

a plurality of light exposure regions respectively defined by patterns formed on portions of the transparent substrate corresponding to contact holes which will be formed using the phase shift mask, the patterns including those comprised of a first phase shift film and those comprised of a second phase shift film exhibiting a difference in phase from the first phase shift film;

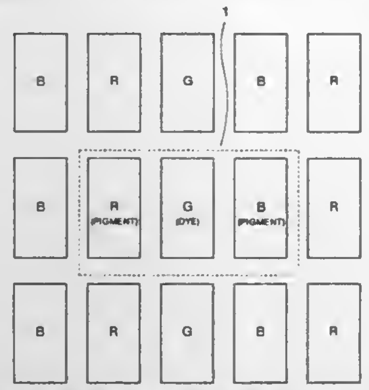
a plurality of light shield regions respectively defined by patterns formed on portions of the transparent substrate not covered with the patterns defining the light exposure regions, the patterns of the light shield regions including those comprised of the first phase shift film and those comprised of the second phase shift film while the light shield regions each having a multiple box structure including at least two concentric boxes respectively consisting of the patterns of the first and second phase shift films associated with the light shield region; and

the patterns of the first and second phase shift films defining the light exposure regions and light shield regions being arranged in such a manner that adjacent patterns are different in phase from each other.

5,712,064

PROCESS FOR PRODUCING A COLOR FILTER AND A LIQUID CRYSTAL DISPLAY DEVICE

Takeshi Miyazaki, Ebina; Hiroshi Sato, Yokohama; Katsuhiro Shirota, Kawasaki; Hideto Yokoi; Akio Kashiwazaki, both of Yokohama, and Shoji Shiba, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 23, 1995, Ser. No. 494,076
Claims priority, application Japan, Jun. 24, 1994, 6-143197
Int. Cl.^{6} G02B *5/20;* **G02F** *1/1335*
U.S. Cl. 430—7 **22 Claims**



1. A process for producing a color filter, comprising the steps of:

applying a red color liquid, a green color liquid, and a blue color liquid onto prescribed spots on a substrate by ink-jet printing; and

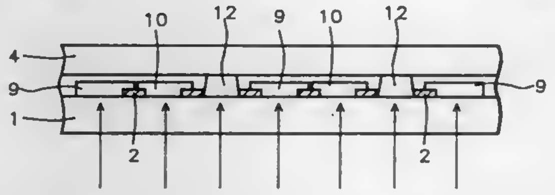
drying the deposited liquid to form a pattern of red, green and blue colors,

wherein at least one of the red color liquid, the green color liquid and the blue color liquid contains a dye, and at least one other of the red color liquid, green color liquid and blue color liquid contains a pigment.

5,712,065

PROCESS FOR FABRICATING A MULTICOLOR FILTER

Jeen-Yuan Chiang, Taipei, Taiwan, assignor to Industrial Technology Research Institute, hsinchu, Taiwan
Continuation of Ser. No. 429,601, Apr. 27, 1995, abandoned.
This application Aug. 28, 1996, Ser. No. 704,295
Int. Cl.^{6} G03F *9/00*
U.S. Cl. 430—7 **19 Claims**



1. A process for fabricating a multicolor filter comprising:

(a) providing a substrate, having a front side and a back side, that is transparent to ultraviolet light;

(b) creating a black matrix by depositing opaque intersecting lines on said front side;

(c) coating said front side with a first layer of photosensitive material in which pigment of a first color has been dispersed, exposing said coated front side to ultraviolet light directed through a mask positioned above said front side and developing said first layer of exposed photosensitive material thereby removing all photosensitive material that was not exposed to ultraviolet light;

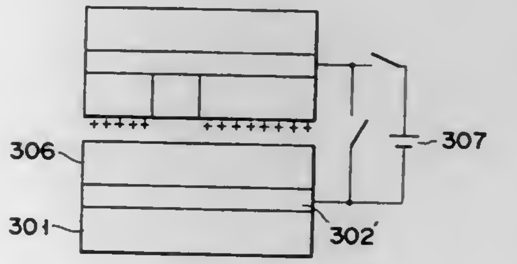
(d) coating said front side with a second layer of photosensitive material in which pigment of a second color has been dispersed, exposing said coated front side to ultraviolet light directed through a mask positioned above said front side and developing said second layer of exposed photosensitive material thereby removing all photosensitive material that was not exposed to ultraviolet light; and

(e) coating said front side with a third layer of photosensitive material in which pigment of a third color has been dispersed, exposing said coated front side to ultraviolet light directed through said back side of the substrate using said black matrix as mask.

5,712,066

IMAGE FORMING METHOD, RECORDING MEDIUM, AND VISIBLE IMAGE REPRODUCING METHOD

Kazuo Yoshinaga, Machida; Shuzo Kaneko, Yokohama; Kazuo Isaka, Tokyo, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 118,360, Sep. 9, 1993, abandoned, which is a continuation of Ser. No. 723,947, Jul. 1, 1991, abandoned.
This application May 22, 1995, Ser. No. 446,995
Claims priority, application Japan, Jul. 4, 1990, 2-175319; Jun. 21, 1991, 3-175858
Int. Cl.^{6} G03G *5/04*
U.S. Cl. 430—20 **8 Claims**



1. An image forming method comprising the steps of:

forming electric charges on a photoconductive layer by charging a medium "A" comprising a conductive substrate having provided thereon said photoconductive layer, to form a charged recording medium "A";

irradiating, after the step of charging, said charged recording medium "A" with a light corresponding to an image information, to form an irradiated medium "A" bearing an electrostatic latent image;

selecting a medium "B" comprising a conductive substrate having provided thereon a recording layer containing a polymeric liquid crystal compound, said recording layer evidencing birefringence;

bringing said irradiated medium "A" into contact with said medium "B" in order to transfer the electrostatic latent image formed on the photoconductive layer of said medium "A" to the recording layer of said medium "B";

separating the medium "A" and the medium "B"; and

writing the image information in the recording layer by uniformly heating the entire recording layer of said medium "B" and thereby imagewise changing the birefringence of said recording layer with in correspondence with the electrostatic latent image transferred from medium "A".

5,712,067

CYLINDRICAL SUBSTRATE FOR AN ORGANIC PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY AND METHOD OF MANUFACTURE FOR THE SAME

Noriaki Kawata, Saitama, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Jun. 4, 1996, Ser. No. 658,227
Claims priority, application Japan, Jun. 2, 1995, 7-135512
Int. Cl.^{6} G03G *5/10*
U.S. Cl. 430—59 **94 Claims**

1. A cylindrical tubular substrate for electrophotography comprising:

polyphthalamide resin as the main component thereof.

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5,712,068

COLOR TONER AND DEVELOPER COMPOSITIONS

Edul N. Dalal, Webster; Sue E. Blaszak, Penfield; Kristen M. Natale-Hoffman; Roger N. Ciccarelli, both of Rochester; Jacques C. Bertrand, Ontario, and Thomas R. Pickering, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 9, 1996, Ser. No. 728,317
Int. Cl.^{6} G03G *9/09*
U.S. Cl. 430—106 **19 Claims**

1. A combination of five process separate color toners for the development of electrostatic latent images enabling the formation of an image with an enlarged color gamut, and wherein the five toners consist essentially of a cyan toner, a magenta toner, a yellow toner, a green toner, and a black toner, each of said toners being comprised of resin and pigment, and wherein the pigment for the cyan toner is a β copper phthalocyanine, the pigment for the magenta toner is a xanthene silicomolybdic acid salt of Rhodamine 6G basic dye (PR 81:3), a quinacridone (PR 122) or a lithol rubine (PR 57:1), the pigment for the yellow toner is a diazo benzidine (PY 12, PY 13, PY 14, or PY 17), a monoazo (PY 74), or a benzimidazolone (PY 180), the pigment for the green toner is Green 7, CI Number 74260, or Green 36, CI Number 74265, and the pigment for the black toner is carbon black; and wherein said pigments, excluding black, are dispersed in said resin by flushing, wherein a cyan, magenta, green, and yellow pigment water wet cake is mixed with toner resin, and the water is removed, or substantially removed to generate pigmented resin containing from about 25 to about 50 weight percent of pigment based on the weight percent of said toner resin and said pigment, or wherein said pigment for each toner is prepared by dispersing said pigment with a polymeric alcohol.

5,712,069

TWO-COMPONENT TYPE DEVELOPER, DEVELOPING METHOD AND IMAGE FORMING METHOD

Yoshinobu Baba, and Yuzo Tokunaga, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,782
Claims priority, application Japan, Oct. 5, 1994, 6-241193
Int. Cl.^{6} G03G *9/083*
U.S. Cl. 430—106.6 **60 Claims**

1. A two-component type developer for developing an electrostatic image, comprising: at least a non-magnetic toner and a magnetic carrier; wherein

the non-magnetic toner has a weight-average particle size D4 of 1–10 μm, a number-average particle size D1 and such a particle size distribution that particles having size of at most D½ occupy at most 20% by number and particles having sizes of at least D4×2 occupy at most 10% by volume, and

the magnetic carrier has a number-average particle size of 1–100 μm and contains at most 20% by number of particles having sizes in the range of at most a half of the number-average particle size, the magnetic carrier has a resistivity of at least 1×10^{12} ohm.cm and has a core having a resistivity of at least 1×10^{10} ohm.cm, and the magnetic carrier has a magnetization at 1 kilo-oersted of 30–150 emu/cm^3.

5,712,070

TONER FOR DEVELOPING ELECTROSTATIC IMAGE, IMAGE FORMING METHOD, DEVELOPING DEVICE AND PROCESS CARTRIDGE

Keita Nozawa, Yokohama; Motoo Urawa, Funabashi; Osamu Tamura, Kawasaki, and Tsutomu Kukimoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 597,876
Claims priority, application Japan, Feb. 10, 1995, 7-045119
Int. Cl.^{6} G03G *9/08*
U.S. Cl. 430—106.6 **49 Claims**

1. A toner for developing electrostatic images, comprising: toner particles comprising a binder resin, a colorant and a wax; wherein the toner has:

(i) a particle size distribution including a weight-average particle size D_4 of X μm and Y% by number of toner particles having a particle size of at most 3.17 μm satisfying the following conditions (1) and (2):

$$-5X+35 \leqq Y \leqq -25X+180 \qquad (1)$$

$$>4.0 \leqq X \leqq 6.3 \qquad (2).$$

(ii) at least one heat absorption peak in a temperature region of at most 110° C. as measured by differential thermal analysis, and

(iii) a tap void of 0.45–0.70.

5,712,071

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Yoshihiro Mikuriya, Amagasaki; Mikihiko Sukeno, Ashiya; Yoshikazu Nishihara, Itami, and Hiroyuki Fukuda, Kobe, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Oct. 16, 1995, Ser. No. 543,587
Claims priority, application Japan, Oct. 18, 1994, 6-251835
Int. Cl.^{6} G03G *9/097*
U.S. Cl. 430—110 **35 Claims**

1. A toner for developing an electrostatic latent image comprising:

a binder resin comprising a first copolymer having a number average molecular weight of 2,000 to 20,000 and a second copolymer having a number average molecular weight of 50,000 to 500,000, wherein a total amount of said first and said second copolymer is 70 percent by weight or more on a basis of the binder resin, said first and said second copolymer respectively comprising styrene copolymer or styrene derivative copolymer;

a colorant; and

an offset preventing agent comprising a polypropylene having a softening point of 135° C. to 155° C. and a polyethylene having a softening point of 100° C. to 150° C., wherein a total amount of said polypropylene and said polyethylene is 2 to 10 parts by weight per 100 parts by weight of the binder resin and a weight ratio of said polypropylene to said polyethylene is 1:6 to 1:1.

5,712,072

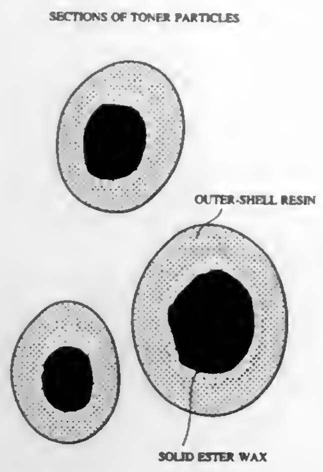
TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Kohji Inaba, Yokohama; Tatsuya Nakamura, Tokyo; Tatsuhiko Chiba, Kamakura, and Kengo Hayase, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

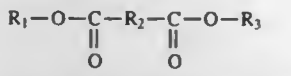
Filed Feb. 22, 1996, Ser. No. 605,737
Claims priority, application Japan, Feb. 28, 1995, 7-063602; Feb. 28, 1995, 7-063604
Int. Cl.^{6} G03G *9/08;9/087;9/093*
U.S. Cl. 430—110 **23 Claims**

1. A toner for developing an electrostatic image, comprising:

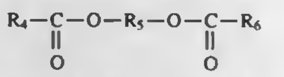
toner particles containing a binding resin composed of a styrene homopolymer or copolymer, a coloring agent, a polar resin,



and a solid ester wax represented by the following general formula (A) or (B):

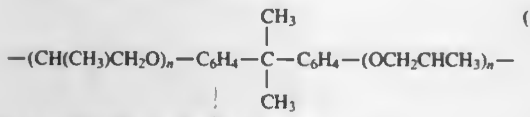

$$R_1-O-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}-O-R_3 \qquad (A)$$

wherein R_1 and R_3 represent organic groups each having 6 to 32 carbon atoms, R_1 and R_3 may be the same or different, and R_2 represents an alkylene group having 4 to 20 carbon atoms:


$$R_4-\underset{\underset{O}{\|}}{C}-O-R_5-O-\underset{\underset{O}{\|}}{C}-R_6 \qquad (B)$$

wherein R_4 and R_6 represent organic groups each having 6 to 32 carbon atoms, R_4 and R_6 may be the same or different, and R_5 represents an organic group selected from the group consisting of the following groups (1), (2), and (3):

$$-CH_2CH_2OC_6H_4OCH_2CH_2- \qquad (1);$$


$$-(CH(CH_3)CH_2O)_n-C_6H_4-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-C_6H_4-(OCH_2CHCH_3)_n- \qquad (2)$$

wherein n represents an integer not less than 1;

$$-(CH_2)_m-(3)$$

wherein m represents an integer of 4 to 20.

5,712,073

TONER FOR DEVELOPING ELECTROSTATIC IMAGE, APPARATUS UNIT AND IMAGE FORMING METHOD

Masaichiro Katada, Numazu; Takashige Kasuya, Shizuoka-ken, and Takakuni Kobori, Susono, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1996, Ser. No. 777,241
Claims priority, application Japan, Jan. 10, 1996, 8-018203; Apr. 18, 1996, 8-119571
Int. Cl.^{6} G03G *9/097;13/22*
U.S. Cl. 430—110 **65 Claims**

1. A toner for developing electrostatic images, comprising: toner particles said inorganic fine powder being different from said metal oxide particles, inorganic fine powder, resin fine particles, and metal oxide particles; wherein

the toner has a weight-average particle size of 4–12 μm and contains at most 30% by number of particles having a particle size of at most 3.17 μm;

the inorganic fine powder has an average primary particle size of 1–50 nm;

the resin fine particles have an average particle size of 0.1–2 μm and a shape factor SF1 of at least 100 and below 150, and

the metal oxide particles have an average particle size of 0.3–3 μm and a shape factor SF1 of 150–250.

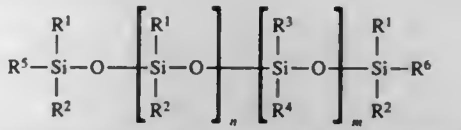
5,712,074

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Yukiya Sato; Masayuki Maruta; Yasushi Ito, and Genichi Nakamura, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jan. 7, 1997, Ser. No. 779,664
Claims priority, application Japan, Jan. 9, 1996, 8-019423
Int. Cl.^{6} G03G *9/087;9/097*
U.S. Cl. 430—110 **9 Claims**

1. A toner for developing an electrostatic latent image comprising a binder resin, a colorant, and a modified polysiloxane having the general formula (1):


$$R^5-\overset{\overset{R^1}{|}}{\underset{\underset{R^2}{|}}{Si}}-O-\left[\overset{\overset{R^1}{|}}{\underset{\underset{R^2}{|}}{Si}}-O\right]_n-\left[\overset{\overset{R^3}{|}}{\underset{\underset{R^4}{|}}{Si}}-O\right]_m-\overset{\overset{R^1}{|}}{\underset{\underset{R^2}{|}}{Si}}-R^6 \qquad (1)$$

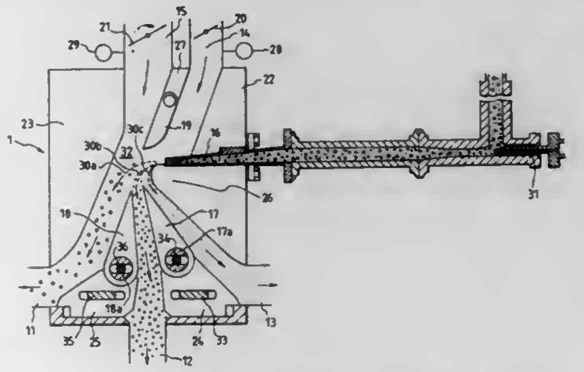
wherein R^1 to R^4, which may be identical or different, each stands for an alkyl group having 1 to 6 carbon atoms, a phenyl group, or a naphthyl group; R^5 and R^6, which may be identical or different, each stands for a linear or branched, saturated hydrocarbon group having an average number of carbon atoms of from 16 to 600; and n and m each stands for a number of zero (0) or more.

5,712,075

GAS CURRENT CLASSIFIER AND PROCESS FOR PRODUCING TONER

Satoshi Mitsumura; Hitoshi Kanda, both of Yokohama; Masayoshi Kato, Iruma; Yoko Goka, Kawasaki, and Yoshinori Tsuji, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 377,111
Claims priority, application Japan, Jan. 25, 1994, 6-023102; Sep. 21, 1994, 6-251576
Int. Cl.^{6} G03G *9/00*
U.S. Cl. 430—137 **23 Claims**



1. In a process for producing a toner, comprising the steps of:

feeding to a gas current classifier a colored resin powder having a true density from 0.3 to 1.4 g/cm^3, wherein the gas current classifier comprises a material feed nozzle, a Coanda block, classifier side walls and a plurality of classifying wedge blocks each having a classifying wedge;

transporting the colored resin powder on an air stream passing inside the material feed nozzle;

introducing the colored resin powder into a classification zone defined between the Coanda block and the classifier side walls;

classifying the colored resin powder by utilizing the Coanda effect, to separate it into at least a coarse powder group, a

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median powder group and a fine powder group by means of the plurality of classifying wedges; and

producing the toner from the median powder group thus separated;

the improvement which comprises:

(a) employing classifying wedge blocks shiftable across the classification zone to selectively change distances L_1, L_2 and L_3 in said classification zone; and

(b) selectively shifting the classifying wedge blocks prior to the feeding step to satisfy the following conditions:

$$L_0>0,\ L_1>0,\ L_2>0,\ L_3>0;\ L_0<L_1+L_2<nL_3$$

where L_0 represents a height-direction diameter (mm) of the discharge orifice of the material feed nozzle; L_1 represents a distance (mm) between the sides facing each other, of a first classifying wedge for dividing the powder into the median powder group and the fine powder group and the Coanda block provided opposingly thereto; L_2 represents a distance (mm) between the sides facing each other, of the first classifying wedge and a second classifying wedge for dividing the powder into the coarse powder group and the median powder group; L_3 represents a distance (mm) between the sides facing each other, of the second classifying wedge and a side wall standing opposingly thereto; and n represents a real number of 1 or more.

5,712,076

IMAGING ELEMENT FOR MAKING AN IMPROVED PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout; Bartholomeus Van Der Linden, Boutersem, and René De Keyzer, Waasmunster, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 29, 1996, Ser. No. 739,756

Claims priority, application European Pat. Off., Nov. 2, 1995, 95202969

Int. Cl.^{6} G03C *8/52;* **G03F** *7/07*

U.S. Cl. 430—204 **8 Claims**

1. An imaging element comprising in the order given on a hydrophilic surface of a support (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing one or more silver halide emulsions being in water permeable relationship with said image receiving layer, characterized in that said one or more silver halide emulsions comprises less than 0.01 mol % of silver bromide and at least 99 mole % of silver chloride and that said imaging element comprises on top of said photosensitive layer an antistress layer, being in water permeable relationship with said photosensitive layer and comprising an unhardened gelatin in an amount ranging from 0.60 to 1.75 g/m^2.

5,712,077

METHOD FOR MAKING BY PHOTOTYPESETTING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Lode Deprez, Wachtebeke, and Paul Callant, Edegem, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jan. 27, 1997, Ser. No. 787,695

Claims priority, application European Pat. Off., Feb. 26, 1996, 96200481

Int. Cl.^{6} G03F *7/07;* **G03C** *8/06;1/18;1/035*

U.S. Cl. 430—204 **10 Claims**

1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process comprising the following steps:

image-wise exposing with a high intensity-short time exposure with light with a wavelength between 600 nm and 700 nm an imaging element comprising on a support (1) a photosensitive layer comprising at least one photosensitive silver halide emulsion sensitized to light by means of one or more cationic carbocyanine sensitizing dyes having a maximum absorption between 600 nm and 700 nm, the silver halide crystals of said silver halide emulsion comprising more than 95 mole % of silver chloride per mole of silver halide and (2) an image receiving layer comprising physical development nuclei in a water permeable relationship with said photosensitive layer,

developing said imaging element using an alkaline processing liquid in the presence of (a) developing agent(s) and (a) silver halide solvent(s),

characterized in that said silver halide crystals contain silver iodide between 0.25 mole % and 2 mole %/mole silver halide in the outer 10% by weight region of said crystals.

5,712,078

HIGH CONTRAST PHOTORESISTS COMPRISING ACID SENSITIVE CROSSLINKED POLYMERIC RESINS

Wu-Song Huang, Poughkeepsie, N.Y.; Harold George Linde, Richmond, and Charles Arthur Whiting, Milton, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 71,095, Jun. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,793

Int. Cl.^{6} G03C *1/73*

U.S. Cl. 430—270.1 **8 Claims**

1. A crosslinked aqueous base developable microlithographic resist composition comprising in admixture:

(a) an acid labile compound comprising a ketal moiety;

(b) a crosslinked resin comprising a film forming polymer having recurrent hydroxyl groups chemically bonded thereto, wherein at least a portion of said recurrent hydroxyl groups are O-substituted by ketal exchange with said acid labile compound and wherein said film forming polymer is crosslinked through at least a portion of said acid labile compound substituents to form said crosslinked resin wherein said crosslinked resin comprises about 33% or above of said film forming polymer; and

(c) an acid generating compound which forms an acid upon exposure to actinic radiation, wherein said acid generated upon exposure causes the cleavage of at least a portion of said acid labile compound from said O-substituted hydroxyl groups and causes the cleavage of at least a portion of said resin crosslinks, and wherein the exposed composition is rendered selectively more soluble in aqueous base and has a lower molecular weight compared with the unexposed composition.

5,712,079

BARRIER LAYER FOR LASER ABLATIVE IMAGING

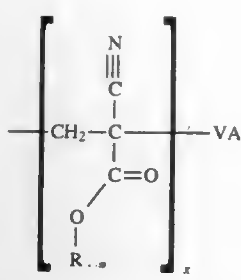
Douglas R. Robello, Webster; Michael T. Swanson, Rochester, and Scott E. Tunney, Ontario, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 11, 1996, Ser. No. 763,777

Int. Cl.^{6} G03C *5/16*

U.S. Cl. 430—270.1 **10 Claims**

1. A process of forming a single color, ablation image comprising imagewise heating by means of a laser, an ablative recording element comprising a support having thereon, in order, a barrier layer and a colorant layer comprising a colorant dispersed in a polymeric binder, said element containing an infrared-absorbing material, said laser exposure taking place through the colorant side of said element, and removing the ablated colorant to obtain said image in said ablative recording element, wherein said barrier layer is obtained from an aqueous latex dispersion of a polycyanoacrylate copolymer having the formula:



$$\left[-CH_2-\underset{\underset{\displaystyle O-R}{\displaystyle C=O}}{\overset{\displaystyle C\equiv N}{C}}-\right]_x-VA_y$$

wherein:

R is a substituted or unsubstituted alkyl group having from 1 to about 20 carbon atoms,

VA is a repeating unit resulting from the polymerization of a vinyl-containing monomer with a pendant ionizable group, and the weight ratios of x:y range from about 97:3 to about 70:30.

5,712,080

METHOD FOR MANUFACTURING PRINTED CIRCUIT BOARD

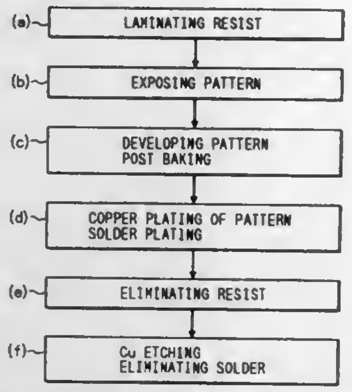
Yuichi Satsu; Haruo Akahoshi; Mineo Kawamoto, all of Hitachi; Akio Takahashi, Hitachioota; Masashi Miyazaki, Hadano, and Toshiaki Ishimaru, Hitachi, all of Japan, assignors to Hitachi, Ltd., and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 394,762, Feb. 27, 1995, abandoned. This application Feb. 18, 1997, Ser. No. 801,421

Claims priority, application Japan, Feb. 25, 1994, 6-027796

Int. Cl.^{6} H05K *3/10;* **G03F** *7/085*

U.S. Cl. 430—315 **7 Claims**



1. A method of manufacturing printed circuit board comprising the steps of:

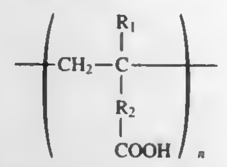
forming a photosensitive resin composition layer at surface of a metal clad laminate comprising a metal clad and an insulating substrate,

forming a negative pattern of said photosensitive resin composition layer by exposure and development, and

forming wiring pattern by electroless plating using said negative pattern of said photosensitive composition layer as the plating resist, wherein

said photosensitive resin comprises at least

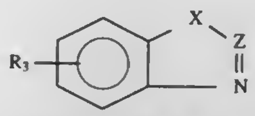
a linear high polymer composed of repeating units expressed by the following general formula (1):



$$\left(-CH_2-\underset{\underset{\displaystyle COOH}{\displaystyle R_2}}{\overset{\displaystyle R_1}{C}}-\right)_n \qquad (1)$$

where, R_1 is H, an alkyl group having 1–9 carbon atoms, an alkoxy group having 1–9 carbon atoms, or a carboxyalkyl group having 1–9 carbon atoms, R_2 is nil or an alkylene group having 1–9 carbon atoms and n is the polymerized number of the repeating unit, and

an organic compound expressed by the following general formula (2):



(2)

where R_3 is H or an alkyl group having 1–6 carbon atoms, X is NH or S, and Z is N or C—Y, where Y is H, NH_2, or SH;

said photosensitive resin composition containing at least

20–500 carboxyl groups of said linear high polymer composed of repeating units expressed by the general formula (1) per one molecule of said organic compound expressed by the general formula (2).

4. A method for manufacturing printed circuit board comprising the steps of:

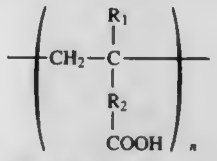
forming a photosensitive resin composition layer at surface of a metal clad laminate comprising a metal clad and an insulating substrate,

forming a negative pattern of said photosensitive resin composition layer by exposure and development, and

forming wiring pattern by electroless plating using said negative pattern of said photosensitive composition layer as the plating resist, wherein

said photosensitive resin comprises at least

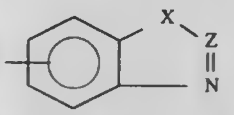
a linear high polymer composed of repeating units expressed by the following general formula (1):



$$\left(-CH_2-\underset{\underset{\displaystyle COOH}{\displaystyle R_2}}{\overset{\displaystyle R_1}{C}}-\right)_n \qquad (1)$$

where, R_1 H, an alkyl group having 1–9 carbon atoms, an alkoxy group having 1–9 carbon atoms, or a carboxyalkyl group having 1–9 carbon atoms, R_2 is nil or an alkylene group having 1–9 carbon atoms and n is the polymerized number of the repeating unit, and

an organic compound expressed by the following general formula (2):



(2)

where R_3 is H or an alkyl group having 1–6 carbon atoms, X is NH or S, and Z is N or C—Y, where Y is H, NH_2, or SH; and

wherein said photosensitive resin composition contains at least

1–10 parts by weight of said linear high polymer composed of repeating units expressed by the general formula (1), and

0.01–1 parts by weight of said organic compound expressed by the general formula (2),

when taking total weight of said photosensitive resin composition as 100 parts by weight.

5. A method for manufacturing printed circuit board comprising the steps of:

forming a photosensitive resin composition layer at surface of a metal clad laminate comprising a metal clad and an insulating substrate,

forming a negative pattern of said photosensitive resin composition layer by exposure and development,

forming wiring pattern by electroless plating using said negative pattern of said photosensitive composition layer as the plating resist, wherein

said photosensitive resin comprises at least

a linear high polymer composed of repeating units expressed by the following general formula (1):

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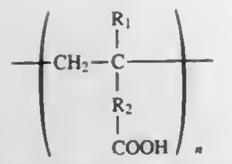
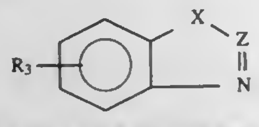


$$\left(\begin{array}{c} R_1 \\ | \\ -CH_2-C- \\ | \\ R_2 \\ | \\ COOH \end{array}\right)_n \qquad (1)$$

where, R_1 is H, an alkyl group having 1–9 carbon atoms, an alkoxy group having 1–9 carbon atoms, or a carboxyalkyl group having 1–9 carbon atoms, R_2 is nil or an alkylene group having 1–9 carbon atoms and n is the polymerized number of the repeating unit, and

an organic compound expressed by the following general formula (2):



(2)

where R_3 is H or an alkyl group having 1–6 carbon atoms, X is NH or S, and Z is N or C—Y, where Y is H, NH_2, or SH; and

further comprising forming a metallic layer composed of a material selected from the group consisting of Au, Ag, Ni, Cr, Sn, Ti and Zn on the surface of said metal clad laminate, wherein said photosensitive resin composition is formed on the surface of said metallic layer before said negative pattern of said photosensitive layer is formed by exposure and development and

wherein said photosensitive resin composition contains at least

1–10 parts by weight of said linear high polymer composed of repeating units expressed by the general formula (1), and

0.01–1 parts by weight of said organic compound expressed by the general formula (2),

when taking total amount of said photosensitive resin composition as 100 parts by weight.

5,712,081

METHOD FOR REPRODUCING AN ELECTRONICALLY STORED MEDICAL IMAGE ON A HARDCOPY MATERIAL

Hieronymus Andriessen, Beerse, and Freddy Henderickx, Olen, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 6, 1997, Ser. No. 812,265

Claims priority, application Netherlands, Mar. 7, 1996, 962006227

Int. Cl.^{6} G03C *5/29*

U.S. Cl. 430—440 **14 Claims**

1. Method of reproducing an electronically stored medical image on a hardcopy material, comprising a support and on only one side thereof a silver halide emulsion layer and a hydrophilic colloid layer, wherein said emulsion layer comprises red or infrared sensitized homogeneous cubic silver chloride, silver chloroiodide, silver chlorobromide and/or silver chlorobromoiodide crystals having not less than 70 mole % of chloride ions and not more than 1 mole % of iodide and an average crystal size of from 0.12 to 0.30 μm; wherein said crystals are coated in an amount, expressed as an equivalent amount of silver nitrate of from 2 to 6 g per sq.m., and wherein said material has a hardening degree corresponding with a water absorption of up to 3 g per gram of gelatin at the emulsion side, the water absorption being measured by following steps:

preserving dry film material for 15 minutes in a conditioning room at 20° C. and 30% RH,

covering backing topcoat layer of the said dry film material with a water impermeable tape,

weighing the said dry film material,

immersing unexposed material in demineralized water of 24° C. for 10 minutes,

sucking up excessive amount of water present on top of outermost layers and

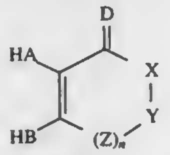
immediately determining weight of the wet film and

calculating measured weight differences between wet and dry film and calculating the said differences per square meter of film and dividing it by coated amount of gelatin per sq.m.;

said method of reproducing being characterized by the steps of

image-wise exposure of said material with an electronically adressed red or infrared laser followed by

development processing in a developer free from hardening agents in less than 20 seconds in a total processing time from 30 to 50 seconds from dry to dry, wherein said developer contains a compound corresponding to formula (I), a precursor thereof, a derivative thereof and/or a metal salt thereof



(I)

wherein

each of A, B and D independently represents an oxygen atom or NR^1;

X represents an oxygen atom, a sulphur atom, NR^2; CR^3R^4; C=O; $C{=}NR^5$ or C=S;

Y represents an oxygen atom, a sulphur atom, NR'^2; $CR'^3R'^4$; C=O; $C{=}NR'^5$ or C=S;

Z represents an oxygen atom, a sulphur atom, NR''^2; $CR''^3R''^4$; C=O; $C{=}NR''^5$ or C=S;

n equals 0, 1 or 2;

each of R^1 to R^5, R'^1 to R'^5 and R''^1 to R''^5, independently represents hydrogen, alkyl, aralkyl, hydroxyalkyl, carboxyalkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, aryl or heterocyclyl;

and wherein

R^3 and R^4, R'^3 and R'^4, R''^3 and R''^4, may further form together a ring; and wherein in the case that $X{=}CR^3R^4$ and $Y{=}CR'^3R'^4$, R^3 and R'^3 and/or R^4 and R'^4 may form a ring and wherein in the case that $Y{=}CR'^3R'^4$ and $Z{=}CR''^3R''^4$ with n=1 or 2, R'^3 and R''^3 and/or R'^4 and R''^4 may form a ring;

replenishing said developer in an amount of not more than 100 ml per square meter of developed material;

fixing said developer in a time from 2 to 10 seconds

rinsing and drying.

5,712,082

Patent Not Issued For This Number

5,712,083

METHOD OF PREPARING MONODISPERSE TABULAR-GRAIN SILVER HALIDE EMULSION, AND PHOTOGRAPHIC MATERIAL COMPRISING THE SAME

Yoichi Hosoya, and Junichi Yamanouchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 14, 1996, Ser. No. 645,707

Claims priority, application Japan, Jun. 6, 1995, 7-161592

Int. Cl.^{6} G03C *1/015;1/043*

U.S. Cl. 430—567 **8 Claims**

1. A method of preparing a silver halide emulsion comprising a disperse medium and silver halide grains, said method comprising the steps of:

(1) forming silver halide tabular grains for the silver halide emulsion in the presence of at least one polymer having repeating units represented by formula (1),

(2) subsequently to the step (1), removing the polymer by washing with water, and

(3) using as seed crystals the silver halide tabular grains obtained via steps (1) and (2) and further growing these grains;

$$—(R—O)_n— \qquad (1)$$

wherein each R represents an alkylene group having 2 to 10 carbon atoms, and n is an average number of repeating units which ranges from 4 to 200.

5,712,084

DONOR KIDNEY VIABILITY TEST FOR IMPROVED PRESERVATION

Richard W. Osgood, North Riverside, Ill., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Sep. 8, 1995, Ser. No. 526,121

Int. Cl.^{6} A01N *1/02*

U.S. Cl. 435—1.2 **8 Claims**

1. A method for monitoring and determining the functional viability of a donor kidney prior to transplantation comprising:

continuously, vascularly perfusing said kidney at about 7° to about 10° C. with a perfusate comprising a glomerular impermeable colloid, wherein the concentration of the colloid is about 0.1 to 4 gram percent of the perfusate, wherein kidney resistance determines the flow rate, wherein the perfusion pressure is no lower than 5 mmHg and the perfusion pressure is further correlated to the colloid concentration in a ratio of about 1 gram percent per 10 mmHg which prevents kidney tubule reabsorption of water and permits glomerular filtration of said perfusate and, determining the glomerular filtration rate of said kidney, which is equal to the urine output rate wherein an increase in the glomerular filtration rate is indicative of functional viability an a decrease in a glomerular filtration rate is indicative of functional deterioration.

5,712,085

5'-(4-AMINO-2-OXA)BUTYE-4,4', 8-TRINETHYLPSORALEN IN SYNTHETIC MEDIUM

Susan Wollowitz, Walnut Creek; Stephen T. Isaacs, Orinda; Henry Rapoport; Hans Peter Spielmann, both of Berkeley, and Aileen Nerio, Santa Clara, all of Calif., assignors to Cerus Corporation, Concord, Calif.

Division of Ser. No. 212,113, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 83,459, Jun. 28, 1993, Pat. No. 5,399,217. This application Jun. 5, 1995, Ser. No. 465,148

Int. Cl.^{6} A01N *1/02;* **C07D** *493/00*

U.S. Cl. 435—2 **2 Claims**

1. A synthetic platelet storage medium, comprising an aqueous solution of:

sodium chloride;

potassium chloride;

sodium citrate;

sodium acetate;

sodium phosphate;

magnesium chloride;

0–2 mM glucose;

0–30 mM mannitol; and

5"-(4-amino-2-oxa)butyl-4,4',8-trimethylpsoralen at a concentration between approximately 0.1 and 250 μM.

5,712,086

PROCESS FOR TRANSFUSING CELL CONTAINING FRACTIONS STERILIZED WITH RADIATION AND A QUENCHER OF TYPE I AND TYPE II PHOTODYNAMIC REACTIONS

Bernard Horowitz, New Rochelle; Bolanle Williams, New York; Henrietta Margolis-Nunno, New York, and Sing N. Chin, New York, all of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Division of Ser. No. 364,031, Dec. 23, 1994, which is a continuation of Ser. No. 69,235, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 31,787, Mar. 15, 1993, which is a division of Ser. No. 706,919, May 29, 1991, Pat. No. 5,232,844, which is a continuation-in-part of Ser. No. 524,208, May 15, 1990, Pat. No. 5,120,649. This application Jun. 7, 1995, Ser. No. 486,668

Int. Cl.^{6} A01N *1/02;* **C12N** *13/00;* **A61M** *37/00*

U.S. Cl. 435—2 **48 Claims**

1. A process for transfusing a cell-containing fraction into a donor comprising:

(a) withdrawing a cell-containing fraction from the donor,

(b) treating said cell-containing fraction with a virucidally effective amount of artificial irradiation in the presence of (i) a mixture of at least one quencher compound that quenches type I free radical mediated photodynamic reactions and at least one quencher compound that quenches type II reactive forms of oxygen mediated photodynamic reactions or (ii) a quencher compound that quenches both type I and type II reactions or (iii) a mixture of a quencher compound that quenches both type I and type II reactions and an additional quencher compound; and

(c) returning to the donor said treated cell-containing fraction.

5,712,087

IMMUNOASSAYS FOR ANTI-HCV ANTIBODIES EMPLOYING COMBINATIONS OF HEPATITIS C VIRUS (HCV) ANTIGENS

Michael Houghton, Danville; Qui-Lim Choo, El Cerrito, and George Kuo, San Francisco, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 910,760, Jul. 7, 1992, which is a continuation-in-part of Ser. No. 504,352, Apr. 4, 1990, abandoned. This application May 12, 1995, Ser. No. 440,519

Int. Cl.^{6} C12Q *1/70;* **G01N** *33/576*

U.S. Cl. 435—5 **24 Claims**

1. A method for detecting antibodies to hepatitis C virus (HCV) in a mammalian body component suspected of containing antibodies comprising contacting said body component with a combination of hepatitis C viral (HCV) antigens comprising:

(a) first HCV antigen comprising the C domain or an immunologically reactive fragment thereof containing at least 8 amino acids, said C domain consisting of amino acids 1 to 120 of the HCV polyprotein; and

(b) a second HCV antigen selected from the group consisting of

- (i) an HCV antigen comprising the NS3 domain or an immunologically reactive fragment thereof containing at least 8 amino acids, said NS3 domain consisting of amino acids 1050 to 1640 of the HCV polyprotein;
- (ii) an HCV antigen comprising the NS4 domain or an immunologically reactive fragment thereof containing at least 8 amino acids, said NS4 domain consisting of amino 1640 to 2000 of the HCV polyprotein;
- (iii) an HCV antigen comprising the S domain or an immunologically reactive fragment thereof containing at least 8 amino acids, said S domain consisting of amino acids 120 to 400 of the HCV polyprotein; and

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(iv) an HCV antigen comprising the NS5 domain or an immunologically reactive fragment thereof containing at least 8 amino acids, said NS5 domain consisting of amino acids 2000 to 3011 of the HCV polyprotein under conditions that permit antibody-antigen reaction and detecting the presence of immune complexes of said antibodies and said antigens.

5,712,088

METHODS FOR DETECTING HEPATITIS C VIRUS USING POLYNUCLEOTIDES SPECIFIC FOR SAME

Michael Houghton, Danville; Qui-Lim Choo, El Cerrito; George Kuo, San Francisco; Amy J. Weiner, Oakland; Jang Han, Lafayette; Michael Steven Urdea, Alamo; Bruce Duncan Irvine, Concord, and Janice A. Kolberg, Richmond, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 40,564, Mar. 31, 1993, Pat. No. 5,714,596, which is a continuation of Ser. No. 566,209, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 505,435, Apr. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 456,637, Dec. 21, 1989, abandoned, Ser. No. 355,002, May 18, 1989, abandoned, and Ser. No. 355,961, May 18, 1989, abandoned, said Ser. No. 355,002is a continuation-in-part of Ser. No. 341,334, Apr. 20, 1989, abandoned, said Ser. No. 355,961is a continuation-in-part of Ser. No. 341,334, and Ser. No. 325,338, Mar. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 271,450, Nov. 14, 1988, abandoned, said Ser. No. 325,338is a continuation-in-part of Ser. No. 271,450, which is a continuation-in-part of Ser. No. 263,584, Oct. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 191,263, May 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,072, Feb. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 139,886, Dec. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 122,714, Nov. 18, 1987, abandoned. This application May 15, 1995, Ser. No. 440,769

Int. Cl.^{6} C12Q *1/70;* **C12P** *19/34;* **C07H** *21/02;* **C12N** *15/00*

U.S. Cl. 435—5 **13 Claims**

1. A method for detecting an HCV sequence in a test sample suspected of containing an HCV polynucleotide, wherein the HCV polynucleotide comprises a selected target region, said method comprising:

(a) providing an oligonucleotide capable of selectively hybridizing to the genome of a hepatitis C virus (HCV), or its complement, wherein the oligonucleotide comprises a contiguous sequence of at least 8 nucleotides fully complementary to the genome of an HCV or its complement;

(b) providing a set of primer oligonucleotides which are printers for the polymerase chain reaction method and which flank the target region;

(c) amplifying the target region via a polymerase chain reaction method to obtain an amplified test sample;

(d) incubating the amplified test sample with the oligonucleotide of step (a) under conditions which allow hybrid duplexes to form between the oligonucleotide and the target region specifically relative to other viral agents; and

(e) detecting any hybrids formed between the target region and the oligonucleotide, wherein the presence of said hybrid duplex is indicative of HCV being present in the test sample.

5,712,089

METHOD OF SELECTING SPECIFIC BACTERIOPHAGES

Carl A. K. Borrebaeck, Hjärup, Sweden, and Marta Duenas, Ciudad Habana, Cuba, assignors to Bioinvent International AB, Lund, Sweden

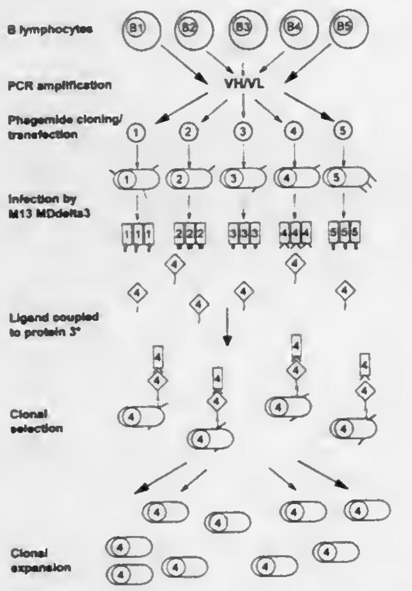
PCT No. PCT/SE94/01166, § 371 Date Oct. 7, 1996, § 102(e) Date Oct. 7, 1996, PCT Pub. No. WO95/16027, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 5, 1994, Ser. No. 640,792

Claims priority, application Sweden, Dec. 6, 1993, 9304060

Int. Cl.^{6} C12Q *1/07;1/02;* **G01N** *33/53;* **C12P** *21/04*

U.S. Cl. 435—5 **8 Claims**


B lymphocytes
B1
B2
B3
B4
B5
PCR amplification
VH/VL
Phagemide cloning/ transfection
1
2
3
4
5
Infection by M13 MDdelta3
Ligand coupled to protein 3*
Clonal selection
Clonal expansion

1. A method of enrichment for filamentous bacteriophages presenting specific ligand I on the phage surface, comprising the steps of:

a) transfecting bacteria with a phagemid expressing ligand I;

b) infecting said transfected bacteria with a helper filamentous phage containing wild-type protein 3 but lacking gene 3, so that the bacteria produce non-infectious phages which lack protein 3 and which present ligand I on the surface;

c) adding to said non-infectious phages a protein 3/ligand II fusion protein, wherein the protein 3/ligand II fusion protein specifically binds to ligand I on the surface of said non-infectious phages, producing phages able to infect bacteria; and

d) infecting bacteria with the resulting phages, so that those phages presenting ligand I are selected and clonally expanded by replication and multiplication by said bacteria.

5,712,090

PCR-BASED ASSAY FOR *MYCOPLASMA HYOPNEUMONIAE*

Sergey Artiushin, Ames, Iowa; László Stipkovits, Budapest, Hungary, and F. Chris Minion, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 18, 1993, Ser. No. 62,632

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **14 Claims**

1. An oligonucleotide primer pair for use in a PCR-based assay for *Mycoplasma hyopneumoniae*, wherein said pair comprises the nucleotide sequence 5'-AAGTTCATTCGCGCTAGCCC-3' (SEQ ID NO:1) and the nucleotide sequence 5'-GCTCCTACTCCATATTGCCC-3' (SEQ ID NO:2) and wherein said pair hybridizes to *Mycoplasma hyopneumoniae* but does not hybridize to *Mycoplasma hyorhinis, Mycoplasma flocculare* and *Mycoplasma hyosynoviae.*

6. A method for detecting the presence of Mycoplasma hyopneumoniae in a first sample comprising the steps of:

(a) isolating the DNA from said *Mycoplasma hyopneumoniae* in said first sample to form a second sample containing said isolated DNA;

(b) amplifying a target nucleic acid sequence in said isolated DNA by a polymerase chain which results in an amplified target nucleic acid sequence wherein an oligonucleotide primer pair used in said reaction comprises the nucleotide sequence 5'AAGTTCATTCGCGCTAGCCC-3' (SEQ ID NO: 1) and the nucleotide sequence 5' GCTCCTACTCCATATTGCCC-3' (SEQ ID NO: 2) and wherein said pair hybridizes to *Mycoplasma hyopneumoniae* but does not hybridize to *Mycoplasma hyorhinis, Mycoplasma flocculare* and *Mycoplasma hyosynoviae;* and

(c) detecting the presence of said amplified target nucleic acid sequence in said second sample as a means of detecting the presence of *Mycoplasma hyopneumoniae* in said first sample.

5,712,091

METHOD OF SELECTING GENETICALLY SUPERIOR SHRIMP

Joseph C. Bagshaw, Holden, and Michael A. Buckholt, Worcester, both of Mass., assignors to Worcester Polytechnic Institute, Worcester, Mass.

Continuation of Ser. No. 913,591, Jul. 14, 1992, abandoned. This application Mar. 29, 1994, Ser. No. 219,746

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **11 Claims**

1. A method of screening for Penaeus shrimp having a predetermined genetically-transmitted characteristic associated with the presence of a genetic marker in a characteristic pattern in Penaeus shrimp comprising the steps of:

a) isolating nuclear nucleic acid molecules from individual shrimp of the same species,

b) hybridizing to the isolated nucleic acid molecules a labelled probe for a nucleic acid marker, which is variable among individuals of the same species, said marker selected from the group consisting of an internal transcribed spacer region of ribosomal RNA genes, a variable number tandem repeat, a restriction fragment length polymorphism in ribosomal RNA genes, and a dispersed repeat in ribosomal RNA genes; and,

c) determining if the marker is present in the isolated DNA molecules in the characteristic pattern associated with the are determined genetically transmitted characteristic.

5,712,092

PAPILLOMAVIRUS PROBE AND PROCESS FOR IN VITRO DIAGNOSIS OF PAPILLOMAVIRUS INFECTIONS

Gerard Orth, Sceaux; Sylvie Beaudenon, Esbly; Michel Favre, Paris; Dina Kremsdorf, Paris; Odile Croissant, Paris, and Gerard Pehau-Arnaudet, Montreuil, all of France, assignors to Institut Pasteur, and Institut Nationale de la Sante et de la Recherche Medicale, both of Paris, France

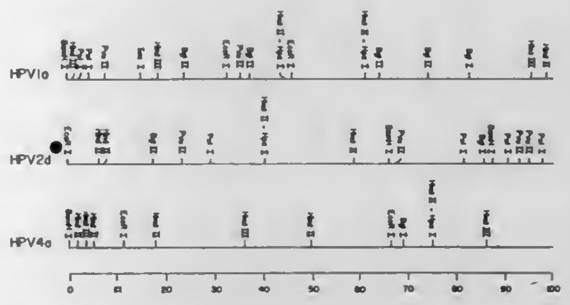
Continuation of Ser. No. 914,002, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 758,421, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 624,463, Dec. 10, 1990, abandoned, which is a continuation of Ser. No. 453,218, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 276,388, Nov. 25, 1988, abandoned, which is a continuation of Ser. No. 159,442, Feb. 18, 1988, abandoned, which is a continuation of Ser. No. 760,993, Jul. 31, 1985, abandoned. This application Jul. 14, 1994, Ser. No. 274,159

Claims priority, application France, Nov. 30, 1984, 84 18369; May 9, 1985, 85 07073

Int. Cl.^{6} C07H *21/04;* **C12P** *19/34;* **C12Q** *1/68;1/70*

U.S. Cl. 435—6 **17 Claims**

1. Isolated DNA of a human papillomavirus (HPV), wherein said DNA is about 7,000 to about 8,000 base pairs; and



said DNA is obtained from a virus selected from the group consisting of HPV-2d, HPV-10b, HPV-14a, HPV-14b, HPV-15, HPV-17a, HPV-17b, HPV-19, HPV-20, HPV-21, HPV-22, HPV-23, HPV-24, HPV-28, HPV-29, HPV-31, HPV-32, HPV-IP2, and HPV-IP4.

5,712,093

RXR HOMODIMER FORMATION

Magnus Pfahl, Solana Beach, and Xiao-kun Zhang, La Jolla, both of Calif., assignors to The Burnham Institute, La Jolla, Calif.

Continuation of Ser. No. 901,719, Jun. 16, 1992. This application Aug. 29, 1994, Ser. No. 297,706

Int. Cl.^{6} C12Q *1/68;* **G01N** *33/53*

U.S. Cl. 435—6 **8 Claims**

1. A method of screening a substance for the ability to affect the formation of a functional retinoid X receptor homodimer, which affects the activation of transcription by the homodimer comprising combining the substance and a solution containing retinoid X receptors and determining the presence of homodimer formation in solution by either 1) a gel shift assay utilizing a response element to bind the homodimer or 2) coprecipitation, the presence of homodimer formation indicating a substance that can affect the activation of transcription.

5,712,094

METHODS FOR DETECTING MODULATORS OF CYTOKINE ACTION

H. Martin Seidel; I. Peter Lamb, and Shin-Shay Tian Chan, all of San Diego, Calif., assignors to Ligand Pharmaceuticals, Inc., San Diego, Calif.

Filed Mar. 27, 1995, Ser. No. 411,020

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **4 Claims**

1. A method for measuring the ability of a compound to act as an agonist of cytokine-mediated gene transcription comprising:

(a) contacting the compound with a cytokine-responsive host cell transfected with a DNA construct comprising:

(i) an oligonucleotide sequence comprising a regulatory element of the nucleotide sequence TTN_xAA, operably linked to

(ii) a promoter, operably linked to

(iii) a heterologous gene, wherein N is independently selected from A, T, C or G and x is 4, 5, 6 or 7, and wherein the DNA construct is operably linked in such a manner that the heterologous gene is under the transcriptional control of the promoter and oligonucleotide sequence when the oligonucleotide sequence is trranscriptionally activated in response to IL-2, IL-3, IL-4, IL-7, IL-9, IL-13, IL-15, G-CSF, GM-CSF, Epo or Tpo

under conditions in which expression of the heterologous gene is responsive to compounds which are agonists of cytokine-mediated gene transcription; and

(b) comparing the level of gene expression in step (a) with the level of gene expression from the host cell in the absence of the compound, wherein the ability of the compound to act as

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an agonist of cytokine-mediated genc transcription is measured as the amount of increase in the level of gene expression in step (a) compared to the level of gene expression from the host cell in the absence of the compound.

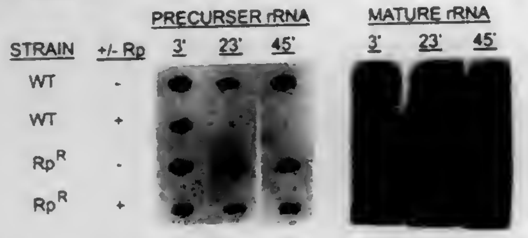
5,712,095
RAPID AND SENSITIVE DETECTION OF ANTIBIOTIC-RESISTANT MYCOBACTERIA USING OLIGONUCLEOTIDE PROBES SPECIFIC FOR RIBOSOMAL RNA PRECURSORS

Theresa B. Britschgi, and Gerard A. Cangelosi, both of Seattle, Wash., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 261,068, Jun. 16, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 485,602

Int. Cl.⁶ C12Q *1/68;* **C07H** *21/04;21/02*

U.S. Cl. 435—6 **18 Claims**



1. A method for detecting pre-ribosomal RNA (pre-rRNA) in cells of a mycobacterial sample, the method comprising the steps of:
  (a) treating the cells to release pre-rRNA, wherein said treatment comprises the steps of:
    (i) pretreating the cells by enzymatic degradation using both lysozyme and protease until their cell walls are rendered porous to expose their cell membranes making the cells susceptible to lysis by steps (ii) and (iii);
    (ii) contacting the pretreated cells with a combination of a magnesium chelator, a nonionic detergent and an anionic detergent; and
    (iii) heating the cells to between about between 75°-99° C. until the mycobacterial cells are lysed, and
  (b) detecting the pre-rRNA using at least one oligonucleotide probe which is capable of selectively hybridizing, under hybridizing conditions, to a region of the pre-rRNA that is not present in a mature mycobacterial rRNA.

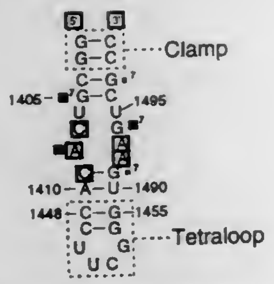
5,712,096
OLIGORIBONUCLEOTIDE ASSAYS FOR NOVEL ANTIBIOTICS

Seth Stern, Sterling, and Prakash Purohit, Worcester, both of Mass., assignors to University of Massachusetts Medical Center, Worcester, Mass.

Continuation-in-part of Ser. No. 294,450, Aug. 23, 1994, abandoned. This application Jul. 5, 1995, Ser. No. 498,402

Int. Cl.⁶ C12Q *1/68;* **C07H** *21/02;* **C12P** *19/34*

U.S. Cl. 435—6 **31 Claims**



1. An artificial oligoribonucleotide analog having both natural and heterologous sequences contained therein, wherein said artificial oligoribonucleotide analog has a three dimensional structure that mimics a ligand binding region of a larger parental RNA molecule, said artificial oligoribonucleotide analog comprising;
  a first oligoribonucleic acid structure whose sequence is identical to the sequence of said ligand binding region; and
  a second nucleic acid structure consisting of a heterologous sequence that does not exist adjacent to the sequence of said ligand binding region in said parental RNA molecule; wherein
    i) the conformation of said second nucleic acid structure is not naturally present adjacent to said ligand binding region;
    ii) said second nucleic acid structure stabilizes the conformation of said first oligoribonucleic acid structure so as to mimic the conformation of said parental RNA molecule ligand binding region so that said first oligoribonucleic acid structure binds said ligand with a binding pattern substantially identical to said parental RNA molecule binding pattern; and
    iii) said first and second structures are linked by one or more covalent or non-covalent bonds.

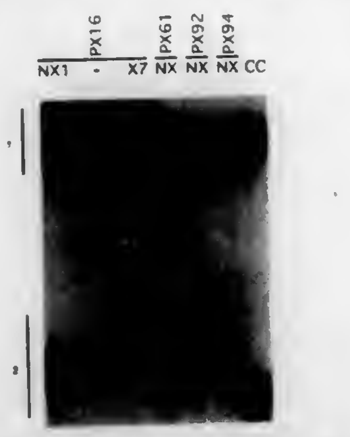
5,712,097
TUMOR SUPPRESSOR GENE, DPC4

Scott E. Kern, Hunt Valley, Md., and Stephan A. Hahn, Wilten, Germany, assignors to The Johns Hopkins University School of Medicine, Baltimore, Md.

Filed Jan. 19, 1996, Ser. No. 588,821

Int. Cl.⁶ C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **14 Claims**



5. A method for detecting the presence of DPC4 nucleic acid in a biological sample, comprising:
  a) seleting a probe from SEQ ID NO: 1 which specifically hybridizes to DPC4;
  b) hybridizing the probe with the biological sample;
  c) detecting the presence of a hybridization complex formed by the hybridization of the probe with the DPC4 nucleic acid in the sample, wherein the presence of the complex is indicative of the presence of DPC4 nucleic acid in the sample.

5,712,098
HEREDITARY HEMOCHROMATOSIS DIAGNOSTIC MARKERS AND DIAGNOSTIC METHODS

Zenta Tsuchibashi, Menlo Park; Andreas Gnirke, San Carlos; Winston J. Thomas; Dennis T. Drayna, both of San Mateo; David Ruddy, San Francisco; Roger K. Wolff, Belmont, and John N. Feder, San Callos, all of Calif., assignors to Mercator Genetics, Menlo Park, Calif.

Continuation-in-part of Ser. No. 630,912, Apr. 4, 1996. This application Apr. 16, 1996, Ser. No. 632,673

Int. Cl.⁶ C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **17 Claims**

1. A method to determine the presence or absence of the common hereditary hemochromatosis (HH) gene mutation in an individual, comprising:

24d1 Unaffected Sequence:

5'-GGAAGAGCAGAGATATACGTGCCAGGTGGAGCACCCAGG-3'

(SEQ ID NO.1)

24d1 Affected Sequence:

5'-GGAAGAGCAGAGATATACGTACCAGGTGGAGCACCCAGG-3'

(SEQ ID NO.2)

  providing DNA or RNA from the individual; and
  assessing the DNA or RNA for the presence or absence of the HH-associated allele A of a base pair polymorphism designated herein 24d1,
  wherein, as a result, the absence of the allele indicates a likely absence of the HH gene mutation in the genome of the individual and the presence of the allele a likely presence of the HH gene mutation in the genome of the individual.

5,712,099
PROCESS FOR THE PRODUCTION OF ARABINONUCLEOSIDES

Heidi Hummel-Marquardt; Mario Kennecke; Alfred Weber; Thomas Schmitz; Ulf Tisltam, and Klaus Nickisch, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/EP94/01343, § 371 Date Jan. 17, 1997, § 102(e) Date Jan. 17, 1997, PCT Pub. No. WO95/32212, PCT Pub. Date Nov. 30, 1995

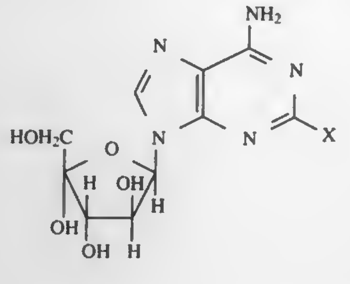
PCT Filed Apr. 13, 1995, Ser. No. 737,735

Claims priority, application United Kingdom, May 20, 1994, 44 18 474.3

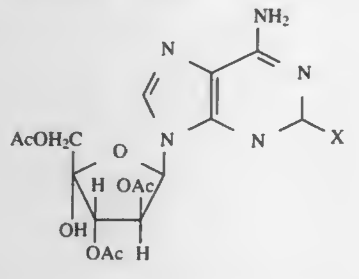
Int. Cl.⁶ C12Q *1/68;* **G01N** *33/566;* **C07H** *19/00;21/02*

U.S. Cl. 435—6 **6 Claims**

1. A process for the production of arabinonucleosides of formula I



in which
  X represents a hydrogen atom or a fluorine atom, comprising reacting a triacetate of formula II



in which
  X has the above-mentioned meaning, and the groups
  Ac respectively mean acetyl groups,
with an esterase or lipase effective to hydrolyze the acetyl groups.

5,712,100
ANTIBODIES TO PEPTIDES HAVING NGF-LIKE ACTIVITY, AND USE THEREOF

Kazuo Nakahama; Tsunehiko Fukuda, both of Kyoto; Tsutomu Kurokawa, Hyogo, and Ken-Ichi Kuroshima, Osaka, all of Japan, assignors to Takeda Limited Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 350,214, Dec. 6, 1994, which is a continuation-in-part of Ser. No. 41,904, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 574,431, Aug. 29, 1990, abandoned. This application May 24, 1995, Ser. No. 448,892

Claims priority, application Japan, Aug. 28, 1989, 1-218711; May 25, 1990, 2-134058

Int. Cl.⁶ C12N *15/85;* **C07K** *16/00;* **G01N** *33/53*

U.S. Cl. 435—7.1 **4 Claims**

1. An antibody to a peptide consisting of 12 to 14 successive amino acids of a sequence represented by:

TyrAlaGluHisLysSerHisArgGlyGluTyrSerValCys,

or 8 to 9 successive amino acids of a sequence represented by:

CysAlaLeuSerArgLysIleGlyArg.

5,712,101
IMMUNOCHEMICAL DETECTION OF IN VIVO ADVANCED GLYCOSYLATION ENDPRODUCTS

Richard J. Bucala, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 956,849, Oct. 1, 1992, Pat. No. 5,624,804, which is a continuation-in-part of Ser. No. 811,579, Dec. 20, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,398

Int. Cl.⁶ G01N *33/53;33/72*

U.S. Cl. 435—7.1 **1 Claim**

1. A method for the long term measurement of the presence, extent or control of blood sugar in a mammal comprising:
  obtaining a sample of hemoglobin from the mammal;
  determining the level of advanced glycosylation of said hemoglobin by quantifying the formation of a reaction complex by measuring the extent of binding detected in said biological sample using a labeled antibody reactive with in vivo-formed advanced glycosylation endproducts and having the following characteristics:
    A. it reacts with an immunological epitope, common to said in vivo-formed advanced glycosylation endproducts;
    B. it is cross reactive with advanced glycosylation endproducts formed in vitro;
    C. it is not cross reactive with the following model advanced glycosylation endproducts however formed: 2-(2-furoyl)-4(5)-(2-furanyl)-1H, imidazole (FFI), 1-alkyl-2-formyl-3,4-diglycosyl pyrrole (AFGP), 5-hydroxymethyl-1-alkylpyrrole-2-carbaldehyde(pyrraline) and pentosidine; and
  comparing the level of advanced glycosylated hemoglobin to a level in said mammal obtained at an earlier time, wherein an increase indicates an increase in blood sugar, and a decrease indicates a decrease in blood sugar.

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5,712,102

METHOD OF SCREENING COMPOUNDS WHICH INHIBIT P. GINGIVALIS LIPOPOLYSACCHARIDE FROM INHIBITING THE EXTRAVASATION OF LEUKOCYTES

Richard P. Darveau, Kirkland, Wash., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 337,614, Nov. 10, 1994, which is a continuation-in-part of Ser. No. 150,635, Nov. 10, 1993, abandoned. This application May 30, 1995, Ser. No. 453,191

Int. Cl.^{6} G01N *33/554;33/569*

U.S. Cl. 435—7.32 **6 Claims**

1. A method for screening compounds which inhibit the ability of *P. gingivalis* lipopolysaccharide to inhibit the extravasation of leukocytes from the vascular endothelium to gingival tissues, comprising

contacting cells which are capable of expressing a selectin molecule with *P. gingivalis* lipopolysaccharide in the presence and absence of the compound being screened for the ability to inhibit *P. gingivalis* lipopolysaccharide-induced inhibition of selectin expression;

stimulating expression of the selectin molecule by the cells; and

measuring the expression of the selectin molecule by the cells in the presence or absence of said compound and therefrom determining the ability of said compound to inhibit *P. gingivalis* lipopolysaccharide-induced inhibition of selectin expression.

5,712,103

DIAGNOSTIC ASSAY FOR THE PREDICTION OF PREECLAMPSIA

John Leavitt, Palo Alto; Robert N. Taylor, San Francisco; Madhu Varma, Mountain View, and Simon Shorter, Los Gatos, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Feb. 13, 1995, Ser. No. 388,251

Int. Cl.^{6} G01N *33/53;33/537;33/543*

U.S. Cl. 435—7.92 **22 Claims**

1. A diagnostic immunoassay for the prediction of preeclampsia, said assay comprising the steps of:

(a) collecting a plasma sample from a pregnant female human during the second trimester of pregnancy; and

(b) detecting the concentration of Insulin-like Growth Factor Binding Protein-1 (IGFBP-1) in said sample by an immunological means;

wherein a reduced concentration of IGFBP-1 in said sample, as compared to the IGFBP-1 concentration in a plasma sample from a healthy pregnant women at the same gestational stage, is predictive of preeclampsia.

5,712,104

DIAGNOSTIC AND PROGNOSTIC ELISA ASSAYS OF SERUM OR PLASMA α-N-ACETYLGALACTOSAMINIDASE FOR CANCER

Nobuto Yamamoto, 1040 66th Ave., Philadelphia, Pa. 19126

Continuation-in-part of Ser. No. 478,121, Jun. 7, 1995, Pat. No. 5,620,846, and Ser. No. 618,485, Mar. 19, 1996. This application Jan. 6, 1997, Ser. No. 779,729

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 435—7.92 **2 Claims**

1. A method for detecting α-N-acetylgalactosaminidase in plasma or serum to screen for cancer comprising the steps of:

(a) providing polyclonal or monoclonal antibodies against α-N-acetylgalactosaminidase;

(b) providing a microtiter plate coated with the antibodies;

(c) adding the serum or plasma to the microtiter plate;

(d) providing alkaline phosphatase-antibody conjugates reactive with α-N-acetylgalactosaminidase to the microtiter plate;

(e) providing p-nitrophenyl-phosphate to the microtiter plate; and

(f) comparing the reaction which occurs as a result of steps (a) to (e) with a standard curve to determine the level of α-N-acetylgalactosaminidase compared to a normal individual.

5,712,105

MONOCLONAL ANTIBODY TO HUMAN GLICENTIN, HYBRIDOMA FOR PRODUCING SAID ANTIBODY AND ASSAY METHOD FOR HUMAN GLICENTIN USING SAID ANTIBODY

Noboru Yanaihara, Fujinomiya; Takeya Sato, Saitama-ken, and Kiyoshi Fukuchi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 548,152

Claims priority, application Japan, Oct. 31, 1994, 6-266567; Jul. 21, 1995, 7-185272

Int. Cl.^{6} G01N *33/53;33/537;33/543;* **C07K** *16/00*

U.S. Cl. 435—7.94 **7 Claims**

3. A method for detecting human glicentin in a sample comprising the steps of;

(a) providing a sample containing human glicentin;

(b) providing a first antibody and a second antibody, wherein the first antibody or the second antibody is a monoclonal antibody produced by the hybridoma having Accession No. BP-5214;

(c) attaching the first antibody to a support, thereby immobilizing the first antibody;

(d) contacting the sample with the first antibody, thereby forming a first immunological complex including human glicentin and the first antibody;

(e) contacting the first immunological complex with the second antibody, thereby forming a second immunological complex including human glicentin, the first antibody, and the second antibody; and

(f) detecting human glicentin in the second immunological complex.

5,712,106

PROCESS FOR THE PRODUCTION OF SUBSTITUTED THIAZOLIN-DIOXETAN SUBSTRATES AND USE THEREOF

Rupert Herrmann; Hans-Peter Josel; Christian Klein, all of Weilheim, and Dieter Heindl, München, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

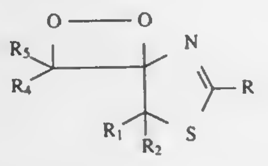
Division of Ser. No. 150,188, Nov. 30, 1993, Pat. No. 5,455,357. This application May 25, 1995, Ser. No. 450,211

Claims priority, application Germany, Jan. 4, 1992, 42 10 759.8

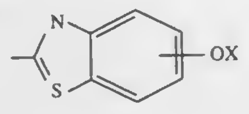
Int. Cl.^{6} C12Q *1/66*

U.S. Cl. 435—8 **3 Claims**

1. A method for the determination of an analyte selected from the group consisting of an acid, base, salt, enzyme, inorganic or organic catalyst and electron donor comprising reacting the analyte with a compound of formula III,



in which R represents



or

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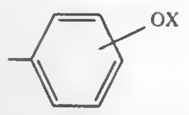


and in which R_1 and R_2 are the same or different and represent hydrogen or lower alkyl C_1-C_6 which is straight-chained or branched, X is a cleavable group and at least one of the groups R_4 or R_5 represents a group stabilizing the dioxetan structure selected from the group consisting of adamanyl, phenyl, cyclohexyl and a secondary or tertiary alkyl residue or at most one of the groups R_4 or R_5 represents hydrogen; and cleaving the group X and measuring the emitted light as a measure for the content of the analyte to be determined.

5,712,107

SUBSTITUTES FOR MODIFIED STARCH AND LATEXES IN PAPER MANUFACTURE

Scott Edward Nichols, Johnston, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jun. 7, 1995, Ser. No. 485,243

Int. Cl.^{6} C12Q *1/48;1/00;1/34;* **C07H** *1/00*

U.S. Cl. 435—15 **20 Claims**

1. A method of manufacturing paper comprising adding a glucan isolated from a host transformed with a gene encoding a glucosyltransferase C (GTFC) obtained from *Streptococcus mutans*, to one or more of the steps of (A) wet ending, (B) sizing, and (C) coating in paper manufacturing wherein modified starch is used.

5,712,108

PEPTIDOGLYCAN BIOSYNTHETIC MURE PROTEIN FROM STREPTOCUCCUS PNEUMONIAE

Robert Brown Peery, Brownsburg, and Paul Luther Skatrud, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 29, 1996, Ser. No. 655,114

Int. Cl.^{6} C12N *9/00*

U.S. Cl. 435—15 **5 Claims**

1. A substantially pure MurE protein from *Streptococcus pneumoniae* having the amino acid sequence which is SEQ ID NO:2.

5,712,109

ANTIFUNGAL AGENT PRODUCED BY *ARTHRINIUM ARUNDINIS* ATCC 74359

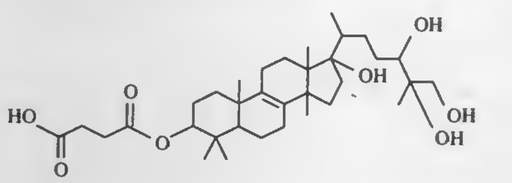
Jerrold M. Liesch, Princeton Junction; Maria S. Meinz, Fair Haven; Janet C. Onishi, Westfield; Robert E. Schwartz, Scotch Plains; Gerald F. Bills, Clark; Robert A. Giacobbe, Lavallette; Deborah L. Zink, Manalapan, all of N.J.; Angeles Cabello, Madrid, Spain; Maria T. Diez, Madrid, Spain; Isabella Martin, Madrid, Spain; Fernando Pelaez, Madrid, Spain, and Francisca Vicente, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 27, 1997, Ser. No. 789,348

Int. Cl.^{6} C12P *33/00;* **C12N** *1/14;* **A61K** *31/56;* **C07J** *9/00*

U.S. Cl. 435—52 **6 Claims**

1. A compound having the structure:



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5,712,110

ASTAXANTHIN-PRODUCING YEAST CELLS METHODS FOR THEIR PREPARATION AND THEIR USE

Bent Flenø , Stenløsé; Ib Christensen, Allerød; Robert Larsen, Virum; Steffen Radich Johansen, Ega, all of Denmark, and Eric A. Johnson, Madison, Wis., assignors to Gist-brocades, B.V., Netherlands

Division of Ser. No. 322,690, Oct. 13, 1994, which is a division of Ser. No. 919,986, Jul. 27, 1992, Pat. No. 5,356,810, which is a continuation of Ser. No. 424,306, Dec. 11, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 484,683

Claims priority, application Denmark, Apr. 15, 1987, 1998/87

Int. Cl.^{6} C12P *23/00;* **C12N** *1/16*

U.S. Cl. 435—67 **12 Claims**

1. A method for producing a biomass of astaxanthin-containing cells containing astaxanthin in an amount of at least 600 μg per g of *Phaffia rhodozyma* dry matter, comprising:

(a) cultivating, under aerobic conditions, cells of a strain of *Phaffia rhodozyma* in a medium containing a carbohydrate source, an assimilable nitrogen source, an assimilable phosphorous source, micronutrients and biotin or desthiobiotin at a temperature in the range of 15°–26° C.;

(b) cultivating the cells in a subsequent phase characterized by growth-limiting conditions wherein the growth medium is continuously aerated and is deprived of at least one growth factor, so as to increase the production of astaxanthin; and

(c) harvesting the cells, so as to obtain a biomass containing astaxanthin in an amount of at least 600 μg per g of *Phaffia rhodozyma* dry matter.

5,712,111

DNA ENCODING BRADYKININ B1 RECEPTOR

David L. Linemeyer; John W. Hess; Joseph A. Borkowski, all of Westfield; Kathleen K. Bierilo, Matawan, and John G. Menke, Morganville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 15, 1994, Ser. No. 229,418

Int. Cl.^{6} C12N *15/12;5/10*

U.S. Cl. 435—69.1 **8 Claims**

1. A purified DNA molecule encoding a human bradykinin B_1 receptor having the amino acid sequence of SEQ ID NO:2.

5,712,112

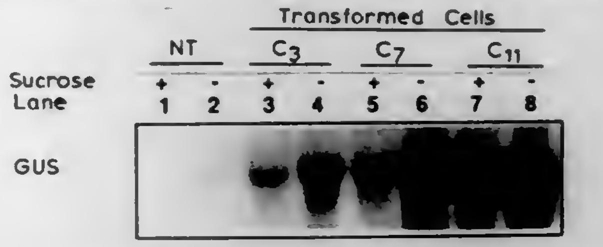
GENE EXPRESSION SYSTEM COMPRISING THE PROMOTER REGION OF THE ALPHA-AMYLASE GENES

Su May Yu; Li Fei Liu, and Ming Tsair Chan, all of Taipei, Taiwan, assignors to National Science Council of R.O.C., Taipei, Taiwan

Continuation of Ser. No. 973,324, Nov. 4, 1992, Pat. No. 5,460,952. This application Nov. 22, 1994, Ser. No. 343,380

Int. Cl.^{6} C12P *21/06;21/02;* **C12N** *5/00;15/00*

U.S. Cl. 435—69.1 **42 Claims**



1. A method for producing a gene product by expressing a gene encoding said gene product in angiosperm host cells, comprising:

a) constructing a vector expressible in angiosperm host cells, said vector comprising a promoter region derived from an α-amylase gene of a plant, and a gene encoding a desired gene product;

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b) transforming a compatible angiosperm host cell with said vector;
c) cultivating the resultant transformant host cell;
d) subjecting said cultivated transformant host cell to a sugar-depleted or sugar-free condition to promote the expression of said gene under the control of said promoter region; and
e) recovering the expressed gene product.

5,712,113

SIGNAL SEQUENCES FOR SECRETION OF HETEROLOGOUS PROTEINS FROM YEAST

Bong Hyun Chung; Soo Wan Nam, both of Daejeon; Byung Moon Kim, Chungju-si; Sun Ah Yang, Daegu, and Young Hoon Park, Daejeon, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Dec. 12, 1994, Ser. No. 353,751

Claims priority, application Rep. of Korea, Dec. 10, 1993, 1993-27269

Int. Cl.^{6} C12P *21/06;* **C12N** *1/19;15/81*

U.S. Cl. 435—69.1 8 Claims

1. A recombinant expression and secretion vector for *Saccharomyces cerevisiae* comprising: a polynucleotide encoding a secretion signal peptide which comprises the amino acid sequence of SEQ ID NO:1 or 2; a DNA sequence which promotes transcription in a *Saccharomyces cerevisiae* cell, located upstream from the polynucleotide encoding the secretion signal peptide; a DNA sequence encoding lipocortin-I or interleukin-2 operably linked to the polynucleotide encoding the secretion signal peptide; and a transcription terminator sequence located downstream from the DNA sequence encoding lipocortin-l or interleukin-2.

5,712,114

COMPOSITIONS FOR EXPRESSION OF PROTEINS IN HOST CELLS USING A PREPROCOLLAGEN SIGNAL SEQUENCE

John A. Mankovich, Andover; Linda Hammill, Townsend,, and Catherine R. Ferenz, Belchertown, all of Mass., assignors to BASF Aktiengesellschaft, Federal Republic of Germany, Germany

Filed Jun. 6, 1995, Ser. No. 466,265

Int. Cl.^{6} C12P *21/02;* **C07H** *21/04;* **C12N** *15/81;15/85*

U.S. Cl. 435—69.1 39 Claims

1. An isolated nucleic acid molecule comprising a first nucleotide sequence encoding a preprocollagen signal sequence operatively linked to a second nucleotide sequence encoding a heterologous protein of interest.

5,712,115

HUMAN CELL DEATH-ASSOCIATED PROTEIN

Phillip R. Hawkins, Mountain View; Scott Michael Braxton, San Mateo, and Lynn E. Murry, Portola Valley, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Mar. 19, 1996, Ser. No. 618,164

Int. Cl.^{6} C07H *21/04;* **C12N** *15/00;15/63*

U.S. Cl. 435—69.1 5 Claims

1. A purified polynucleotide encoding a polypeptide consisting of the amino acid sequence shown in SEQ ID NO:2.

2. The polynucleotide of claim 1 wherein the nucleic acid sequence consists of SEQ ID NO:1, or its complement.

5,712,116

METHOD FOR ISOLATING CYTOKINES AND OTHER SECRETED PROTEINS

Kenneth Jacobs, Newton, Mass., assignor to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 328,962, Oct. 24, 1994, Pat. No. 5,536,637, which is a continuation of Ser. No. 45,467, Apr. 7, 1993, abandoned. This application Apr. 24, 1996, Ser. No. 639,052

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—69.1 6 Claims

1. A method for screening for a cDNA encoding a secreted protein which comprises:
a) constructing a cDNA library from cellular messenger RNA;
b) ligating said cDNA library to a DNA encoding a nonsecreted yeast invertase from which the secretory leader sequence and initiating methionine have been deleted;
c) transforming the DNA of step b) into a yeast cell which does not contain an invertase gene;
d) selecting transformed yeast cells from step c) which are capable of growth on sucrose or raffinose;
e) purifying DNA from the yeast cells of step d);
f) analyzing the DNA obtained from step e) to determine its sequence;
g) preparing a second cDNA library from cellular messenger RNA and screening said second cDNA library to detect full-length cDNAs which contain the sequence of step f); and
h) isolating the full-length cDNA of step g) wherein the isolated cDNA encodes a putative secreted protein.

5,712,117

CYTOPLASMIC ANTIPROTEINASE-2 AND CODING SEQUENCES

Cindy A. Sprecher, Seattle, Wash., assignor to Zymogenetics, Inc., Seattle, Wash.

Filed Feb. 8, 1995, Ser. No. 385,500

Int. Cl.^{6} C12N *5/10;15/15;15/63;21/02*

U.S. Cl. 435—69.2 12 Claims

1. An isolated nucleic acid molecule encoding a mammalian CAP-2 protein wherein said protein is at least 80% identical to the amino acid sequence depicted in Seq. ID No. 2, and inhibits serine protease activity.

5,712,118

VACCINE FOR BRANHAMELLA CATARRHALIS

Timothy F. Murphy, East Amherst, N.Y., assignor to Research Foundation of State University of New York, Amherst, N.Y.

Continuation-in-part of Ser. No. 129,719, Sep. 29, 1993, Pat. No. 5,556,755. This application Sep. 20, 1994, Ser. No. 306,871

Int. Cl.^{6} C12N *15/00;7/00;* **C07K** *1/00;* **C07H** *19/00*

U.S. Cl. 435—69.3 9 Claims

1. A recombinant vector comprising a DNA sequence encoding one or more antigenic epitopes of CD, wherein CD is an outer membrane protein of *Branhamella catarrhalis* having an apparent molecular mass determined by polyacrylamide gel electrophoresis of about 55,000 to 60,000 daltons and comprises an amino acid sequence shown in SEQ ID NO. 14.

5,712,119

METHODS AND COMPOSITIONS FOR HIGH PROTEIN PRODUCTION FORM RECOMBINANT DNA

Hermann Oppermann, Medway; Haimanti Dorai, Lexington, and Paul Kaplan, Auburndale, all of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Continuation of Ser. No. 461,666, Jun. 5, 1995, Pat. No. 5,614,385, which is a division of Ser. No. 143,497, Oct. 25, 1993, Pat. No. 5,585,237. This application Nov. 27, 1996, Ser. No. 757,300

Int. Cl.^{6} C12P *21/02;* **C12N** *5/10;15/64*

U.S. Cl. 435—69.4 71 Claims

1. An immortalized eukaryotic cell for the enhanced expression of a recombinant gene of interest, said cell comprising transfected DNA sequences operatively integrated into its genome, said transfected DNA sequences encoding:
(a) a viral transcription promoter operatively associated with a DNA sequence defining a gene of interest, said viral transcription promoter being stimulated by a viral transcription activator protein which acts on and induces transcription of said DNA sequence defining said gene of interest to produce an RNA transcript of interest;
(b) a transcription activator protein that acts on and stimulates said transcription promoter, wherein the transfected DNA sequence encoding said viral transcription activator protein is operatively associated with, and under the control of, a DNA sequence defining a transcription promoter sequence which induces transcription of said viral transcription activator protein DNA sequence, said transcription promoter DNA sequence not requiring limitation of transcription; and,
(c) an RNA sequence operative to promote translation of an RNA transcript.

5,712,120

METHOD FOR OBTAINING MODIFIED IMMUNOGLOBULINS WITH REDUCED IMMUNOGENICITY OF MURINE ANTIBODY VARIABLE DOMAINS, COMPOSITIONS CONTAINING THEM

Rolando Perez Rodriguez, Vibora; Christina Maria Mateo de Acosta del Rio, Vedado, and Josefa Lombardero Valladares, Vibora, all of Cuba, assignors to Centro De Immunologia Molecular, Havana, Cuba

Filed Jun. 30, 1995, Ser. No. 497,312

Claims priority, application Cuba, Jun. 30, 1994, 80/94

Int. Cl.^{6} C12N *15/13;* **C07K** *16/00;* **C07H** *21/04;* **A61K** *39/395*

U.S. Cl. 435—69.6 4 Claims

1. A method of modifying an antibody comprising:
comparing the framework amino acids of a variable domain of a first mammalian species with a group of framework amino acid residue variable domains of a second mammalian species;
determining a subgroup of the second mammalian species to which the first mammalian species most closely corresponds;
selecting the antibody from said subgroup whose framework is most similar to the first mammalian species' framework sequence;
identifying amino acid residues of the first mammalian species which differ from the amino acid residues of the selected second mammalian species framework and which are within T-cell antigenic sequences, with said amino acid residues being with T-cell antigenic sequences in the variable region of the immunoglobulins;
identifying only those amino acid residues which are not within a complementarity region or are not directly involved with canonical structures or Vernier zone; and
replacing the amino acid residues in the first mammalian species framework which differ from the amino acid residues of the second mammalian species with the corresponding amino acid residues from the most similar second mammalian species thus identified; and
obtaining the modified antibody.

5,712,121

CHIMERIC INTERLEUKIN 5-RECEPTOR/ IMMUNOGLOBULIN POLYPEPTIDES

Rene Devos, Oostende; Walter Fiers, Destelbergen; Jose van der Heyden, Munte; Geert Plaetinck, Destelbergen, and Jan Tavernier, Balegem, all of Belgium, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 947,130, Sep. 16, 1992, Pat. No. 5,455,337. This application Apr. 13, 1995, Ser. No. 421,823

Claims priority, application European Pat. Off., Sep. 18, 1991, 91.810738.4

Int. Cl.^{6} C07K *14/00;* **C12N** *5/10;15/11;15/64*

U.S. Cl. 435—69.7 27 Claims

1. An isolated DNA molecule comprising:
(a) a first DNA subsequence encoding SEQ ID NO:2; and
(b) a second DNA subsequence selected from the group consisting of:
  (i) a DNA subsequence encoding a constant domain of a heavy chain of a human immunoglobulin, and
  (ii) a DNA subsequence encoding a constant domain of a light chain of a human immunoglobulin.

5,712,122

CARBOXY TERMINAL PEPTIDE-EXTENDED PROTEINS

Irving Boime; Martin M. Matzuk, and Jeffrey L. Keene, all of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Division of Ser. No. 239,256, May 6, 1994, Pat. No. 5,585,345, which is a division of Ser. No. 950,801, Sep. 24, 1992, Pat. No. 5,338,835, which is a division of Ser. No. 532,254, Jun. 1, 1990, Pat. No. 5,177,193, which is a continuation-in-part of Ser. No. 313,646, Feb. 21, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 483,023

Int. Cl.^{6} A61K *38/17;* **C07K** *14/435;* **C12N** *5/10;15/12*

U.S. Cl. 435—69.7 9 Claims

1. A modified protein which retains the biological activity of the parent protein, wherein said modified protein comprises an extension of the carboxy terminus of said parent protein with an amino acid sequence of the carboxy terminal portion of human CG beta subunit (CTP) which consists of the amino acid sequence from amino acid 112–118 to position 145 of human CG, or a variant thereof wherein said variant differs from said CTP by 1–5 conservative amino acid substitutions.

5,712,123

MIXTURE HAVING ANTITUMOR ACTIVITIES

Melvin E. Klegerman, Chicago; Michael J. Groves, Deerfield, and Ronghua Wang, Hinsdale, all of Ill., assignors to Board of Trustees of The University of Illinois, Urbana, Ill.

Continuation of Ser. No. 319,515, Oct. 7, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,002

Int. Cl.^{6} C12P *19/00;* **A61K** *39/02;39/04;* **C12N** *1/00*

U.S. Cl. 435—72 6 Claims

1. A polymer extract having antitumor activity obtained from *Mycobacterium bovis* BCG (TICE substrain) comprising a plurality of α-D-glucopyranosyl-(1–6)-α-D-glucopyranose units and at least one α-D-glucopyranosyl-(1–4)-α-D-glucopyranose unit wherein the polymer has a molecular weight of from between 65 and 87 kDa.

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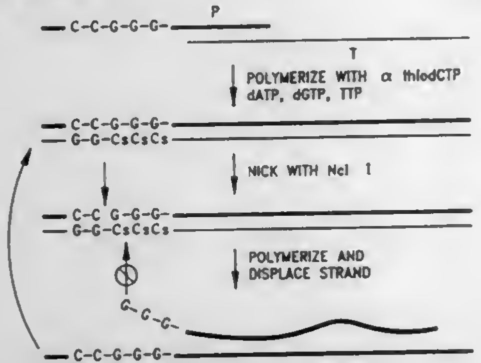
5,712,124
STRAND DISPLACEMENT AMPLIFICATION

George Terrance Walker, Chapel Hill, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 819,358, Jan. 9, 1992, Pat. No. 5,455,166, which is a continuation-in-part of Ser. No. 648,257, Jan. 31, 1991, abandoned. This application Jan. 18, 1995, Ser. No. 375,133

Int. Cl.^{6} C12P *19/34*

U.S. Cl. 435—91.2 **23 Claims**



1. A method for amplifying a target nucleic acid sequence comprising:

a) providing a single stranded nucleic acid fragment containing the target nucleic acid sequence, the fragment having a 5' end and a 3' end;

b) binding an oligonucleotide primer to the 3' end of the fragment such that the primer forms a 5' single stranded overhang, the primer comprising a 3' end complementary to the 3' end of the fragment and a 5' end comprising a recognition sequence for a restriction endonuclease which does not cut the target nucleic acid sequence;

c) extending the primer on the fragment in the presence of

i) a DNA polymerase lacking 5'-3' exonuclease activity,

ii) deoxynucleoside triphosphates,

iii) at least one substituted deoxynucleoside triphosphate, and

iv) a restriction endonuclease which nicks the recognition sequence when the recognition sequence is double stranded and hemimodified by incorporation of the substituted deoxynucleoside triphosphate,

thereby producing a double stranded first reaction product comprising the primer, a first newly synthesized strand and a hemimodified restriction endonuclease recognition sequence;

d) nicking the double stranded hemimodified restriction endonuclease recognition sequence with the restriction endonuclease;

e) extending from the nick using the polymerase, thereby displacing the first newly synthesized strand from the first reaction product and generating a second newly synthesized strand, and;

f) repeating the nicking, extending and displacing steps such that the target sequence is amplified.

5,712,125
COMPETITIVE PCR FOR QUANTITATION OF DNA

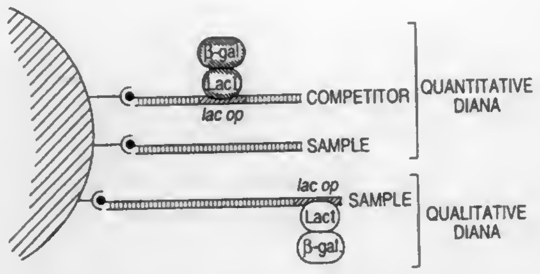
Mathias Uhlen, Uppsala, Sweden, assignor to CEMV Bioteknik AB, Uppsala, Sweden

Continuation of Ser. No. 987,285, Mar. 16, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,519

Claims priority, application United Kingdom, Jul. 24, 1990, 9016163

Int. Cl.^{6} C12P *19/34*

U.S. Cl. 435—91.2 **16 Claims**



1. A method of determining the amount of target DNA in a sample comprising the steps of:

(a) providing a plurality of aliquots of the sample;

(b) adding to each aliquot a known amount of competitor DNA, thereby producing aliquots each containing a different ratio of target DNA to competitor DNA, wherein said competitor DNA is the same as the target DNA except that it comprises a recognition site for specific binding by a detector molecule, wherein said detector molecule is not a restriction enzyme and is directly or indirectly linked to a detectable label;

(c) co-amplifying the target DNA and competitor DNA in each aliquot by the polymerase chain reaction (PCR) using at least one primer which permits immobilization of the co-amplified target and competitor DNA, wherein the amplified competitor DNA contains said recognition site;

(d) binding said labeled detector molecule to the amplified competitor DNA, thereby producing labeled competitor DNA;

(e) before or after step (d), immobilizing the co-amplified target and competitor DNA via said PCR primer of step (c); and

(f) determining the amount of target DNA in the sample by determining the amount of label on the immobilized amplified competitor DNA in each aliquot and generating a titration curve therefrom, determining the inflection point of said titration curve, and using a standard curve to relate the amount of competitor DNA at the inflection point of said titration curve to the amount of target DNA in the sample.

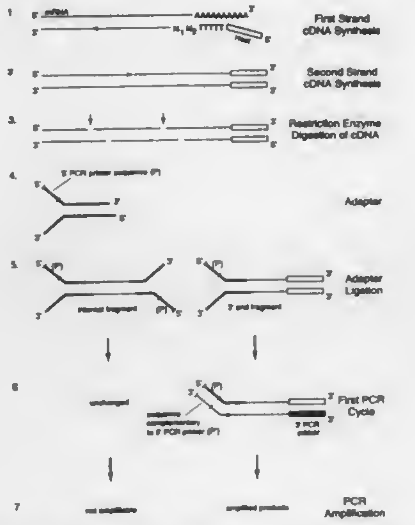
5,712,126
ANALYSIS OF GENE EXPRESSION BY DISPLAY OF 3-END RESTRICTION FRAGMENTS OF CDNA

Sherman M. Weissman, and Yatindra Prashar, both of New Haven, Conn., assignors to Yale University, New Haven, Conn.

Filed Aug. 1, 1995, Ser. No. 510,032

Int. Cl.^{6} C12P *19/34;* **C12Q** *1/68*

U.S. Cl. 435—91.2 **16 Claims**


First Strand cDNA Synthesis
Second Strand cDNA Synthesis
Restriction Enzyme Digestion of cDNA
Adapter
Adapter Ligation
First PCR Cycle
PCR Amplification

1. A method for selectively amplifying in a nucleic acid sample a DNA fragment having sequence complementary to a 3' end of an mRNA, comprising the steps of:

(a) contacting the mRNA with an oligonucleotide primer comprising a 5' sequence incapable of hybridizing to a polyA tail of the mRNA, and a 3' sequence that hybridzes to a portion of the polyA tail of the mRNA and at least one non-polyA nucleotide immediately upstream of the polyA tail;

(b) reverse transcribing the mRNA to produce a first strand cDNA that includes the oligonucleotide primer;

(c) synthesizing a second DNA strand complementary to the first strand cDNA to form a duplex;

(d) cleaving the duplex with at least one sequence-specific cleaving agent to provide a number of duplex cleavage fragments;

(e) ligating an adapter to the cleavage fragments, the adapter consisting of two partially hybridized nucleic acid strands, wherein portions of the two strands are non-complementary to each other and portions of the two strands are complementary to each other; and

(f) amplifying the ligated cleavage fragments using a first primer whose sequence comprises at least a portion of the 5' sequence of the oligonucleotide primer of step (a) and a second primer whose sequence comprises at least a portion of the sequence of one strand of the adaptor in the non-complementary portion, thereby selectively amplifying a DNA fragment comprising sequence complementary to a 3' end of an mRNA.

5,712,127
SUBTRACTIVE AMPLIFICATION

Lawrence T. Malek, Brampton, and Roy R. Sooknanan, Toronto, both of Canada, assignors to Genescape Inc., Ontario, Canada

Filed Apr. 29, 1996, Ser. No. 639,763

Int. Cl.^{6} C12P *19/34;* **C12Q** *1/68*

U.S. Cl. 435—91.21 **27 Claims**

1. A subtractive amplification method for preferentially amplifying target RNA relative to non-target RNA in a sample of tester RNA, the method comprising;

a) contacting a sample of tester RNA with driver nucleic acids under hybridizing conditions, wherein tester RNA which hybridizes to driver nucleic acids is non-target RNA and is inhibited by the hybridized driver nucleic acids from functioning as a template for reverse transcription, and wherein tester RNA which does not hybridize to driver nucleic acids comprises target RNA;

b) reverse transcribing the target RNA using a first primer to form a DNA template complementary to at least a portion of the target RNA;

c) forming an extended DNA template comprising an RNA polymerase promoter sequence by extending the 3' end of the DNA template using a hybridized promoter template; and

d) transcribing the extended DNA template formed in step c) to form synthetic target RNA.

5,712,128
ENZYMATIC RNA MOLECULES

Michael D. Been; Sarah P. Rosenstein, both of Durham, and Anne T. Perrotta, Garner, all of N.C., assignors to Duke University, Durham, N.C.

Division of Ser. No. 238,963, May 5, 1994, which is a continuation of Ser. No. 821,155, Jan. 13, 1992, abandoned. This application May 3, 1995, Ser. No. 434,453

Int. Cl.^{6} C12P *19/34;* **A61K** *48/00;* **C12N** *15/11;* **C07H** *21/04*

U.S. Cl. 435—91.31 **5 Claims**

2. A method for forming a circular ribonucleic acid lacking the ability to interconvert between linear and circular forms comprising the steps of:

incubating a self-cleaving and self-ligating ribonucleic acid molecule which forms said circular ribonucleic acid under self-cleaving and self-ligating conditions thereby generating said circular ribonucleic acid molecule.

5,712,129
RAPAMYCIN DERIVATIVE WITH ANTIMICROBIAL, ANTICANCER AND IMMUNOMODULATION ACTIVITY

Brian Douglas Ford, Forest Green, England, assignor to SmithKline Beecham p. l. c., Brentford, England

PCT No. PCT/GB94/01600, § 371 Date Jan. 31, 1996, § 102(e) Date Jan. 31, 1996, PCT Pub. No. WO95/04060, PCT Pub. Date Feb. 9, 1995

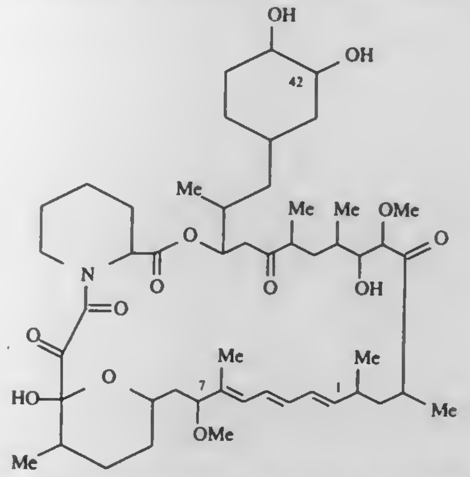
PCT Filed Jul. 25, 1994, Ser. No. 591,457

Claims priority, application United Kingdom, Jul. 31, 1993, 9315914

Int. Cl.^{6} C12P *17/18;* **C12R** *1/465;* **A61K** *31/455;* **C07D** *498/18*

U.S. Cl. 435—118 **4 Claims**

1. A process for the production of a compound of formula (I):



(I)

which is 42-O-demethylrapamycin, or pharmaceutically acceptable salt thereof, which comprises contacting a microorganism which belongs to the genus Streptomyces with rapamycin and subsequently isolating said 42-O-demethylrapamycin, or a pharmaceutically acceptable salt thereof, from the incubation.

4. Streptomyces NCIMB 40515.

5,712,130
PROCESS FOR THE ISOLATION OF LOVASTATIN

Pavica Hajko; Tanja Vesel; Ivan Radež , and Miroslav Pokorny, all of Novo mesto, Slovenia, assignors to KRKA tovarna zdravil, p.o, Novo mesto, Slovenia

PCT No. PCT/SI94/00010, § 371 Date Jun. 17, 1996, § 102(e) Date Jun. 17, 1996, PCT Pub. No. WO94/29292, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 8, 1994, Ser. No. 591,669

Claims priority, application Slovenia, Jun. 8, 1993, 9300303

Int. Cl.^{6} C12P *17/02:17/06:17/00*

U.S. Cl. 435—123 **5 Claims**

1. A process for isolating lovastatin from a fermentation broth, mycelium or filtrate of a microorganism which produces lovastatin which comprises extracting lovastatin with butyl acetate to thereby obtain a solution of lovastatin in butyl acetate; concentrating said solution of lovastatin in butyl acetate under reduced pressure and at a temperature above 40° C.; and permitting the lovastatin to crystallize.

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5,712,131

RECOVERY OF ORGANIC ACID FROM AN IMPURE PROCESS STREAM BY ADDITION OF STRONG ACID OR SALT THEREOF

Steven W. Felman, Granger, Ind.; Chetna Patel, Naperville, Ill.; Bhalchandra H. Patwardhan, Granger, and David J. Solow, Elkhart, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Continuation-in-part of Ser. No. 88,219, Jul. 6, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,140

Int. Cl.^{6} C12P *7/40;7/48*

U.S. Cl. 435—136 **7 Claims**

1. A process for the recovery of an organic acid from an impure process stream, said process consisting essentially of:
   a. adding a strong acid or salt thereof to the impure process stream;
   b. concentrating the resulting impure process stream to produce a concentrated solution; and
   c. recovering organic acid crystals from the concentrated solution.

5,712,132

METHOD FOR THE ENZYMATIC PREPARATION OF AROMATIC SUBSTANCES

Jean Mane, Grasse, and Joseph Zucca, Antibes, both of France, assignors to V. Mane Fils S.A., Bar-Sur-Loup, France

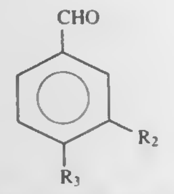
Continuation of Ser. No. 211,036, Mar. 17, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 574,786

Claims priority, application France, Jul. 24, 1992, 92 09174

Int. Cl.^{6} C12P *7/42;* **C12N** *9/02*

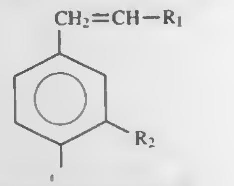
U.S. Cl. 435—147 **20 Claims**

1. Method for the preparation of aromatic substances having formula I:



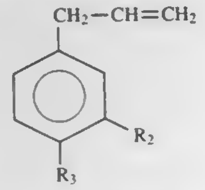
I

wherein a substrate selected from the group consisting of eugenol, estragol, chavicol, safrole, compounds having the formula II:



II

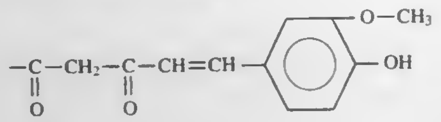
and compounds having the formula III:



III

in which

R_2 is a radical selected from the group consisting of —CH_3, —CH_2OH, —CHO, —COOH, or



R_2 is a radical selected from the group consisting of —H, —OH, or —O—CH_3,

R_3 is a radical selected from the group consisting of —H, —OH, or —O—CH_3,

with the proviso that when R_2 and R_3 represent together —OH, then R_1 does not represent —COOH.

or R_2 and R_3 form a methylenedioxy bridge, is reacted with a lipoxygenase, and the aromatic substances having formula I are recovered, and wherein said lipoxygenase is used in purified form in an amount of 1 to 500 mg per gram of substrate or in unpurified form in an amount of 0.01 to 50 g per gram of substrate.

5,712,133

PENTUSE FERMENTATION BY RECOMBINANT ZYMOMONAS

Stephen K. Picataggio, Golden; Min Zhang, Lakewood, both of Colo.; Christina K. Eddy, Saratoga Springs, N.Y.; Kristine A. Deanda, Conifer, Colo.; Mark Finkelstein, Fort Collins, Colo.; Ali Mohagheghi, Northglenn, Colo.; Mildred M. Newman, Littleton, Colo., and James D. McMillan, Boulder, Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 228,303, Apr. 15, 1994, Pat. No. 5,514,583. This application Apr. 14, 1995, Ser. No. 422,424

Int. Cl.^{6} C12P *7/06;* **C12N** *1/21;15/74*

U.S. Cl. 435—161 **10 Claims**

1. A process for producing ethanol comprising: providing a feedstock containing arabinose, adding the microorganism *Zymomonas mobilis* to the feedstock, said microorganism containing exogenous genes that encode L-arabinose isomerase, L-ribulokinase and L-ribulose- 5-phosphate-4-epimerase, transaldolase and transketolase which impart arabinose to ethanol fermentation capability and wherein said microorganism without said genes is incapable of fermenting said arabinose to ethanol,

allowing the microorganism to ferment the arabinose in the feedstock to ethanol, and separating the ethanol.

5,712,134

METHOD OF PRODUCING A CELL CARRYING AN EXCESS OF MAMMALIAN CENTROMERES

Gyula Hadlaczky, Szamos, Hungary, assignor to The Biological Research Center of the Hungarian Academy of Sciences, Hungary

Continuation of Ser. No. 80,097, Jun. 23, 1993, abandoned, which is a continuation of Ser. No. 892,487, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 521,073, May 9, 1990, abandoned. This application Jan. 19, 1995, Ser. No. 375,271

Int. Cl.^{6} C12N *15/09*

U.S. Cl. 435—172.2 **11 Claims**

1. A method of producing a mammalian cell containing an excess of functional centromeres, comprising:
   (a) cotransfecting cells with a DNA fragment comprising human DNA and a DNA fragment encoding a dominant selectable marker, wherein the cotransfected human DNA fragment comprises CM8,
   (b) growing the cells and selecting cells that express the dominant selectable marker;
   (c) detecting among the cells that express the dominant selectable marker those cells with an excess of mammalian centromeres.

5,712,135

PROCESS FOR TRANSFORMING MONOCOTYLEDONOUS PLANTS

Kathleen D'Halluin, Mariakerke, and Elke Gobel, Gent, both of Belgium, assignors to Plant Genetic Systems, N.V., Gent, Belgium

Continuation of Ser. No. 64,121, Jun. 23, 1993. This application Jun. 7, 1995, Ser. No. 478,015

Claims priority, application European Pat. Off., Nov. 23, 1990, 90403332; Jul. 8, 1991, 91401888

Int. Cl.^{6} C12N *15/05;15/82;* **A01H** *4/00;5/00*

U.S. Cl. 435—172.3 **18 Claims**

1. A process for the stable integration of a DNA comprising a gene that is functional in a cell of a cereal plant wherein said DNA is integrated into the nuclear genome of a cereal plant, said process comprising:
   (a) providing a compact embryogenic callus of said cereal plant,
   (b) wounding said compact embryogenic callus by cutting said callus into pieces or treating said compact embryogenic callus with a cell wall degrading enzyme for a period of time so as not to cause a complete disruption of tissues and transferring said DNA into the nuclear genome of a cell in said compact embryogenic callus by means of electroporation to generate a transformed cell, and
   (c) regenerating a transformed cereal plant from said transformed cell.

5,712,136

ADENOVIRAL-MEDIATED CELL TARGETING COMMANDED BY THE ADENOVIRUS PENTON BASE PROTEIN

Thomas J. Wickham, Potomac; Imre Kovesdi, Rockville; Petrus W. Roelvink, Gaithersburg; Douglas E. Brough, Otney; Duncan L. McVey, Derwood, and Joseph T. Bruder, Frederick, all of Md., assignors to GenVec, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 303,162, Sep. 8, 1994, Pat. No. 5,559,099. This application Apr. 17, 1996, Ser. No. 634,060

Int. Cl.^{6} C12N *15/09;15/86;7/01;* **C07K** *14/075*

U.S. Cl. 435—172.3 **52 Claims**

1. A method of introducing an adenovirus into a cell in vitro, said cell comprising a particular cell surface binding site, which method comprises:
   (a) contacting said adenovirus with a bispecific molecule comprising (i) a first component that selectively binds a binding domain of the penton base protein of said adenovirus, and (ii) a second component that selectively binds said particular cell surface binding site, to form a complex of said adenovirus and said bispecific molecule, and
   (b) contacting said cell with said complex such that cell entry of said adenovirus is effected.

5,712,137

LAMINATE OF A CULTURE SUBSTRATE ON A CARRIER FOR PRODUCING AN APERTURED WOUND DRESSING

Yvonne Margaret Barlow, Sawston, and Stephen Michael Lang, Saffron Walden, both of United Kingdom, assignors to Smith & Nephew PLC, United Kingdom

Continuation of Ser. No. 191,057, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 752,659, Aug. 21, 1991, abandoned. This application May 8, 1995, Ser. No. 436,839

Claims priority, application United Kingdom, Mar. 5, 1991, 9004911

Int. Cl.^{6} C12N *11/08;5/00;* **A61F** *13/00*

U.S. Cl. 435—180 **14 Claims**

1. A laminate containing mammalian cells comprising a film substrate supported by a carrier layer, said carrier layer having a plurality of raised portions, and said substrate having a subconfluent layer of cultured mammalian cells anchored to a first surface thereof, said substrate comprising a continuous film of synthetic polymer material having a plurality of thin and thickened areas, said substrate being cast on the carrier layer and supported by the carrier layer, with said thin areas rupturing to form apertures on separation of said carrier layer from said substrate.

5,712,138

FRUCTOSYL AMINO ACID OXIDASE

Nobuo Kato, Kameoka; Yasuyoshi Sakai, Otsu; Yoshiki Tani, Kyoto; Toshikatsu Sakai, Kyoto, and Kaori Ishimaru, Kyoto, all of Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Filed Sep. 29, 1995, Ser. No. 536,190

Claims priority, application Japan, Oct. 5, 1994, 6-241556

Int. Cl.^{6} C12N *9/02*

U.S. Cl. 435—189 **3 Claims**

1. A fructosyl amino acid oxidase enzyme having the following physicochemical characteristics:
   a) it catalyzes the oxidation of an amadori compound in the presence of oxygen to generate α-ketoaldehyde, amine derivatives and hydrogen peroxide;
   b) it is active on fructosyl lysine and fructosyl valine, wherein the activity on fructosyl lysine is the same as or higher than the activity on fructosyl valine;
   c) it is stable in the pH range of about 4.0 to 13.0 with optimal activity at a pH of 8.5;
   d) it is stable in the temperature range of about 20° to 50° C. with optimal activity at a temperature of 30° to 35° C.;
   e) the molecular weight is about 106,000 daltons when estimated by gel filtration with Superdex 200 pg;
   f) a covalently-bound flavin adenine dinucleotide is required as a coenzyme for activity; and
   g) the isoelectric point of the enzyme is 6.8 as measured by disc electrofocussing.

5,712,139

PYRANOSE OXIDASE, PYRANOSE OXIDASE GENE, NOVEL RECOMBINANT DNA AND PROCESS FOR PRODUCING PYRANOSE OXIDASE

Ikuko Nishimura; Kimiharu Okada; Tomoyuki Minamihara; Genshiro Kawai; Yasuji Koyama, and Masaru Suzuki, all of Noda, Japan, assignors to Kikkoman Corporation, Noda, Japan

Division of Ser. No. 568,428, Dec. 6, 1995. This application Oct. 22, 1996, Ser. No. 734,925

Claims priority, application Japan, Dec. 7, 1994, 6-304086; May 24, 1995, 7-124835

Int. Cl.^{6} C12N *9/04*

U.S. Cl. 435—190 **6 Claims**

1. An isolated DNA sequence encoding a pyranose oxidase and having the sequence of SEQ ID NO:1.

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5,712,140

METHOD OF MANUFACTURING INTERCONNECTION STRUCTURE OF A SEMICONDUCTOR DEVICE

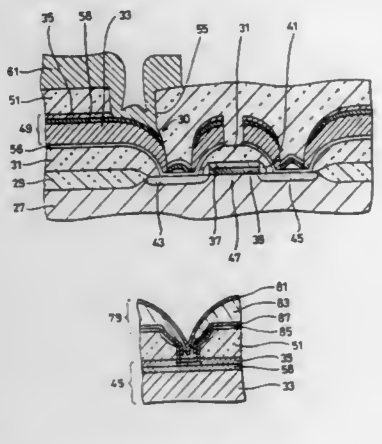
Atsushi Ishii; Yoshifumi Takata; Akihiko Ohsaki, and Kazuyoshi Maekawa, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 489,706, Jun. 13, 1995, abandoned, which is a continuation of Ser. No. 194,596, Feb. 10, 1994, abandoned, which is a division of Ser. No. 871,228, Apr. 20, 1992, Pat. No. 5,313,100. This application Mar. 25, 1997, Ser. No. 816,201

Claims priority, application Japan, Apr. 19, 1991, 3-097088; Nov. 7, 1991, 3-291296

Int. Cl.^{6} H01L *21/283*

U.S. Cl. 437—190 **7 Claims**



1. A method of manufacturing a semiconductor device comprising an interconnection structure having a first interconnection layer and a second interconnection layer connected by a through hole formed in an insulating layer, which method comprises:

- forming a first interconnection layer comprising, sequentially, a first conductive layer of aluminum or aluminum alloy, a second conductive layer of tungsten formed directly on the first conductive layer, and a third conductive layer of titanium nitride; wherein the etching speed of the second conductive layer is slower than that of the third conductive layer and the reflectivity of the third conductive layer is lower than that of the second conductive layer;
- forming the insulating layer on the first interconnection layer;
- etching the insulating layer to form the through hole;
- etching to remove the third conductive titanium nitride layer in the through hole;
- forming the second interconnection layer on the insulating layer contacting the second conductive layer of the first interconnection layer in the through hole.

5,712,141

Patent Not Issued For This Number

5,712,142

METHOD FOR INCREASING THERMOSTABILITY IN CELLULASE ENNZYMES

William S. Adney, Golden; Steven R. Thomas, Denver; John O. Baker, Golden; Michael E. Himmel, Littleton, and Yat-Chen Chou, Wheat Ridge, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 276,213, Jul. 15, 1994, Pat. No. 5,536,655, which is a continuation-in-part of Ser. No. 125,115, Sep. 21, 1993, Pat. No. 5,366,884, which is a continuation-in-part of Ser. No. 826,089, Jan. 27, 1992, Pat. No. 5,275,944, which is a continuation-in-part of Ser. No. 412,434, Sep. 26, 1989, Pat. No. 5,110,735. This application Feb. 22, 1996, Ser. No. 604,913

Int. Cl.^{6} C12N *9/42;1/20;* **C12P** *21/06;* **C17H** *21/04*

U.S. Cl. 435—209 **13 Claims**

1. A DNA having the nucleotide sequence of SEQ ID NO. 12.

5,712,143

FLEA PROTEASE PROTEINS, NUCLEIC ACID MOLECULES, AND USES THEREOF

Robert B. Grieve; Keith E. Rushlow; Shirley Wu Hunter, all of Ft. Collins, Colo.; Glenn R. Frank, Wellington, Colo., and Gary L. Stiegler, Ft. Collins, Colo., assignors to Heska Corporation, Ft. Collins, Colo.

Continuation-in-part of Ser. No. 326,773, Oct. 18, 1994, which is a continuation-in-part of Ser. No. 806,482, Dec. 13, 1991, Pat. No. 5,356,622. This application Jun. 7, 1995, Ser. No. 485,455

Int. Cl.^{6} C12N *9/48;* **C07K** *1/40;* **A61K** *39/00*

U.S. Cl. 435—212 **15 Claims**

1. An isolated and purified flea aminopeptidase protein that comprises an amino acid sequence encoded by a nucleic acid molecule that hybridizes under stringent hybridization conditions with a flea aminopeptidase gene comprising SEQ ID NO:50.

5,712,144

CLONED FACTOR C CDNA OF THE SINGAPORE HORSESHOE CRAB, *CARCINOSCORPIUS ROTUNDICAUDA* AND PURIFICATION OF FACTOR C PROENZYME

Jeak Ling Ding, and Bow Ho, both of Singapore, Singapore, assignors to National University of Singapore, Singapore

Division of Ser. No. 296,014, Aug. 19, 1994. This application Jun. 2, 1995, Ser. No. 460,521

Int. Cl.^{6} C12N *9/50*

U.S. Cl. 435—219 **9 Claims**

1. A method for maintaining Factor C in its zymogen form in a crude amoebocyte lysate, comprising 5–30% v/v lysing amoebocytes in a solution comprising 5–30% v/v dimethylsulfoxide and, optionally, a chelating agent.

5,712,145

HEPATITIS C VIRUS PROTEASE

Michael Houghton, Danville; Qui-Lim Choo, El Cerrito, and George Kuo, San Francisco, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 440,548, May 12, 1995, Pat. No. 5,597,691, which is a division of Ser. No. 350,884, Dec. 6, 1994, Pat. No. 5,885,258, which is a division of Ser. No. 680,296, Apr. 4, 1991, Pat. No. 5,371,017, which is a continuation-in-part of Ser. No. 505,433, Apr. 4, 1990, abandoned. This application Sep. 6, 1996, Ser. No. 709,173

Int. Cl.^{6} C12N *9/50;15/57;15/62;* **C12Q** *1/37*

U.S. Cl. 435—219 **10 Claims**

1. A composition comprising a purified proteolytic hepatitis C virus (HCV) polypeptide wherein said HCV polypeptide comprises the amino acid sequence set forth in SEQ ID NO:67.

5,712,146

RECOMBINANT COMBINATORIAL GENETIC LIBRARY FOR THE PRODUCTION OF NOVEL POLYKETIDES

Chaitan Khosla, Stanford, Calif.; David A. Hopwood, Norwich, England; Suzanne Ebert-Khosla, Stanford, Calif.; Robert McDaniel, Palo Alto, Calif.; Hong Fu, and Camilla Kao, both of Stanford, Calif., assignors to The Leland Stanford Junior University, Palo Alto, Calif.

Continuation-In-part of Ser. No. 238,811, May 6, 1994, which is a continuation-In-part of Ser. No. 164,301, Dec. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 123,732, Sep. 20, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,645

Int. Cl.^{6} C12N *1/20*

U.S. Cl. 435—252.35 **5 Claims**

1. A library for synthesis of a multiplicity of polyketides which library comprises

- a multiplicity of individual cell lines wherein each cell line produces a functional polyketide synthase (PKS) such that each said cell line produces a different polyketide;
- wherein each functional PKS comprises the products of: a first open reading frame (ORF) encoding a ketosynthase/acyltransferase (KS/AT); a second ORF encoding an acyl carrier protein (ACP); and a third ORF encoding a chain length determining factor (CLDF);
- wherein the ORFs in said library are derived from at least three different aromatic PKS.

5,712,147

DNA ENCODING *BACILLUS LICHENIFORMIS* PWD-1 KERATINASE

Jason C. H. Shih, Cary; Xiang Lin, and Eric S. Miller, both of Raleigh, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Continuation of Ser. No. 250,028, May 27, 1994, abandoned. This application Jul. 24, 1996, Ser. No. 685,774

Int. Cl.^{6} C12N *9/56;1/20;15/00;* **C07H** *21/04*

U.S. Cl. 435—222 **4 Claims**

1. An isolated DNA molecule encoding a keratinase, said isolated DNA having the DNA sequence of SEQ ID NO: 1.

5,712,148

DNA ENCODING A HUMAN BETAINE/GABA TRANSPORTER AND USES THEREOF

Laurence A. Borden, Hackensack; Kelli E. Smith, Wayne, both of N.J., and Richard L. Weinshank, New York, N.Y., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Continuation of Ser. No. 334,858, Nov. 4, 1994, abandoned, which is a continuation of Ser. No. 1,738, Jan. 4, 1993, abandoned. This application Oct. 17, 1995, Ser. No. 543,881

Int. Cl.^{6} C12N *5/00;1/14;15/00;* **C07H** *21/04*

U.S. Cl. 435—240.2 **14 Claims**

1. An isolated nucleic acid molecule encoding a human betaine/GABA transporter having the amino acid sequence shown in FIG. 1 (Seq. I.D. No. 2).

5,712,149

CHIMERIC RECEPTOR MOLECULES FOR DELIVERY OF CO-STIMULATORY SIGNALS

Margo R. Roberts, San Francisco, Calif., assignor to Cell Genesys, Inc., Foster City, Calif.

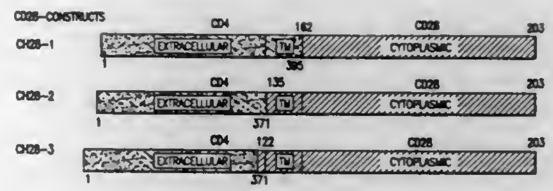
Filed Feb. 3, 1995, Ser. No. 383,749

Int. Cl.^{6} C07K *14/705;19/00;* **C12N** *15/62*

U.S. Cl. 435—252.3 **25 Claims**

1. A DNA encoding a chimeric membrane-bound protein, said protein comprising in the N-terminal to C-terminal direction:

- a signal sequence;
- an extracellular binding domain of a surface membrane or secreted protein that binds specifically to at least one ligand;
- a transmembrane domain; and
- a cytoplasmic domain of CD2 or CD28;
- wherein said extracellular domain is not obtained from CD2 or CD28, and when said DNA is placed in a selected host cell under conditions suitable for expression, said chimeric membrane-bound protein is expressed and co-stimulates effector function signaling in said host cell upon binding of a ligand to the extracellular domain.



5,712,150

NUCLEIC ACID SEQUENCE AND PLASMIDS COMPRISING AT LEAST ONE PHAGE RESISTENCE MECHANISM, BACTERIA CONTAINING THEM AND THEIR USE

Fabien Prevots, Toulouse; Sandrine Tolou, and Marléne Daloyau, both of Castanet, all of France, assignors to Systems Bio-Industries, Boulogne, France

Filed Aug. 16, 1996, Ser. No. 689,916

Claims priority, application France, Aug. 18, 1995, 95 09913

Int. Cl.^{6} C12N *1/21;15/31*

U.S. Cl. 435—252.3 **10 Claims**

1. A polynucleotide comprising at least one phage resistance mechanism, said polynucleotide selected from the group consisting of:

- (a) a DNA having the nucleic acid sequence of SEQ ID NO. 1;
- (b) a DNA having at least 70% homology with (a); and
- (c) the corresponding mRNA and cDNA polynucleotide of (a) or (b).

5,712,151

ANTIFUNGAL AGENT

Sandra A. Morris, Westfield; Gerald F. Bills, Clark; James E. Curotto, Morgan; Sarah J. Dreikorn, Scotch Plains, all of N.J.; Angela Basilio, Madrid, Spain; Maria Teresa Diez, Madrid, Spain; Fernando Pelaez, Madrid, Spain; Francisca Vicente, Madrid, Spain; Bruce W. Burgess, Passaic, N.J.; Stanley L. Streicher, Verona, N.J.; Deborah L. Zink, Manalapan, N.J., and John R. Thompson, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

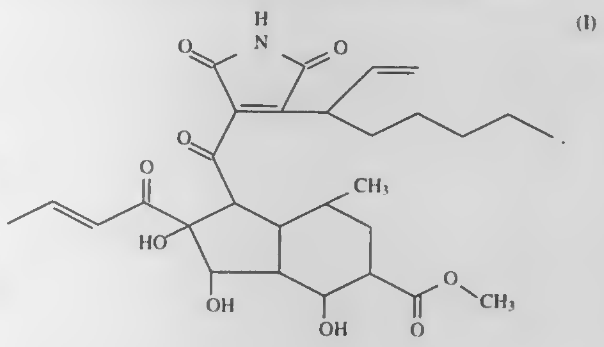
Filed Oct. 21, 1996, Ser. No. 734,702

Int. Cl.^{6} C12N *5/00;5/02*

U.S. Cl. 435—254.1 **7 Claims**

1. A substantially pure compound having the structure:

(I)



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5,712,152

YEAST STRAINS EXPRESSING THE LACTIC LACTICODESHYDROGENASE GENE AND VECTORS USEFUL IN PRODUCING SAID STRAINS

Sylvie Dequin, Montpellier, and Pierre Barre, Saint-Gely-Du-Fesc, both of France, assignors to Institut National de la Recherche Agronomique - I.N.R.A., Paris Cedex, France

PCT No. PCT/FR93/00618, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO94/00554, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 338,509

Claims priority, application France, Jun. 23, 1992, 92 07632

Int. Cl.^{6} C12N *1/19;15/31;15/81*

U.S. Cl. 435—254.21 **6 Claims**

1. A recombinant yeast strain for use in alcoholic fermentation and which comprises at least one copy of a gene coding for a lactic dehydrogenase (LDH) derived from a lactic acid bacterium, under the control of sequences regulating the expression of said gene in yeast.

5,712,153

DYE TRANSFER INHIBITION

Ture Damhus; Ole Kirk, both of Copenhagen; Gitte Pedersen, Frederiksberg C, all of Denmark; Manuel Garcia Venegas, Cincinnati, Ohio; Bjørn Eggert Christensen, Holte, and Palle Schneider, Ballerup, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 105,222, Aug. 11, 1993, Pat. No. 5,605,832, which is a division of Ser. No. 599,331, Oct. 17, 1990, Pat. No. 5,273,896, which is a continuation-in-part of Ser. No. 421,414, Oct. 13, 1989, abandoned. This application May 23, 1995, Ser. No. 448,209

Int. Cl.^{6} C12N *9/08;* **C07K** *7/00;* **D06M** *16/00*

U.S. Cl. 435—263 **1 Claim**

1. A process for bleaching a textile dye in a solution or dispersion, the process comprising incorporating an effective amount of an enzyme exhibiting oxidase activity on phenolic compounds into the solution or dispersion.

5,712,154

DUAL FIBER BIOREACTOR

Claudy Jean Paul Mullon, Framingham; Kerry Ann Gagnon, Danvers; Christine Marie Tosone, Walpole, all of Mass., and Hugo Osyaldo Jauregui, Providence, R.I., assignors to W.R. Grace & Co.-Conn., Boca Raton, Fla.

Filed Jun. 7, 1995, Ser. No. 488,185

Int. Cl.^{6} C12M *1/22*

U.S. Cl. 435—297.4 **15 Claims**

1. A cell culture unit comprising:

a. a shell having two ends and defining an elongated chamber there between;

b. a liquid and a gas perfusion port located on each of said end;

c. liquid perfusion fibers connected to said liquid perfusion ports and gas perfusion fibers

connected to said gas perfusion ports; said fibers defining extra-capillary and intracapillary space;

d. means communicating with the intracapillary space of said gas perfusion fibers;

e. means communicating with the intracapillary space of said liquid perfusion fibers; and

f. means communicating with said extracapillary space.

5,712,155

DNA ENCODING TUMOR NECROSIS FACTOR-α AND -β RECEPTORS

Craig A. Smith; Raymond G. Goodwin, both of Seattle, and M. Patricia Beckmann, Poulsbo, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 523,635, May 10, 1990, Pat. No. 5,395,760, which is a continuation-in-part of Ser. No. 421,417, Oct. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,370, Sep. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 403,241, Sep. 5, 1989, abandoned. This application Nov. 29, 1994, Ser. No. 346,555

The portion of the term of this patent subsequent to Mar. 7, 2012, has been disclaimed.

Int. Cl.^{6} C12N *15/12;15/63;* **C07K** *14/435;14/705*

U.S. Cl. 435—320.1 **17 Claims**

1. An isolated DNA sequence selected from the group consisting of:

(a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and

(b) a DNA sequence capable of hybridization to the complement of the DNA sequence of (a) under moderately stringent conditions (50° C., 2× SSC) and which encodes a polypeptide that is capable of binding to TNF and which is at least 88% identical to a polypeptide encoded by the DNA of (a).

5,712,156

ENHANCED IMPLANTATION, DEVELOPMENT AND MAINTENANCE OF EMBRYOS USING LEUKAEMIA INHIBITORY FACTOR

Richard Charles Fry, Altona North, and Ronald Allen Parr, Hoppers Crossing, both of Australia, assignors to Amrad Corporation Limited, Victoria, Australia

Continuation of Ser. No. 838,425, Apr. 16, 1992, Pat. No. 5,366,888. This application Aug. 17, 1994, Ser. No. 292,101

Claims priority, application Australia, Jul. 9, 1990, PK1064/90

Int. Cl.^{6} C12N *5/85;15/86;15/00*

U.S. Cl. 435—325 **12 Claims**

1. A method for maintaining one or more mammalian, avian, or fish embryos in an in vitro culture that permits normal morphological development of said embryos in vitro, the improvement comprising culturing said one or more mammalian, avian, or fish embryos in a medium containing an effective amount of leukemia inhibitory factor (LIF) for a sufficient time and under appropriate conditions to permit normal morphological development of said one or more embryos.

5,712,157

METHODS AND MATERIALS FOR THE IMMUNOASSAY OF APOLIPOPROTEIN(A) AND LIPOPROTEIN(A)

Santica M. Marcovina, and John J. Albers, both of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Filed Dec. 20, 1994, Ser. No. 360,234

Int. Cl.^{6} C07K *16/18;* **C12N** *5/20*

U.S. Cl. 435—337 **2 Claims**

1. A monoclonal antibody produced by the hybridoma ATCC No. CRL 11759.

5,712,158

CELL LINE FOR THE RAPID EXPRESSION OF FUNCTIONAL CALCIUM CHANNELS

James David Offord, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 6, 1995, Ser. No. 467,203

Int. Cl.^{6} C12N *5/00;* **C12P** *21/06*

U.S. Cl. 435—369 **1 Claim**

1. A tissue culture cell line, 34893 2L, having ATCC No. CRL-12108.

5,712,159

GLUCOSE RESPONSIVE INSULIN SECRETING β-CELL LINES AND METHOD FOR PRODUCING SAME

Megan E. Laurance, Portland, Oreg.; David Knaack, Chepachet, R.I.; Deborah M. Fiore, Swansea, Mass., and Orion D. Hegre, Chepachet, R.I., assignors to Brown University Research Foundation, Providence, R.I.

Division of Ser. No. 208,873, Mar. 10, 1994, Pat. No. 5,534,404, which is a continuation of Ser. No. 165,088, Dec. 10, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,302

Int. Cl.^{6} C12N *5/06;5/08;* **C12Q** *1/54;* **C12P** *21/00*

U.S. Cl. 435—372.2 **5 Claims**

1. A cell culture comprising selected β-cells produced] having enhanced secretion of insulin, said β-cells selected by the following steps:

(a) providing a population of cells comprising β-cells in which increased intracellular concentrations of calcium ions is correlated with the extracellular presence glucose;

(b) exposing said population of cells to a vital calcium-activated labelling agent;

(c) exposing said population of cells to glucose in concentration sufficient to result in secretion of insulin;

(d) selecting from the population, cells that exhibit increased amounts of intracellular free calcium when exposed to said glucose in step (e); and

(f) culturing said selected cells.

5,712,160

METHOD OF STIMULATING GROWTH USING NEUROTROPHIC PEPTIDES

J. Regino Perez-Polo, Galveston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 208,921, Mar. 10, 1994, Pat. No. 5,475,088, which is a continuation of Ser. No. 852,631, Mar. 17, 1992, abandoned. This application Dec. 11, 1995, Ser. No. 570,673

Int. Cl.^{6} G01N *33/566;* **C07K** *14/475;14/48;* **A61K** *38/10*

U.S. Cl. 435—375 **7 Claims**

1. A method for stimulating growth in vitro of cells expressing neuronal growth factor receptor, the method comprising:

contacting said cells with neuronal growth factor and Gln-Asp-Lys-Gln-Asn-Thr-Val-Cys-Glu-Glu-Cys-Pro-Glu-OH (Seq. ID NO. 3), Cys-Gln-Asp-Lys-Gln-Asn-Thr-Val-Cys-Glu-Glu-Cys-Pro-Glu-OH (SEQ ID NO. 4). or Tyr-Cys-Gln-Asp-LVs-Gln-Asn-Thr-Val-Cys-Glu-Glu-Cys-Pro-Glu-OH (SEQ ID NO. 5) in an amount enhancing nerve growth factor binding to neuronal growth factor receptor.

5,712,161

METHOD FOR CULTURING ANIMAL CELLS IN COLLAGEN DROPS ON A SUPPORT

Masahiro Koezuka, Kashiba; Naohito Kondo, Osaka; Hisayuki Kobayashi, Osaka; Hiroshi Saeki, Osaka; Keizo Tanisaka, Yamatotakada, and Sachiko Oda, Yao, all of Japan, assignors to Nitta Gelatin Inc., Osaka, Japan

PCT No. PCT/JP94/02222, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO95/18216, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 26, 1994, Ser. No. 507,418

Claims priority, application Japan, Dec. 30, 1993, 5-351036

Int. Cl.^{6} C12N *5/00;1/02;11/04;* **C12Q** *1/02*

U.S. Cl. 435—382 **29 Claims**

1. A method for culturing animal cells under embedded conditions, comprising the steps of dispersing animal cells into a collagen solution;

placing at least one drop containing about 3 to about 300 microliters of said collagen solution on a surface of a support and allowing said at least one drop to gel to form and fix on the support surface a globular collagen gel having a convex surface; and

contacting said collagen gel with a cell culture medium and culturing said animal cells.

5,712,162

Patent Not Issued For This Number

5,712,163

CHEMICALLY DEFINED CELL CULTURE MEDIA AND SYSTEM AND METHODS FOR USE, PARTICULARLY FOR CULTURING EPITHELIAL CELLS

Nancy Louise Parenteau, Brighton; Eric William Johnson, Malden; Susan Frances Meunier, Brighton, and John Gregory Maresh, Cambridge, all of Mass., assignors to Organogenesis, Inc., Canton, Mass.

Continuation of Ser. No. 990,814, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 532,257, Jun. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 361,041, Jun. 5, 1989, abandoned. This application Mar. 28, 1995, Ser. No. 412,982

Int. Cl.^{6} C12N *5/00*

U.S. Cl. 435—405 **27 Claims**

1. A chemically defined cell culture medium comprising, insulin or an insulin-like growth factor; transferrin or ferrous ion; triiodothyronine or thyroxin; at least one ethanolamine or o-phosphorylethanolamine; calcium; and a nutrient source in the absence of undefined components, wherein:

(a) Insulin is present at from about 0.5 to about 50 μg/ml or an insulin-like growth factor is present at from about 10^{-10} to about 10^{-8}M;

(b) Transferrin is present at from about 0.05 to about 50 μg/ml or ferrous ion is present at from about 5×10^{-8} to about 5×10^{-5}M;

(c) Triiodothyronine is present at from about 2 to about 200 ρM;

(d) At least one of o-phosphoryl-ethanolamine and ethanolamine is present at from about 10^{-6} to about 10^{-2}M;

(e) Calcium is present at from about 0.005 to about 2.0 mM; and

(f) Nutrient source is selected from at least one of DMEM, IDMEM, MEM, M199, RPMI 1640, Ham's F12, Ham's F10, NCTC 109, and NCTC 135.

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5,712,164
METHOD FOR REDUCING CONTAMINATION OF IN VITRO CULTURES OF SHOOT MATERIAL

Jay Eric Coke, Summerville, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 258,719, Jun. 13, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 456,757

Int. Cl.⁶ C12N *5/00*

U.S. Cl. 435—420 **10 Claims**

1. A method for reducing contamination of in vitro cultures of shoot material from woody plants which comprises:

(a) placing a bag over a branch of a donor plant at locations where new plant shoots will develop and sealing the bag in order to isolate that portion of the branch which is enveloped in the bag from contaminants;

(b) cultivating the donor plant to produce new plant shoots on the isolated portion of the branch;

(c) periodically applying an antimicrobial agent to the branch inside the bag at appropriate time intervals so as to reduce microbial contaminants on the branch during the time the branch is isolated in the bag and resealing the bag after each application so as to maintain the isolation of the branch;

(d) after a period of time sufficient for development of new plant shoots, removing the bag and excising new plant shoot explants from that portion of the branch which had been isolated;

(e) surface-sterilizing the explants;

(f) grafting the surface-sterilized explants onto surface-sterilized understocks; and

(g) culturing the grafted explants in vitro to develop new contamination-free in vitro shoot material.

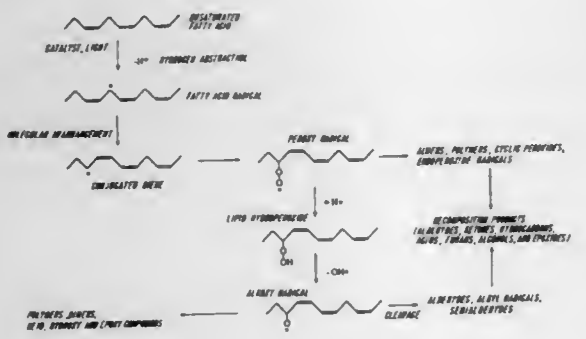
5,712,165
METHOD AND APPARATUS FOR DETECTING HYDROCARBON OXIDATION

Juan G. Alvarez, Boston, and Mark Modell, Brookline, both of Mass., assignors to Beth Israel Hospital Administration, Boston, Mass.

Filed Aug. 22, 1994, Ser. No. 294,173

Int. Cl.⁶ G01N *33/12*

U.S. Cl. 436—21 **9 Claims**


UNSATURATED FATTY ACID
CATALYST, LIGHT
-H• HYDROGEN ABSTRACTION
FATTY ACID RADICAL
MOLECULAR REARRANGEMENT
CONJUGATED DIENE
PEROXY RADICAL
ALKENES, POLYMERS, CYCLIC PEROXIDES, ENDOPEROXIDE RADICALS
+H•
LIPID HYDROPEROXIDE
DECOMPOSITION PRODUCTS (ALDEHYDES, KETONES, HYDROCARBONS, ACIDS, FURANS, ALCOHOLS, AND EPOXIDES)
OH
-OH•
ALKOXY RADICAL
POLYMERS, DIMERS, KETO, HYDROXY AND EPOXY COMPOUNDS
CLEAVAGE
ALDEHYDES, ALKYL RADICALS, SEMIALDEHYDES

1. A method for determining the oxidation state unsaturated fatty acids or long-chain hydrocarbons in a food sample by Raman spectroscopy, comprising the steps of:

(i) irradiating the food sample with electromagnetic radiation at a plurality of wavelengths including a reference wavelength and a sample wavelength, wherein the sample wavelength is an infrared wavelength and absorption of light at the sample wavelength varies with the state of oxidation of unsaturated fatty acids or hydrocarbons in the food sample, and the reference wavelength is sufficiently removed from the sample wavelength so that absorption of light at the reference wavelength is substantially insensitive to the concentration of oxidized unsaturated fatty acids or long-chain hydrocarbons;

(ii) optically detecting radiation absorbed or scattered by the food sample at each of the sample and reference wavelengths, wherein the spectrophotometric detection of radiation absorbed or scattered by the sample is performed using Raman spectroscopy;

(iii) determining the ratio of absorbance at the sample wavelength to the absorbance at the reference wavelength;

(iv) comparing the ratio to a predetermined value from a control specimen to determine the oxidation state of unsaturated fatty acids or long-chain hydrocarbons in the food sample by Raman spectroscopy.

5,712,166
METHOD AND MATERIAL FOR THE DETECTION OF IONIZING RADIATION

Christopher J. Broan, Preston, United Kingdom, assignor to British Nuclear Fuels, PLC, Cheshire, United Kingdom

PCT No. PCT/GB94/02676, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO95/16210, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 7, 1994, Ser. No. 647,991

Claims priority, application United Kingdom, Dec. 10, 1993, 9325364

Int. Cl.⁶ G01N *21/64*

U.S. Cl. 436—58 **25 Claims**

1. A method of detecting ionizing radiation, the method comprising the steps of providing a fluorescent organic sensor material in the location where detecting is required, the fluorescent organic sensor material having a molecular structure comprising at least one pair of fluorophore units, the fluorophore units being held together by a spacer unit such that they are capable of interacting to produce a distinct fluorescence spectrum different from those of the individual fluorophore units, said distinct spectrum being responsive to said ionizing radiation; exposing said fluorescent organic sensor material to said radiation; and determining any change in the fluorescence spectrum of said fluorescent organic sensor material after said exposure.

5,712,167
METHOD OF MEASURING AMADORI COMPOUND BY LIGHT SCATTERING

Yoshinori Yamaguchi; Xiaoming Dou; Masayuki Yagi, and Harumi Uenoyama, all of Kyoto, Japan, assignors to Kyoto Dai-Ichi Kagaku Co., Ltd., Kyoto, Japan

Filed Jul. 17, 1996, Ser. No. 682,219

Claims priority, application Japan, Jul. 19, 1995, 7-206559

Int. Cl.⁶ G01N *21/47*

U.S. Cl. 436—87 **7 Claims**

1. A method of measuring an Amadori compound by irradiating a sample containing said Amadori compound with excitation light of a single wavelength, receiving scattered light from said sample and separating said scattered light into its spectral components for obtaining a light scattering spectrum, and performing quantitative measurement of said Amadori compound through a light scattering peak existing at 820 to 840 cm^{-1}, 1655 to 1660 cm^{-1}, 2000 to 2020 cm^{-1}, 2080 to 2100 cm^{-1}, 2460 to 2470 cm^{-1} or 2530 to 2600 cm^{-1} in shift wavenumber with respect to said excitation wavelength in said light scattering spectrum.

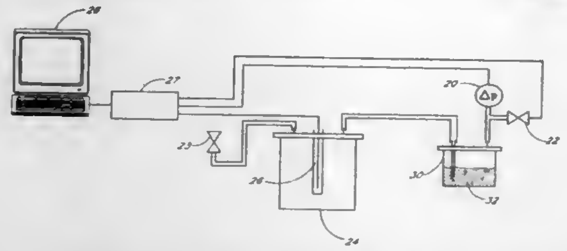
5,712,168
METHOD FOR EVALUATING, MONITORING OR CONTROLLING THE EFFICIENCY, STABILITY, OR EXHAUSTION OF A COMPLEXING OR CHELATING AGENT PRESENT IN A CHEMICAL SOLUTION USED FOR OXIDIZING, DISSOLVING, ETCHING OR STRIPPING A SEMICONDUCTOR WAFER

Harald Okorn Schmidt, Leuven; Martien Johanna Maria Godelieve Bernard Baeyens, Oostende; Marc Marcel Annie Maria Heyns, Linden, and Paul Mertens, Liedekerke, all of Belgium, assignors to IMEC, Leuven, Belgium

Filed Feb. 3, 1995, Ser. No. 384,272

Int. Cl.⁶ G01N *7/00*

U.S. Cl. 436—135 **12 Claims**



1. A method for evaluating exhaustion of a complexing or chelating agent in a solution, comprising H_2O_2 molecules and said complexing or chelating agent said method comprising the steps of:

a. monitoring a rate of decomposition of said H_2O_2 molecules in said solution;

b. detecting a change in the rate of said decomposition of said H_2O_2 molecules in said solution, and

c. correlating said change in the rate of decomposition of said H_2O_2 molecules to the exhaustion of said complexing or chelating agent present in said solution.

5,712,169
SCREENING OF CANDIDATES FOR BIOLOGICAL HAIR CARE ACTIVITY

Bruno Bernard, Neuilly Sur Seine, and Olivier Gaillard, Paris, both of France, assignors to Societe L'Oréal S.A., Paris, France

Filed Jul. 12, 1996, Ser. No. 678,979

Claims priority, application France, Jul. 12, 1995, 95 08465

Int. Cl.⁶ G01N *33/567;* **A61K** *49/00;7/06;* **C12N** *5/00*

U.S. Cl. 436—503 **10 Claims**

1. An improved method for identifying a candidate substance which exhibits bioactivity on hair, wherein said bioactivity is selected from the group consisting of promoting hair growth, maintaining hair growth, increasing hair growth, arresting hair growth, terminating hair growth, affecting hair loss, affecting hair coloration or pigmentation, and exhibiting cosmetic activity, wherein the improvement comprises identifying a compound exhibiting at least one of said bioactivities on hair by a method comprising the following combination of steps:

(i) microdissecting and isolating at least one viable hair follicle comprising a dermal papilla, a root and a hair shaft enclosed within its sheaths, under conditions that maintain the epidermal surroundings thereof, wherein epidermal surroundings refer to the upper layer of the skin (epidermis) at the anastomosis of the pilosebaceous duct that encloses the deep portion of the hair shaft;

(ii) removing the adipose tissue therefrom;

(iii) incubating said at least one hair follicle in a nutrient medium;

(iv) contacting said at least one incubated hair follicle with said candidate substance to determine whether it exhibits at least one of said bioactivities on hair; and

(v) evaluating the efficacy of said candidate substance as a hair bioaffecting agent based on its relative ability to affect one or more of said bioactivities on hair in comparison to a control composition containing at least one viable hair follicle isolated and cultured under identical conditions except for the absence of said candidate substance.

5,712,170
TEST STRIP, ITS PRODUCTION AND USE

Ilkka Sakari Kouvonen, Kauniainen; Eivor Helena Svens, Espoo; Sari Hannele Tikanoja, Helsinki; Pekka Antero Turunen, Joensuu, and Lauri Markus Sivonen, Helsinki, all of Finland, assignors to Oy Medix Biochemica AB, Kauniainen, Finland

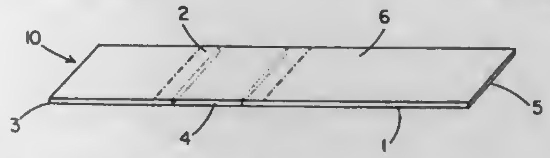
PCT No. PCT/FI93/00569, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO94/15215, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 29, 1993, Ser. No. 335,755

Claims priority, application Finland, Dec. 29, 1992, 925922

Int. Cl.⁶ G01N *33/543;33/558*

U.S. Cl. 436—518 **14 Claims**



1. A test strip for a rapid immunoassay which comprises a backing member having positioned thereon a receiving end pad and a finishing end pad located a distance downstream of said receiving end pad, a test membrane being provided on and in liquid flow contact with said pads such that said backing member and said test membrane are in a spaced apart relationship to define top and bottom boundaries of an air gap therebetween, said test membrane having thereon at least one immunochemical reagent zone and being positioned in parallel relationship to said backing member, whereby said air gap is open at its edges in a direction perpendicular to said downstream direction.

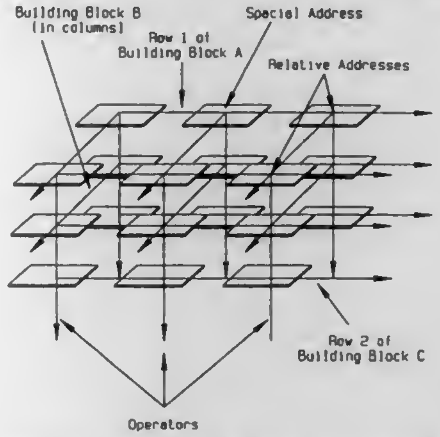
5,712,171
METHOD OF GENERATING A PLURALITY OF CHEMICAL COMPOUNDS IN A SPATIALLY ARRANGED ARRAY

Robert Zambias, Lexington, Mass.; David A. Bolten, Tinton Falls, N.J.; Joseph C. Hogan, Belmont, Mass.; Paul Furth, Waltham, Mass.; David Casebier, Hudson, Mass., and Cheng Tu, Cambridge, Mass., assignors to ArQule, Inc., Medford, Mass.

Filed Jan. 20, 1995, Ser. No. 375,838

Int. Cl.⁶ G01N *33/543;33/53;* **C12Q** *1/00*

U.S. Cl. 436—518 **29 Claims**


Building Block B (in columns)
Special Address
Row 1 of Building Block A
Relative Addresses
Row 2 of Building Block C
Operators

1. A method for constructing an array of synthetic molecular constructs, comprising the steps of:

forming a plurality of molecular constructs having a scaffold backbone of a chemical molecule comprising a linear,

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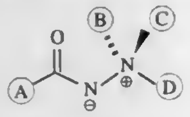
branched or cyclic organic compound having at least three atoms of carbon, nitrogen, sulfur, phosphorus or combinations thereof, and at least one location on the molecule capable of undergoing reaction with other molecules for attachment of at least one structural diversity element;

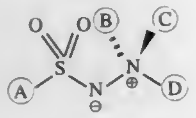
laying out an array possessing a logical ordering of sub-arrays of said molecular constructs;

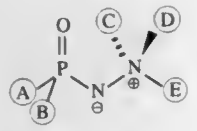
providing each sub-array with molecular constructs having said scaffold backbone and at least one structural diversity element which is different from the others; and

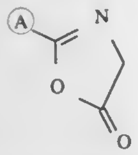
relating each sub-array within the array to all other sub arrays by said difference in said structural diversity elements.

2. The method according to claim 1, which further comprises selecting the scaffold backbone to be at least one of the following:









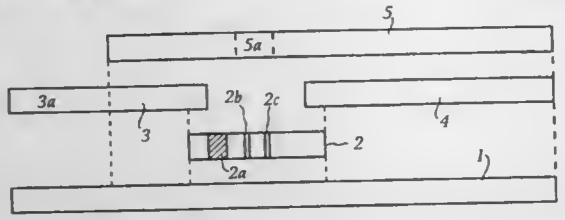
wherein A, B, C, D and E are structural diversity elements.

5,712,172

ONE STEP IMMUNOCHROMATOGRAPHIC DEVICE AND METHOD OF USE

Ching Huang, Chula Vista, and Eugene Fan, La Jolla, both of Calif., assignors to Wyntek Diagnostics, Inc., San Diego, Calif.

Filed Apr. 18, 1995, Ser. No. 444,238
Int. Cl.^{6} G01N *33/543;33/558*
U.S. Cl. 436—518 **17 Claims**



1. An immunochromatographic assay device for detection of the presence or absence of an analyte in a liquid sample, wherein said immunochromatographic assay device consists of:

(a) a separate sample receiving region comprising a porous material which conducts lateral flow of a liquid sample, in lateral flow contact with

(b) a separate analyte detection region comprising a porous material which conducts lateral flow of said liquid sample, wherein said analyte detection region comprises a first and a second mobile labeling reagent at a discrete labeling situs, an immobile capture reagent at a discrete capture situs, and an immobile control reagent at a discrete control situs, wherein said first labeling reagent is capable of forming a complex with said analyte; said capture reagent is capable of binding said analyte-labeling reagent complex and said control reagent is capable of binding said second labeling reagent, wherein said analyte detection region is in lateral flow contact with

(c) a separate end flow region comprising a porous material which conducts lateral flow of said liquid sample and capable of absorbing excess liquid sample,

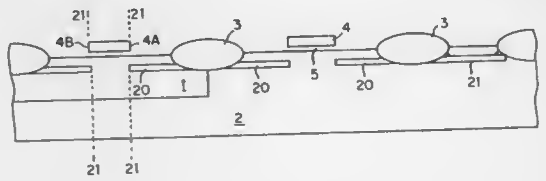
wherein said liquid sample laterally flows from said sample receiving region towards said end flow region, and mixes with said first and second labeling reagents to move said first and second labeling reagents towards said end flow region, wherein the back of said porous materials are laminated with a semi-rigid material of at least 0.005 inches thick to produce a device with adequate mechanical strength, and the front of said porous materials partially covered with a plastic material so as to leave a portion of said sample receiving region exposed for sample application and allow the discrete capture situs and said discrete control situs to be visible.

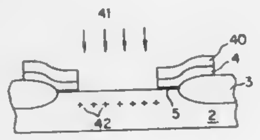
5,712,173

METHOD OF MAKING SEMICONDUCTOR DEVICE WITH SELF-ALIGNED INSULATOR

Yowjuang W. Liu, San Jose; Feng Qian, Campbell, and Tze-Kwai Kelvin Lai, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 24, 1996, Ser. No. 590,981
Int. Cl.^{6} H01L *21/84;21/265*
U.S. Cl. 437—24 **8 Claims**





1. A method of manufacturing a semiconductor device having a self-aligned insulator, which method comprises:

forming a field oxide region in a section of an upper surface of a semiconductor substrate to isolate an active region;

forming a gate electrode having side surfaces over the active region with a gate oxide therebetween and leaving portions of the active region exposed;

forming a mask on the gate electrode;

implanting oxygen ions into the exposed portions of the active region in the semiconductor substrate;

heating to effect reaction of the implanted oxygen ions to form a thin, self-aligned, buried oxide layer with an upper surface adjoining and extending from the field oxide region within the semiconductor substrate up to and substantially aligned with the gate electrode;

forming a resist mask over the gate electrode and a portion of the field oxide region prior to implanting oxygen ions;

heating after implanting oxygen ions to form a thin, self-aligned, buried oxide layer; and

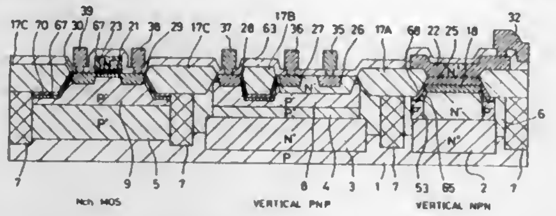
implanting ions to form source/drain regions therein; wherein the upper surface of the thin buried oxide layer extends either under the source or drain region.

5,712,174

METHOD OF MANUFACTURING A BIPOLAR TRANSISTOR

Takehiro Hirai; Mitsuo Tanaka; Atsushi Hori, all of Osaka; Hiroshi Shimomura, Kyoto, and Yoshihiko Horikawa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 216,940, Mar. 24, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,115
Claims priority, application Japan, Mar. 26, 1993, 5-067217; Apr. 14, 1993, 5-087116
Int. Cl.^{6} H01L *21/265*
U.S. Cl. 437—31 **17 Claims**


39
17B
17C 70 67 30 67 23 21 38 29 17C 37 28 63 36 27 35 26 17A 68 22 25 18
32
6
7 9 5 7 8 4 3 1 7 53 65 2 7
Nch MOS
VERTICAL PNP
VERTICAL NPN

1. A method of manufacturing a semiconductor apparatus having a P-type emitter layer, an N-type base layer, a P-type collector layer, a P-type collector contact layer, and an oxide insulating layer, comprising:

a first step of forming a nitride film on a P-type semiconductor substrate so that the nitride film covers an active region formed in said P-type semiconductor substrate;

a second step of forming said P-type collector layer in said P-type semiconductor substrate, including a step of forming an under-layer film in a specified configuration and an upper-layer resist pattern on the surface of said P-type semiconductor substrate and forming said P-type collector layer by using said under-layer film and upper-layer resist pattern as masks;

a third step of forming said oxide insulating layer, by selectively oxidizing the region except said active region by using said nitride film as a mask, so that it is in contact with at least a part of said P-type collector layer in the surface region of said P-type semiconductor substrate, while forming a P-type collector-contact/base leakage prevention layer, by using said under-layer film as a mask, in that region of said P-type collector layer at least a part of which is in contact with said oxide insulating layer, so as to prevent the generation of a leakage current between said P-type collector contact layer and said N-type base layer, said P-type collector-contact/base leakage prevention layer having a higher impurity concentration than said P-type collector layer;

a fourth step of forming said N-type base layer in a region on the surface side of said P-type collector layer in which said P-type collector contact layer does not exist; and

a fifth step of forming said P-type collector contact layer in the surface region of said P-type collector layer, while forming said P-type emitter layer on the surface side of said N-type base layer.

5,712,175

METHOD OF MAKING SEMICONDUCTOR DEVICE HAVING A SCHOTTKY GATE ELECTRODE

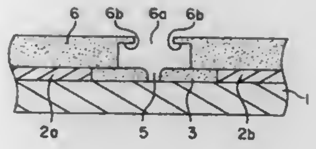
Kazuhiro Yoshida, Shiga-ken, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

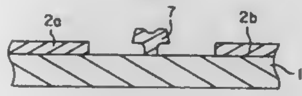
Filed Sep. 6, 1995, Ser. No. 524,208
Claims priority, application Japan, Sep. 12, 1994, 6-217513
Int. Cl.^{6} H01L *21/441*
U.S. Cl. 437—39 **20 Claims**

1. A method of making a semiconductor device having a Schottky gate electrode on a semiconductor substrate comprising the steps of:

forming a first layer of an insulative film on the semiconductor substrate;

forming a second layer of a resist for a gate patterning on the first layer of the insulative film;





forming a gate pattern on the second layer of the resist;

transcribing the gate pattern in the first layer of the insulative film by anisotropic etching; and

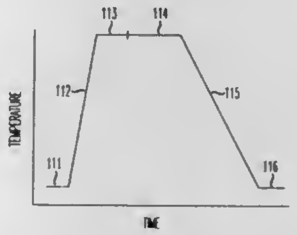
after said transcribing step, forming a third layer of a resist for forming a mushroom-type gate electrode and patterning a cap portion of the mushroom-type gate electrode.

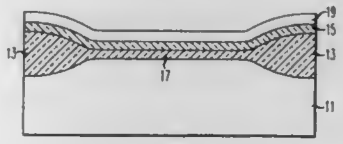
5,712,176

DOPING OF SILICON LAYERS

Steven Alan Lytle; Yaw Samuel Obeng, and Eric John Persson, all of Orlando, Fla., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 30, 1995, Ser. No. 497,470
Int. Cl.^{6} H01L *21/8234*
U.S. Cl. 437—40 GS **10 Claims**





1. A method of integrated circuit manufacture comprising the steps of:

forming a polysilicon layer overlying a substrate at a first temperature;

heating an ambient from said first temperature to an elevated temperature;

exposing said polysilicon layer to said ambient at said elevated temperature;

exposing said polysilicon layer while at said elevated temperature to a gas flow containing a dopant for a period of time;

terminating said dopant gas flow and simultaneously permitting the temperature of said ambient to decrease, said dopant diffusing into said polysilicon layer;

patterning said doped polysilicon layer to define a gate; and

forming source and drain regions in the substrate.

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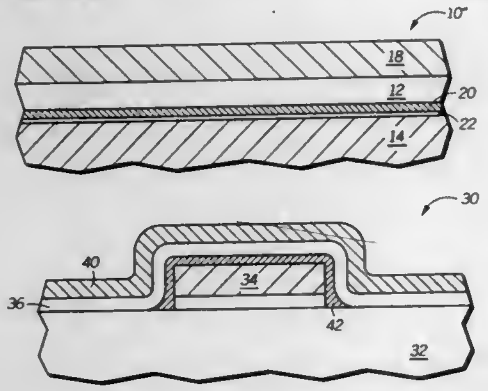
5,712,177
METHOD FOR FORMING A REVERSE DIELECTRIC STACK

Vidya S. Kaushik, and Hsing-Huang Tseng, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 283,361, Aug. 1, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,496

Int. Cl.^{6} H01L *21/8247;21/316*

U.S. Cl. 437—42 **4 Claims**



1. A method for making a stacked gate dielectric, comprising the steps of:
- providing a semiconductor substrate;
- forming a CVD oxide layer overlying a portion of the semiconductor substrate;
- forming a silicon layer overlying the CVD oxide layer; and
- oxidizing the silicon layer to convert the silicon layer into a first dielectric layer and to form a second dielectric layer interposed between the CVD oxide layer and the semiconductor substrate,
- wherein the step of oxidizing also forms a silicon nitride layer interposed between the second dielectric layer and the semiconductor substrate, and the stacked gate dielectric comprises the CVD oxide layer, the first dielectric layer, the second dielectric layer and the nitride layer.

5,712,178
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR MANUFACTURING THE SAME

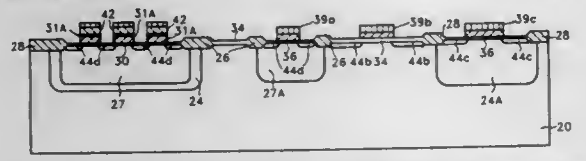
Myoung-kwan Cho, Kyungki-do, and Jeong-hyuk Choi, Kwacheon, both of Rep. of Korea, assignors to Samsung Eletronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 107,901, Aug. 18, 1993, Pat. No. 5,514,889. This application Jun. 7, 1995, Ser. No. 477,323

Claims priority, application Rep. of Korea, Aug. 18, 1992, 92-14810

Int. Cl.^{6} H01L *21/8247*

U.S. Cl. 437—43 **14 Claims**



1. A method for manufacturing a semiconductor memory device comprising the steps of:
- providing a semiconductor substrate of a first conductivity type defined into a cell array region and a peripheral circuit region;
- forming a second impurity-doped region of a second conductivity type in a surface portion of said semiconductor substrate in said cell array region;
- forming a first impurity-doped region of said first conductivity type enclosed by said second impurity-doped region;
- forming a memory device on said first impurity-doped region;
- forming a third impurity-doped region of said first conductivity type in a first surface portion of said semiconductor substrate in said peripheral circuit region;
- forming a fourth impurity-doped region of said second conductivity type in a third surface portion of said semiconductor substrate in said peripheral circuit region;
- forming a first MOS transistor on said third impurity-doped region,
- forming a second MOS transistor on a second surface portion of said semiconductor substrate in said peripheral circuit region; and
- forming a third MOS transistor on said fourth impurity-doped region.

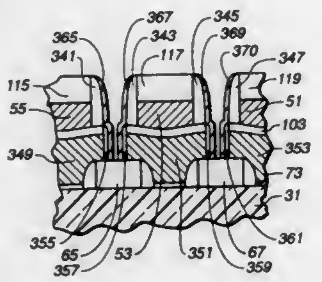
5,712,179
METHOD OF MAKING TRIPLE POLYSILICON FLASH EEPROM ARRAYS HAVING A SEPARATE ERASE GATE FOR EACH ROW OF FLOATING GATES

Jack H. Yuan, Cupertino, Calif., assignor to SanDisk Corporation, Sunnyvale, Calif.

Filed Oct. 31, 1995, Ser. No. 550,887

Int. Cl.^{6} H01L *21/8247*

U.S. Cl. 437—43 **7 Claims**



1. A method of making a flash EEPROM cell array, comprising:
- forming a two dimensional array of floating gates arranged in rows and columns on a semiconductor substrate with elongated source and drain diffusions in the substrate that are positioned between columns of said floating gates,
- forming a plurality of elongated control gates with individual ones thereof extending along and over a row of floating gates in order to establish capacitive coupling therebetween, wherein elongated trenches with opposing walls are formed between adjacent rows of floating gates with control gates thereover, and
- in individual ones of the trenches, forming at least one elongated erase gate along one wall of the trench to establish capacitive coupling with floating gates along said one wall while maintaining said at least one erase gate a distance away from an opposite trench wall that avoids establishing capacitive coupling with the floating gates therealong.

5,712,180
EEPROM WITH SPLIT GATE SOURCE SIDE INJECTION

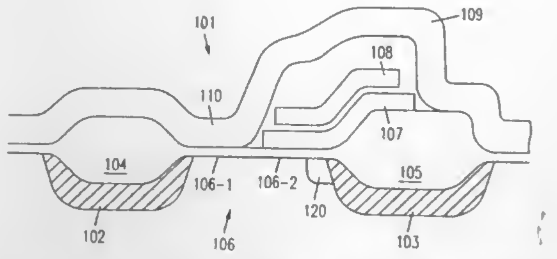
Daniel C. Guterman, Fremont; Gheorghe Samachisa, San Jose, and Yupin Kawing Fong, Fremont, all of Calif., assignors to Sundisk Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 193,707, Feb. 9, 1994, which is a division of Ser. No. 820,364, Jan. 14, 1992, Pat. No. 5,313,421. This application Feb. 28, 1996, Ser. No. 607,951

Int. Cl.^{6} H01C *21/8247;21/265*

U.S. Cl. 437—43 **27 Claims**

1. A method for forming a memory structure comprising the steps of:
- forming a source region of a first conductivity type;
- forming a drain region of said first conductivity type;
- forming a first channel region of a second conductivity type opposite said first conductivity type, adjacent said source region;
- forming a second channel region of said second conductivity type, adjacent said drain region;



- forming a transfer channel region of said second conductivity type, between said first and second channel regions;
- forming a first floating gate above said first channel region:
- forming a second floating gate above said second channel region;
- forming a first control gate above said first floating gate, serving as a steering element associated with said first floating gate;
- forming a second control gate above said second floating gate, serving as a steering element associated with said second floating gate;
- forming a third control gate above said transfer channel region, serving as a control gate of an access transistor, said third control gate also overlying at least a portion of said first and second control gates;
- forming a first tunneling zone between said first floating gate and said third control gate, and including one or more of edges, side wall, corners of the top edge, portions of the top, and portions of the bottom of said first floating gate; and
- forming a second tunneling zone between said second floating gate and said third control gate, and including one or more of edges, side wall, corners of the top edge, portions of the top, and portions of the bottom of said second floating gate.

5,712,181
METHOD FOR THE FORMATION OF POLYCIDE GATE IN SEMICONDUCTOR DEVICE

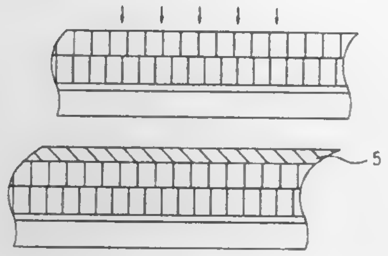
Jeong Soo Byun, Chungcheongbuk-do, and Hyeong Joon Kim, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 251,703, May 31, 1994, abandoned. This application Nov. 29, 1995, Ser. No. 565,634

Claims priority, application Rep. of Korea, Jul. 20, 1993, 13692/1993

Int. Cl.^{6} H01L *21/265*

U.S. Cl. 437—46 **8 Claims**



1. A method for fabricating a semiconductor device, comprising the steps of:
- (a) providing a semiconductor substrate having a gate insulating film thereon;
- (b) forming an amorphous silicon layer about 2,500 angstroms thick on the gate insulating film;
- (c) forming a polysilicon layer on the amorphous silicon layer, the polysilicon layer being thinner than the amorphous silicon layer;
- (d) implanting impurity ions into the polysilicon layer such that a concentration of the impurity ions in the polysilicon layer is higher than a concentration of the impurity ions in the amorphous silicon layer, wherein the impurity ions are BF_2 ions;
- (e) after step (d), conducting heat treatment on the semiconductor device, thereby forming vertical grain boundaries in the amorphous silicon layer and forming vertical grain boundaries in the polysilicon layer, wherein the vertical grain boundaries formed in the amorphous silicon layer are not connected with the vertical grain boundaries formed in the polysilicon layer; and then
- (f) forming a refractory metal layer on the polysilicon layer and then annealing the refractory metal layer to form a polycide.

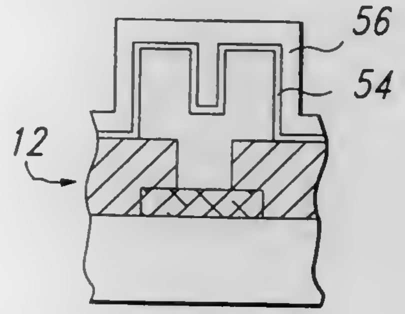
5,712,182
METHOD OF FORMING A MICROELECTRONIC DEVICE HAVING A CAVITY SMALLER THAN LITHOGRAPHIC TOLERANCES

Sudhir K. Madan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 486,128, Jun. 7, 1995, Pat. No. 5,604,659, which is a continuation of Ser. No. 288,515, Aug. 10, 1994, Pat. No. 5,539,612, which is a continuation of Ser. No. 941,484, Sep. 8, 1992, abandoned. This application Jun. 7, 1996, Ser. No. 660,566

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 437—60 **4 Claims**



1. A method of forming a microelectronic device comprising:
- a) forming a substrate;
- b) forming a conductive region in the substrate;
- c) forming an insulating layer on the substrate over the conductive region;
- d) forming a first window through the insulating layer to expose a selected area of the conductive region;
- e) forming a conductive layer on the insulating layer and in electrical contact with the conductive region through the first window;
- f) forming a mask layer over the conductive layer;
- g) forming a second window in the masking layer to expose the conductive layer, the second window being defined by sidewalls of the mask layer and being substantially over the selected area of the conductive region;
- h) forming mask spacers on the mask layer sidewalls defining the second window to reduce the size of the window to below lithographic tolerances;
- i) forming a cavity in the conductive layer through the second window of the mask layer reduced in size by the mask spacers;
- j) isolating a portion of the conductive layer containing the cavity from other surrounding circuit elements on the substrate to form a storage electrode;
- k) forming a dielectric material covering the storage electrode; and
- l) forming a plate electrode over the dielectric material covering the storage electrode.

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5,712,183
METHOD OF FABRICATING A VIA FOR AN SRAM DEVICE

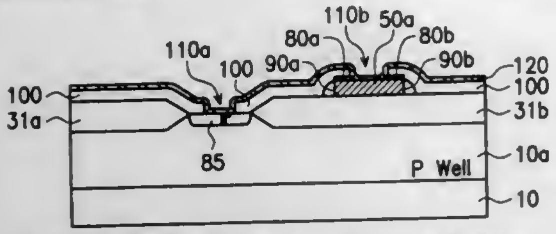
Tzu-Chiang Yu, Yungkang, Taiwan, assignor to Winbond Electronics Corporation, Taiwan

Filed Aug. 16, 1996, Ser. No. 697,026

Claims priority, application Taiwan, Jun. 29, 1996, 85107906

Int. Cl.^{6} H01L *21/8244*

U.S. Cl. 437—60 **16 Claims**



1. A method of fabricating a via, comprising the steps of:

(a) providing a silicon substrate;

(b) defining component areas on the surface of the silicon substrate by selective formation of a field oxide layer;

(c) forming a gate insulating layer above one of the component areas;

(d) forming a first conductive layer over the silicon substrate;

(e) forming a step oxide layer above the first conductive layer;

(f) forming a masking layer above the step oxide layer;

(g) performing a photolithographic and etching procedure on the masking layer to mark a gate position on the field oxide layer;

(h) selectively etching the step oxide layer such that a portion of the step oxide layer beneath the masking layer is etched away, leaving an undercut structure and a residual oxide layer beneath the masking layer;

(i) forming a second conductive layer above the first conductive layer, above the masking layer, and inside the undercut structure;

(j) etching the second conductive layer and then the first conductive layer, using the masking layer as a gate mask, to define a gate and a source/drain region;

(k) removing the masking layer;

(l) forming a first insulating layer over the silicon substrate, and etching the first insulating layer to remove the residual oxide layer and a portion of the first insulating layer to form sidewall spacers on sidewalls of the gate;

(m) forming a second insulating layer;

(n) etching the second insulating layer to form a first via above the gate and a second via above the source/drain region, such that a step profile is formed within the first via by exposed portions of the second conductive layer; and

(o) forming a third conductive layer connecting the gate and the source/drain region through the first and second vias.

5,712,184
METHOD FOR MANUFACTURING INTEGRATED CIRCUITS COMPLETE WITH HIGH Q PASSIVE DEVICES

Reinhold Kaiser, Heilbronn, Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Nov. 9, 1995, Ser. No. 552,491

Claims priority, application Germany, Nov. 11, 1994, 44 40 362.3

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 437—62 **15 Claims**

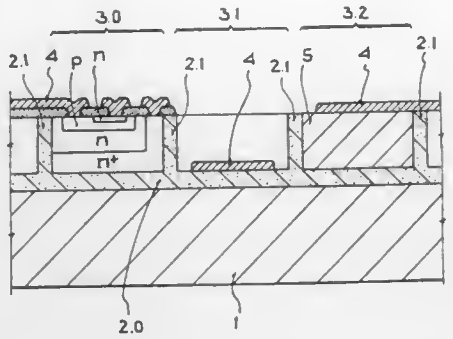
1. Method for manufacturing integrated circuits complete with integrated passive devices, using the following sequential process steps:

providing a semiconductor substrate wafer with a resistivity greater than approximately 5 kΩcm;

generating monocrystalline semiconductor material in lateral and vertical direction dielectrically insulated boxes for receiving the active devices of the integrated circuit, with the boxes being disposed on a surface of the semiconductor wafer;

removing the monocrystalline material from boxes provided for receiving the passive devices; and,

forming appropriate thin film conductor structures by deposition and structuring inside the empty boxes provided for receiving the passive devices.



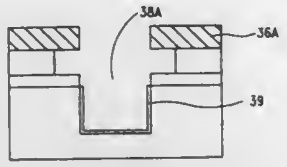
5,712,185
METHOD FOR FORMING SHALLOW TRENCH ISOLATION

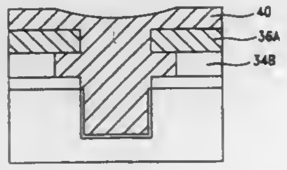
Meng-Jin Tsai, Pao-Shan Hsiang; Water Lur, Taipel, and Chin-Lai Chen, Tao-Yuan Hsien, all of Taiwan, assignors to United Microelectronics, Hslnchu, Taiwan

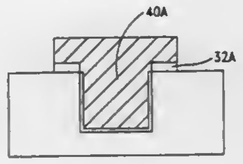
Filed Apr. 23, 1996, Ser. No. 636,623

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 437—67 **12 Claims**







1. A method for forming a trench isolation, the method comprising:

forming a pad oxide layer on a semiconductor substrate;

forming a silicon nitride layer on the pad oxide layer;

forming a sacrificial layer on the silicon nitride layer;

forming a photo-resist layer that defines an active region on the sacrificial layer;

removing the portions of the sacrificial layer, the silicon nitride layer, the pad oxide layer and the semiconductor substrate to form a trench;

undercutting portions of the silicon nitride layer;

forming a dielectric layer over the sacrificial layer, thereby completely filling the trench in the semiconductor substrate, the pad oxide layer, the silicon nitride layer, the sacrificial layer, and completely filling the undercut of the silicon nitride layer

planarizing the dielectric layer and the sacrificial layer until the silicon nitride layer is exposed;

removing the silicon nitride layer; and

removing portions of the pad oxide layer using the remaining dielectric layer as a mask.

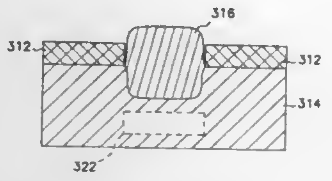
5,712,186
METHOD FOR GROWING FIELD OXIDE TO MINIMIZE BIRDS' BEAK LENGTH

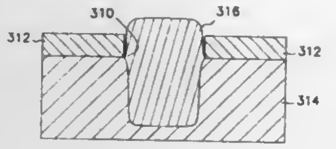
Randhir P. S. Thakur, Boise; Michael Nuttall, Meridian, and Pai-Hung Pan, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 12, 1996, Ser. No. 662,852

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 437—69 **27 Claims**





1. A method for forming field oxide on a semiconductor substrate, comprising the steps of:

forming an oxidation resistant mask layer on the substrate;

etching the mask layer, creating at least one opening, which exposes the substrate;

oxidizing the substrate where it is exposed;

implanting oxygen into the opening at an energy level which implants the oxygen substantially below the oxidized substrate; and

oxidizing the oxygen implanted substrate to form field oxide, having a desired field oxide thickness.

5,712,187
VARIABLE TEMPERATURE SEMICONDUCTOR FILM DEPOSITION

Xiaonan Li, Golden, and Peter Sheldon, Lakewood, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Nov. 9, 1995, Ser. No. 555,621

Int. Cl.^{6} H01L *21/20;31/18*

U.S. Cl. 437—109 **42 Claims**

1. A method of depositing a semiconductor material on a substrate, the method comprising the sequential steps of:

a) providing the semiconductor material in a depositable state for deposition on the substrate;

b) depositing the semiconductor material on the substrate while heating the substrate for a time sufficient and to a first temperature sufficient to cause the semiconductor material to form a first semiconductor material film layer contiguous to the substrate and having a first grain size;

c) continually depositing the semiconductor material on the substrate while cooling the substrate for a time sufficient and to a second temperature sufficient to cause the semiconductor material to form a second semiconductor material film layer deposited on the first film layer and having a second grain size smaller than the first grain size; and

d) continually depositing the semiconductor material on the substrate while heating the substrate for a time sufficient and to a third temperature sufficient to cause the semiconductor material to form a third semiconductor material film layer on the second film layer and substantially simultaneously anneal the first, second third film layers.

5,712,188
FABRICATION METHOD OF POLARIZATION-CONTROLLED SURFACE-EMITTING LASER DIODE USING TILTED-CAVITY

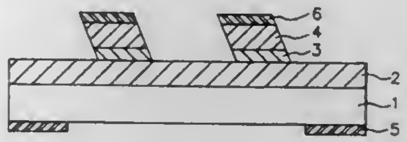
HyeYong Chu, Yusong-ku; ByuengSu Yoo, Seo-ku; HyoHoon Park, Yusong-ku, and MinSoo Park, Yusong-ku, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

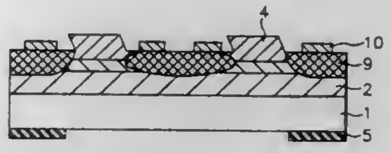
Filed May 1, 1996, Ser. No. 641,531

Claims priority, application Rep. of Korea, Dec. 21, 1995, 95-53677

Int. Cl.^{6} H01L *21/20*

U.S. Cl. 437—129 **4 Claims**





1. A fabrication method of a laser which emits light from an emitting surface having a sidewall which is inclined with respect to a normal to the emitting surface comprising:

providing an ion beam for etching the sidewall of the laser; and

providing a semiconductor substrate having a face which is formed into the emitting surface with the face being intercepted by the ion beam and the substrate being tilted about either a [110] or a [1$\bar{1}$0] direction and forming an angle of 5° and 45° between a [001] direction and the sidewall.

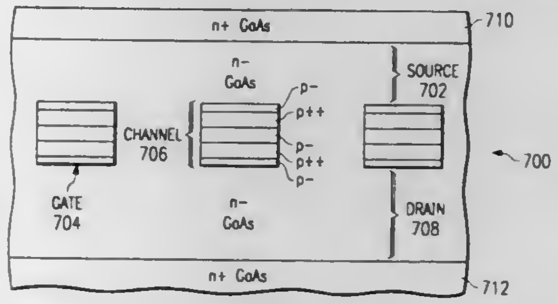
5,712,189
EPITAXIAL OVERGROWTH METHOD

Donald Lynn Plumton, and Tae Seung Kim, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1993, Ser. No. 56,004

Int. Cl.^{6} H01L *21/20*

U.S. Cl. 437—133 **16 Claims**



1. A method of III-V semiconductor epitaxial overgrowth, comprising the steps of:

(a) providing a semiconductor layer, said layer with a planar surface and with at least two parallel trenches extending into said planar surface, each of said trenches having sidewalls perpendicular to said planar surface and with a bottom parallel to said planar surface, said sidewalls forming a series of parallel sidewalls with each sidewall having crystal orientation equivalent to that of said planar surface within about 5°; and

(b) epitaxially growing an epilayer of a semiconductor material simultaneously on said planar surface and said sidewalls and said bottoms;

(c) wherein said layer is made of a first III-V compound and said epilayer is made of a second III-V compound.

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5,712,190

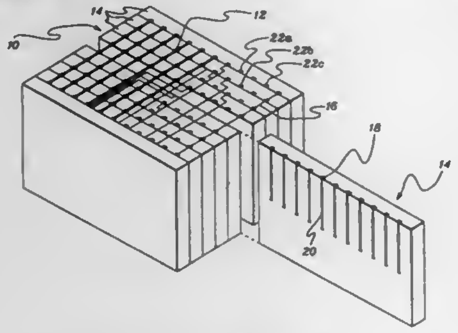
PROCESS FOR CONTROLLING DISTANCE BETWEEN INTEGRATED CIRCUIT CHIPS IN AN ELECTRONIC MODULE

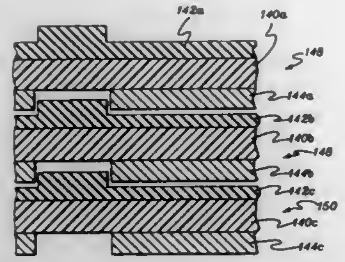
Claude Louis Bertin, South Burlington; John Edward Cronin, Milton, both of Vt., and David Jacob Perlman, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 306,042, Sep. 14, 1994, Pat. No. 5,567,653. This application Jan. 16, 1996, Ser. No. 585,579

Int. Cl.^{6} H01L *21/027;21/31*

U.S. Cl. 437—173 **8 Claims**





1. A method for controlling a distance between two integrated circuit chips in a three-dimensional electronic module having a plurality of stacked integrated circuit chips, each of said plurality of integrated circuit chips having two main surfaces and at least one edge surface, each integrated circuit chip having a thickness less than or equal to a constant thickness, said method comprising the steps of:

determining a first thickness of a first one of said two integrated circuit chips, said first thickness being less than said constant thickness; and

forming a layer on said first one of said two integrated circuit chips, said layer having a thickness determined as a function of said first thickness and said constant thickness, said step of forming including depositing said layer such that said first thickness and said thickness of said layer together equal said constant thickness and, such that upon subsequent stacking of said two integrated circuit chips in said three-dimensional electronic module, a distance between a first main surface of a second one of said two integrated circuit chips and a first main surface of the first one of said two integrated circuit chips is equal to said constant thickness.

5,712,191

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

Setsuo Nakajima, Kanagawa; Shunpei Yamazaki, Tokyo; Naoto Kusumoto, and Satoshi Teramoto, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

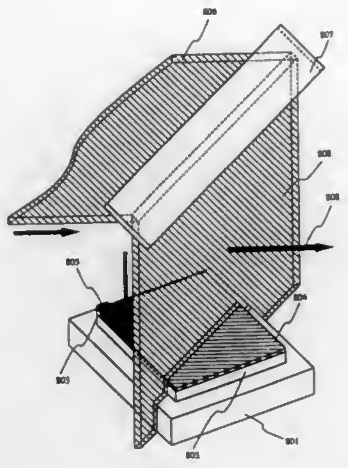
Filed Sep. 8, 1995, Ser. No. 525,167

Claims priority, application Japan, Sep. 16, 1994, 6-248618; May 6, 1995, 7-132903

Int. Cl.^{6} H01L *21/428*

U.S. Cl. 437—174 **15 Claims**

1. A method for producing a semiconductor device comprising the steps of:



preparing a rectangular substrate having an insulating surface;

forming a semiconductor film comprising amorphous silicon on said insulating surface;

disposing a metal element in contact with said semiconductor film, said metal element being capable of promoting crystallization of the amorphous silicon; and

irradiating the semiconductor film with a laser light to increase crystallinity of the semiconductor film, said laser light having a cross section elongated in one direction at a surface of said semiconductor film; and

moving said substrate relative to said laser light in a direction orthogonal to an elongation direction of said cross section during the irradiation of said laser light,

wherein the elongation direction of said cross section at a surface of said semiconductor film is oblique with respect to the sides of said substrate.

5,712,192

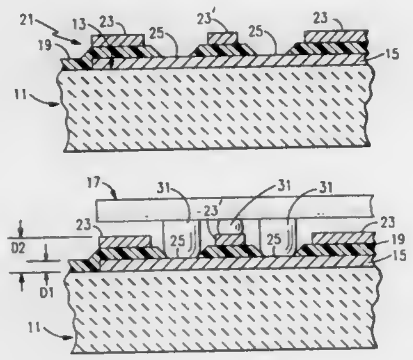
PROCESS FOR CONNECTING AN ELECTRICAL DEVICE TO A CIRCUIT SUBSTRATE

Robert Lee Lewis, Apalachin; Robert David Sebesta, Endicott, and Daniel Martin Waits, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1994, Ser. No. 233,193

Int. Cl.^{6} H01L *21/283;21/48;21/58;21/60*

U.S. Cl. 437—182 **15 Claims**



1. A method of making a circuitized substrate adapted for being electrically connected to an electronic device, said method comprising:

providing a substrate having a first surface;

providing a first circuit pattern on said first surface of said substrate, said pattern including at least one contact location;

substantially covering said first circuit pattern, including said contact location, with a layer of dielectric material;

providing a second circuit pattern on said layer of dielectric material, said second circuit pattern including at least one contact location;

removing at least a portion of said layer of dielectric material to expose said contact location of said first circuit pattern, said contact locations of said first and second circuit patterns being exposed and located at different levels relative to said first surface of said substrate, said contact locations adapted for being separately directly electrically connected to said electronic device, said removing of said at least said portion of said layer of said dielectric material occurring after said providing of said second circuit pattern on said layer of said dielectric material; and

electrically connecting said electronic device to said exposed contact locations of said first and second circuit patterns using a soldering operation wherein a plurality of substantially equal size solder elements are applied onto said electronic device and thereafter connected to respective ones of said exposed contact locations.

5,712,193

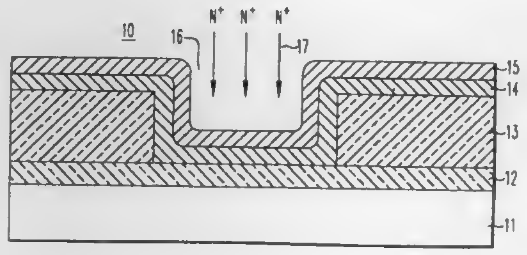
METHOD OF TREATING METAL NITRIDE FILMS TO REDUCE SILICON MIGRATION THEREIN

Glen Roy Hower, Allen Township, Northampton County; Daniel David Kostelnick, Whitehall Township, Lehigh County, both of Pa., and Yih-Cheng Shih, Hsin-Chu, Taiwan, assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 367,377

Int. Cl.^{6} H01L *21/28*

U.S. Cl. 437—187 **14 Claims**



1. A method of making an integrated circuit, the integrated circuit having a substrate, a layer of a first metal and a layer of a nitride of the first metal on and in contact with the first metal layer, characterized by the step of:

exposing the layer of nitrided first metal to a nitrogen plasma in a reactor containing nitrogen at a pressure between 0.1 and 100 Torr.

5,712,194

SEMICONDUCTOR DEVICE INCLUDING INTERLAYER DIELECTRIC FILM LAYERS AND CONDUCTIVE FILM LAYERS

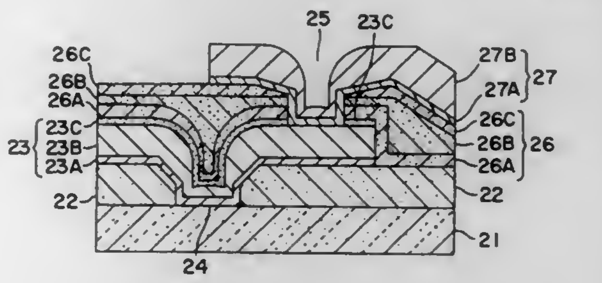
Masato Kanazawa, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 465,685, Jun. 6, 1995, abandoned, which is a division of Ser. No. 369,253, Jan. 5, 1995, Pat. No. 5,459,353, which is a continuation of Ser. No. 116,947, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 834,620, Feb. 12, 1992, abandoned. This application Jun. 6, 1996, Ser. No. 660,745

Claims priority, application Japan, Feb. 12, 1991, 3-018642

Int. Cl.^{6} H01L *21/441*

U.S. Cl. 437—194 **3 Claims**



1. A method of fabricating a semiconductor device comprising:

a step of forming a first interlayer dielectric film layer in a first region on a semiconductor substrate,

a step of forming first connection holes for exposing the semiconductor substrate in the first interlayer dielectric film layer,

a step of removing a first oxide film from the exposed surface of the semiconductor substrate,

a step of forming a first conductive film layer on the exposed surface of the semiconductor substrate and on the first interlayer dielectric film layer,

a step of forming a second interlayer dielectric film layer on the first conductive film layer,

a step of forming second connection holes for exposing the first conductive film layer in the second interlayer dielectric film layer,

a step of removing a native oxide film from the exposed surface of the first conductive film layer, and

a step of forming a second conductive film layer on the exposed surface of the first conductive film layer and on the second interlayer dielectric film layer without exposing to air,

wherein the first conductive film layer comprises a barrier metal film, an anti-reflection film and a first aluminum alloy film, the second conductive film layer consists of a refractory metal film from 30 nm to 150 nm thick and a second aluminum alloy film formed on the refractory metal film, and forming of the refractory metal film and forming of the second aluminum alloy film are done continuously without being exposed to atmosphere, and

wherein the anti-reflection film is formed on the first aluminum alloy film and the first aluminum alloy film is then exposed by the second connection holes,

further comprising a step of heating the semiconductor substrate for causing the refractory metal film and the second aluminum alloy film to be alloyed, and also causing the refractory metal film to be alloyed with the first conductive film layer in the bottom of the second connection holes.

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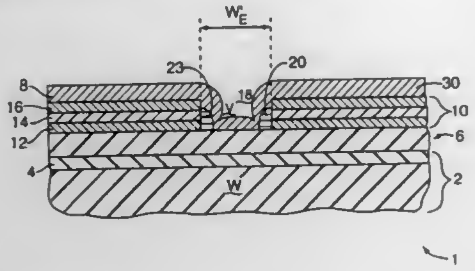
5,712,195
METHOD FOR MAKING VIA STRUCTURE WITH METALLIC SPACER

Kuang-Yeh Chang, Los Gatos, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 485,809, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 335,306, Nov. 7, 1994, Pat. No. 4,493,152, which is a continuation of Ser. No. 153,932, Nov. 9, 1993, abandoned. This application Sep. 12, 1996, Ser. No. 712,573

Int. Cl.^{6} H01L *21/28*

U.S. Cl. 437—195 **4 Claims**



1. A method for making an electrical interconnection between two conductive layers in a semiconductor structure, including the steps of:

(a) providing a first conductive layer on a semiconductor substrate;
(b) providing a non-conductive layer including a spin-on-glass (SOG) layer, upon said first layer of conductive material;
(c) creating an aperture extending through said non-conductive layer, said aperture having aperture walls in said non-conductive layer and defining an aperture width, said aperture exposing a portion of said first conductive layer;
(d) depositing a conductive layer having a thickness ranging from between about 2500 Angstroms and about 5000 Angstroms and processing said conductive layer to create tapered metallic conductive spacers within said aperture in abutment against said aperture walls and co-extensive therewith, said tapered conductive spacers being in electrical contact with said fast conductive layer, and
(e) providing a substantially continuous second conductive layer over said non-conductive layer and within said aperture to provide electrical contact with said tapered conductive spacers and said fast conductive layer to provide thereby an effective width for the passage of electric current between said first conductive layer and said second conductive layer that is substantially equal to the effective width of said aperture;

wherein said tapered conductive spacers are effective to reduce outgassing from said spin-on-glass layer.

5,712,196
METHOD FOR PRODUCING A LOW RESISTIVITY POLYCIDE

Effiong E. Ibok, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 473,195, Jun. 7, 1995, abandoned. This application Jul. 1, 1996, Ser. No. 674,081

Int. Cl.^{6} H01L *21/283*

U.S. Cl. 437—200 **19 Claims**

1. A method for producing a low resistivity polycide, comprising:

depositing a layer of polysilicon upon one surface of a silicon substrate;
doping said layer of polysilicon with a first impurity species to form a doped layer of polysilicon;
removing select portions of said doped layer of polysilicon to present a polysilicon gate structure having an upper surface;
implanting said upper surface with ions at an energy level sufficient to amorphize the upper surface of said polysilicon gate structure; and
forming a silicide upon the amorphized upper surface of said polysilicon gate structure.

5,712,197
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE SUITABLE FOR SURFACE MOUNTING

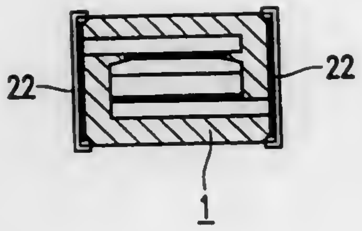
Klaastinus H. Sanders, and Geert J. Duinkerken, both of Stadskanaal, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 13, 1996, Ser. No. 645,436

Claims priority, application European Pat. Off., May 12, 1995, 95201234

Int. Cl.^{6} H01L *21/60*

U.S. Cl. 437—214 **21 Claims**



1. A method of manufacturing a semiconductor device suitable for surface mounting, the semiconductor device comprising a semiconductor element having a connection point on a first main surface, the method comprising the steps of:

interconnecting a first semiconductor element and a second semiconductor element into a coherent row by means of a first conductive strip connecting a connection point of the first semiconductor element to a connection point of the second semiconductor element, enveloping the row in a protective material, separating the first and second semiconductor elements of the row so as to form at least one individual semiconductor device provided with at least a first side surface having a portion of the first conductive strip exposed thereat, and processing so as to form, in association with the portion of the first conductive strip, a connection conductor.

5,712,198
PRE-THERMAL TREATMENT CLEANING PROCESS

Larry W. Shive, St. Peters, and Saeed Pirooz, St. Louis, both of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Continuation of Ser. No. 296,537, Aug. 26, 1994, Pat. No. 5,516,730. This application Dec. 7, 1995, Ser. No. 568,997

Int. Cl.^{6} H01L *21/02*

U.S. Cl. 437—235 **18 Claims**

1. A process for heat-treating a silicon wafer comprising:

contacting a surface of the silicon wafer with an aqueous solution containing hydrofluoric acid to remove metals from the wafer surface,
contacting the hydrofluoric acid treated wafer with ozonated water to grow a hydrophilic oxide layer on the surface of the silicon wafer, and
heating the ozonated water treated wafer to a temperature of at least about 300° C., the surface of the silicon wafer having a concentration of each of iron, chromium and titanium at the initiation of the heating of less than 1×10^9 atoms/cm^2.

5,712,199
METHOD FOR MAKING SEMICONDUCTOR BODY AND PHOTOVOLTAIC DEVICE

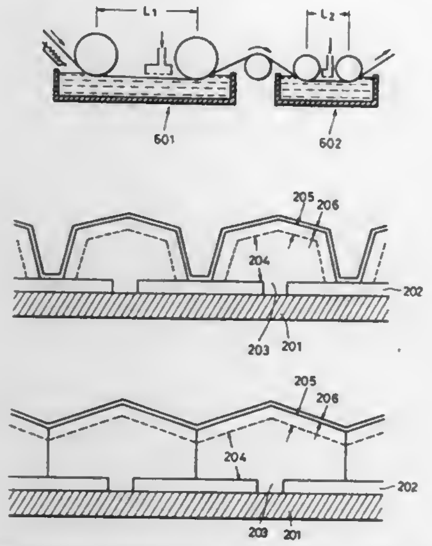
Katsumi Nakagawa, Nagahama, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 777,637, Oct. 16, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 466,761

Claims priority, application Japan, Oct. 16, 1990, 278696

Int. Cl.^{6} H01L *21/208*

U.S. Cl. 438—62 **13 Claims**



1. A method of manufacturing a solar cell, comprising the steps of:

preparing a substrate in sheet form having an insulating film and holes which pass through said insulating film, said holes being dispersed at a uniform density;
preparing a solution in which a semiconductor material is dissolved;
conveying said substrate along a surface of the solution so as to grow a single crystal nucleus from each of said holes and thereby form a set of single crystal semiconductors on said substrate;
and wherein a silicon oxide film contains impurity elements which can control conductivity type of the semiconductor material, the impurity elements in the silicon oxide film being diffused into said single crystal semiconductors when said single crystal semiconductors are formed on the surface of the silicon oxide film and,
forming an electrode on said single crystal semiconductors.

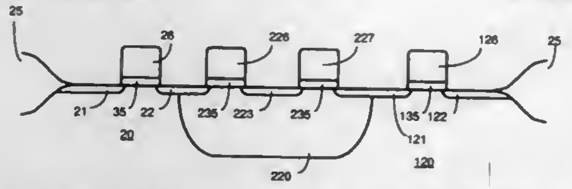
5,712,200
N-WELL RESISTOR AS A BALLAST RESISTOR FOR OUTPUT MOSFET

Chun Jiang, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 586,041, Jan. 16, 1996, Pat. No. 5,637,902. This application Feb. 18, 1997, Ser. No. 801,173

Int. Cl.^{6} H01L *21/70*

U.S. Cl. 438—238 **6 Claims**



1. A method for forming a transistor comprising the steps of:

(a) forming a first region of first conductivity type;
(b) forming a well of second conductivity type, the well being adjacent to the first region;
(c) forming a gate region over a portion of the first region;
(d) forming source/drain regions of the second conductivity type on either side of the gate region, a first source/drain region extending into the well; and,
(e) forming a doped region within the well, the doped region being of a same doping density as a doping density of the first source/drain region, the doped region being physically separate from the first source/drain region by a first area of the well.

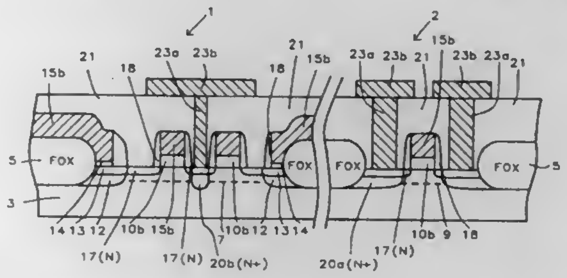
5,712,201
FABRICATION METHOD FOR INTEGRATING LOGIC AND SINGLE LEVEL POLYSILICON DRAM DEVICES ON THE SAME SEMICONDUCTOR CHIP

Jin-Yuan Lee; Chue-San Yoo, and Mong-Song Liang, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Jun. 7, 1996, Ser. No. 660,306

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—239 **24 Claims**



1. A method of fabricating a memory and a logic cell on a single semiconductor substrate, comprising the steps of:

forming a field oxide in regions of said semiconductor substrate, to be used for said memory cell, and in regions of said semiconductor substrate to be used for said logic cell;
ion implanting a first conductivity imparting dopant into a first region of said semiconductor substrate, to be used for said memory cell, to adjust the threshold voltage of said memory cell;
ion implanting a second conductivity imparting dopant into said second region of said semiconductor substrate, to be used for a first type/logic device, of said logic cell, to adjust threshold voltage of said first type, logic device; then,
growing a first insulator layer on said semiconductor substrate;
ion implanting a third conductivity imparting dopant into an area, of said first region of said semiconductor substrate, to be used for said memory cell, to form a first part of a silicon memory capacitor;
ion implanting a fourth conductivity imparting dopant into said area, of said first region of said semiconductor substrate, to be used for said memory cell, to form a second part of said silicon memory capacitor; removing said first insulator layer from a portion of said semiconductor substrate on a surface of said silicon memory capacitor, leaving said first insulator layer in other areas;
growing a second insulator layer on said surface of said silicon memory capacitor while simultaneously modifying said first insulator layer in said other areas;
depositing a polysilicon layer;
doping said polysilicon layer;
patterning said polysilicon layer to form polysilicon storage gate structures, on said second insulator layer, and polysilicon transfer gate structures on said modified first insulator layer, for said memory cell, while forming polysilicon gate structures, on said modified first insulator layer, for said first type, logic device, and for a second type logic device;
ion implanting a fifth conductivity imparting dopant, into said first region of said semiconductor substrate, to be used for said memory cell, and not covered by said field oxide, not covered by said polysilicon storage gate structures, and not

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covered by said polysilicon transfer gate structures, and into said second region of said semiconductor substrate, to be used for said first type logic device, of said logic cell, and not covered by said field oxide, and not covered by said polysilicon gate structures, to form lightly doped source and drain region for said first type logic device;
ion implanting a sixth conductivity imparting dopant, into said second region of said semiconductor substrate, to be used for said second type logic device, of said logic cell, not covered by said field oxide, and not covered by said polysilicon gate structures, to form lightly doped source and drain region for said second type logic device;
depositing a third insulator layer;
anisotropically etching said third insulator layer to form insulator sidewall spacers on sides of said polysilicon storage gate structures, on sides of said polysilicon transfer gate structures, and on sides of said polysilicon gate structures;
ion implanting a seventh conductivity imparting dopant, into said first region of said semiconductor substrate, to be used for said memory cell, between said polysilicon transfer gate structures, and into said second region of said semiconductor substrate, to be used for said first type logic device, not covered by said field oxide, not covered by said polysilicon gate structures, and not covered by said insulator sidewall spacers, to form heavily doped source and drain regions for said first type logic device;
ion implanting an eight conductivity imparting dopant, into said second region of said semiconductor substrate, to be used for said second type logic device, not covered by said field oxide, not covered by said polysilicon gate structures, and not covered by said insulator sidewall spacer to form heavily doped source and drain regions for said second type logic device;
depositing a fourth insulator layer;
planarizing said fourth insulator layer;
opening contact holes in said fourth insulator layer, to said first region of said semiconductor substrate, between said polysilicon transfer gate structures, and to heavily doped source and drain regions of said first type logic device, and of said second type logic device;
depositing a metal layer; and
forming metal contact structures to said first region of said semiconductor substrate, between said polysilicon transfer gate structures, and to said heavily doped source and drain regions of said first type logic device, and of said second type logic device.

5,712,202

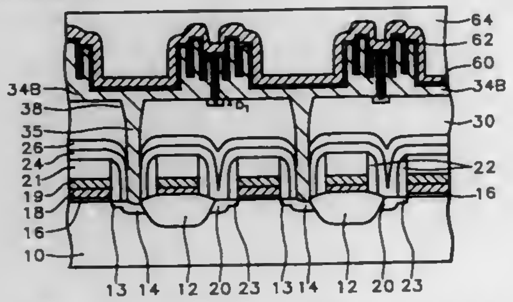
METHOD FOR FABRICATING A MULTIPLE WALLED CROWN CAPACITOR OF A SEMICONDUCTOR DEVICE

Ing-Ruey Liaw, Chutung, and Meng-Jaw Cherng, Shung Hsi, both of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Dec. 27, 1995, Ser. No. 578,928

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—253 **13 Claims**



1. A method of fabricating a double crown capacitor for a semiconductor memory device in a semiconductor substrate in areas for a memory cell unit; said memory device having a source, a drain, and a gate element; which comprises the steps of:
forming a first insulation layer over the substrate surface;
forming a first conductive layer on said first insulation layer; said first conductive layer has a thickness in the range between about 2000 and 3000 Å and said first conductive layer is formed of polysilicon;
forming a contact hole through at least said first conductive layer and said first insulation layer over said source that exposes said source;
forming a second conductive layer over said first conductive layer and filling said contact hole thereby forming a contact to said source; said second conductive layer has a thickness in the range between about 8000 and 10,000 Å and said second conductive layer is formed of doped polysilicon;
forming a first photoresist mask forming a pattern for defining areas for a memory cell unit on said second conductive layer;
etching upper portions of said second conductive layer through said first photoresist mask forming an groove in said second conductive layer; said groove having vertical sidewalls; said groove has a depth in the range between about 1000 and 2000 Å;
removing said first photoresist mask;
forming a first spacer on said annular sidewalls of said groove; said first spacers have a width in the range between about 0.05 and 0.2 μm, and said first spacers are formed a material selected from the group consisting of silicon oxide and silicon nitride;
anisotropically etching an upper portion of said second conductive layer using said first spacer as an etching mask, thereby forming an upright annular ridge within each said area for said cell unit; said etching removing a thickness of said second conductive layer less than the entire thickness of said second conductive layer; said anisotropic etch into said first conductive layer consumes between about 1000 to 3000 Å of said first conductive layer;
removing said first spacer;
forming second and third non-contiguous spacers on opposite sides of said annular ridge; said second spacers and said third spacers have a width in the range between about 500 and 2000 Å, and said second and third spacers are formed a material selected from the group consisting of silicon oxide and silicon nitride;
anisotropically etching said first and said second conductive layers using said second and said third spacers as an etch mask thereby forming inner and outer electrodes; said anisotropic etch exposing said first insulation layer under said groove;
isotropically etching said first isolation layer in the area under said groove; the isotropic etch removes a thickness (t_3) of said first isolation layer between about 500 to 1000 Å of the first insulation layer;
removing said second and said third spacers;
covering at least said inner and outer electrodes, said first conductive layer and said first insulation layer with a conformal dielectric layer; and
forming a top plate electrode over said conformal dielectric layer.

5,712,203

PROCESS FOR FABRICATING READ-ONLY MEMORY CELLS USING REMOVABLE BARRIER STRIPS

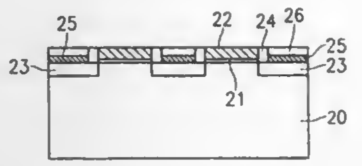
Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

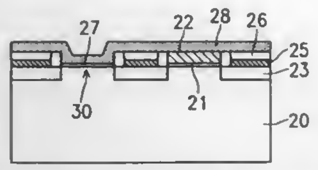
Filed Dec. 11, 1995, Ser. No. 570,340

Int. Cl.^{6} H01L *21/8246*

U.S. Cl. 438—275 **8 Claims**

1. A process for fabricating memory cells of a read-only memory device comprising the steps of:
successively forming a silicon dioxide layer and a silicon nitride layer on the surface of a silicon substrate, and patterning the layers of silicon dioxide and silicon nitride to form a plurality of parallel barrier strips extending along a first direction on the surface of the silicon substrate;





selectively implanting impurities into the silicon substrate within the areas between the barrier strips, constituting a plurality of buried bit lines of the memory cells;
forming insulating sidewall spacers on the sidewalls of the barrier strips;
forming a metal silicide layer over the exposed surface of the buried bit lines in a self-aligned process to improve the electrical conductivity of the buried bit lines;
forming a thick dielectric layer overlying the barrier strips, the insulating sidewall spacers, and the metal silicide;
polishing the upper portions of the thick dielectric layer, the insulating sidewall spacers, and the silicon nitride layer to form a planar surface;
removing designated portions of the barrier strips to expose the surface of the silicon substrate for coding regions of the read-only memory device;
forming a gate oxide layer on the exposed silicon substrate within the areas for the coding regions;
forming a conducting layer overlying the surface of the barrier strips, the insulating sidewall spacers, the thick dielectric layer, and the gate oxide layer; and
patterning the conducting layer to form a plurality of parallel strip-shaped word lines extending along a second direction substantially orthogonal to the first direction.

5,712,204

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING REDUCED JUNCTION CAPACITANCE BETWEEN THE SOURCE AND DRAIN REGIONS AND THE SUBSTRATE

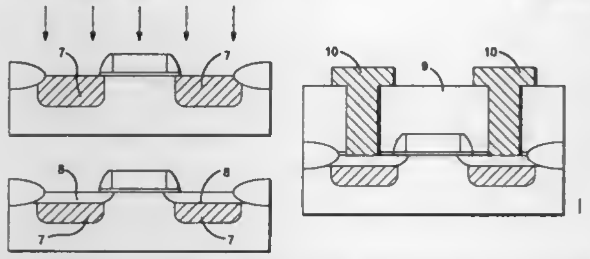
Tadahiko Horiuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,475

Claims priority, application Japan, Dec. 21, 1994, 6-341204

Int. Cl.^{6} H01L *21/265*

U.S. Cl. 438—307 **8 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a gate electrode on a substrate of a first conductivity type, said substrate having a first carrier concentration;
implanting first impurity ions of a second conductivity type into said substrate, said second conductivity type being opposite to said first conductivity type, using said gate electrode as a mask, at a concentration to create a first region of said substrate retaining said first conductivity type and having a second carrier concentration; and
implanting second impurity ions of said second conductivity type into said substrate using said gate electrode as said mask, at a concentration to create a second region of said substrate having said second conductivity type, said second region overlying said first region;
wherein said first carrier concentration is higher than said second carrier concentration.

5,712,205

SEMICONDUCTOR ISOLATION METHOD

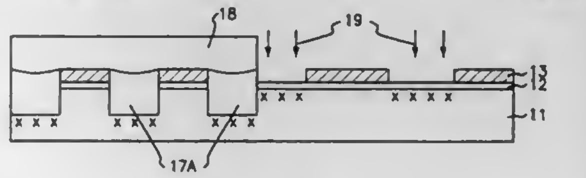
In Ok Park; Yung Seok Chung, and Eul Sik Kim, all of Bubaleub, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

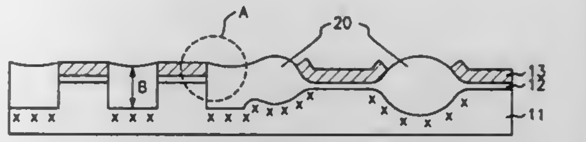
Filed Nov. 7, 1996, Ser. No. 747,024

Claims priority, application Rep. of Korea, Nov. 21, 1995, 1995-42466

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 438—425 **7 Claims**





1. A semiconductor isolation method comprising the steps for:
forming a pad oxide layer and a nitride layer on a semiconductor substrate comprising an area of relatively narrow isolation pitch and an area of relatively wide isolation pitch;
selectively etching said nitride layer and said pad oxide layer on said area of relatively narrow isolation pitch to expose said semiconductor substrate thereunder and forming a trench into a predetermined area of said exposed semiconductor substrate;
forming a chemical vapor deposition oxide layer on the resulting structure;
removing said chemical vapor deposition oxide layer using a chemical-mechanical polish process and using said nitride layer as an etch stop layer;
selectively etching said nitride layer on said area of relatively wide isolation pitch; and
forming a field oxide using thermal oxidation said area where said nitride layer is removed.

5,712,206

METHOD OF FORMING MOISTURE BARRIER LAYERS FOR INTEGRATED CIRCUIT APPLICATIONS

Chung-Zen Chen, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Mar. 20, 1996, Ser. No. 618,617

Int. Cl.^{6} H01L *21/70*

U.S. Cl. 438—601 **21 Claims**

1. A method of forming a moisture barrier system for an integrated circuit on a substrate; said substrate having a fuse window area and device areas; comprising the steps of:
a) forming an insulating layer over portions of said substrate including in said fuse window area;
b) forming a first barrier layer composed of a moisture impervious material over said insulating layer and said substrate;
c) forming a first interlevel dielectric layer over said first barrier layer;

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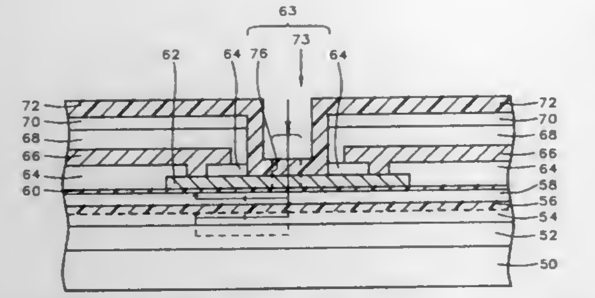
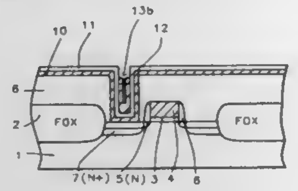
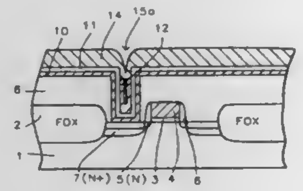


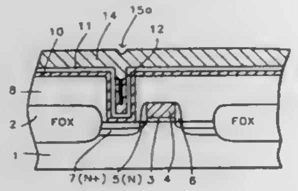
d) forming a second barrier layer composed of a moisture impervious material over said first interlevel dielectric layer;
e) forming a fuse over said second barrier layer at least across said fuse window area; and
f) forming insulating and conductive layers over said fuse and forming a fuse window through said insulating and conductive layers.

5,712,207
PROFILE IMPROVEMENT OF A METAL INTERCONNECT STRUCTURE ON A TUNGSTEN PLUG

Chung-Kuang Lee; Pi-Chen Shieh, and Pin-Nan Tseng, all of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan
Continuation of Ser. No. 608,791, Feb. 29, 1996, abandoned. This application May 19, 1997, Ser. No. 858,289
Int. Cl.^{6} H01L *21/29*
U.S. Cl. 438—627 **18 Claims**



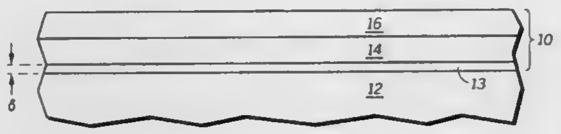




1. A method for fabricating a MOSFET device, on a semiconductor substrate, using an interconnect metallization structure overlying a metal filled contact hole, to provide a conductive path between underlying silicon device regions, in said semiconductor substrate, and overlying metallization structures, comprising:
providing said silicon device region, in said semiconductor substrate;
deposition of an insulator layer on said semiconductor substrate, including deposition on said silicon device region;
photolithographic processing to open a region in a photoresist layer, to expose a specific region of said insulator layer, directly overlying a specific area of said silicon device region;
anisotropic etching of said insulator layer, in opened region of said photoresist layer, to create said contact hole to said specific area, of said silicon device region;
removal of said photoresist layer;
surface cleaning of said specific area, of said silicon device region;
deposition of an adhesive layer on top surface of said insulator layer, on sides of said insulator layer, in said contact hole, and on said specific area, of said silicon device region;
deposition of a barrier layer on said adhesive layer;
deposition of a metal layer, on said barrier layer, filling said contact hole, and resulting in a seam in the center of said metal layer;
removal of said metal layer, from top surface of said barrier layer, outside said contact hole, forming a metal plug in said contact hole, and converting said seam, in center of said metal layer, to a first void, in the center of said metal layer;
deposition of an interconnect metallization layer on said metal plug, and on top surface of said barrier layer, resulting in the creation of a second void, in said interconnect metallization layer, overlying said first void, in center of said metal layer, and larger then said first void, in center of said first metal layer;
treatment of said interconnect metallization layer, to decrease the size of said second void, in said interconnect metallization layer, with said treatment performed at a pressure between about 30 to 120 mega-pascal at a temperature between about 400° and 500° C. in an argon ambient; and
patterning of said interconnect metallization layer, said barrier layer, and said adhesive layer, to form interconnect metallization structure.

5,712,208
METHODS OF FORMATION OF SEMICONDUCTOR COMPOSITE GATE DIELECTRIC HAVING MULTIPLE INCORPORATED ATOMIC DOPANTS

Hsing-Huang Tseng; Philip J. Tobin, and Keith E. Witek, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 258,360, Jun. 9, 1994. This application May 25, 1995, Ser. No. 449,964
Int. Cl.^{6} H01L *21/225;21/3115*
U.S. Cl. 438—770 **19 Claims**



1. A method for making a dielectric comprising the steps of:
providing a substrate having a surface portion;
oxidizing the surface portion of the substrate using a nitrogen-containing oxidant to form a nitrogen-containing dielectric, the nitrogen residing in a concentration most-heavily near the surface portion rather than at a top portion of the nitrogen-containing dielectric;
depositing a deposited dielectric layer over the nitrogen-containing dielectric, the deposited dielectric and the nitrogen-containing dielectric each containing micropores which misalign to one another;
forming a gate electrode overlying the deposited dielectric;
implanting fluorine into the gate electrode to form a fluorinated gate electrode; and
annealing the fluorinated gate electrode to drive the fluorine into the nitrogen-containing dielectric to form a fluorinated nitrogen-containing dielectric where the fluorine is also concentrated most heavily at the surface portion.

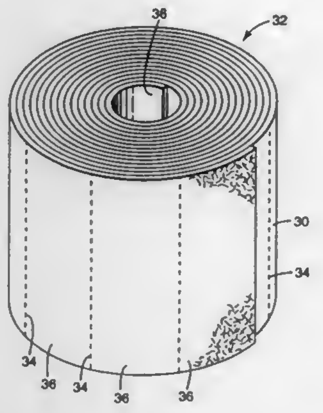
5,712,209
FABRICS COMPRISING FILLING YARNS COMPRISING LINEAR LOW DENSITY POLYETHYLENE FIBERS

James D. Geiman, Alpharetta; Rakesh K. Gupta, Conyers; Randall E. Kozulla, Social Circle; Richard J. Legare, and Robert G. MacLellan, both of Conyers, all of Ga., assignors to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 287,973, Aug. 9, 1994. This application May 3, 1996, Ser. No. 642,837
Int. Cl.^{6} D03D *3/00*
U.S. Cl. 442—208 **44 Claims**

1. A fabric comprising a warp yarn and a filling yarn,
wherein the filling yarn comprises linear low density polyethylene fiber and the warp yarn comprises nonmelting fiber or fiber having a melting point higher than the linear low density polyethylene fiber,
wherein the fabric comprises at least about 3% by weight, based on the total weight of the fabric, of the low density polyethylene fiber and not greater than about 97% by weight, based on the total weight of the fabric, of the nonmelting fiber or the fiber having a melting point higher than the linear low density polyethylene fiber; and
wherein the fabric is a thermally consolidated fabric.

5,712,210
NONWOVEN ABRASIVE MATERIAL ROLL

Laurie A. Windisch, Stillwater; Louis S. Moren, White Bear Lake; Charlie A. Hanf, Eagan, and C. Mathew Barnard, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 520,954, Aug. 30, 1995, abandoned. This application Nov. 22, 1996, Ser. No. 755,120
Int. Cl.^{6} B32B *5/02*
U.S. Cl. 442—320 **4 Claims**



1. A lofty nonwoven abrasive surface treatment web having a face-to-face surface engagement force greater than 35 grams and a bending force/density less than ten.

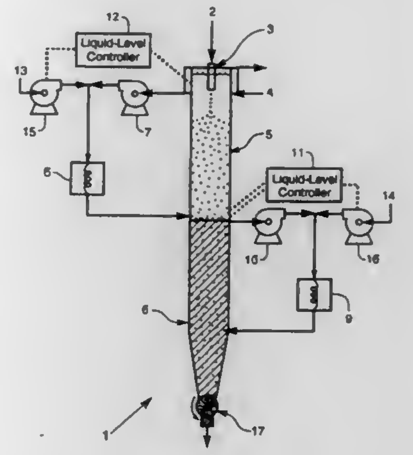
5,712,211
ELECTRICAL DISCHARGE MACHINABLE MG-PSZ/TIB2 CERAMIC COMPOSITE

Dong-Soo Park, and Hai-Doo Kim, both of Sangnam-dong, Rep. of Korea, assignors to Korea Institute of Machinery & Materials, Rep. of Korea
Filed May 9, 1996, Ser. No. 647,320
Int. Cl.^{6} C04B *35/58;35/488*
U.S. Cl. 501—96 **3 Claims**

1. An electroconductive ceramic composite having density higher than 4.95 g/cc and fracture toughness vlaue of 8–11 MPa·m$^{1/2}$ according to Evans-Charles' technique and consisting essentially of 30–40% by weight of TiB_2 and 60–70% by weight of Mg-PSZ.

5,712,212
APPARATUS AND METHOD FOR THE PRODUCTION OF GEL BEADS CONTAINING A BIOCATALYST

Charles D. Scott, Oak Ridge; Timothy C. Scott, and Brian H. Davison, both of Knoxville, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.
Filed Mar. 8, 1995, Ser. No. 401,054
Int. Cl.^{6} B01D *37/36;* **C12N** *11/04*
U.S. Cl. 502—7 **6 Claims**



1. A method of manufacturing a gel bead containing a biocatalyst, comprising the steps of:
mixing the biocatalyst with an aqueous gel solution to form an aqueous biocatalyst-gel solution, the aqueous biocatalyst-gel solution being maintained at a temperature sufficient to prevent solidification, the aqueous biocatalyst-gel solution being maintained at a temperature which is within the viability range of the biocatalyst, the aqueous gel solution containing a gelling material;
providing a vessel, the vessel having at least one inlet and at least one outlet, the vessel containing a non-interacting liquid phase and an aqueous liquid phase, the non-interacting liquid phase having a lower specific gravity than the aqueous liquid phase, the non-interacting liquid phase consisting of an upper region and a lower region, the non-interacting liquid phase and the aqueous liquid phase being continuously introduced into the vessel, the non-interacting liquid phase and the aqueous liquid phase being continuously removed from the vessel;
introducing the aqueous biocatalyst-gel solution in droplet form into the upper region of the non-interacting liquid phase, the upper region of the non-interacting liquid phase being maintained at a temperature sufficient to prevent the solidification of the aqueous gel-biocatalyst solution, the droplet descending downwardly through the lower region of the non-interacting liquid phase, the lower region of the non-interacting liquid phase being maintained at a temperature below the gelling temperature of the aqueous gel-biocatalyst solution so as to cause the droplet to solidify into a gel bead;
introducing the gel bead into the aqueous liquid phase, the gel bead descending downwardly through the aqueous liquid phase, the aqueous liquid phase containing a fixing solution so as to cause a cross-linking reaction to occur, the aqueous liquid phase being maintained at a temperature below the gelling temperature of the aqueous gel-biocatalyst solution; and recovering the gel bead.

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5,712,213
REJUVENATION PROCESS FOR A SOLID ALKYLATION CATALYST

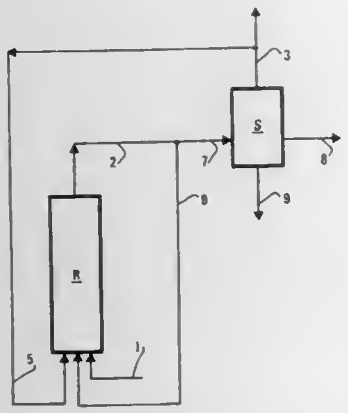
Jean-François Joly, Lyons; Eric Benazzi, Montesson; Christian Marcilly, Houilles; Jean-Paul Euzen, Dardilly, and Alain Forestiere, Vernaison, all of France, assignors to Institut Francaise Du Pétrole, Rueil-Malmaison, France

Filed Jun. 22, 1995, Ser. No. 493,462

Claims priority, application France, Jun. 22, 1994, 94 07855

Int. Cl.^{6} B01J *20/34;38/56*

U.S. Cl. 502—31 **20 Claims**



1. A process for the rejuvenation of a solid catalyst for the alkylation of at least one isoparaffin by at least one olefin containing 3 to 6 carbon atoms per molecule, characterized in that said rejuvenation is carried out in the reaction zone, at least periodically, by circulating at least a portion of an isoparaffin-rich fraction obtained by fractionation or separation of the liquid reaction effluent from the reaction zone over the catalytic bed, the process being characterised in that the reaction zone R containing a catalytic bed is supplied with a feed (i) comprising at least said isoparaffin and said olefin introduced at least partially to the base of the reaction zone, and in that:

the supply of feed is periodically stopped for a sufficient time to enable the catalyst in the reaction zone to be washed,

the reaction effluent is extracted and the catalytic bed remains substantially in the reaction zone R,

the reaction effluent is separated or fractionated in a zone S to recover at least an isoparaffin-rich fraction, at least a portion of this fraction being recycled to the reaction zone to wash said catalyst while said feed to the reaction zone is stopped, and,

the reaction is restarted by restarting the supply of feed (i) to the reaction zone.

5,712,214
REGENERATION OF AROMATIZATION CATALYSTS

Yao-Jyh Robert Huang, Taipei, Taiwan, and Shun Chong Fung, Annandale, N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 942,694, Sep. 9, 1992, and Ser. No. 940,579, Sep. 4, 1992, each which is a continuation of Ser. No. 709,154, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 205,567, Jun. 15, 1988, Pat. No. 4,925,819, which is a continuation of Ser. No. 814,027, Dec. 23, 1985, abandoned, which is a continuation of Ser. No. 550,951, Nov. 10, 1983, abandoned. This application Dec. 7, 1993, Ser. No. 163,455

Int. Cl.^{6} B01J *29/90;38/42;38/44;* **C10G** *35/095*

U.S. Cl. 502—37 **39 Claims**

1. A process for regenerating a monofunctional, non-acidic deactivated reforming catalyst in a vessel having an inlet and an outlet, said catalyst comprising at least one Group VIII catalytic metal, zeolite L, and a binder, said process comprising the following steps:

(a) subjecting said deactivated catalyst to a first gaseous stream comprising inert gas and oxygen present at a partial pressure within the range up to about 10 psia under oxidation conditions comprising a temperature within the range of about 400° C. to about 530° C. and a pressure within the range of about 14.7 psia to about 300 psia, and for a time effective to burn coke off said deactivated catalyst to result in a gas flow at said outlet comprising a partial pressure of CO_2 of less than about 0.01 psia and a substantially decoked catalyst comprising Group VIII catalytic metal particles having an average particle size of less than about 150 Å;

(b) treating said substantially decoked catalyst with a second gaseous stream comprising inert gas, oxygen at a partial pressure of up to about 10 psia, water at a partial pressure of up to about 3 psia, and a source of halogen at a partial pressure d up to about 0.5 psia under oxyhalogenation conditions comprising temperature within the range of about 480° C. to about 550° C. and a pressure within the range of about 14.7 psia to about 300 psia for a time effective to halogenate and disperse said at least one Group VIII catalytic metal to result in a halogenated catalyst comprising dispersed at least one Group VIII catalytic metal and a gas flow at said outlet comprising a partial pressure of halogen of greater than about 0.01 psia;

(c) exposing said halogenated catalyst to a third gaseous stream comprising water having a partial pressure of up to about 1.5 psia, oxygen having a partial pressure of less than about 4.5 psia, and an inert gas at a temperature within the range of about 450° C. to about 530° C. at a pressure within the range of about 14.7 psia to about 65 psia for a time sufficient to effect a hydrogen halide partial pressure in offgas from said halogenated catalyst of less than about 0.004 psia to effectively remove excess halide from said halogenated catalyst; and

(d) reducing said halogenated catalyst from which excess halide has been removed by subjecting said halogenated catalyst to a fourth gaseous stream comprising inert gas, hydrogen having a partial pressure greater than about 0.015 psia and water having a partial pressure of up to about 1.5 psia at a temperature within the range of about 450° C. to about 530° C. at a pressure within the range of about 14.7 psia to 65 psia to reduce said at least one Group VIII catalytic metal in said catalyst to the metallic state and result in a regenerated catalyst.

5,712,215

Patent Not Issued For This Number

5,712,216
HIGHLY ACTIVE DOUBLE METAL CYANIDE COMPLEX CATALYSTS

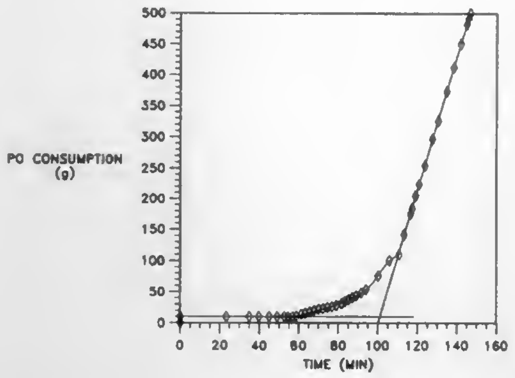
Bi Le-Khac, West Chester, Pa.; Paul T. Bowman, Hurricane, and Harry R. Hinney, Cross Lanes, both of W. Va., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed May 15, 1995, Ser. No. 435,116

Int. Cl.^{6} B01J *27/26*

U.S. Cl. 502—175 **3 Claims**

1. A method of making a double metal cyanide (DMC) complex catalyst, said method comprising reacting aqueous solutions of a metal salt and a metal cyanide salt in the presence of a tertiary alcohol complexing agent, wherein one or both of the reactant solutions contains the complexing agent, and wherein the metal cyanide salt solution is added to the metal salt solution.



5,712,217
SUPPORTED CATALYST WITH MIXED LANTHANUM AND OTHER RARE EARTH OXIDES

Vasant Ramchandra Choudhary; Balu Shivaji Uphade, and Shafeek Abdul Rashid Mulla, all of Pune, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Jun. 5, 1995, Ser. No. 462,671

Int. Cl.^{6} B01J *23/10;23/02*

U.S. Cl. 502—303 **17 Claims**

1. An improved supported catalyst containing mixed strontium and other alkaline earth oxides deposited on a sintered low surface area porous catalyst carrier (or support) precoated with mixed lanthanum and other rare earth oxides, represented by the formula:

$$A_aSrO_b(x)/R_cLaO_d(y)/S,$$

wherein, A is alkaline earth element selected from Be, Mg, Ca, Ba or a mixture thereof; Sr is strontium; O is oxygen; R is rare earth element selected from Ce, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu or a mixture thereof; La is lanthanum; S is catalyst support selected from sintered low surface area porous refractory inert solids comprising of alumina, silica, silica-alumina, silicon carbide, zirconia, hafnia or a mixture thereof; a is A/Sr mole ratio in the range of about 0.01 to about 10; b is number of oxygen atoms needed to fulfill the valence requirement of alkaline earth elements (A_a Sr); c is R/La mole ratio in the range of about 0.01 to about 10; d is number of oxygen atoms needed to fulfill the valence requirement of rare earth elements, (R_cLa); y is weight percent loading of rare earth oxides (R_cLaO_d) precoated on the support in the range of about 0.5 wt % to about 50 wt % and x is wt % loading of alkaline earth oxides (A_aSrO_b) deposited on the precoated support in the range of about 0.4 wt % to about 40 wt %.

5,712,218
CERIUM/ZIRCONIUM MIXED OXIDE CATALYSTS HAVING HIGH/STABLE SPECIFIC SURFACE AREAS

Thierry Chopin, Saint Denis, and Olivier Touret, La Rochelle, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 170,725, Dec. 21, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 562,491

Claims priority, application France, Dec. 21, 1992, 92 15376

Int. Cl.^{6} B01J *23/10*

U.S. Cl. 502—304 **42 Claims**

1. A cerium/zirconium mixed oxide presenting a pure, monophasic CeO_2 cubic crystalline habit of the type CeO_2 and having a specific surface area of at least 30 m^2/g after calcination at 800° C. for 6 hours.

5,712,219
IRON OXIDE MAGNESIUM OXIDE COMPOSITES AND METHOD FOR DESTRUCTION OF CHOLRINATED HYDROCARBON USING SUCH COMPOSITES

Kenneth J. Klabunde, and Abbas Khaleel, both of Manhatttan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Continuation of Ser. No. 224,705, Apr. 8, 1994, abandoned. This application Feb. 6, 1995, Ser. No. 384,689

Int. Cl.^{6} C01B *33/12*

U.S. Cl. 502—328 **14 Claims**

12. A composite material comprising particles of a first metal oxide selected from the group consisting of MgO, CaO, Al_2O_3, SnO_2, TiO_2 and mixtures thereof, said particles being at least partially coated with a quantity of a second metal oxide selected from the group consisting of Fe_2O_3, Cu_2O, CoO and mixtures thereof, said composite having an average particle size of up to about 21 nm and an average surface area of from about 300–500 m^2/g.

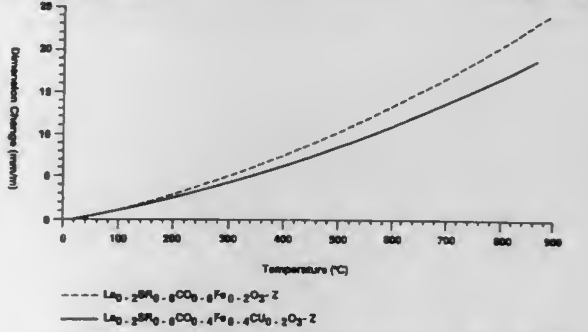
5,712,220
COOMPOSITIONS CAPABLE OF OPERATING UNDER HIGH CARBON DIOXIDE PARTIAL PRESSURES FOR USE IN SOLID-STATE OXYGEN PRODUCING DEVICES

Michael Francis Carolan; Paul Nigel Dyer, both of Allentown; Stephen Andrew Motika, Kutztown, and Patrick Benjamin Alba, Bath, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 402,689, Mar. 13, 1995. This application Feb. 29, 1996, Ser. No. 600,668

Int. Cl.^{6} B01J *23/39;20/00;* **B01D** *53/02;53/22*

U.S. Cl. 502—400 **9 Claims**



1. A composition of matter represented by the formula $Ln_xA'_{x'}A''_{x''}B_yB'_{y'}B''_{y''}O_{3-z}$, wherein Ln is an element selected from the f block lanthanides, A' is selected from Group 2, A" is selected from Groups 1, 2 and 3 and the f block lanthanides, and B, B', B" are independently selected from the d block transition metals, excluding titanium and chromium, wherein $0 \leqq x < 1$, $0 < x' < 1$, $0 \leqq x'' < 1$, $0 < y < 1.1$, $0 < y' < 1.1$, $0 < y'' < 1.1$, $x + x' + x'' = 1.0$, $1.1 > y + y' + y'' > 1.0$ and z is a number which renders the compound charge neutral wherein such elements are represented according to the Periodic Table of the Elements adopted by IUPAC.

5,712,221
THERMAL RECORDING MEDIUM

Hiroshi Goto, Fuji, and Ichiro Sawamura, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 17, 1996, Ser. No. 649,110

Claims priority, application Japan, May 19, 1995, 7-121529; May 7, 1996, 8-112616

Int. Cl.^{6} B41M *5/40*

U.S. Cl. 503—226 **14 Claims**

1. A thermal recording medium, comprising:

a thermal recording layer provided on a transparent substrate, consisting essentially of an electron-donating chromophoric compound, an electron-accepting compound and a binder resin, and

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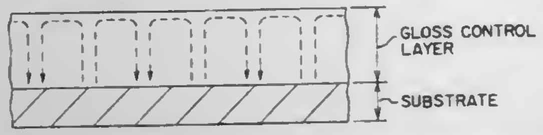
an over layer, having a surface dynamic friction coefficient no greater than about 0.1, comprising a resin having a refractive index substantially the same as a refractive index of said thermal recording layer,
wherein said over layer is comprised of a protective layer and a skid layer and said skid layer has a dynamic friction coefficient which does not exceed about 0.05.

5,712,222
THERMAL TRANSFER IMAGE-RECEIVING SHEET

Koichi Shirai, and Kazunobu Imoto, both of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan
Filed Nov. 6, 1995, Ser. No. 554,587
Claims priority, application Japan, Nov. 4, 1994, 6-295770
Int. Cl.⁶ B41M *5/035;5/38*
U.S. Cl. 503—227 **7 Claims**

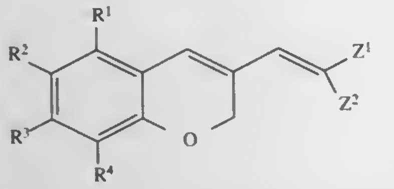


7. A method of controlling the gloss of a thermal transfer image-receiving sheet comprising a substrate and a receptive layer, said method comprising the steps of:
providing a substrate;
forming a gloss control layer on the substrate;
forming a receptive layer on the gloss control layer; and
controlling the surface roughness of the gloss control layer in the range of 0.07 to 2.00 μm, as measured according to ISO 4287/1, thereby controlling the glossiness of the surface of the thermal transfer image-receiving sheet on the receptive layer side thereof in the range of 10–95%. as measured according to JIS Z8741 Method 4.

5,712,223
CHROMEME DYES FOR THERMAL IMAGING

Charles David DeBoer, Palmyra; Douglas Robert Robello, and Lee William Tutt, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 16, 1996, Ser. No. 724,290
Int. Cl.⁶ B41M *5/035;5/38*
U.S. Cl. 503—227 **16 Claims**

7. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder and transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said dye has the formula:

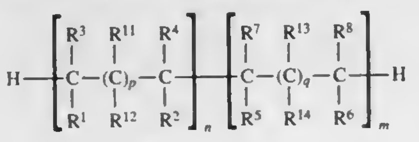


wherein:
R^1, R^2, R^3 and R^4 each independently represents hydrogen, halogen, hydroxy, nitro, a substituted or unsubstituted alkyl or alkoxy group of from 1 to about 6 carbon atoms, a substituted or unsubstituted phenyl group, an alkylazo group, or an arylazo group;
or any two adjacent R^1, R^2, R^3 and R^4 groups may be taken together with the phenyl ring to which they are attached to form a fused ting system; and
Z^1 and Z^2 each independently represents hydrogen or a moiety having a Ham met Sigma (meta) Constant greater than 0.3. such as cyano, esterified carboxy, amide, benzoxazole, alkylsulfonyl, arylsulfonyl; or may be taken together to form a group baving a Hammet Sigma (meta) Constant greater than 0.3.

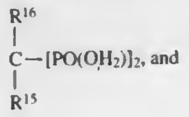
5,712,224
PESTICIDE COMPRISING SOIL DESALINATING AGENTS

Larry C. Boyd, Wellton, Ariz.; Truman V. Sylling, El Centro, and Stephen L. Allen, San Diego, both of Calif., assignors to Sotac Corporation, El Centro, Calif.
Continuation-in-part of Ser. No. 993,605, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 711,911, Jun. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 709,837, Jun. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 520,104, May 4, 1990, Pat. No. 5,106,406, which is a division of Ser. No. 68,026, Jun. 29, 1987, Pat. No. 4,923,500, which is a continuation-in-part of Ser. No. 732,501, May 9, 1985, Pat. No. 4,687,505, which is a continuation-in-part of Ser. No. 547,866, Nov. 2, 1983, abandoned. This application Jun. 27, 1996, Ser. No. 671,042
Int. Cl.⁶ A01N *25/00*
U.S. Cl. 504—116 **16 Claims**

1. A pesticide composition for agricultural soils consisting of a preemergent pesticide in a quantity sufficient to destroy unwanted organisms and a soil desalinating substance in a quantity sufficient to reduce the salinity of the soil, said soil desalinating substance being selected from the formulas consisting of:



$$H-\left[\begin{array}{ccc} R^3 & R^{11} & R^4 \\ | & | & | \\ C- & (C)_p & -C \\ | & | & | \\ R^1 & R^{12} & R^2 \end{array}\right]_n\left[\begin{array}{ccc} R^7 & R^{13} & R^8 \\ | & | & | \\ C- & (C)_q & -C \\ | & | & | \\ R^5 & R^{14} & R^6 \end{array}\right]_m-H \qquad I$$



$$\begin{array}{l} R^{16} \\ | \\ C-[PO(OH_2)]_2, \text{ and} \\ | \\ R^{15} \end{array} \qquad II$$

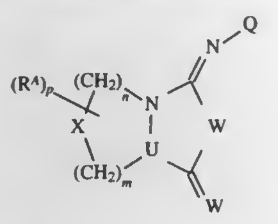
$$R^{17}[R^{18}PO(OH)]_{2-5} \qquad III$$

wherein
the compounds of formula 1 have a molecular weight of from 300 to 5000 and
R^1 is hydroxyl, COOH, C_6H_4COOH, $NHC(O)R^9COOH$, hydroxyphenyl, $COOR^9.SO_3H$, $C_6H_4SO_3H$, R^9SO_3H, $COOR^9SO_3H$, OSO_3H, $C_6H_4OSO_3H$ OR^9SO_3H, OR^9OSO_3H, $OP(OH)_2$, $R^9P(OH)_2O$, or phenyl:
R^2 is hydrogen or COOH;
R^3 is hydrogen or C_1–C_4 alkyl;
R^4 is hydrogen or C_1–C_4 alkyl;
R^5 is hydrogen, COOH, C_6H_4COOH, $NHC(O)R^9COOH$, hydroxyphenyl, $COOR^9$, SO_3H, $C_6H_4SO_3H$, R^9SO_3H, $COOR^9SO_3H$, OSO_3H, $C_6H_4OSO_3H$, OR^9SO_3H, OR^9OSO_3H, $OP(OH)_2$, $R^9P(OH)_2O$, phenyl, OR^{10}, hydroxyl or pyrrolidonyl;
R^6 is hydrogen or COOH;
R^7 is hydrogen or C_1–C_4 alkyl;
R^8 is hydrogen or C_1–C_4 alkyl;
R^9 is C_1–C_4 alkyl;
R^{10} is C_1–C_4 alkyl;
R^{11} is hydrogen or CH_3;
R^{12} and R^{13} are hydrogen;
R^{14} is hydrogen or CH_3;
R^{15} is hydrogen, hydroxyl or C_1–C_4 alkyl;
R^{16} is hydrogen or C_1–C_4 alkyl;
R^{17} is N, NR^{19} N or NR^9NR^9N;
R^{18} is C_1–C_4 alkyl;
R^{19} is C_1–C_4 alkyl;
R^1 and R^2 when taken together are anhydride;
R^5 and R^6 when taken together are anhydride:
n and m are independently 3–100; and
p and q are independently 0–3.

5,712,225
OXA-AND THIA(DI)AZABICYCLIC COMPOUNDS

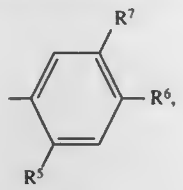
Wonpyo Hong, Hockessin, Del.; Matthias Schafer, Obernburg, Germany, and Thomas Martin Stevenson, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., and Degussa Aktiengesellschaft, Frankfurt, Germany
PCT No. PCT/US94/09522, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/06643, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 30, 1994, Ser. No. 605,010
Int. Cl.⁶ C07D *498/02;* **A01N** *43/824*
U.S. Cl. 504—223 **5 Claims**

1. A compound of the formula

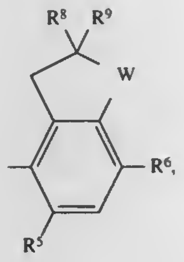


I

wherein:
X is selected from the group O, S, S(O), $S(O)_2$, $CHOCH_2F$, $CHOCHF_2$, $CHOCF_3$, $CHOCH_2CF_3$ and NR^4;
m and n are independently 1 or 2, where m+n=2 or 3;
p is 0 to 9;
U is N or CH;
W is independently O or S;
R^A is independently selected from the group halogen, C_1–C_4 alkyl, cyano, C_1–C_4 haloalkyl, C_3–C_4 alkenyl, C_1–C_3 alkylthio, C_1–C_3 haloalkylthio, C_2–C_4 alkylcarbonyl, OR^3, C_2–C_6 alkyloxycarbonyl, C_2–C_6 haloalkoxycarbonyl, and C_3–C_8 alkoxycarbonylalkyl; or, two R^A groups on the same carbon atom, together with this carbon, are C═O;
R^3 is selected from the group hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkylcarbonyl and C_2–C_4 haloalkylcarbonyl;
R^4 is selected from the group hydrogen, C_1–C_3 alkyl, C_1–C_3 haloalkyl, C_2–C_4 alkylcarbonyl, C_2–C_4 haloalkoxycarbonyl and C_2–C_4 alkoxycarbonyl;
provided that when X is $CHOCH_2F$, $CHOCHF_2$, $CHOCF_3$, or $CHOCH_2CF_3$, m and n are 1, and U is N, then p is 1 to 5 and at least one R^A is other than alkyl;
Q is selected from the group



Q-1



Q-2

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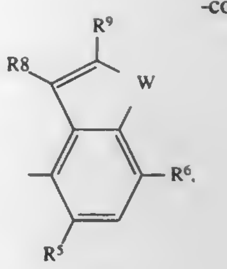
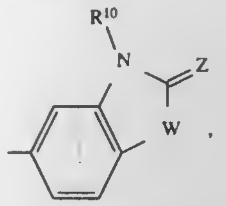
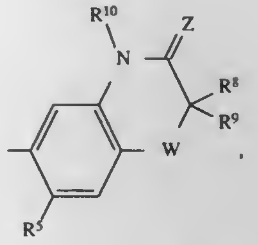


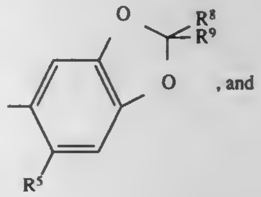
Q-3



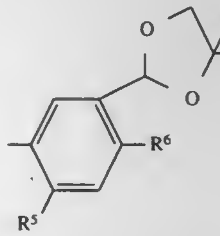
Q-4



Q-5



Q-6



Q-7

Z is O or S;
R^5 is hydrogen or halogen;
R^6 is selected from the group C_1–C_2 alkyl, C_1–C_2 haloalkyl, OCH_3, SCH_3, $OCHF_2$, halogen, CN and NO_2;
R^7 is selected from the group hydrogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, halogen, OR^{11}, SR^{11}, $S(O)_qR^{11}$, COR^{11}, CO_2R^{11}, $C(O)SR^{11}$, $C(O)NR^{12}R^{13}$, CHO and $NHSO_2NHR^{16}$;
R^8 is selected from the group hydrogen, C_1–C_3 alkyl, C_1–C_3 haloalkyl and halogen;
R^9 is selected from the group hydrogen, C_1–C_3 alkyl, C_1–C_3 haloalkyl and halogen; or, when Q is Q-2 or Q-6, R^8 and R^9 together with the carbon to which they are bonded is additionally selected from C═O;
R^{10} is selected from the group C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_6 alkoxyalkyl, C_3–C_6 alkenyl and C_3–C_6 alkynyl;
R^{11} is selected from the group C_1–C_8 alkyl, C_3–C_8 cycloalkyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, C_1–C_8 haloalkyl, C_2–C_8 alkoxyalkyl, C_2–C_8 alkylthioalkyl, C_2–C_8 alkylsulphinylalkyl, C_2–C_8 alkylsulphonylalkyl, C_3–C_8 alkoxyalkoxyalkyl, C_4–C_8 cycloalkylalkyl, C_2–C_4 carboxyalkyl, C_3–C_8 alkoxycarbonylalkyl, C_6–C_8 alkenyloxycarbonylalkyl, C_6–C_8 alkynyloxycarbonylalkyl, C_5–C_8 alkoxycarbonylalkenyl, C_4–C_8 alkenyloxyalkyl, C_6–C_8 cycloalkoxyalkyl, C_4–C_8 alkynyloxyalkyl, C_3–C_8 haloalkoxyalkyl, C_4–C_8 haloalkenyloxyalkyl, C_4–C_8 haloalkynyloxyalkyl, C_4–C_8 alkenylthioalkyl, C_4–C_8 alkynylthioalkyl; C_1–C_4 alkyl substituted with phenoxy or benzyloxy, each of the phenoxy and benzyloxy optionally substi-

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tuted with at least one member independently selected from the group halogen, C_1–C_3 alkyl and C_1–C_3 haloalkyl, C_4–C_8 trialkylsilylalkyl, C_3–C_8 cyanoalkyl, C_3–C_8 halocycloalkyl, C_3–C_8 haloalkenyl, C_5–C_8 alkoxyalkenyl, C_5–C_8 haloalkoxyalkenyl, C_5–C_8 alkylthioalkenyl, C_3–C_8 haloalkynyl, C_5–C_8 alkoxyalkynyl, C_5–C_8 haloalkoxyalkynyl, C_5–C_8 alkylthioalkynyl, C_2–C_8 alkylcarbonyl; benzyl optionally substituted with at least one member independently selected from the group halogen, C_1–C_3 alkyl and C_1–C_3 haloalkyl; $CHR^{17}COR^{18}$, $CHR^7P(O)(OR1^{18})_2$, $P(O)(OR^{18})_2$, $CHR^{17}P(S)(OR^{18})_2$, $CHR^{17}C(O)NR^{12}R^{13}$, $CHR^{17}C(O)NH_2$, phenyl and pyridyl, each of the phenyl and pyridyl optionally substituted with at least one member independently selected from the group halogen, C_1–C_3 alkyl, C_1–C_3 haloalkyl, C_1–C_4 alkoxy and $CHR^{17}CH{=}NOR^{18}$;

R^{12} and R^{14} are independently hydrogen or C_1–C_4 alkyl;

R^{13} and R^{15} are independently selected from the group C_1 –C_4 alkyl and phenyl optionally substituted with at least one member independently selected from the group halogen, C_1–C_3 alkyl, C_1–C_3 haloalkyl and C_1–C_4 alkoxy; or

R^{12} and R^{13} are taken together as $—(CH_2)_5—$, $—(CH_2)_4—$ or $—CH_2CH_2OCH_2CH_2—$, each independently forming a ring in which one or more H atoms is optionally replaced by at least one member independently selected from the group C_1–C_3 alkyl, optionally substituted phenyl and optionally substituted benzyl; or

R^{14} and R^{15} together with the carbon atom to which they are attached is C_3–C_8 cycloalkyl;

R^{16} is C_1–C_4 alkyl or C_1–C_4 haloalkyl;

R^{17} is hydrogen or C_1–C_3 alkyl;

R^{18} is selected from the group C_1–C_6 alkyl, C_3–C_6 alkenyl and C_3–C_6 alkynyl; and

q is 1 or2.

5,712,226
OPTICALLY ACTIVE D-PYRIDYLOXY PHENOXY PROPIONATE HERBICIDES

Hans Jürgen Nestler, Königstein/Taunus; Gerhard Hörlein, Frankfurt am Main; Reinhard Handte, Hofheim am Taunus; Hermann Bieringer, Eppstein/Taunus; Friedhelm Schwerdtle, Frankfurt am Main; Peter Langelüddeke, Hofheim am Taunus, and Peter Frisch, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

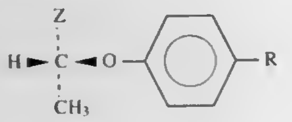
Continuation of Ser. No. 400,175, Mar. 6, 1995, abandoned, which is a continuation of Ser. No. 238,974, May 5, 1994, abandoned, which is a continuation of Ser. No. 98,452, Jul. 27, 1993, abandoned, which is a division of Ser. No. 790,128, Nov. 7, 1991, Pat. No. 5,254,527, which is a continuation of Ser. No. 663,274, Feb. 28, 1991, abandoned, which is a continuatinn of Ser. No. 434,490, Nov. 9, 1989, abandoned, which is a continuation of Ser. No. 144,612, Jan. 11, 1988, abandoned, which is a continuation of Ser. No. 730,295, May 3, 1985, abandoned, which is a division of Ser. No. 971,427, Dec. 20, 1978, Pat. No. 4,531,969. This application Jun. 6, 1995, Ser. No. 465,889

Claims priority, application Germany, Dec. 24, 1977, 27 58 002.5

Int. Cl.^{6} A01N *43/40;* **C07D** *213/643*

U.S. Cl. 504—251 **18 Clalms**

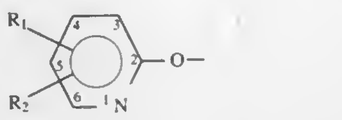
1. An optically active compound containing, based on the total amount of D- and L-enantiomers, at least 80 percent of the D-enantiomer of formula (1)



(I)

where

R is a group of the formula



(III)

in which

R_1 is halogen or CF_3;

R_2 is hydrogen, $(C_1$–$C_4)$-alkyl, halogen or NO_2;

Z is a group of the formula $—CO—O—R_3$, $—CO—S—R_4$, $—CO—NR_5R_6$, $—CO—NR_7—NR_8R_9$ or $—CS—NH_2$,

R_3 is hydrogen, $(C_1$–$C_{12})$-alkyl, which is unsubstituted or substituted by 1–6 halogen atoms or substituted by OH, $(C_1$–$C_6)$-alkoxy, $(C_1$–$C_4)$-alkylthio, $(C_1$–$C_6)$-alkoxy-C_2–C_6-alkoxy, halo-$(C_1$–$C_2)$-alkoxy, methoxy-ethoxy-ethoxy, $(C_1$–$C_4)$-alkylamino, Di-$(C_1$–$C_4)$-alkylamino, phenyl, oxiranyl or phenoxy, the latter one being unsubstituted or mono- or disubstituted by radicals selected from the group consisting of halogen and $(C_1$–$C_4)$-alkyl; $(C_5$–$C_6)$-cycloalkyl or halo-$(C_5$–$C_6)$-cycloalkyl; $(C_3$–C6)-alkenyl, halogeno-$(C_3$–$C_6)$-alkenyl or $(C_5$–$C_6)$-cycloalkenyl; (C3–C_4)-alkinyl, unsubstituted or mono- or disubstituted by (C1–C6)-alkyl, phenyl, halogen or $(C_1$–$C_2)$-alkoxy; phenyl, unsubstituted or mono- to trisubstituted by $(C_1$–$C_4)$-alkyl, $(C_1$–$C_4)$-alkoxy halogen, NO_2 or CF_3; furfuryl, tetrahydrofurfuryl or a cation equivalent of an organic or inorganic base;

$R_4$is $(C_1$–$C_6)$-alkyl unsubstituted or substituted by $(C_1$–$C_4)$-alkoxy, halogen or phenyl, the latter one being unsubstituted or mono- to trisubstituted by $(C_1$–$C_4)$-alkyl or halogen; $(C_3$–$C_6)$-alkenyl or phenyl unsubstituted or mono- to trisubstituted by $(C_1$–$C_4)$-alkyl or halogen or both;

R_5 and R_6, being identical or different, each are H, $(C_1$–$C_6)$-alkyl, hydroxy-$(C_1$–$C_6)$-alkyl, $(C_5$–$C_6)$-cycloalkyl or phenyl unsubstituted or mono- to trisubstituted by $(C_1$–$C_4)$-alkyl, $(C_1$–$C_4)$-alkoxy, halogen or CF_3 (with the proviso that not both R_5 and R_6 are phenyl), or together form a methylene chain having 2, 4 or 5 members, wherein a CH_2 group may be substituted by O, NH or $N(CH_3)$;

R_7 is H or CH_3;

R_8 is H, CH_3 or C_2H_5;

R_9 is H, CH_3, C_2H_5 or phenyl.

5,712,227
SUBSTRATE HAVING A SUPERCONDUCTOR LAYER

Kenjiro Higaki; Keizo Harada; Takashi Matsuura; Hitoshi Oyama; Hideo Itozaki, and Shuji Yazu, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd.

Continuation of Ser. No. 180,395, Jan. 11, 1994, abandoned, which is a continuation of Ser. No. 908,597, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 547,723, Jul. 12, 1990, abandoned. This application Jan. 25, 1995, Ser. No. 378,895

Claims priority, application Japan, Jun. 30, 1989, 1-168677; Jul. 24, 1989, 1-191014; Dec. 27, 1989, 1-338916

Int. Cl.^{6} H01L *39/12*

U.S. Cl. 505—234 **2 Claims**

1. A composite comprising a single crystal substrate of MgO, a superconducting thin film of compound oxide and an intermediate layer which is interposed between and contacting the substrate and the oxide superconducting thin film,

wherein said superconducting thin film of compound oxide has a composition represented by the formula:

$$Bi_4(Sr_{1-x}, Ca_x)_mCu_nO_{p+y}$$

in which "x", "m", "n", "p" and "y" are numbers each satisfying ranges of $6 \leqq m \leqq 10$, $4 \leqq n \leqq 8$, $0<x<1$ and $-2 \leqq y \leqq +2$, respectively and $p=(6+m+n)$, and

said intermediate layer has a composition represented by a formula:

$$Y_1Ba_2Cu_3O_{7-z}$$

in which "z" is a number satisfying a range of $0 \leqq z<1$, wherein said bismuth superconducting thin film is epitaxially deposited on said yttrium intermediate layer.

5,712,228
SILICONE BASED FLUIDS FOR DRILLING APPLICATIONS

Arvind D. Patel, Houston, Tex., assignor to M-I Drilling Fluids L.L.C., Houston, Tex.

Filed Sep. 21, 1995, Ser. No. 531,708

Int. Cl.^{6} C09K *7/02;7/00*

U.S. Cl. 507—233 **14 Claims**

1. In drilling a borehole in a subterranean formation using water base mud, wherein a drill string and drill bit are rotated in said formation, and the drill string or drill bit has become stuck, a process of unsticking the drill string or drill bit, comprising:

combining silicone with an emulsifier;

introducing said combination into the borehole which contains water base mud;

circulating in said borehole the water base mud and the combination of silicone and emulsifier in a volume sufficient to lubricate the drill pipe or drill bit so that the drill pipe or drill bit becomes unstuck.

5,712,229
WATERBORNE LUBRICANT FOR TEFLON PRODUCTS

David P. Hopkins, Salt Lake City, and Mohammad A. Khan, Sandy, both of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 568,886, Dec. 7, 1995, abandoned. This application Dec. 9, 1996, Ser. No. 762,360

Int. Cl.^{6} C10M *107/50*

U.S. Cl. 508—202 **5 Claims**

1. A lubrication solution for a medical device, consisting essentially of:

about 2% to about 6% of a silicone surfactant lubricant;

less than about 30% of a low molecular weight alcohol; and

the balance water.

5,712,230
ADDITIVE COMPOSITIONS HAVING REDUCED SULFUR CONTENTS FOR LUBRICANTS AND FUNCTIONAL FLUIDS

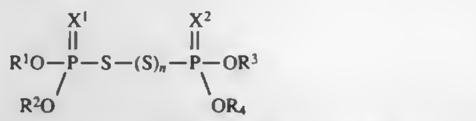
William D. Abraham, South Euclid; John S. Manka, Euclid; Stephen H. Roby, Chesterland, and James A. Supp, Parma, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 10, 1997, Ser. No. 812,897

Int. Cl.^{6} C10M *141/10*

U.S. Cl. 508—232 **47 Claims**

1. A composition of matter, said composition comprising (AT) the reaction products formed by treating compounds represented by the formula (A) with a compound to reduce the bound sulfur content of (A):



$$R^1O—\overset{\overset{\displaystyle X^1}{\|}}{\underset{\displaystyle / \atop R^2O}{P}}—S—(S)_n—\overset{\overset{\displaystyle X^2}{\|}}{\underset{\displaystyle \backslash \atop OR_4}{P}}—OR^3 \qquad (A)$$

wherein in Formula (A), R^1, R^2, R^3 and R^4 are independently hydrocarbyl groups, X^1 and X^2 are independently O or S, and n is zero to 3; and wherein said reaction products have lower copper reactivity than (A); and (B) an acylated nitrogen-containing compound having a substituent of at least 10 aliphatic carbon atoms.

5,712,231
POLYMERS HAVING DIHYDROXY MOIETIES

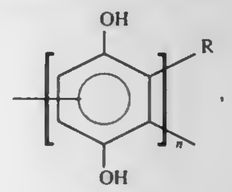
Abbimanyn Onkar Patil, Westfield; Manuel Anthony Francisco, Washington, both of N.J.; Ken Lewtas, Wantage, United Kingdom, and Howard Lih Fang, Bridgewater, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 4, 1996, Ser. No. 659,129

Int. Cl.^{6} C10M *145/00;* **C07C** *37/14*

U.S. Cl. 508—587 **7 Claims**

2. A lubricating composition comprising a major portion of oil of lubricating viscosity and a minor portion of an additive polymer comprising a plurality of dihydroxy aromatic moieties and a polyalkyl moiety, wherein the polymer has the formula



R is a polyalkyl group, and n is an integer ranging from about 2 to about 50.

5,712,232
AQUEOUS LIQUID CLEANSING COMPOSITION

Masaaki Moriyama; Hisateru Tanabe; Hideyuki Hanazawa, and Yasushi Kajihara, all of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,095

Claims priority, application Japan, Sep. 20, 1994, 6-224440; Sep. 20, 1994, 6-224441

Int. Cl.^{6} C11D *1/04;9/10;7/10*

U.S. Cl. 510—120 **10 Claims**

1. An aqueous liquid cleansing composition, consisting essentially of:

(A) from 5 to 50% by weight of a carboxylate surfactant; and

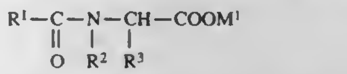
(B) from 0.1 to 5% by weight of an inorganic acid salt or organic acid salt, wherein:

when said salt is an inorganic acid salt it is selected from the group consisting of an alkali metal, alkaline earth metal, ammonium, alkylamine, and alkanolamine salt of an inorganic acid, and

when said salt is an organic acid salt it is selected from the group consisting of an alkali metal, alkaline earth metal, ammonium, alkylamine, and alkanolamine salt of an organic acid selected from the group consisting of acetic acid, propionic acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, citric acid, maleic acid, fumaric acid, glycolic acid, lactic acid, 2-hydroxybutyric acid, glyceric acid, hydroxymalonic acid, malic acid, tartaric acid, and citric acid, and

wherein said composition has a viscosity of 30 cps or less at 5° C. and is packaged in a squeeze or pump foamer container

wherein said carboxylate surfactant is selected from the group consisting of N-lauroyl-β-alanine, N-myristoyl-β-alanine and a compound represented by the following formula (1):



$$R^1—\underset{\underset{\displaystyle O}{\|}}{C}—\underset{\underset{\displaystyle R^2}{|}}{N}—\underset{\underset{\displaystyle R^3}{|}}{CH}—COOM^1 \qquad (1)$$

wherein R^1 represents a linear or branched alkyl or alkenyl group having 7 to 21 carbon atoms; R^2 represents a hydrogen atom or an alkyl or alkenyl group having 1 to 4 carbon atoms; R^3 represents $—(CH_2)_pR^4$ wherein R^4 represents a hydrogen atom, a hydroxyl group or $—COOM^1$; M^1 represents a hydrogen atom, an alkali metal or an alkanolamine; and p is a number from 0 to 2.

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5,712,233
ALKOXYLATE SURFACTANT COMPOSITIONS AND THE USE THEREOF IN PAPER DEINKING

Khalid Rasheed, Missouri City, Tex., assignor to Witco Corporation, Greenwich, Conn.

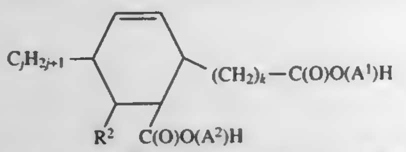
Filed Jan. 22, 1996, Ser. No. 589,855

Int. Cl.^{6} D21C *5/02*

U.S. Cl. 510—174 **34 Claims**

1. A deinking composition useful in the froth flotation deinking of waste paper, comprising a surfactant comprising a mixture of one or more

(A) cyclohexenyl dialkoxylates of the formula (A)



(A)

wherein R^2 is H or CH_3, j is 1–11, k is 1–11, and (j+k) is 10–14, A^1 and A^2 are alkoxylate chains composed of propoxy units, ethoxy units, or both propoxy and ethoxy units, and the dialkoxylate has a molecular weight of 6,000 to 18,000, and mixtures thereof; and one or more

(B) alkoxylates of straight-chain, branched-chain, and cyclic polyhydric alcohols containing 3 to 12 carbon atoms and at least 2 hydroxyl groups, wherein each alkoxylate chain is composed of propoxy units, ethoxy units, or propoxy and ethoxy units, wherein the alkoxylate has a molecular weight of 6,000 to 50,000, and mixtures thereof.

5,712,234
GRAFFITI REMOVERS WHICH COMPRISE A DYE BLEACHING AGENT

Daniel B. Pourreau, Downingtown, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Continuation of Ser. No. 345,098, Nov. 28, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,358

Int. Cl.^{6} C11D *7/54*

U.S. Cl. 510—174 **16 Claims**

1. A graffiti remover which comprises:
(a) from about 20 to about 60 wt. % of a dye solvent selected from the group consisting of pyrrolidones and lactones;
(b) from about 40 to about 80 wt. % of a dye non-solvent selected from the group consisting of glycol ether esters and glycol diethers; and
(c) from about 0.1 to about 10 wt. % of a dye bleaching agent selected from the group consisting of main group metal hydrides, transition metal hydrides, and alkali metal hydrosulfites.

5,712,235
BAR SOAPS

Claus Nieendick, Krefeld; Gerhard Wollmann, Hilden; Bernd Richter, Leichlingen; Karl-Heinz Schmid, Mettmann; Andreas Syldath, Duesseldorf, and Bernd Fabry, Korschenbroich, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/02968, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/07975, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 6, 1994, Ser. No. 617,906

Claims priority, application Germany, Sep. 15, 1993, 43 31 297.7

Int. Cl.^{6} C11D *1/68;1/74;3/22*

U.S. Cl. 510—151 **21 Claims**

1. A bar soap comprising: (a) an alkyl oligoglucoside an alkenyl oligoglycoside, or a combination thereof; (b) a fatty acid-N-alkyl polyhydroxyalkylamide; (c) from about 45 to about 95% by weight of soap; (d) from 0 to about 10% by weight of anionic surfactant selected from the group consisting of alkyl sulfates, monoglyceride (ether) sulfates, fatty acid alkanolamide (ether) sulfates, isethionates, taurides, sarcosinates, mono- and dialkyl sulfosuccinates, ether carboxylic acids, sulfotriglycerides and alkyl oligoglucoside sulfates; wherein the ratio by weight of component (a) to component (b) is from 2:1 to about 1:2 and the total weight of component(a) plus component (b) is from 4 to 7%.

5,712,236
ALKALI METAL CLEANER WITH ZINC PHOSPHATE ANTI-CORROSION SYSTEM

Steven A. Bolkan, Hopewell; Steve Dunn, Hillsborough, and Gale Byrnes, Califon, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Aug. 2, 1995, Ser. No. 510,413

Int. Cl.^{6} C11D *7/16;3/06;3/10;7/12*

U.S. Cl. 510—259 **25 Claims**

1. An aqueous metal cleaning concentrate comprising: about 5–40 wt. % of a metal cleaning composition and the balance water, the metal cleaning composition comprising an alkali metal salt, a water soluble salt of magnesium, and a zinc phosphate corrosion inhibitor.

5,712,237
COMPOSITION FOR CLEANING TEXTILES

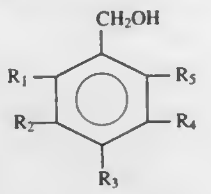
Edwin B. Stevens, 30 Brookside Rd., West Orange, N.J. 07052

Filed Nov. 27, 1995, Ser. No. 563,176

Int. Cl.^{6} C11D *3/20;3/44;1/72*

U.S. Cl. 510—291 **31 Claims**

1. A composition for use as a cleaning or degreasing composition consisting essentially of:
i. about 3% to about 95% by weight of at least one dibasic ester, selected from the group consisting of dimethyl adipate, dimethyl glutarate, dimethyl succinate and mixtures thereof;
ii. about 5% to about 50% by weight of a hydrophilic alcohol selected from the group consisting of methanol, ethanol, propanol and isopropanol;
iii. about 0% to about 10% by weight of at least one phenyl-substituted benzyl alcohol according to the general structure:



where R_1–R_5 are H or C_1–C_5 alkyl.
iv. about 0% to about 20% by weight of a terpene compound;
v. about 0.001% to about 15% by weight of a surfactant; and
vi. about 3% to about 75% by weight water.

5,712,238
MULTIPURPOSE CLEANING AGENT

Wu Hsiung Chan, 4F., No. 530 Sung Chiang Rd.,, Taipei, Taiwan

Filed Aug. 2, 1996, Ser. No. 691,707

Int. Cl.^{6} C11D *3/065;1/37;9/12;9/14*

U.S. Cl. 510—367 **1 Claim**

1. A multipurpose cleaning agent containing 6.5–8% sodium alkyl sulfate, 2.7–4% fatty acid coconut diethanolamide, 0.38–0.42% citric acid, 0.38–0.42% ethylene diamine tetraacetic acid, 0.42–0.48% sodium citrate, 2.88–3.2% water, 1.88–2.5% sodium polyoxyethylene alkyl ether sulfate, 0.5– 1% CMC (Sodium carboxy methyl cellulose), 0.2–0.4% sodium percarbonate ($2Na_2Co_33H_2O_2$), 2–5% sodium tripoly phosphate, 40.38–35.89% low density sodium carbonate, 40.38–35.89% $Na_2SO_4.H_2O$, 0.4–0.8% savinase 40T, and 1–2% celluzyme 0.7T.

5,712,239
AQUEOUS LIQUID COMPOSITIONS COMPRISING PERACID COMPOUNDS AND SUBSTITUTED PHENOLIC COMPOUNDS

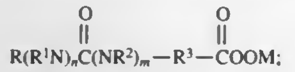
Charles Nathaniel Knowlton, Glen Rock; Janet Coope, Hackensack; Daniel Kuzmenka, Wallington, and Mark Stephen Naser, Hamburg, all of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Apr. 8, 1996, Ser. No. 629,982

Int. Cl.^{6} C11D *3/395*

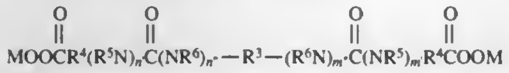
U.S. Cl. 510—372 **9 Claims**

1. A liquid detergent composition comprising;
(1) 20% to 80% by wt. of a surfactant selected from the group consisting of anionic, nonionic, cationic, amphoteric and zwitterionic surfactants and mixtures thereof;
(2) 0.1 to 10% by wt. of a peroxyacid selected from the group consisting of
(i) mono- or percarboxylic acids of formula:



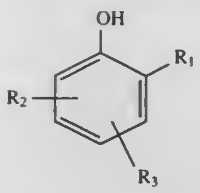
$$R(R^1N)_n\overset{O}{\overset{\|}{C}}(NR^2)_m—R^3—\overset{O}{\overset{\|}{C}}OOM;$$

wherein
R is selected from the group consisting of C_1–C_{16} alkyl, C_3–C_{16} cycloalkyl and C_6–C_{12} aryl radicals;
R^1 is selected from the group consisting of hydrogen, C_1–C_{16} alkyl, C_3–C_{16} cycloalkyl and C_1–C_{12} aryl radicals;
R^2 is selected from the group consisting of hydrogen, C_1–C_{16} alkyl, C_3–C_{16} cycloalkyl and C_1–C_{12} aryl radicals and a carbonyl radical that can form a ring together with R when R^3 is arylene;
R^3 is selected from the group consisting of C_1–C_{16} alkylene, C_5–C_{12} cycloalkylene and C_6–C_{12} arylene radicals;
n and m are integers whose sum is 1; and
M is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, ammonium and alkanol ammonium cations and radicals;
(ii) di-percarboxylic acids of formula:



$$MOO\overset{O}{\overset{\|}{C}}R^4(R^5N)_{n'}\overset{O}{\overset{\|}{C}}(NR^6)_{n''}—R^3—(R^6N)_{m''}\overset{O}{\overset{\|}{C}}(NR^5)_{m'}R^4\overset{O}{\overset{\|}{C}}OOM$$

wherein:
R^4 is selected from the group consisting of C_1–C_{12} cycloalkylene, C_5–C_{12} alkylene cycloalkylene, C_6–C_{12} arylene and radical combinations thereof;
R^5 is selected from the group consisting of hydrogen, C_1–C_{16} alkyl and C_6–C_{12} aryl radicals and a carbonyl radical that can form a ring together with R^3;
R^6 is selected from the group consisting of hydrogen, C_1–C_{16} alkyl and C_6–C_{12} aryl radicals and a radical that can form a C_3–C_{12} ring together with R^3;
R^3 is selected from the group consisting of C_1–C_{12} alkylene, C_5–C_{12} cycloalkylene and C_6–C_{12} arylene radicals;
n' and n" each are an integer chosen such that the sum thereof is 1;
m' and m" each are an integer chosen such that the sum thereof is 1; and
M is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, ammonium and alkanolammonium cations and radicals; and
(iii) ω-phthalimido peroxyhexanoic acid (PAP); and
(3) 0.01 to 20.0% by wt. of a substituted phenolic compound:



wherein:
R_1=C_1 to C_{10} straight or branched chain alkyl; and
R_2 and R_3 are C_1 to C_{10} straight or branch chain alkyl, hydroxy, alkoxy or hydrogen wherein R_2 and R_3 may be the same or different.

5,712,240
AQUEOUS CLEANING COMPOSITIONS PROVIDING WATER AND OIL REPELLENCY TO FIBER SUBSTRATES

Michael Richard Tyerech, Fort Lee; Jeanne Marie Weller, Glen Rock, both of N.J.; Andrew Francis Colurciello, Jr., Newburgh, N.Y., and Tracy Ann Ryan, Rivervale, N.J., assignors to Reckitt & Colman Inc., Montvale, N.J.

Filed Oct. 1, 1996, Ser. No. 724,441

Claims priority, application United Kingdom, Apr. 25, 1996, 9608503; Jul. 19, 1996, 9615180

Int. Cl.^{6} C11D *1/722;1/12;3/37;7/50*

U.S. Cl. 510—424 **37 Claims**

1. Aqueous cleaning compositions which impart oil and water repellent characteristics to fibrous substrates which comprise:
(a) a fluoroaliphatic oligomer or polymer according to the general formulae (3):

$$C_aF_{2a+a}N(CH_3)(W)_3(A)_nB^{31'}X^+ \qquad (3)$$

in which:
B is a water soluble group selected for sulfate, sulfonate, carboxylate, phosphate, phosphonate or halogen group;
W is a lower alkyl group especially a $—CH_2—$, $—CH_2CH_2—$ and/or $—CH_2CH_2CH_2—$;
A is an ethoxy (OC_2H_4), propoxy (OC_3H_6), and/or butoxy (OC_4H_8) or is a mixture of two or more such groups;
X+ is a salt forming organic counterion, or an inorganic counterion;
n represents a value of between 1 and 8;
a represents a value of between 1 and 12,
(b) anionic surfactant selected from alkyl sulfates, alkyl benzene sulfates, and alkane sulfonates as well as salt forms thereof;
(c) organic solvent;
(d) water;
and further optionally;
(e) one or more additives selected from preservatives, coloring agents; fragrances, anti-foaming agents, pH adjusting agents, buffer compositions, anti-soiling agents and resoiling inhibitors, chelating agents, optical brighteners, further solvents or surfactants, one or more further fluorosurfactant compositions, and one or more nonionic surfactants selected from alkoxylated primary alcohols and alkoxylated secondary alcohols as well as salt forms thereof.

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5,712,241
LIGHT DUTY LIQUID CLEANING COMPOSITION

Philip Gorlin, Monmouth Junction, and Gary Jakubicki, Robbinsville, both of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Apr. 8, 1996, Ser. No. 629,955

Int. Cl.^{6} C11D *1/12;3/32;1/75;3/22*

U.S. Cl. 510—426 **4 Claims**

1. A clear light duty liquid cleaning composition which consists essentially of approximately by weight:

(a) 6% to 24% of an alkali metal or ammonium salt of a C_{8-18} ethoxylated alkyl ether sulfate;
(b) 0.1% to 8% of an amine oxide surfactant;
(c) 3% to 20% of an alkali metal salt of a C_{8-C16} beta-hydroxy paraffin sulfonate surfactant;
(d) 0 to 12% of at least one solubilizing agent;
(e) 3% to 20% of an alkyl polyglucoside surfactant;
(f) 0.5% to 6% of a C_{12}–C_{14} alkyl monoalkanol amide;
(g) 0.4% to 4% of an ethoxylated C_{12}–C_{14} alkyl monoalkanol amide; and
(h) the balance being water.

5,712,242
HIGH ACTIVE GRANULAR DETERGENTS COMPRISING CHELANTS AND POLYMERS, AND PROCESSES FOR THEIR PREPARATION

Yousef Georges Aouad, Brussel; Jose Luis Vega, and Adrian John Waynforth Angell, both of Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/01917, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO94/22992, PCT Pub. Date Oct. 13, 1994

PCT Filed Feb. 23, 1994, Ser. No. 532,555

Claims priority, application European Pat. Off., Mar. 30, 1993, 93870058.0

Int. Cl.^{6} C11D *11/00;3/20;3/37;17/00*

U.S. Cl. 510—444 **13 Claims**

1. A process for making a high active detergent paste which has a viscosity of at least 10 Pas when measured at 70° C. and a shear rate of 25 s^{-1}, comprising:

i) preparing a paste premix which comprises at least 40% by weight of an anionic surfactant; and
ii) mixing the paste premix with an aqueous solution comprising a polymer or copolymer which comprises a water soluble salt of a homopolymer or copolymer of an aliphatic carboxylic acid and

an aqueous solution comprising a chelating agent selected from the group consisting of succinic acids and salts thereof, phosphonic acids and salts thereof, and mixtures thereof wherein the weight ratio of chelating agent to polymer or copolymer is from about 1:20 to 1:1.

5. A process for making a high active free flowing granular detergent composition or component which comprises the steps of:

i) preparing a paste premix which comprises at least 40% by weight of an anionic surfactant;
ii) mixing the paste premix with an aqueous solution comprising a polymer or copolymer which comprises a water soluble salt of a homopolymer or copolymer of an aliphatic carboxylic acid, and an aqueous solution comprising a chelating agent selected from the group consisting of succinic acids and salts thereof, phosphonic acids and salts thereof, and mixtures thereof to give a high active detergent paste which has a viscosity of at least 10 Pas when measured at 70° C. and a shear rate of 25 s^{-1};
iii) mixing the high active detergent paste with an effective amount of powdered materials to agglomerate the high active paste in the high speed mixer, the high active paste having a residence time in the high speed mixer of from 1 second to 30 seconds;
iv) further processing the agglomerate resulting from step iii) by at least one of drying and cooling; and

wherein the weight ratio of the chelating agent to the polymer or copolymer is from about 1:20 to 1:1.

5,712,243
INTIMATE ADMIXTURES OF SALTS OF 2,2'-OXYDISUCCINATE (ODS) WITH SELECTED GLYCOLIPID BASED SURFACTANTS TO IMPROVE THE FLOW AND HANDLING CHARACTERISTICS OF THE (ODS) SALT

Eddie Nelson Gutierrez, Midland Park; Shang Ren Wu, Mahwab, both of N.J., and Peter Michael DiGiacomo, Heswall, United Kingdom, assignors to Lever Berothers Company, Division of Conopco, Inc., New York, N.Y.

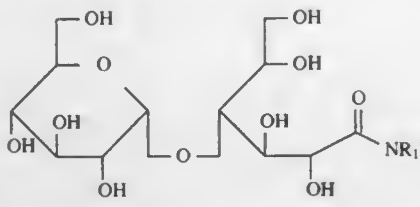
Continuation of Ser. No. 348,383, Dec. 2, 1994, abandoned. This application Jun. 20, 1996, Ser. No. 667,317

Int. Cl.^{6} C11D *3/20;3/22*

U.S. Cl. 510—446 **5 Claims**

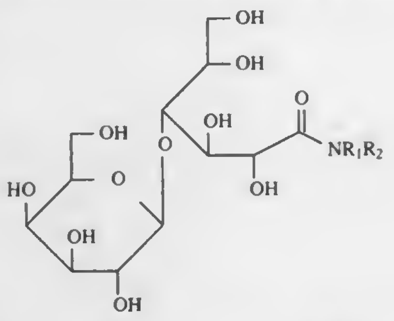
1. A method for improving the flowability of flowable granular compositions containing oxydisuccinic acid (ODS) comprising:

preparing an intimate admixture consisting essentially of of an alkali metal salt of said ODS with a glycolipid surfactant selected from the group consisting of alkyl maltobionamides, having the structure set forth below:



wherein R_1 and R_2 are the same or different and when different, differ by no more than 2 carbon atoms and are an aliphatic hydrocarbon radical of 8 to 18 carbon atoms;

alkyl lactobionamides of the structure set forth below;



wherein R_1 and R_2 are the same or different and when different, differ by no more than 2 carbon atoms and are an aliphatic hydrocarbon radical of 8 to 18 carbon atoms;

and an alkyl N-methyl glucamides having an alkyl group of 8 to 18 carbon atoms; in a ratio of said ODS to said glycolipid of 1:1.4 to 1:4.

5,712,244
RINSE AID COMPOSITIONS COMPRISING NON-NITROGEN-CONTAINING ORGANS DIPHOSPHONIC ACID, SALT OR COMPLEX THEREOF

Michael Crombie Addison; Lynda Anne Jones, and Rhona Alexandra Knox, all of Newcastle upon Tyne, England, assignors to Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 350,352, Dec. 6, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,211

Claims priority, application United Kingdom, Dec. 23, 1993, 9326235

Int. Cl.^{6} C11D *3/36;1/66;3/37*

U.S. Cl. 510—514 **26 Claims**

1. A rinse aid composition containing a non-nitrogen containing organo diphosphonic acid or a salt or complex thereof, at least 5% by weight of a surfactant system, and from 1% to 60% by weight of a carboxylate or polycarboxylate detergent builder selected from the group consisting of water soluble salts of lactic acid, glycolic acid and ethers thereof, succinic acid, malonic acid, (ethylenedioxy) diacetic acid, maleic acid, diglycolic acid, tartaric acid, tartronic acid, lamatic acid, citric acid, aconitic acid, and citraconic acid, the pH of said composition as a 1% solution in distilled water at 20° C. being less than 7.

5,712,245
RECEPTOR OF THE MINOR HUMAN RHINOVIRUS RECEPTOR GROUP

Dieter Blaas; Ernst Kuechler, both of Vienna; Harald Mischak, St. Poelten, and Christoph Neubauer, Vienna, all of Austria, assignors to Boehringer Ingelheim International GmbH, Germany

Division of Ser. No. 182,824, Jan. 19, 1994, Pat. No. 5,447,840, which is a division of Ser. No. 95,246, Jul. 22, 1993, Pat. No. 5,304,636, which is a continuation of Ser. No. 294,512, Feb. 14, 1989, abandoned. This application May 25, 1995, Ser. No. 450,684

Claims priority, application Germany, Apr. 14, 1987, 37 12 678.4

Int. Cl.^{6} A61K *38/00*

U.S. Cl. 514—2 **1 Claim**

1. A pharmaceutical composition for use in the treatment of rhinovirus infections, said composition comprising a receptor with a binding affinity for rhinoviruses of the minor receptor group and a pharmaceutically acceptable carrier, wherein said receptor has the following characteristics:

(i) a molecular weight of 120 kD on a polyacrylamide gel in the presence of SDS;
(ii) a sedimentation constant, determined by sucrose gradient centrifugation in the presence of detergents, corresponding to about 28.4 S;
(iii) is bound by *Lens culinaris* lectin;
(iv) is not bound by heparin-sepharose;
(v) binds irreversibly to an anion exchanger;
(vi) has binding activity which is insensitive to neuraminidase;
(vii) consists of sub-units connected by intermolecular disulfide bridges; and
(viii) shows no binding activity to rhinoviruses in the presence of EDTA.

5,712,246

Patent Not Issued For This Number

5,712,247
USE OF LACTOFERRIN TO MODULATE AND/OR NEUTRALIZE HEPARIN ACTIVITY

Hai-Feng Wu, Carrboro, and Frank Clement Church, Chapel Hill, both of N.C., assignors to University of North Carolina, Chapel Hill, N.C.

Filed Feb. 21, 1995, Ser. No. 391,986

Int. Cl.^{6} A61K *38/02;38/36;* **C07K** *14/00;14/435*

U.S. Cl. 514—12 **8 Claims**

1. A method for neutralizing blood coagulation by administration to a patient in need a pharmaceutically-acceptable formulation comprised of lactoferrin or a polypeptide fragment thereof, comprising residues 1–61.

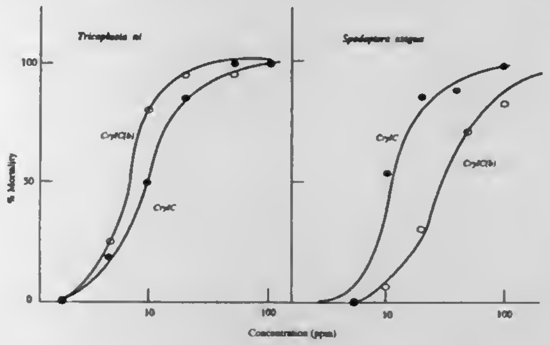
5,712,248
METHOD OF CONTROLLING INSECT WITH NOVEL INSECTICIDAL PROTEIN

Sue S. Kalman, Saratoga, and Kristine L. Kiehne, San Jose, both of Calif., assignors to Sandoz LTD., Basel, Switzerland

Division of Ser. No. 197,998, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 102,316, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 4,474, Jan. 14, 1993, abandoned, which is a continuation of Ser. No. 844,302, Feb. 27, 1992, abandoned. This application May 4, 1995, Ser. No. 434,823

Int. Cl.^{6} A01N *37/18;63/00*

U.S. Cl. 514—12 **8 Claims**



7. A method of controlling insects comprising exposing the insects to an insecticidally effective amount of a protein derived from expression of a vector in a cell, wherein said vector comprises a promoter operably linked to a nucleic acid having a sequence encoding a truncated CryIC(b) toxin polypeptide which comprises an amino acid sequence which results after an insect ingests and cleaves the polypeptide of SEQ ID NO:2.

5,712,249
USE OF INSULIN-LIKE GROWTH FACTORS I AND II FOR INHIBITION OF INFLAMMATORY RESPONSE

Philip F. Halloran, Edmonton, Canada, assignor to Ciba-geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 302,494, Sep. 8, 1994. This application May 19, 1995, Ser. No. 444,848

Int. Cl.^{6} A61K *37/36;38/00;* **C07K** *7/10*

U.S. Cl. 514—12 **7 Claims**

1. A method for inhibiting ischemic injury involving liver in a mammal at risk for decreased blood flow to the liver, comprising administering to said mammal an ischemic injury inhibiting dose of an IGF.

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5,712,250
PRODUCT FOR INHIBITION OF HUMAN ROTAVIRUS INFECTION

Pradip Mukerji, Gahanna; Pedro Antonio Prieto, Columbus; Amanda Eun-Yeong Seo, Gahanna; Jeffrey Harris Baxter, Galena, all of Ohio, and Richard Dale Cummings, Edmond, Okla., assignors to Abbott Laboratories, Abbott Park, Ill., and University of Oklahoma, Oklahoma City, Okla.

Continuation of Ser. No. 308,882, Sep. 16, 1994, abandoned. This application Oct. 15, 1996, Ser. No. 730,163

Int. Cl.^{6} A61K *38/00;38/16;* **C12P** *21/06;* **A23J** *1/02*

U.S. Cl. 514—12 **3 Claims**

1. An enteral nutritional product comprising an anti-rotaviral agent selected from the group consisting of native unhydrolyzed human kappa-casein and recombinant unhydrolyzed human kappa-casein at a concentration exceeding that found in human milk.

5,712,251
TREATMENT METHOD

Fernand Labrie, Quebec, Canada, and Jean-Pierre Raynaud, Paris, France, assignors to Roussel Uclaf, France

Division of Ser. No. 347,054, Nov. 30, 1994, which is a division of Ser. No. 19,232, Feb. 18, 1993, Pat. No. 5,389,613, which is a division of Ser. No. 595,297, Oct. 10, 1990, Pat. No. 5,189,021, which is a division of Ser. No. 334,088, Apr. 5, 1989, Pat. No. 4,981,842, which is a division of Ser. No. 120,408, Nov. 13, 1987, Pat. No. 4,851,386, which is a division of Ser. No. 921,737, Oct. 22, 1986, Pat. No. 4,745,102, which is a division of Ser. No. 895,179, Aug. 11, 1986, Pat. No. 4,728,640, which is a division of Ser. No. 621,421, Jun. 18, 1984, Pat. No. 4,743,589, which is a division of Ser. No. 468,932, Feb. 23, 1982, Pat. No. 4,472,382, which is a division of Ser. No. 189,168, Sep. 22, 1980, abandoned. This application May 18, 1995, Ser. No. 444,198

Claims priority, application France, Sep. 21, 1979, 79 23545

Int. Cl.^{6} A61K *38/00;* **C07K** *14/00*

U.S. Cl. 514—15 **6 Claims**

1. A method for treatment of prostate adenocarcinoma and prostate benign hypertrophia in male warm-blooded animals comprising administering to such male animals an effective amount of an association of an antiandrogen and an agonist of LH-RH.

5,712,252
METHOD OF AUGMENTING SOFT TISSUE IN MAMMALS

Dean Preston Smith, Knoxville, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Mar. 8, 1996, Ser. No. 611,613

Int. Cl.^{6} A61K *38/00;2/00*

U.S. Cl. 514—21 **38 Claims**

1. A method of augmenting soft tissue in mammals comprising: injecting keratin into the soft tissue, wherein the soft tissue is bladder tissue or urethral tissue.

5,712,253
MACROCYCLIC 13-MEMBERED RING DERIVATIVES OF ERYTHROMYCINS A AND B

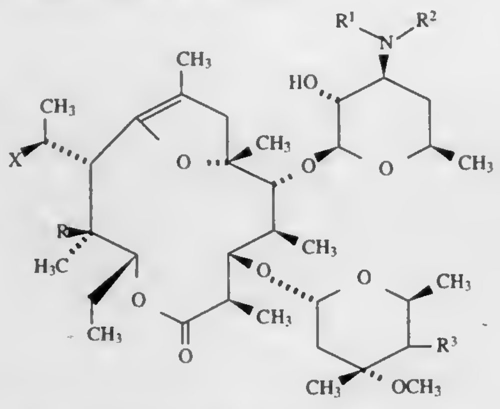
Paul A. Lartey, Wadsworth, Ill.; Cynthia Burnell Curty, Kenosha, Wis.; Ramin Faghih, Lake Forest, Ill.; Hugh Nerby Nellans, Lake Bluff, Ill., and Albert Christian Petersen, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 18, 1996, Ser. No. 668,050

Int. Cl.^{6} A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—28 **12 Claims**

1. A compound having the Formula



or a pharmaceutically acceptable salt thereof, wherein

R is H or OH;

R^1 and R^2 are independently selected from the group consisting of H, C_1–C_8-alkyl, phenyl-C_1–C_8-alkyl, and naphthyl-C_1–C_8-alkyl;

R^3 is selected from the group consisting of H, OH, O—C_1–C_8-alkyl, O—CO—C_1–C_8-alkyl, O—CO—phenyl, O—CO—NR^4R^5, where R^4 and R^5 are independently H or C_1–C_8-alkyl; NH_2; N—CO—C_1–C_8-alkyl; N—CO-phenyl; and N—CO—NR^4R^5, wherein R^4 and R^5 are independently H or C_1–C_8-alkyl; and

X is selected from the group consisting of F, Cl, Br, and I.

8. A method for treating gastrointestinal disorders associated with hypermotilinemia in humans and other mammals in need of such treatment comprising administering, to a patient in need thereof, a therapeutically effective amount of a compound according to claim **1**.

5,712,254
SIALIC ACID DERIVATIVES

Haruyuki Chaki; Naoko Ando; Yasuhiro Morinaka; Ken-Ichi Saito; Tomoko Yugami, and Rie Yoshida, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

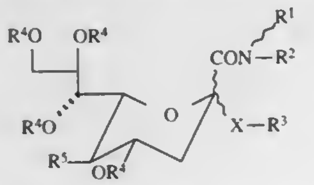
Filed Dec. 23, 1994, Ser. No. 362,947

Claims priority, application Japan, Dec. 24, 1993, 5-328454

Int. Cl.^{6} A61K *31/70;31/58;* **C07D** *315/00*

U.S. Cl. 514—42 **25 Claims**

1. A sialic acid derivative represented by the formula (I):



(I)

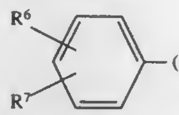
wherein

R^1 represents a steroidal compound residue:

R^2 represents hydrogen or C_1–C_4 alkyl:

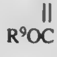
R^3 represents

(1) C_1–C_{15} alkyl



wherein each of R^6 and R^7 independently represents

(a) hydrogen,
(b) halogen,
(c) C_1–C_4 alkyl,
(d) hydroxyl,
(e) R^8O—,
wherein R^8 represents C_1–C_4 alkyl, phenyl or phenyl-$(C_1$–$C_3)$alkyl,
(f) nitro,
(g) amino,
(h) C_1–C_4 alkylamino,
(i) C_2–C_8 dialkylamino, or

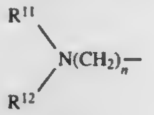
(j) 

$R^9OC(=O)$—

wherein R^9 represents hydrogen, C_1–C_4 alkyl, phenyl or phenyl-$(C_1$–$C_3)$ alkyl, and

l represents an integer of 0–6,

(3) $R^{10}O(CH_2)_m$-
wherein R^{10} represents
(a) hydrogen,
(b) C_1–C_4 alkyl,
(c) phenyl which is unsubstituted or is substituted by at least one member of the group consisting of C_1–C_4 alkyl, halogen, hydroxyl, nitro, amino and carboxyl, or
(d) phenyl-$(C_1$–$C_3)$alkyl which is unsubstituted or is substituted by at least one member of the group consisting of C_1–C_4 alkyl, halogen, hydroxyl, nitro, amino and carboxyl, and m is an integer of 2–6, or

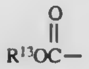


(4)

wherein

R^{11} represents hydrogen or C_1–C_4 alkyl,

R^{12} represents
(a) hydrogen,
(b) C_1–C_4 alkyl,
(c) C_2–C_7 acyl,
(d) C_1–C_4 alkylsulfonyl,
(e) phenylsulfonyl which is unsubstituted or is substituted by at least one member selected from the group consisting of C_1–C_4 alkyl, halogen, hydroxyl, nitro, amino and carboxyl, or



$R^{13}OC(=O)$—

(f)

wherein R^{13} represents C_1–C_4 alkyl, phenyl, or phenyl-$(C_1$–$C_3)$alkyl, and n is an integer of 2–6,

R_4 represents hydrogen or C_2–C_7 acyl,

R_5 represents
(1) $R^{14}O$—
wherein R^{14} is hydrogen or C_2–C_7 acyl, or
(2) $R^{15}NH$—
wherein R^{15} represents
(a) C_2–C_7 acyl,
(b) $R^{16}O(CH_2)_pCO$—
wherein R^{16} represents hydrogen, C_1–C_6 alkyl, phenyl or phenyl-$(C_1$–$C_3)$alkyl, and p represents an integer of 0 to 4,
(c) C_7–C_{11} aroyl which is unsubstituted or is substituted by at least one member of the group consisting of C_1–C_4 alkyl, halogen, hydroxyl, nitro, amino and carboxyl,
(d) phenyl-$(C_1$–$C_3)$alkylcarbonyl which is unsubstituted or is substituted by at least one member of the group consisting of C_1–C_4 alkyl, halogen, hydroxyl, nitro, amino and carboxyl,
(e) C_1–C_4 alkylsulfonyl, or
(f) phenylsulfonyl which is unsubstituted or is substituted by at least one member of the group consisting of C_1–C_4 alkyl, halogen, hydroxyl, nitro, amino and carboxyl,

X represents O or S,

or a pharmaceutically acceptable salt, hydrate or solvate thereof.

5,712,255
TREATMENT OF HERPES INFECTIONS WITH POLYSUBSTITUTED BENZIMIDAZOLES

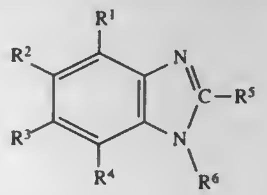
Leroy B. Townsend, and John C. Drach, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 50,470, May 3, 1993, which is a continuation-in-part of Ser. No. 607,899, Nov. 1, 1990, Pat. No. 5,248,672. This application Jun. 1, 1995, Ser. No. 457,391

Int. Cl.^{6} A01N *43/52;* **A61K** *31/70;* **C07D** *235/04*

U.S. Cl. 514—43 **16 Claims**

1. A method for treating a herpes viral infection comprising administering to the infected host a therapeutically effective amount of a compound, or a pharmaceutically acceptable salt or formulation thereof, selected from the group consisting of compounds having the following formula:



wherein

R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is Br and R_6 is β-D-ribofuranosyl (denoted compound 52 in the text);

R_1 is H, R_2 is NO_2, R_3 is NO_2, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 61 in the text);

R_1 is Cl, R_2 is H, R_3 is Cl, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 81 in the text);

R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is I and R_6 is β-D-ribofuranosyl (denoted compound 83a in the text);

R_1 is Br, R_2 is Br, R_3 is H, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 85 in the text);

R_1 is H, R_2 is Br, R_3 is Cl, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 95 in the text);

R_1 is H, R_2 is Cl, R_3 is Br, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 99 in the text);

R_1 is H, R_2 is I, R_3 is I, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 107 in the text);

R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is Cl and R_6 is 2'-deoxy-β-D-erythro-enthropentofuranosyl (denoted compound 111 in the text);

R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is Br and R_6 is 2'-deoxy-β-D-erythropentofuranosyl (denoted compound 112 in the text);

R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is Cl and R_6 is (1,3-dihydroxy-2-propoxy)methyl (denoted compound 155 in the text);

R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is NH_2 and R_6 is (1,3-dihydroxy- 2-propoxy)methyl (denoted compound 156 in the text);

R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is OCH_3 and R_6 is 2-hydroxyethoxymethyl (denoted compound 166a in the text);

R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is NH_2 and R_6 is 2-hydroxyethoxymethyl (denoted compound 167 in the text); and

R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is NH_2 and R_6 is benzyl (denoted compound 182 in the text).

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5,712,256
RIBONUCLEOTIDE PREPARATIONS AND USES THEREOF

Anil D. Kulkarni, St. Louis, Mo.; Charles T. Van Buren, and Frederick B. Rudolph, both of Houston, Tex., assignors to Board of Regents, Austin, and The University of Texas System and William Marsh Rice University, Houston, both of Tex.

Continuation of Ser. No. 86,346, Jun. 30, 1993, abandoned. This application Sep. 21, 1994, Ser. No. 309,958

Int. Cl.^{6} A61K *48/00;* **C12N** *5/00;15/00;* **C07N** *14/00*

U.S. Cl. 514—44 **4 Claims**

1. A method for promoting wound healing in an animal comprising: preparing a dietary composition supplemented with yeast RNA,

adenine or adenosine in an amount effective for promoting wound healing; and feeding said wounded animal with the composition.

5,712,257
TOPICALLY ACTIVE COMPOSITIONS OF MISMATCHED DSRNAS

William A. Carter, Birchrunville, Pa., assignor to HEM Research, Inc., Philadelphia, Pa.

Continuation of Ser. No. 147,431, Nov. 5, 1993, abandoned, which is a continuation of Ser. No. 926,372, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 731,400, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 545,661, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 428,016, Oct. 26, 1989, abandoned, which is a continuation of Ser. No. 227,929, Aug. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 84,226, Aug. 12, 1987, abandoned. This application May 23, 1995, Ser. No. 447,427

Int. Cl.^{6} A61K *31/715;6/04;* **C07H** *21/02*

U.S. Cl. 514—44 **15 Claims**

1. A topically applied pharmaceutical composition for the treatment of a condition susceptible to or sensitive to treatment with mismatched dsRNA comprising in a pharmaceutically acceptable topical carrier an effective quantity of a mismatched dsRNA in a ternary complex of two mismatched strands of dsRNA complexed with a surfactant.

5,712,258
INOTROPIC ADP AND ATP ANALOGUES AND THEIR PHARMACEUTICAL COMPOSITIONS

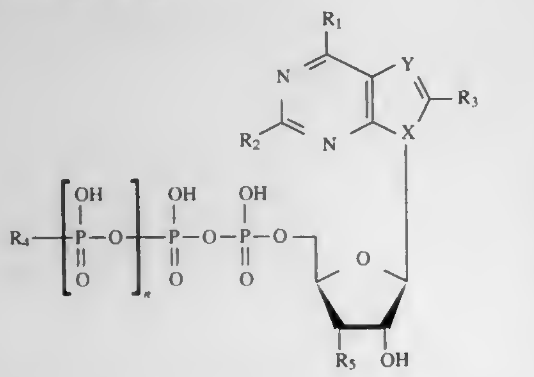
Bruce T. Liang, Merion Station, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Mar. 23, 1995, Ser. No. 409,350

Int. Cl.^{6} A61K *31/70;* **C07H** *19/20*

U.S. Cl. 514—47 **23 Claims**

1. A compound having structure:



or a pharmaceutically acceptable salt thereof, wherein:

R_1 and R_2, independently, are halogen or $—R_6—(R_7)_p—R_8$;

R_3 is halogen or $—R_6—(R_7)_p—R_8$;

R_4 is OH or SH;

R_5 is OH or acetamido;

R_6 is NH or S;

R_7 is alkylene having from 1 to 10 carbon atoms;

R_8 is H, NH_2, CN, cycloalkyl having 3 to about 10 carbon atoms, or aryl having 3 to about 20 carbon atoms;

X and Y are independently N or CH;

n is 0 or 1; and

p is 0 or 1.

23. A composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier, adjuvant, or vehicle.

5,712,259
NADH AND NADPH PHARMACEUTICALS FOR TREATING CHRONIC FATIGUE SYNDROME

Joerg G. D. Birkmayer, Vienna, Australia, assignor to Birkmayer Pharmaceuticals, New York, N.Y.

Filed Apr. 22, 1996, Ser. No. 636,202

Int. Cl.^{6} A61K *31/70*

U.S. Cl. 514—52 **10 Claims**

1. A method of treating Chronic Fatigue Syndrome, comprising the step of administering to a patient suffering from Chronic Fatigue Syndrome an effective amount of NADH or NADPH, or a physiologically compatible salt of NADH or NADPH.

5,712,260
ESTRAMUSTINE FORMULATIONS WITH IMPROVED PHARMACEUTICAL PROPERTIES

Alessandro Martini, Milan; Giuseppe Maccari, Voghera; Lorena Muggetti, Milan; Giuseppe Colombo, Milan, and Giovanni Buzzi, Milan, all of Italy, assignors to Pharmacia AB, Stockholm, Sweden

PCT No. PCT/EP95/03438, § 371 Date May 6, 1996, § 102(e) Date May 6, 1996, PCT Pub. No. WO96/09072, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 1, 1995, Ser. No. 635,956

Claims priority, application United Kingdom, Sep. 22, 1994, 9419153.3

Int. Cl.^{6} A61K *31/705*

U.S. Cl. 514—58 **13 Claims**

1. A pharmaceutical composition suitable for oral administration, comprising an estramustine compound and a cyclodextrin in a ratio from about 1:1 to 1:10, wherein said estramustine compound is selected from the group consisting of estramustine-17-phosphate and estramustine-17-phosphate disodium salt.

5,712,261
METHOD FOR PREVENTING OR TREATING HYPERTRIGLYCERIDEMIA

David R. Magnin, 40 Cottage Crt., Hamilton, N.J. 08690; Scott A. Biller, 31 Second St., Hopewell, N.J. 08525; John K. Dickson, Jr., 14 Shelter Rock Rd., Eastampton, N.J. 08060; R. Michael Lawrence, 48 W. Crown Ter., Yardley, Pa. 19067, and Richard B. Sulsky, 71 Gregory La., Franklin Park, N.J. 08823

Continuation-in-part of Ser. No. 131,364, Oct. 4, 1993. This application Jun. 21, 1995, Ser. No. 493,032

Int. Cl.^{6} C07F *9/38;* **A61K** *31/66*

U.S. Cl. 514—75 **18 Claims**

1. A method for inhibiting and/or treating hypertriglyceridemia, which comprises administering to a mammalian species in need of treatment a therapeutically effective amount of a squalene synthetase inhibitor including a prodrug ester thereof, which is exclusive of boron or boron containing moieties, and which inhibits de novo cholesterol biosynthesis.

5,712,262
USE OF SPHINGOSINE-1-PHOSPHATE TO SUPPRESS PROGRAMMED CELL DEATH

Sarah Spiegel, 6343 Linway Terr., McLean, Va. 22101

Filed Nov. 21, 1996, Ser. No. 754,323

Int. Cl.^{6} A61K *31/66*

U.S. Cl. 514—114 **5 Claims**

1. A method of delaying programmed cell death by administration of a programmed cell death-delaying effective amount of sphingosine-1-phosphate.

5,712,263
STEROID DERIVATIVES

Chihiro Yokoo; Hisaya Wada; Hidemichi Mitome; Tatsuhiko Sano; Katsuo Hatayama, and Yasuji Yamada, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1996, Ser. No. 663,929

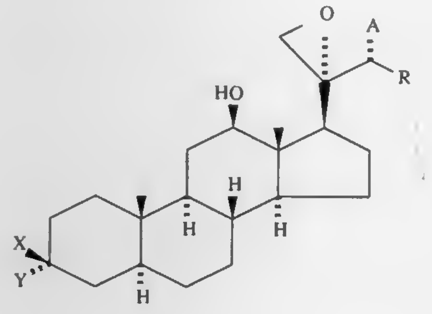
Claims priority, application Japan, Dec. 15, 1993, 5-315246

Int. Cl.^{6} A61K *31/58;* **C07J** *17/00*

U.S. Cl. 514—172 **4 Claims**

1. A steroid derivative represented by the formula:

(I)



wherein R is a straight or branched alkyl group having 1 to 13 carbon atoms, A is a hydroxyl group or a group easily hydrolyzable to a hydroxyl group, with the caveat that R and A do not include asymmetric carbon atoms, X and Y together form an oxo group or an alkylenedioxy group having 2 or 3 carbon atoms, X is a hydroxyl group, an alkoxy group having 1 to 5 carbon atoms or a group easily hydrolyzable to a hydroxyl group, Y is a hydrogen atom or an alkoxy group having 1 to 5 carbon atoms, with the proviso that when X is a hydroxyl group or a group easily hydrolyzable to a hydroxyl group, Y is a hydrogen atom, and when X is an alkoxy group having 1 to 5 carbon atoms, Y is an alkoxy group having 1 to 5 carbon atoms, or salt thereof.

5,712,264
17-SPIROMETHYLENE STEROIDS

Johannes Antonius Maria Hamersma; Everardus Otto Maria Orlemans, and Johannes Bernardus Maria Rewinkel, all of Oss, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

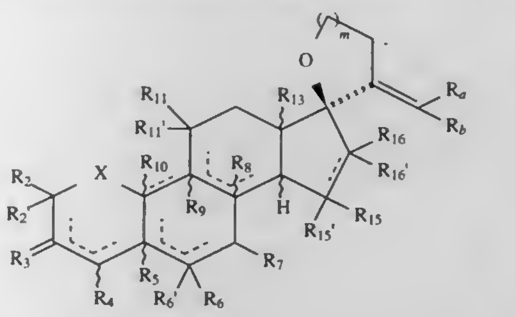
Filed Jul. 28, 1993, Ser. No. 98,665

Claims priority, application European Pat. Off., Jul. 29, 1992, 92202339; Jun. 10, 1993, 93201657

Int. Cl.^{6} C07J *21/00;41/00;43/00;* **A61K** *31/58*

U.S. Cl. 514—173 **19 Claims**

1. A 17-spiromethylene steroid having the formula:



wherein:

R_a and R_b are independently selected from the group consisting of hydrogen, methyl, and halogen;

m is 1;

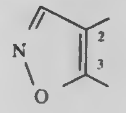
X is CHR_1 or a bond;

R_1 is H, CH_3, CN, OH, Oacyl, F, spirocyclopropyl; or together with R_2 or R_{10} is CH_2, CF_2, or $OC(CH_3)_2O$; or together with R_{11} is CH_2O;

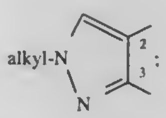
R_2 is H, alkyl, CH_2OH, CN, OH, Oacyl, F, or spirocyclopropyl; or together with R_1 or R_3 is a group indicated in the definitions of R_1 and R_3, respectively; or together with R_{10} is CH_2; or together with $R_{2'}$ is $=CH—R$, wherein R is H, OH, Oalkyl, or Oacyl;

R_2' is H, alkyl, or CN; or together with R_2 is a group indicated in the definition of R_2;

R_3 is H_2, O, NOH, NOalkyl, NOacyl, (H,OH), (H,Oacyl), (O,Oalkyl), (H,Ocycloalkyl), or 1-pyrrolidinyl; or (O,alkynyl) when X is a bond; or R_2 and R_3 together with C2 and C3 of the steroid skeleton form an oxazole:



or a diazole:



R_4 is H, alkyl, halogen, CN, N_3, OH, phenylmethyl, phenylthiomethyl, methylthio, or alkylcarbonylthio;

R_5 is H or OH;

one of R_6 and R_7 is H, alkyl, CF_3, CH_2F, OH, halogen, CN, Oalkyl, Oacyl, Sacyl, CH_2OH, NO_2, COOalkyl, OSO_2alkyl, or spirocyclopropyl, and the other is H; or R_6 together with R_7 is CH_2, CF_2, O, or CHClCHCl; or R_6 together with $R_{6'}$ is CH_2 when R_7 is H; or R_7 together with $R_{7'}$ is CH_2 or CF_2 when R_6 is H;

$R_{6'}$ is H; or H or alkyl when R_6 is alkyl; or H or halogen when R_6 is halogen; or together with R_6 is a group indicated in the definition of R_6; or H or F when R_6 and R_7 together are CF_2;

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R_7' is H; or H or alkyl when R_7 is alkyl; or H or halogen when R_7 is halogen; or together with R_7 is a group indicated in the definition of R_7;

R_8 is H or CH_3;

R_9 is H, halogen, OH, or methyl; or together with R_{10} is CH_2 or O;

R_{10} is H, alkyl, halogen-substituted alkyl, alkenyl, alkynyl, halogen, OH, OOH, OOacyl, Oalkyl, Oalkynyl, amino, alkyl-substituted amino, NHacyl, aminomethyl, alkyl-substituted aminomethyl, CHO, COOH, COOalkyl, CH_2OH, CH_2Oacyl, or CH_2CH_2OH; or together with R_1, R_9, or R_{11} is a group indicated in the definition of R_1, R_9, or R_{11} respectively; or together with C10, C9, C11 of the steroid skeleton and R_{11}, when R_{11} is a substituted or unsubstituted phenyl, naphthyl, pyridinyl, pyrimidinyl, or thienyl, as defined for R_{11} below, is a 6-membered ring;

R_{11} is H, alkyl, cycloalkyl, alkenyl, alkynyl, phenylethyl, phenylethynyl, naphthylethynynl, pyridinylethynyl, pyrimidinylethynyl, thienylethynyl, halogen-substituted alkyl, alkyl-substituted aminoalkyl, halogen, CH_2OCH_3, OH, OOH, Oalkyl, Oacyl, SH, Salkyl, N_3, $Si(CH_3)_2$, phenyl, naphthyl, pyridinyl, pyrimidinyl or thienyl, wherein any of said phenyl, naphthyl, pyridinyl, pyrimidinyl and thienyl moieties are optionally substituted with alkyl, Oalkyl, halogen, acyl, and/or OH, and wherein said phenyl is optionally substituted with amino, alkyl-substituted amino or an N-oxide of the amino or alkyl-substituted amino group, vinyl, methylthio, oxazole that is optionally substituted with an alkyl, CN, CHO, CHNOH, CONR'R", R' and R" being independently H, alkyl or hydroxy-substituted alkyl; or R_{11} together with $R_{11'}$ is CH_2, CF_2, or CHF; or together with R_{10} is OC═O or OCHF; or together with R_1 is OCH_2; or together with R_{13} is OCH_2 or $CH_2CH_2CH_2$;

$R_{11'}$ is H, alkyl, cycloalkyl, alkenyl, alkynyl, phenylethyl, phenylethynyl, naphthylethynynl, pyridinylethynyl, pyrimidinylethynyl, thienylethynyl, halogen-substituted alkyl, alkyl-substituted aminoalkyl, halogen, $CH_2O\ CH_3$, OH, OOH, Oalkyl, Oacyl, SH, Salkyl, N_3, $Si(CH_3)_2$, phenyl, naphthyl, pyridinyl, pyrimidinyl or thienyl, wherein any of said phenyl, naphthyl, pyridinyl, pyrimidinyl and thienyl moieties are optionally substituted with alkyl, Oalkyl, halogen, acyl, and/or OH, and wherein said phenyl is optionally substituted with amino, alkyl-substituted amino or an N-oxide of the amino or alkyl-substituted amino group, vinyl, methylthio, oxazole that is optionally substituted with an alkyl, CN, CHO, CHNOH, CONR'R", R' and R" being independently H, alkyl or hydroxy-substituted alkyl; or $R_{11'}$ together with R_{11} is a group indicated in the definition of R_{11}; or together with R_{13} is $CH_2CH_2CH_2$ when R_{11} is H;

R_{13} is H, alkyl, alkenyl, alkynyl, fluoro-substituted alkyl, phenyl, or cycloalkyl; or R_{13} together with R_{11}, $R_{11'}$, or R_{16} is $CH_2CH_2CH_2$;

one of R_{15} and R_{16} is H, OH, Oalkyl, Oacyl, halogen, alkyl, or spirocyclopropyl, and the other is H; or R_{15} together with R_{16} is CH_2 or CClF;

$R_{15'}$ is H; or together with R_{15} is CH_2 or F_2 when R_{16} is H;

$R_{16'}$ is H; or together with R_{16} is CH_2 or F_2 when R_{15} is H; and wherein the twitched lines represent an α or β bond; and the dotted lines represent up to four optional non-adjacent bonds; or pharmaceutically acceptable salts thereof.

5,712,265

ADMINISTRATION OF PIRENZEPINE, METHYL SCOPOLAMINE AND OTHER MUSCARININ RECEPTOR ANTAGONISTS FOR TREATMENT OF GLUCOSE METABOLISM DISORDERS

Anthony H. Cincotta, Andover, Mass.; Albert H. Meier, Baton Rouge, La., and John M. Wilson, Charlestown, Mass., assignors to The General Hospital Corporation, Boston, Mass., and The Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 263,607, Jun. 20, 1994, Pat. No. 5,668,155, which is a continuation-in-part of Ser. No. 995,292, Dec. 22, 1992, Pat. No. 5,585,347, which is a continuation-in-part of Ser. No. 719,745, Jun. 24, 1991, Pat. No. 5,344,832, which is a continuation-in-part of Ser. No. 463,327, Jan. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 192,332, May 10, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 458,061

Int. Cl.^{6} A61K *31/545;31/55;31/44;31/35*

U.S. Cl. 514—200 **14 Claims**

1. A method for altering glucose metabolism in a vertebrate subject suffering from Type II diabetes comprising administering to said subject an amount of a muscarinic receptor antagonist selective for the M1 muscarinic receptor, said administration taking place at a predetermined time during a 24-hour period, said time and said amount being effective to accomplish at least one of: decreasing hyperinsulinemia, decreasing hyperglycemia, and decreasing insulin resistance in said subject.

5,712,266

CEPHALOSPORINS

Jozsef Aszodi, Combault; Jean-Francois Chantot, Gressy en France; Patrick Fauveau, Livry Gargan; Solange Gouin D'Ambrieres, Paris; Daniel Humbert, Sous Bois, and Christophe Dini, Pate, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 167,192, Dec. 13, 1993, Pat. No. 5,587,372, which is a continuation-in-part of Ser. No. 989,235, Dec. 11, 1992, Pat. No. 5,455,238. This application May 30, 1995, Ser. No. 453,923

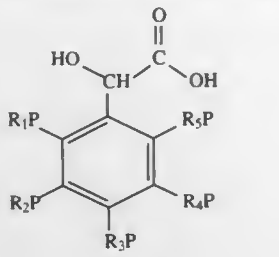
Claims priority, application France, Dec. 12, 1991, 91 15416; Sep. 28, 1992, 92 11520

Int. Cl.^{6} C07D *501/24*

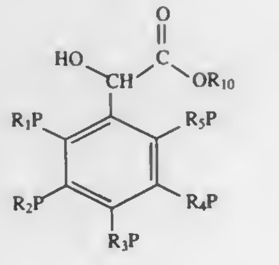
U.S. Cl. 514—202 **1 Claim**

1. A compound having a formula selected from the group

III



IV



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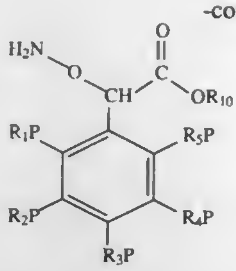
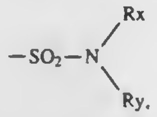
VI



wherein R_{1p}, R_{2p}, R_{3p} and R_{5p} have the definition of R_1, R_2, R_3 and R_5 which are individually selected from the group consisting of hydrogen, halogen, hydroxy, alkyl of 1 to 4 carbon atoms optionally substituted with at least one member of the group consisting of -halogen, alkoxy and alkylthio of 1 to 4 carbon atoms, —NO_2, —CN, NH_2, mono- and dialkylamino of 1 to 4 carbon atoms, carbamoyl, (alkylamino) carbonyl of 2 to 5 carbon atoms, di(alkylamino) carbonyl of 3 to 9 carbon atoms, carboxy, alkoxycarbonyl of 2 to 5 carbon atoms, acyloxy of 1 to 8 carbon atoms and Rx


$-SO_2-N(Rx)(Ry).$

and Rx and Ry are individually hydrogen or alkyl of 1 to 4 carbon atoms, and R_{4p} has the definition of R_4 which is acyloxy of 1 to 8 carbon atoms or R_{1p}, R_{2p}, R_{3p}, and R_{5p} are a protected form and R_{4p} is a protected form of hydroxy, R_{10} is the remainder of an easily clearable ester.

5,712,267

CARBAPENEM DERIVATIVES, THEIR PREPARATION AND THEIR USE AS ANTIBIOTICS

Isao Kawamoto; Rokuro Endo; Masao Miyauchi; Katsuya Ishikawa; Eiji Nakayama; Hiroshi Yasuda; Satoshi Ohya; Yukio Utsui, and Katsuhiko Watanabe, all of Tokyo, Japan, assignors to Sankyo Company,. Limited, Tokyo, Japan

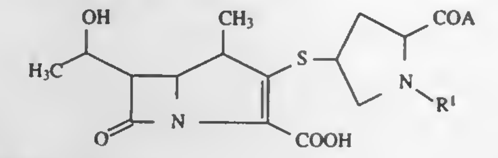
Continuation-in-part of Ser. No. 288,987, Aug. 11, 1994, abandoned, and Ser. No. 293,378, Aug. 19, 1994, abandoned, which is a continuation of Ser. No. 81,848, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 894,004, Jun. 3, 1992, abandoned, said Ser. No. 288,987is a continuation of Ser. No. 29,779, Mar. 11, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 472,850

Claims priority, application Japan, Jun. 4, 1991, 131545/1991; Dec. 27, 1991, 345737/1991; Feb. 18, 1992, 30521/1992; Mar. 11, 1992, 52163/1992; Apr. 10, 1992, 91283/1992; Sep. 14, 1992, 244953/1992; Sep. 16, 1992, 246578/1992

Int. Cl.^{6} C07D *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **37 Claims**

1. A compound of formula (I):


(I)

wherein:

R^1 represents:

a hydrogen atom,

an unsubstituted alkyl group having from 1 to 6 carbon atoms,

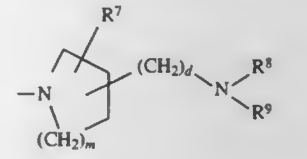
a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents (a), defined below,

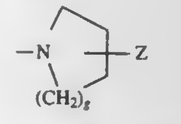
an alkenyl group having from 2 to 6 carbon atoms,

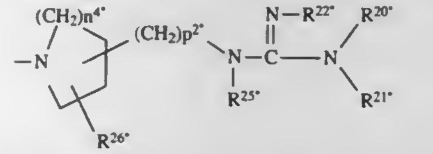
an alkynyl group having from 2 to 6 carbon atoms, or

a group of formula —C(═NH)R°, where R° represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms; and

A represents a group of formula (A2), (A7) or (Q—VIII):


(A2)


(A7)


(Q-VIII)"

wherein:

R^7 is selected from the group consisting of a hydrogen atom, an unsubstituted alkyl group having from 1 to 6 carbon atoms, a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents (d), defined below, a halogen atom, a hydroxy group, and a group of formula —CO.NR^aR^b, — OCO.NR^aR^b or —NR^aR^b, wherein R^a and R^b are selected from the group consisting of a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, and a cyano group;

R^8 represents:

a hydrogen atom,

an unsubstituted alkyl group having from 1 to 6 carbon atoms,

a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents (a), defined below,

an alkenyl group having from 2 to 6 carbon atoms, or

an alkynyl group having from 2 to 6 carbon atoms;

R^9 represents:

a hydrogen atom,

an unsubstituted alkyl group having from 1 to 6 carbon atoms,

a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents (a), defined below, or

a group of formula —C(═NH)R^{10}, where R^{10} represents a hydrogen atom, an unsubstituted alkyl group having from 1 to 6 carbon atoms, a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents (c), defined below, or a cycloalkyl group having from 3 to 7 ring carbon atoms;

or

R^8 and R^9 together represent a group of formula —$(CH_2)_s$—W—$(CH_2)_t$—

wherein W represents a carbon-carbon single bond, an oxygen atom, a sulfur atom or a group of formula >NR^{22}, wherein R^{22} represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and

s and t are independently 1, 2 or 3;

Z represents an imidazolyl, triazolyl or tetrazolyl group;

d is 0 or 1;

g and m are independently 0, 1 or 2;

$R^{20"}$, $R^{21"}$ and $R^{22"}$ are independently selected from the group consisting of a hydrogen atom and an unsubstituted alkyl group having from 1 to 6 carbon atoms;

or

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$R^{20''}$ and $R^{21''}$ or $R^{20''}$ and $R^{22''}$ together represent a group of formula —$(CH_2)_{s''}$—$(W'')_{w'''}$—$(CH_2)_{t''}$—where s" is 0, 1, 2 or 3, t" is 0, 1, 2 or 3, W" represents an oxygen or sulfur atom and w"' is 0 or 1;

$R^{25''}$ represents a hydrogen atom, an unsubstituted alkyl group having from 1 to 6 carbon atoms, a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents C", defined below, an alkenyl group having from 2 to 6 carbon atoms, or an alkynyl group having from 2 to 6 carbon atoms;

$R^{26''}$ represents a hydrogen atom, a halogen atom, an unsubstituted alkyl group having from 1 to 6 carbon atoms, a substituted alkyl group which has from 1 to 6 carbon atoms and which is substituted by at least one substituent selected from the group consisting of substituents C", defined below, a hydroxy group, a carboxy group, a carbamoyl group, an amino group, a cyano group or a carbamoyloxy group;

$n^{4''}$ is 0, 1 or 2;

$p^{2''}$ is 0 or 1;

said substituents (a) are selected from the group consisting of a hydroxy group, a carboxy group, a cyano group, a halogen atom, an oxygen atom to form an oxo group, an alkoxy group having from 1 to 6 carbon atoms, and a group of formula —$CO.NR^aR^b$, —$OCO.NR^aR^b$ or —NR^aR^b, wherein R^a and R^b are as defined above;

said substituents (c) are selected from the group consisting of a halogen atom, an alkoxy group having from 1 to 6 carbon atoms and a cycloalkyl group having from 3 to 7 ring carbon atoms;

said substituents (d) are selected from the group consisting of a hydroxy group, a cyano group, a group of the formula —$CO.NR^aR^b$, —$OCO.NR^aR^b$ or —NR^aR^b, wherein R^a and R^b are as defined above, a carboxy group, a halogen atom and an alkoxy group having from 1 to 6 carbon atoms; and

said substituents C" are selected from the group consisting of a hydroxy group, a carboxy group, a carbamoyl group, a cyano group, a halogen atom, an alkoxy group having from 1 to 6 carbon atoms and an amino group, or

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof.

5,712,268

COMPOSITIONS OF TRICYCLIC β-LACTAMS AND USES THEREOF

Christian Hubschwerlen, Durmenach; Robert Charnas, Hesingue, both of France; Ingrid Heinze, Merzhausen, and Klaus Gubernator, Freiburg, both of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 163,611, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 959,197, Oct. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,878, Apr. 3, 1992, abandoned. This application Apr. 12, 1995, Ser. No. 420,385

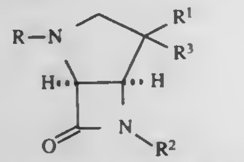
Claims priority, application Switzerland, Apr. 11, 1991, 1083/91; Feb. 13, 1992, 429/92

Int. Cl.^{6} A61K *31/395;31/43;31/545;31/40*

U.S. Cl. 514—210 **14 Claims**

1. A pharmaceutical composition for controlling illnesses caused by β-lactamase-forming pathogens comprising:

(a) a therapeutically effective amount of a compound having the formula



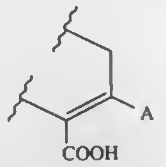
I

in which R signifies lower alkoxycarbonyl, lower alkoxycarbonylamino, the carboxylic acyl residue of an α- or β-amino acid, the amino group of said α- or β-amino acid being optionally substituted by lower alkyl, phenyl, lower alkanoyl, benzoyl, benzyloxycarbonyl, t-butoxycarbonyl, (4-ethyl-2,3-dioxo-1-piperazinyl)carbonyl or (4-hydroxy-6-methyl-3-pyridyl)carbonyl, or a residue of the formula

Q—X—Y— (a)

wherein Q signifies a 3- to 6-membered ring which optionally contains 1–4 nitrogen atoms, and/or 1–2 sulphur or oxygen atoms and which is optionally substituted by hydroxy, halogen, lower alkyl, lower alkoxy, amino, lower alkanoyloxy, sulphonyloxy, dimethylamino or chloroacetylamino and which is optionally fused to a phenyl ring or a 5- or 6-membered heterocycle ring containing 1–3 nitrogen atoms or 1 oxygen atom, X signifies a direct bond or represents one of —O—, —S—, —NH—, —NH—NH—, —CH_2—, —CO—, —CH_2O—, —CH_2CH_2—, —CH=CH—, —CH_2NH—, —S—CH_2—, —SO_2CH_2—, —O— CH_2—, —S—CH_2CH_2—, —CH_2CH_2—NH—, —CH_2-O—NH—CO—CH_2CH_2 —, —CHOH—, —CH(COOH)—, —CH(OSO_3H)—, —CH($OCONH_2$)—, and —CH[CH$(CH_3)_2$]—, and Y represents one of the groups —CO—, —CS—, —CONH— and —SO_2—, except that when Y is —SO_2—, X represents one of —O—, —NH—, —NH—NH—, — CH_2—, —CH_2O—, —CH_2CH_2—, —CH=CH—, —CH_2NH—, —O—CH_2—, —CH_2CH_2—NH—, —CHOH—, and —CH[CH$(CH_3)_2$]—;

and in which R^1 and R^2 together signify a group of the formula



(b)

wherein A represents hydrogen or a residue which is usable in the 3-position of cephalosporin antibiotics, and in which R^3 represents hydrogen,

or their pharmaceutically compatible salts; and

(b) a therapeutically effective amount of a β-lactam antibiotic or their pharmaceutically compatible salts;

and a pharmaceutically acceptable carrier.

5,712,269

M_2 RECEPTOR LIGAND FOR THE TREATMENT OF NEUROLOGICAL DISORDERS

R. Tyler McCabe, South Salem; Bryan R. Wilson, Tuxedo, both of N.Y., and Christopher A. Rhodes, Stamford, Conn., assignors to Pharmaceutical Discovery Corporation, Elmsford, N.Y.

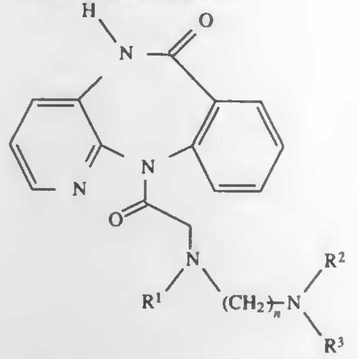
Continuation of Ser. No. 42,872, Apr. 5, 1993, abandoned. This application Jan. 24, 1995, Ser. No. 377,667

Int. Cl.^{6} A61K *31/55;* **C07D** *471/04*

U.S. Cl. 514—220 **10 Claims**

1. A compound having a formula selected from the group consisting of:

1st Generation M_2 Ligand



R^1, R^2, and R^3 are independently

a) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl,

b) substituted or unsubstituted C_3 to C_{10} cycloalkyl, or

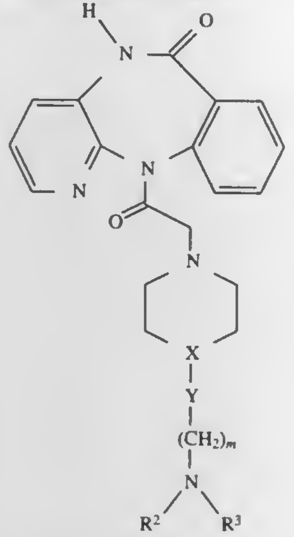
c) substituted or unsubstituted C_1 to C_{20} branched or straight chain arylalkyl,

wherein the substituted alkyl, cycloalkyl, and arylalkyl, are substituted with substituents selected from the group consisting of

C_1 to C_{20} branched or straight chain alkyl, aryl, C_1 to C_{20} branched or straight chain alkoxy, aryloxy, amino, C_1 to C_{20} branched or straight chain alkythio, arylthio, halogen, nitro, C_1 to C_{20} branched or straight chain alkyl carbonamido, aryl carbonamido, C_1 to C_{20} branched or straight chain alkylurea, and arylurea,

wherein n is between 1 and 20; and

2nd Generation M_2 Ligand



X is —CH or —N;

Y is —$CONR^1$—, —NR^1CO—, —CH_2NR^1—, —NR^1CH_2—, or —$NCO(CH_2)_nNR^1$—;

R^1 is

a) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl,

b) substituted or unsubstituted C_3 to C_{10} cycloalkyl,

c) substituted or unsubstituted C_1 to C_{20} branched or straight chain arylalkyl,

d) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl carbonyl,

e) substituted or unsubstituted aryl carbonyl,

f) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl sulfonyl,

g) substituted or unsubstituted aryl sulfonyl,

f) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkylurea, or

g) substituted or unsubstituted arylurea,

wherein the substituted alkyl, cycloalkyl, arylalkyl, alkyl carbonyl, aryl carbonyl, alkyl sulfonyl, aryl sulfonyl, alkylurea, and arylurea, are substituted with substituents selected from the group consisting of

C_1 to C_{20} branched or straight chain alkyl, aryl, C_1 to C_{20} branched or straight chain alkoxy, aryloxy, amino, halogen, nitro, C_1 to C_{20} branched or straight chain alkyl carbonyl, aryl carbonyl, C_1 to C_{20} branched or straight chain alkyl sulfonyl, aryl sulfonyl, C_1 to C_{20} branched or straight chain alkyl sulfamido, aryl sulfamido, C_1 to C_{20} branched or straight chain alkyl carbonamido, aryl carbonamido, C_1 to C_{20} branched or straight chain alkylurea, and arylurea;

R^2 and R^3 are independently

a) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl,

b) substituted or unsubstituted C_3 to C_{10} cycloalkyl, or

c) substituted or unsubstituted C_1 to C_{20} branched or straight chain arylalkyl,

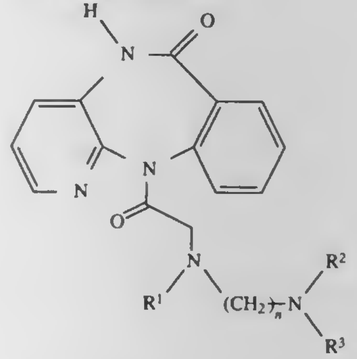
wherein the substituted alkyl, cycloalkyl, and arylalkyl, are substituted with substituents selected from the group consisting of

C_1 to C_{20} branched or straight chain alkyl, aryl, C_1 to C_{20} branched or straight chain alkoxy, aryloxy, amino, halogen, nitro, C_1 to C_{20} branched or straight chain alkythio, arylthio, C_1 to C_{20} branched or straight chain alkyl carbonyl, aryl carbonyl, C_1 to C_{20} branched or straight chain alkyl sulfonyl, aryl sulfonyl, C_1 to C_{20} branched or straight chain alkyl sulfamido, aryl sulfamido, C_1 to C_{20} branched or straight chain alkyl carbonamido, aryl carbonamido, C_1 to C_{20} branched or straight chain alkylurea, and arylurea;

wherein m and n are between 1 and 20.

6. A method of enhancing cognition in a subject in need thereof comprising the administration to a subject in need of treatment thereof of an effective mount to enhance cognition of a compound in a pharmaceutically acceptable carrier for administration to a patient wherein the compound is selected from the group of compounds of the following formulas:

1st Generation M_2 Ligand



R^1, R^2, and R^3 are independently

a) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl,

b) substituted or unsubstituted C_3 to C_{10} cycloalkyl, or

c) substituted or unsubstituted C_1 to C_{20} branched or straight chain arylalkyl,

wherein the substituted alkyl, cycloalkyl, and arylalkyl, are substituted with substituents selected from the group consisting of

C_1 to C_{20} branched or straight chain alkyl, aryl, C_1 to C_{20} branched or straight chain alkoxy, aryloxy, amino, C_1 to C_{20} branched or straight chain alkythio, arylthio, halogen, nitro, C_1 to C_{20} branched or straight chain alkyl carbonamido, aryl carbonamido, C_1 to C_{20} branched or straight chain alkylurea, and arylurea,

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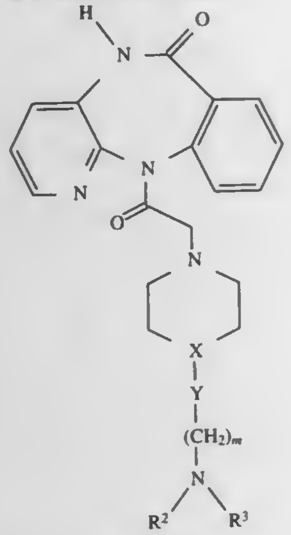
wherein n is between 1 and 20; and

2nd Generation M_2 Ligand



X is —CH or —N;
Y is $—CONR^1$, $—NR^1CO—$, $—CH_2NR^1$. $—NR^1CH_2—$, or $—NCO(CH_2)_nNR^1—$;
R^1 is
- a) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl,
- b) substituted or unsubstituted C_3 to C_{10} cycloalkyl,
- c) substituted or unsubstituted C_1 to C_{20} branched or straight chain arylalkyl,
- d) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl carbonyl,
- e) substituted or unsubstituted aryl carbonyl,
- f) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl sulfonyl,
- g) substituted or unsubstituted aryl sulfonyl,
- f) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkylurea, or
- g) substituted or unsubstituted arylurea,

wherein the substituted alkyl, cycloalkyl, arylalkyl, alkyl carbonyl, aryl carbonyl, alkyl sulfonyl, aryl sulfonyl, alkylurea, and arylurea, are substituted with substituents selected from the group consisting of
C_1 to C_{20} branched or straight chain alkyl, aryl, C_1 to C_{20} branched or straight chain alkoxy, aryloxy, amino, halogen, nitro, C_1 to C_{20} branched or straight chain alkyl carbonyl, aryl carbonyl, C_1 to C_{20} branched or straight chain alkyl sulfonyl, aryl sulfonyl, C_1 to C_{20} branched or straight chain alkyl sulfamido, aryl sulfamido, C_1 to C_{20} branched or straight chain alkyl carbonamido, aryl carbonamido, C_1 to C_{20} branched or straight chain alkylurea, and arylurea;

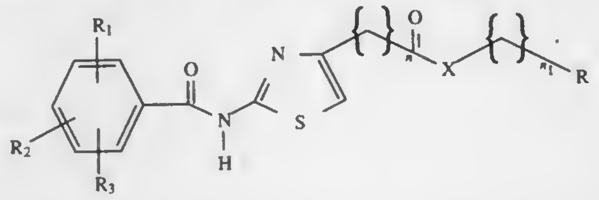
R^2 and R^3 are independently
- a) substituted or unsubstituted C_1 to C_{20} branched or straight chain alkyl,
- b) substituted or unsubstituted C_3 to C_{10} cycloalkyl, or
- c) substituted or unsubstituted C_1 to C_{20} branched or straight chain arylalkyl,

wherein the substituted alkyl, cycloalkyl, and arylalkyl, are substituted with substituents selected from the group consisting of
C_1 to C_{20} branched or straight chain alkyl, aryl, C_1 to C_{20} branched or straight chain alkoxy, aryloxy, amino, halogen, nitro, C_1 to C_{20} branched or straight chain alkythio, arylthio, C_1 to C_{20} branched or straight chain alkyl carbonyl, aryl carbonyl, C_1 to C_{20} branched or straight chain alkyl sulfonyl, aryl sulfonyl, C_1 to C_{20} branched or straight chain alkyl sulfamido, aryl sulfamido, C_1 to C_{20} branched or straight chain alkyl carbonamido, aryl carbonamido, C_1 to C_{20} branched or straight chain alkylurea, and arylurea;
wherein m and n are between 1 and 20.

5,712,270
2-ARYLAMIDOTHIAZOLE DERIVATIVES WITH CNS ACTIVITY

Annmarie L. Sabb, Pennington, N.J., assignor to American Home Products Corporation, Madison, N.J.
Filed Oct. 30, 1996, Ser. No. 739,559
Int. Cl.^{6} C07D *277/46;417/14;417/06;453/02*
U.S. Cl. 514—212 **3 Claims**

1. A method for alleviating the symptoms of neurological illness associated with acetylcholine deficiency which comprises administering to a patient in need thereof, parenterally or orally, a muscarinic receptor active compound of the formula:

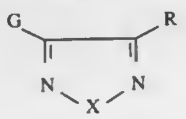


where
R_1, R_2 and R_3 are, independently, H, alkyl of 1 to 6 carbon atoms, halo, perhalooalkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or arylalkyl of 7 to 12 carbon atoms;
n is one of the integers 0, 1, 2, 3, 4 or 5;
R is azabicyclo[2.2.2]octyl or azabicyclo[2.2.1]heptyl when n_1 is zero, or R is NR_4R_5 when n_1 is 1, 2, 3, 4, or 5, in which R_4 and R_5 are alkyl of 1 to 6 carbon atoms or R_4 and R_5, taken with the nitrogen atom to which they are attached, are N-(substituted aryl)piperazinyl in which said substituent is alkoxy of 1 to 6 carbon atoms, halo, perhaloalkyl of 1 to 6 carbon atoms, and the aryl group contains 6 to 10 carbon atoms; N-(pyridyl)piperazinyl; N-(pyrimidinyl)piperazinyl; or 3-azabicyclo-[3.2.2]non-3-yl;
X is oxygen or NH;
n and n_1 are, independently, one of the integers 0, 1, 2, 3, 4 or 5;
or a pharmaceutically acceptable salt thereof, in an amount sufficient to relieve the neurological symptoms of said patient.

5,712,271
METHOD OF TREATING URINARY BLADDER DYSFUNCTIONS

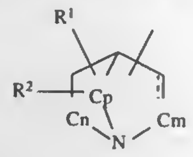
Mark A. Muhlhauser, 4811 Basil Ct., Indianapolis, Ind. 46237; Harlan E. Shannon, 4229 Rolling Springs Dr., Carmel, Ind. 46234, and Karl B. Thor, 4959 Jennings Dr., Carmel, Ind. 46033
Division of Ser. No. 336,357, Nov. 8, 1994, Pat. No. 5,612,351. This application Oct. 3, 1996, Ser. No. 725,523
Int. Cl.^{6} A61K *31/44;31/55;31/41;31/415*
U.S. Cl. 514—212 **8 Claims**

1. A method of treating a urinary bladder dysfunction in a subject in need thereof comprising administering to the subject an effective amount of a compound of formula I



(I)

wherein
X is oxygen or sulphur;
R is hydrogen, amino, halogen, —CHO, $—NO_2$, $—R^4$, —Y, $—NHCO—R^4$, $—OR^4$, $—SR^4$, $—SOR^4$, $—SO_2R^4$, C_{3-10}-cycloalkyl, C_{4-10}-cycloalkenyl, C_{4-10}-(cycloalkylalkyl). $—Z^1—C_{3-10}$-cycloalkyl, $—Z^1—C_{4-10}$-cycloalkenyl, $—Z^1—C_{4-10}$-(cycloalkylalkyl), $—Z^1—C_{4-10}$-(cycloalkenylalkyl), $—Z^1—C_{4-10}$-(methylenecycloalkylalkyl), $—NH—R^4$, $—NR^4R^5$, $—NH—OR^4$, $—CH{=}NOR^4$, or an aromatic ring selected from the group consisting of phenyl, benzyloxycarbonyl, phenoxy, benzoyl, tetrahydronaphthyl, naphtyl, and indenyl, wherein each aromatic ring is optionally substituted with halogen, $—NO_2$. —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CONH_2$, $—CSNH_2$, phenoxy or phenyl; or R is $—Z^1—R^6—Z^2—R^5$, $—Z^1—R^6—Z^2—R^7—Z^3—R^5$, $—Z^1—CO—R^5$, $—Z^1—R^6—CO—R^5$, $—Z^1—R^6—CO_2—R^5$, $—Z^1—R^6—O_2C—R^5$, $—Z^1—R^6—COHN—R^5$, $—Z^1—R^6—NHCO—R^5$, $—Z^1—R^6—Y$, $—Z^1—R^6—Z^2—Y$, wherein Z^1 and Z^2 independently are oxygen or sulphur, and R^4 and R^5 independently are straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen(s), C_{1-6}-alkoxy, $—CF_3$, —CN, —COOH, —OH, $—NH_2$, C_{1-6}-alkyl ester, —SH, $—NHR^4$, $—NR^4R^5$, or a phenyl or phenoxy group, wherein the phenyl or phenoxy group is optionally substituted with halogen, $—NO_2$, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CONH_2$, $—CSNH_2$, phenyl or phenoxy, and wherein R^6 and R^7 independently are straight or branched C_{1-10}-alkylene, straight or branched C_{2-10}-alkenylene, straight or branched C_{2-10}-alkynylene, each of which is optionally substituted with one or more halogen(s), $—CF_3$, —CN, —COOH, —OH, $—NH_2$, C_{1-6}-alkyl ester, —SH, $—NHR^4$, $—NR^4R^5$, phenyl or phenoxy, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched C_{1-6}-alkyl, phenyl or benzyl, or a carbon atom of the heterocyclic group together with an oxygen atom to form a carbonyl group, or wherein the heterocyclic group is optionally fused with a phenyl group; and
G is an azabicyclic ring of formula II



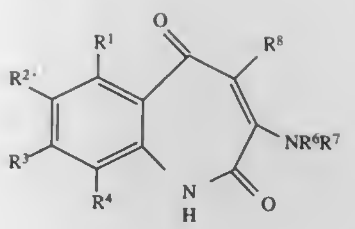
(II)

wherein
the thiadiazole or oxadiazole ring is attached to any carbon atom of the azabicyclic ring;
R^1 and R^2 may be present at any appropriate position of the thiadiazole or oxadiazole ring and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, $—NH_2$, carboxy or straight or branched C_{1-5}-alkyl substituted with —OH; m and n are 2; p is 1; and fheight..... is a single or double bond; or
a pharmaceutically acceptable salt thereof.

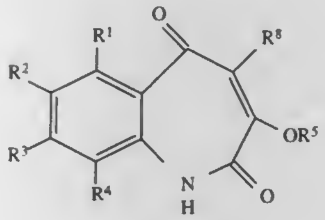
5,712,272
THERAPEUTIC COMPOSITIONS

Gregory David Harris; Marc Jerome Chapdelaine, both of Wilmington, Del., and Paul Francis Jackson, Chadds Ford, Pa., assignors to Zeneca Limited, United Kingdom
Continuation of Ser. No. 524,557, Sep. 7, 1995, which is a continuation of Ser. No. 74,907, Jun. 10, 1993, Pat. No. 5,492,905. This application Jan. 13, 1997, Ser. No. 782,279
Claims priority, application United Kingdom, Jun. 10, 1992, 9212308
Int. Cl.^{6} A61K *31/55;* **C07D** *223/16*
U.S. Cl. 514—213 **7 Claims**

7. A pharmaceutical composition comprising a compound of formula I or of formula II,



I



II

wherein
R^1, R^2, R^3 and R^4 are independently selected from hydrogen, (1–3C)perfluoroalkyl, halo, nitro and cyano;
R^5 is selected from hydrogen and (1–6C)alkyl;
R^6 and R^7 are independently selected from hydrogen,(1–6C)alkyl, (2–6C)alkenyl, (3–7C)cycloalkyl, (3–7C)cycloalkyl, aryl, aryl(1–6C)alkyl, heteroaryl, heteroaryl(1–6C)alkyl and CH_2Y wherein Y is selected from $(CHOH)_nCH_2OH$ and $(CH_2)_mR^c$ wherein m is 0 to 5 n is 1 to 5 and R^c is selected from hydroxy, (1–6C)alkoxy, (1–6C)alkoxycarbonyl, carboxy, and NR^dR^e in which R^d and R^e are independently selected from hydrogen and (1–4C)alkyl or R^d and R^e, together with the nitrogen atom to which they are attached, form a saturated 5-, 6- or 7-membered heterocyclic ring which optionally contains one additional heteroatom selected from nitro, oxygen and sulfur; or R^6 and R^7, together with the nitrogen atom to which they are attached, form a 5-, 6- or 7-membered heterocyclic ring which is bonded to said compound through said nitrogen atom, said heterocyclic ring optionally containing one additional heteroatom selected from nitrogen, oxygen and sulfur, and wherein said heterocyclic ring may be substituted with 0–2 substituents selected from (1–6C)alkyl, phenyl, phenyl(1–4C)alkyl, phenoxy and phenyl(1–4C)alkoxy;
R^8 is selected from hydrogen, halo (1–6C)alkyl which may optionally bear a substituent selected from amino, (1–6C)acylamino, carboxy and carboxamido, aryl(1–6C)alkyl and heteroaryl(1–6C)alkyl;
and wherein each moiety is selected from phenyl and naphthyl; each heteroaryl moiety is selected from 5- and 6-membered aromatic rings containing up to 3 heteroatoms independently selected from oxygen, sulfur, and nitrogen; and wherein each aryl or heteroaryl moiety be substituted with 0–2 substituents selected from halo, cyano, hydroxy, carboxy, nitro, (1–6C)alkoxy, (1–6C)alkenyl, phenyl, phenyl(1–4C)alkyl, phenoxy, phenyl(1–4C)alkoxy and (1–6C)alkoxycarbonyl;
or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable diluent or carrier; provided that in compounds of formula II, R^8 is not hydrogen; and excluding the compound of formula II in which R^1–R^4 are each hydrogen, R^8 is bromo and R^5 is hydrogen and its pharmaceutically acceptable salt.

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AMINO ACID DERIVATIVES, PROCESSES FOR THE MANUFACTURE THEREOF AND PHARMACEUTICAL COMPOSITIONS (II) CONTAINING THESE COMPOUNDS

Gerd Schnorrenberg, Gau-Algesheim; Franz Esser; Horst Dollinger, both of Ingelheim am Rhein; Birgit Jung, Bingen am Rhein; Georg Speck, Ingelheim am Rhein, and Erich Burger, Bingen am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed May 4, 1995, Ser. No. 434,613

Claims priority, application Germany, May 7, 1994, 44 16 255.3; Dec. 22, 1994, 44 45 939.4

Int. Cl.^{6} A61K *31/55;31/495;* **C07D** *403/12;403/14*

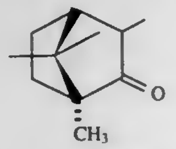
U.S. Cl. 514—218 **17 Claims**

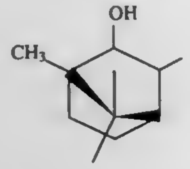
1. An amino acid derivative of formula I:

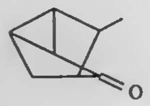
$R^1\text{-}R^{11}\text{—}A^1\text{—}B$

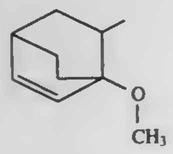
or the pharmaceutically acceptable salts thereof, wherein

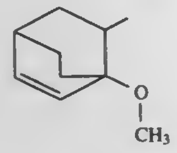
R^1 is selected from the group consisting of

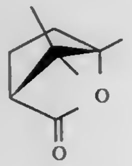


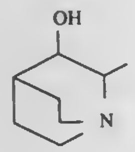


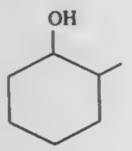












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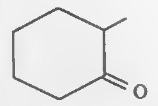

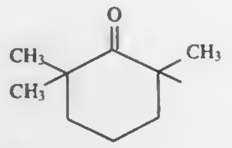

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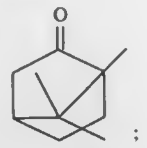


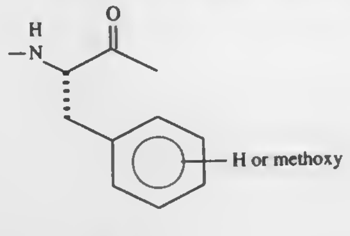
;

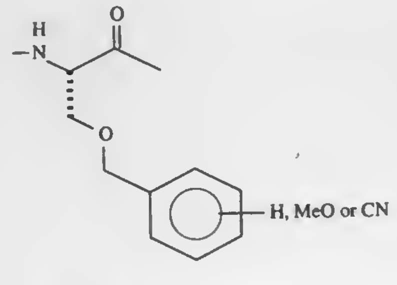
R^{11} is —C(O)—;

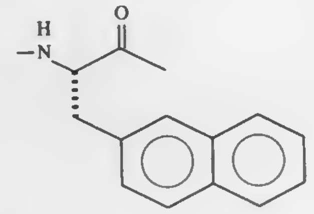
A^1 is selected from the group consisting of a proline radical and a 4 -hydroxyproline radical wherein the proline or hydroxyproline radical is attached to R^{11} by way of the ring nitrogen and is attached to B by way of side chain carboyl;

B is the group —A^2—NR^2R^3;

A^2 is selected from the group consisting of







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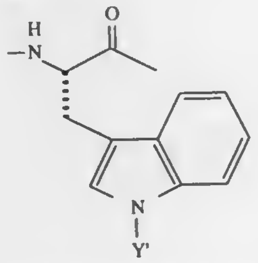
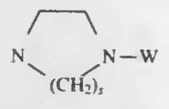


Y' is selected from the group consisting of H and CH_3;

R^2 and R^3 is a ring of formula



wherein s is 2 or 3; and

W is selected from the group consisting of cyclopentyl, cyclohexyl, phenyl, CH(phenyl)$_2$, $(CH_2)_{1-2}$phenyl; $(CH_2)_{1-2}$cyclohexyl, naphthyl and pyridyl, wherein the phenyl groups are optionally mono-, di- or tri-substituted with one or more substituents selected from the group consisting of halogen, trihalomethyl, alkoxy, alkyl, cyano, hydroxy, CO_2CH_3, $CO_2C_2H_5$, nitro and alkylthio (wherein the alkyl group has 1–3 carbon atoms) or two adjacent positions of the phenyl group are linked by —O—$(CH_2)_{1-2}$—O—.

5,712,274

THIENOTRIAZOLODIAZEPINE COMPOUNDS AND THEIR PHARMACEUTICAL USE

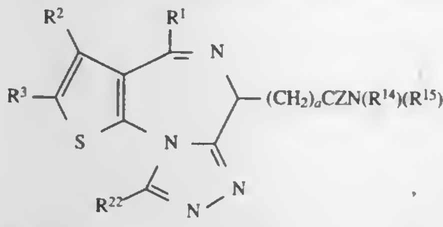
Hiroyuki Sueoka; Shuji Ehara; Haruhito Kobayashi; Takeshi Arichi, all of Fukuoka, and Hirotsugu Komatsu, Saitama, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 403,726, Mar. 17, 1995, abandoned. This application Mar. 30, 1995, Ser. No. 413,444

Int. Cl.^{6} A61K *31/55;* **C07D** *243/06*

U.S. Cl. 514—219 **12 Claims**

1. A thienotriazolodiazepine compound of the formula (1)



(1)

wherein

R^1 is a phenyl substituted at the 4-position with a substituent selected from the group consisting of (i) halogen, (ii) alkyl having 1 to 20 carbon atoms, (iii) alkyl having 1 to 6 carbon atoms which is substituted with 1 to 3 substituents selected from alkoxy having 1 to 6 carbon atoms, halogen, hydroxy, sulfo, mercapto, alkylthio, arylthio, aralkylthio, amidino, guanidino, amino, nitro, cyano, carboxy, alkoxycarbonyl, oxo, sulfamoyl, and carbamoyl, (iv) alkoxy having 1 to 6 carbon atoms, (v) hydroxy, (vi) nitro and (vii) cyano,

R^2 is an alkyl having 1 to 4 carbon atoms;

R^3 is an alkyl having 1 to 4 carbon atoms;

a is an integer of 1 to 4;

R^{14} and R^{15} are the same or different and each is (a) a hydrogen, (b) an alkyl having 1 to 20 carbon atoms, (c) an alkenyl having a 2 to 20 carbon atoms, (d) an aryl selected from the group consisting of phenyl, 1-naphthyl and 2-naphthyl, said aryl being optionally substituted with 1 to 3 substituents selected from the group consisting of (i) halogen, (ii) alkyl having 1 to 20 carbon atoms, (iii) alkyl having 1 to 6 carbon atoms which is substituted with 1 to 3 substituents selected from alkoxy having 1 to 6 carbon atoms, halogen, hydroxy, sulfo, mercapto, alkylthio, arylthio, aralkylthio, amidino, guanidino, amino, nitro, cyano, alkoxycarbonyl, oxo, sulfamoyl, and carbamoyl, (iv) alkoxy having 1 to 6 carbon atoms, (v) hydroxy, (vi) mercapto, (vii) alkylthio, (viii) arylthio, (ix) aralkylthio, (x) sulfamoyl which is optionally substituted with, on its nitrogen atom, 1 to 2 substituents selected from alkyl having 1 to 6 carbon atoms, (xi) amino which is optionally substituted with, on its nitrogen atom, 1 to 2 substituents selected from alkyl having 1 to 6 carbon atoms and alkylcarbonyl having 1 to 20 carbon atoms, (xii) nitro, (xiii) cyan, (xiv) sulfo, (xv) alkoxycarbonyl, and (xvi) carbamoyl which is optionally substituted with, on its nitrogen atom, 1 to 2 substituents selected from alkyl having 1 to 6 carbon atoms, or (e) a heterocyclic ring selected from the group consisting of pyridyl, quinolyl, imidazolyl, pyrrolyl, isoquinolyl, triazolyl, 1-pyrazolyl, 2-oxo-1,2,3,4-tetrahydroquinolin- 5, 6 or 7-yl, 2-oxoindolin-5 or 6-yl, 2-oxopyrolidine- 3 or 4-yl, 2-oxopiperidin-4-yl, 1-benzylpiperidin-4-yl, pyridazinyl, pyrimidinyl, pyrazinyl, indolyl, thienyl, furyl, benzofuranyl, 1H-benzimidazol-2-yl, 2-thiazolyl, 2-benzothiazolyl, 4-methylpiperazin-1-yl, 1 -piperazinyl and 1-perhydropyridazinyl, said heterocyclic group being optionally substituted with 1 to 3 substituents selected from halogen, alkyl, alkoxy having 1 to 6 carbon atoms, hydroxy, mercapto, amino, aminosulfonyl, nitro, cyano, alkoxycarbonyl having 1 to 6 carbon atoms, and carbamoyl;

Z is an oxygen atom; and

R^{22} is an alkyl having 1 to 4 carbon atoms,

or a pharmaceutically acceptable salt thereof.

5,712,275

ANTIBACTERIAL AND ANTIFOULING OXATHIAZINES AND THEIR OXIDES

Jozef Frans Elizabetha Van Gestel, Vosselaar, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium

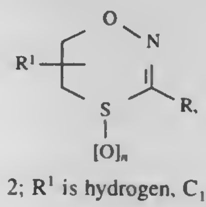
PCT No. PCT/EP94/02784, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO95/05739, PCT Pub. Date Mar. 2, 1995

Continuation-in-part of Ser. No. 111,352, Aug. 24, 1993, abandoned. This PCT application Aug. 24, 1994, Ser. No. 586,690

Int. Cl.^{6} A61K *31/54;* **A01N** *43/34;43/36;43/72*

U.S. Cl. 514—222.5 **11 Claims**

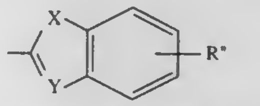
1. A method of controlling bacteria and fouling organisms, said method comprising administering to said bacteria or fouling organisms, or to a non-living material other than wood, an effective antibacterial or antifouling amount of a compound having the formula



(I)

wherein n is 0, 1 or 2; R^1 is hydrogen, C_{1-4}alkyl or benzyl; and R represents

(a) phenyl; phenyl substituted with 1 to 3 substituents independently selected from hydroxyl, halo, C_{1-12}alkyl, C_{5-6}cycloalkyl, trihalomethyl, phenyl, C_{1-5}alkoxy, C_{1-5}alkylthio, tetrahydropyranyloxy, phenoxy, C_{1-4}alkylcarbonyl, phenylcarbonyl, C_{1-4}alkylsulfinyl, C_{1-4}alkylsulfonyl, carboxy or its alkali metal salt, C_{1-4}alkyloxy-carbonyl, C_{1-4}alkylaminocarbonyl, phenylaminocarbonyl, tolylaminocarbonyl, morpholinocarbonyl, amino, nitro, cyano, dioxolanyl or C_{1-4}alkyloxyiminomethyl; naphthyl; pyridinyl; thienyl, preferably when n is not 2; furanyl; or thienyl or furanyl substituted with one to three substituents independently selected from C_{1-4}alkyl, C_{1-4}alkyloxy, C_{1-4}alkylthio, halo, cyano, formyl, acetyl, benzoyl, nitro, C_{1-4}alkyl-oxycarbonyl, phenyl, phenylaminocarbonyl and C_{1-4}alkyloxyiminomethyl; or R represents a radical of formula



(b)

wherein X is oxygen or sulfur; Y is nitrogen, CH or $C(C_{1-4}$alkyloxy); and R" is hydrogen or C_{1-4}alkyl.

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2-(N-ALKYLPIPERAZINO OR MORPHOLINO)-4-AMINO-5-ARYL-PYRIMIDINES

Alistair Ainslie Miller; Malcolm Stuart Nobbs; Richard Martin Hyde, and Michael John Leach, all of Beckenham, England, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

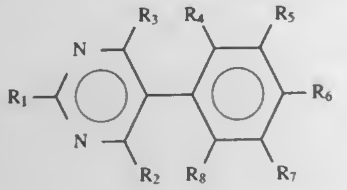
Division of Ser. No. 444,963, Dec. 4, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,148

Claims priority, application United Kingdom, Dec. 7, 1988, 8828620; Apr. 14, 1989, 8908561; Aug. 18, 1989, 8918893

Int. Cl.^{6} A61K *31/505;31/535*

U.S. Cl. 514—235.8 **20 Claims**

1. A method of alleviating cerebral ischaemic damage in a mammal who has had a stroke or of treating a mammal who has suffered physical injury or trauma of the spinal cord or brain, which method comprises the step of administering to said mammal a non-toxic effective amount of a pyrimidine of formula (1):



(1)

wherein:

- R_1 is N-morpholino or N-(C_1–C_6 alkyl)-piperazino; R_2 is amino;
- R_3 is selected from the group consisting of hydrogen, C_1–C_6 alkyl, trifluoromethyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, (C_1–C_6 alkyl) thio (C_1–C_6 alkyl), di (C_1–C_6 alkyl), and —CH_2X wherein X is selected from the group consisting of C_1–C_6 alkoxy, phenoxy and benzyloxy;
- each of R_4, R_5, R_7, and R_8 is the same or different and is hydrogen or halo or R_4 and R_5 together denote —CH=CH—CH=CH—; and R_6 is selected from the group consisting of hydrogen, halo, nitro and amino;
- or a pharmaceutically acceptable acid addition salt thereof, excluding the administration of the compound where R_1 is 4-methylpiperazin-1-yl, R_2 is amino, R_3 is hydrogen, R_4, R_5 and R_7 are chloro and R_6 and R_8 are hydrogen or a pharmaceutically acceptable acid addition salt thereof.

5,712,277

USE OF 3,5-DIAMINO-6(2,3-DICHLOROROPHENYL) ETC.

Meire Nakamura-Craig, and Michael John Leach, both of Beckenham, Great Britain, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 284,497, Aug. 4, 1994. This application Jul. 15, 1996, Ser. No. 680,111

Claims priority, application United Kingdom, Feb. 19, 1992, 9203483

Int. Cl.^{6} A01N *43/64*

U.S. Cl. 514—242 **8 Claims**

1. A method of preventing or treating oedema in a mammal, in need thereof the method comprising administering thereto a therapeutically effective amount of a compound selected from 3,5-diamino-6-(2,3-dichlorophenyl)-1,2,4-triazine and the pharmaceutically and veterinarily acceptable acid addition salts thereof.

5,712,278

Patent Not Issued For This Number

5,712,279

INHIBITORS OF MICROSOMAL TRIGLYCERIDE TRANSFER PROTEIN AND METHOD

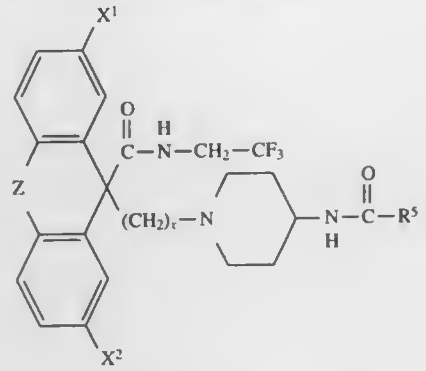
Scott A. Biller, Hopewell; John K. Dickson, Eastampton, both of N.J.; R. Michael Lawrence, Yardley, Pa.; David R. Magnin, Hamilton; Michael A. Poss, Lawrenceville, both of N.J.; Jeffrey A. Robl, Newtown, Pa.; Richard B. Sulsky, Franklin Park, and Joseph A. Tino, Lawrenceville, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation-in-part of Ser. No. 472,067, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 391,901, Feb. 21, 1995, abandoned. This application Jan. 11, 1996, Ser. No. 548,811

Int. Cl.^{6} C07D *211/98;409/06;405/06;* **A61K** *31/445*

U.S. Cl. 514—252 **19 Claims**

1. A compound having the structure



including the piperidine N-oxide thereof or a pharmaceutically acceptable salt thereof, wherein Z is a bond or S;

- X^1 and X^2 are independently selected from H or halo;
- x is an integer from 2 to 6, $(CH_2)_x$ is optionally substituted with 1, 2 or 3 substituents which are the same or different and are alkyl or halo;
- R^5 is heteroaryl, aryl, heterocycloalkyl or cycloalkyl, each R^5 group being optionally substituted with 1, 2, 3 or 4 substituents which may be the same or different, wherein one substituents is optionally attached to a ring carbon in the position adjacent to the carbon linked to

$$\overset{O}{\overset{\|}{C}}.$$

5,712,280

TRICYCLIC COMPOUNDS USEFUL FOR INHIBITION OF G-PROTEIN FUNCTION AND FOR TREATMENT OF PROLIFERATIVE DISEASES

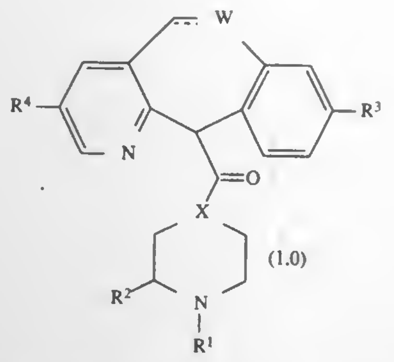
Ronald J. Doll, Maplewood; Alan K. Mallams, Hackettstown; Adriano Afonso, West Caldwell; Dinanath F. Rane, Morganville; Randall R. Rossman, Nutley, and F. George Njoroge, Union, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Apr. 7, 1995, Ser. No. 418,973

Int. Cl.^{6} A61K *31/495;* **C07D** *401/06*

U.S. Cl. 514—253 **20 Claims**

1. A compound of the formula:

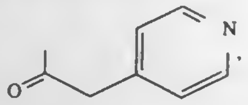


(1.0)

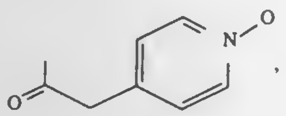
or a pharmaceutically acceptable salt or solvate thereof, wherein:

(1) R^1 is a group selected from:

(a)



(b)



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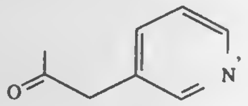

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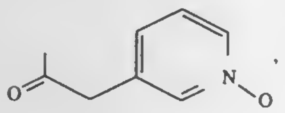

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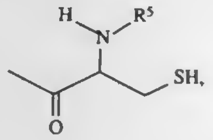

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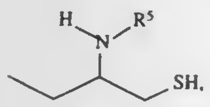
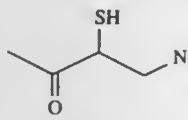
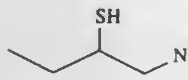


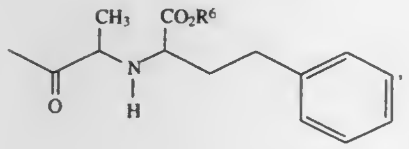
(g)



(h)



(i)



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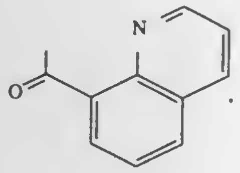

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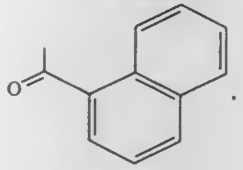
(k)



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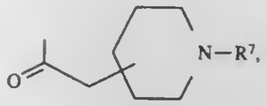

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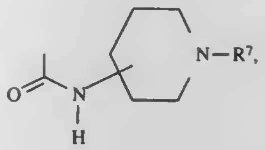
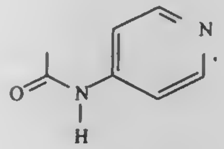
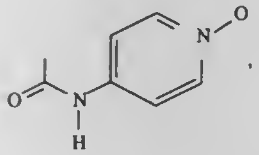


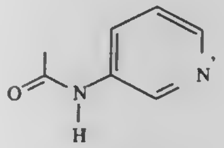
(n)



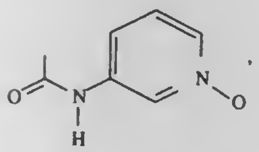
(o)



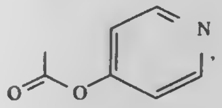
(p)



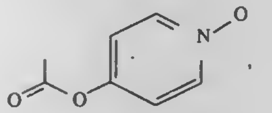
(q)



(r)



(s)



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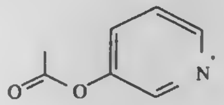

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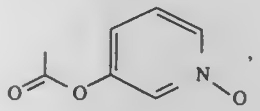

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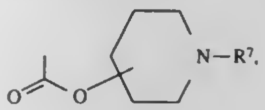

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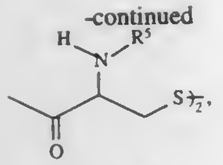
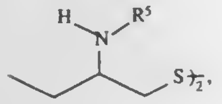
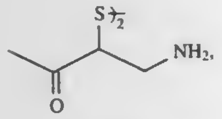


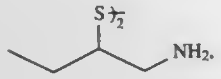
(w)



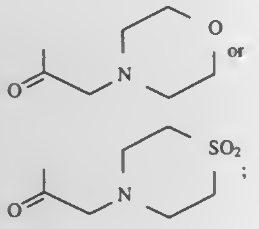
(x)



(y)

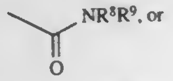


(z)

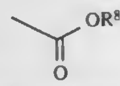


(z.1)

R^2 is selected from:
(1) H,
(2) C_1 to C_8 alkyl,
(3) C_2 to C_8 alkenyl,
(4) C_2 to C_8 alkynyl,
(5)



(5)

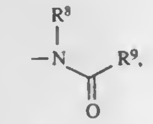


(6)

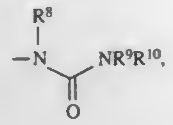
wherein said alkyl, alkenyl, or alkynyl is optionally substituted with one or more groups independently selected from:

(a) aryl, aralkyl, heteroaryl, heteroarylalkyl or heterocycloalkyl; said aryl, aralkyl, heteroaryl, heteroarylalkyl or heterocycloalkyl optionally substituted with one or more groups independently

selected from:
(1) C_1 to C_4 alkyl,
(2) $(CH_2)_tOR^8$ wherein t is 1 to 4,
(3) $(CH_2)_tNR^8R^9$ wherein t is 1 to 4, or
(4) halogen,
(b) C_3 to C_6 cycloalkyl,
(c) —OR^8,
(d) —SR^8,
(e) —$S(O)R^8$,
(f) —SO^2R^8,
(g) —NR^8R^9,
(h)

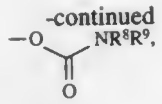


(h)

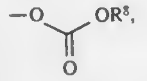


(i)

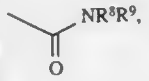
-continued



(j)

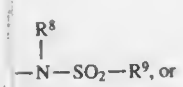


(k)



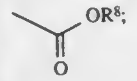
(l)

$-SO_2-NR^8R^9$, (m)

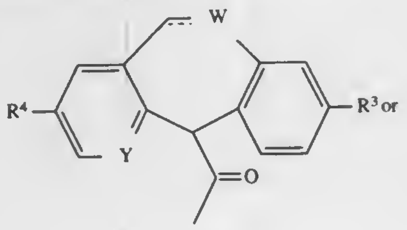


$-N(R^8)-SO_2-R^9$, or

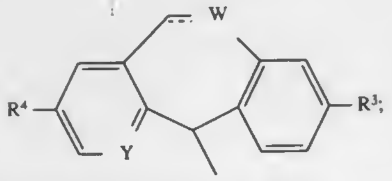
(n)



R^3 is selected from H, halogen or C_1 to C_6 alkyl;
R^4 is selected from H, halogen or C_1 to C_6 alkyl;
R^5 is selected from: H,



(aa)



(bb)

R^6 is selected from H or C_1 to C_6 alkyl;

R^7 is selected from H, C_1 to C_6 alkyl, haloalkyl, or —$C(O)R^{11}$ wherein R^{11} is selected from C_1 to C_6 alkyl, C_1 to C_6 alkoxy or —NHR^{12} (wherein R^{12} is C_1 to C_6 alkyl or H), or R^7 is an acyl radical of a naturally occurring amino acid;

R^8, R^9 and R^{10} are independently selected from H, C_1 to C_4 alkyl, C_3 to C_6 cycloalkyl, heteroaryl, heteroarylalkyl, heterocycloalkyl, aryl or aralkyl; said alkyl, cycloalkyl, heteroaryl, heteroarylalkyl, heterocycloalkyl, aryl or aralkyl are optionally substituted with C_1 to C_4 alkoxy, aryl, heteroaryl, heterocycloalkyl, cyclopropyl, halogen, —OH, —$C(O)R^{13}$, —SO_2R^{13}, or —$NR^{14}R^{15}$ wherein R^{13} is selected from C_1 to C_4 alkyl or aralkyl, and wherein R^{14} and R^{15} are independently selected from H, C_1 to C_4 alkyl or aralkyl; with the proviso that R^8 is not H in substituents (e), (f) or (k), and with the proviso that R^9 is not H in substituent (h) or (n), and with the proviso that R^8, R^9, or R^{10} is not —CH_2OH or —$CH_2NR^{14}R^{15}$ when R^8, R^9, or R^{10} is directly attached to a heteroatom;

optionally, when R^8 and R^9 are bound to the same nitrogen, R^8 and R^9, together with the nitrogen to which they are bound, form a 5 to 7 membered heterocycloalkyl ring;

optionally, when R^9 and R^{10} are bound to the same nitrogen, R^9 and R^{10}, together with the nitrogen to which they are bound, form a 5 to 7 membered heterocycloalkyl ring;

—represents an optional bond;

W is selected from CH when the optional bond is present, or O, S or CH_2 when the optional bond is absent;

X is N; and

Y is selected from N or CH.

5,712,281

INSECTICIDAL SUBSTITUTED-2,4-DIAMINO-5,6,7,8-TETRAHYDROQUINAZOLINES

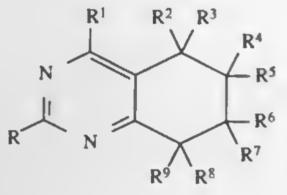
Thomas G. Cullen, Milltown; Robert N. Henrie, II, East Windsor; Clinton J. Peake, Trenton, all of N.J., and Brian D. Bennett, Morrisville, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 319,504, Oct. 6, 1994, Pat. No. 5,536,725, which is a continuation of Ser. No. 111,802, Aug. 25, 1993, abandoned. This application May 23, 1995, Ser. No. 445,201

Int. Cl.^{6} A01N *43/54*

U.S. Cl. 514—259 **3 Claims**

1. An insecticidal composition comprising, in admixture with an agriculturally acceptable carrier, and a surface-active agent other than is used in pharmaceutical formulations, an insecticidally effective amount of a tetrahydroquinazoline compound of the formula



wherein
R and R^1 are amino;
R^2, R^3, R^5, R^6, R^7, R^8, and R^9 are hydrogen; and
R^4 is lower alkyl.

5,712,282

METHOD FOR THERAPEUTICALLY TREATING TARDIVE DYSKINESIA AND USES THEREOF

Masaomi Iyo, 21-15 Makuharihongo, Chiba; Hajime Sasaki, Funabashi; Yohko Maeda, Ichinomiya; Kenji Hashimoto, Kadaira; Toshiya Inada, Ichikawa, and Yoshie Kitao, Tokyo, all of Japan, assignors to Masaomi Iyo, Chiba, and Meiji Seika Kaisha, Ltd., Tokyo, both of Japan

PCT No. PCT/JP95/00736, § 371 Date Oct. 9, 1996, § 102(e) Date Oct. 9, 1996, PCT Pub. No. WO95/28177, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 14, 1995, Ser. No. 727,654

Claims priority, application Japan, Apr. 15, 1994, 6-077146

Int. Cl.^{6} A61K *31/52;31/415;31/40*

U.S. Cl. 514—263 **5 Claims**

1. A method for therapeutically treating tardive dyskinesia, which comprises administering a therapeutically effective amount of a compound which has an enzyme-inhibitory activity against a phosphodiesterase, and is able to penetrate the blood-brain barrier after administration of said compound, to a patient in need of the treatment and having received occurrence of tardive dyskinesia as induced by long-term administration of an antipsychotic drug which acts as an antagonist against the dopamine D_2 receptors in the dopamine neuron system in the brain.

5,712,283

METHOD OF INHIBITING HYPERGLYCEMIA AND PHARMACEUTICAL COMPOSITION FOR USE THEREIN

Elbert Kaan, Grossburgwedel; Dieter Ziegler, Hemmingen, and Reinhard Brueckner, Hanover, all of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Germany

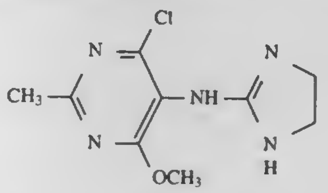
Filed Jun. 20, 1995, Ser. No. 492,656

Claims priority, application Germany, Jul. 1, 1994, 44 23 177.6

Int. Cl.^{6} A01N *43/50*

U.S. Cl. 514—269 **12 Claims**

1. A method of treating a mammal having an elevated blood glucose level resulting from increased glucose release or decreased metabolic glucose utilization connected with at least one glucose metabolism affecting condition selected from the group consisting of insulin resistance, glucose intolerance, type II diabetes and obesity, said method comprising lowering the blood glucose level of said mammal toward a normal value by administering to said mammal an effective elevated blood glucose level lowering amount of 4-chloro-5-{(4,5-dihydro-1H-imidazol-2-yl)amino}-6-methoxy-2-methylpyrimidine of formula I



or a physiologically acceptable acid addition salt thereof.

5,712,284

AZALICYCLOOCTANE DERIVATIVES AS ANTI-ARRHYTHMIC AGENTS

Guy Marguerite Marie Gerard Nadler, and Michel Louis Souchet, both of Rennes, France, assignors to SmithKline Beecham Laboratoires Pharmaceutiques, Nanterre Cedex, France

PCT No. PCT/EP94/02299, § 371 Date Feb. 14, 1996, § 102(e) Date Feb. 14, 1996, PCT Pub. No. WO95/03301, PCT Pub. Date Feb. 2, 1995

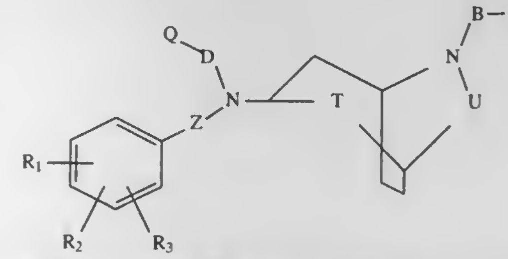
PCT Filed Jul. 11, 1994, Ser. No. 578,667

Claims priority, application France, Jul. 22, 1993, 93 09017

Int. Cl.^{6} A61K *31/435;* **C07D** *451/04*

U.S. Cl. 514—299 **10 Claims**

1. A compound of formula (I):



(I)

or a salt thereof, or a solvate thereof, wherein

B represents a C_{1-4} n-alkylene group wherein each carbon is optionally substituted by a C_{1-6} alkyl group; .

Z represents a bond, CH_2, $(CH_2)_2$ or X—CH_2—CH_2 wherein X represents O or S;

D represents CO, SO_2, NH—CO or NH—SO_2;

T represents a bond and U represents CH_2 or T represents CH_2 and U represents a bond;

Q represents aryl, aralkyl, aralkenyl or aralkynyl, wherein the aryl moiety may be unsubstituted or substituted with 1 to 5 substituents selected from the list consisting of nitro, halogen, alkylsulfonamido, acylamido, 1H-imidazolyl, alkyl or haloalkyl, or Q represents substituted or unsubstituted: furanyl, pyranyl, thienyl, thiazolyl, imidazolyl, triazolyl or the benzo fused equivalents of furanyl, pyranyl, thienyl, thiazolyl, 1H-imidazolyl or triazolyl, indolyl, oxoindolyl, indenyl, isoindenyl, indazolyl, indolizinyl or pyridinyl or cycloalkyl optionally fused to an aryl group;

R_1, R_2 and R_3 each independently represents H, alkyl, OH or alkoxy or, if attached to adjacent carbon atoms, any two of R_1, R_2 or R_3 together with the carbon atoms to which they are attached may form a fused heterocyclic ring of five or six atoms wherein one, two or three of the said atoms are oxygen or nitrogen;

Ar represents substituted or unsubstituted aryl, wherein the optional substituents are the above defined R_1, R_2 and R_3.

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5,712,285
PYRROLO-PYRIDINE DERIVATIVES

Neil Roy Curtis, Puckeridge; Janusz Jozef Kulagowski, Bishops Stortford, both of United Kingdom; Paul David Leeson, Monmouth Junction, N.J., and Mark Peter Ridgill, Watton-At-Stone, United Kingdom, assignors to Merck, Sharp & Dohme, Ltd., Hoddesdon, England

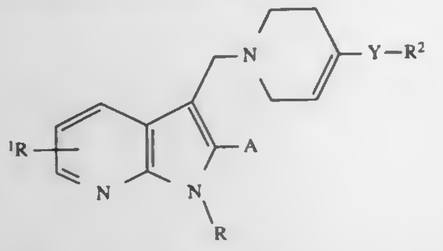
Filed Apr. 3, 1996, Ser. No. 626,099

Int. Cl.^{6} A61K *31/435;* C07D *471/04*

U.S. Cl. 514—300 **7 Claims**

I. A compound of formula I, or a salt thereof:

(I)

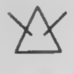


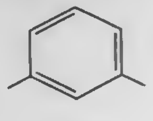
wherein

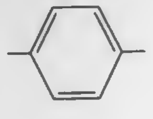
A represents hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, halogen, cyano or trifluoromethyl;

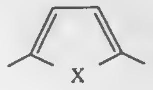
R^1 represents hydrogen, halogen, cyano, nitro, trifluoromethyl, amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{1-6} alkyl, C_{1-6} alkoxy, aryl(C_{1-6})alkoxy or C_{2-6} alkylcarbonyl;

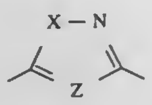
Y represents a divalent monocyclic radical selected from the following groups of formula Ya to Yg:

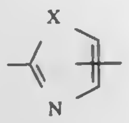

(Ya)

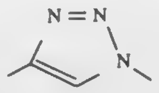

(Yb)


(Yc)


(Yd)


(Ye)


(Yf)


(Yg)

in which X represents oxygen, sulphur or N—R^3;

Z represents CH or N;

R and R^3 independently represent hydrogen or C_{1-6}alkyl; and

R^2 represents an optionally substituted aryl or heteroaryl group, wherein aryl is selected from the group consisting of phenyl and naphthyl and heteroaryl is selected from the group consisting of pyridyl, quinolyl, isoquinolyl, pyridazinyl, pyrimidinyl, pyrazinyl, pyranyl, furyl, benzofuryl, dibenzofuryl, thienyl, benzthienyl, pyrrolyl, indolyl, pyrazolyl, indazolyl, imidazolyl, benzimidazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl and thiadiazolyl, and the substituents are selected from the group consisting of C_{1-6}alkyl, adamantyl, phenyl, aryl(C_{1-6})alkyl, halogen, C_{1-6}haloalkyl, C_{1-6}aminoalkyl, trifluoromethyl, hydroxy, C_{1-6}alkoxy, aryloxy, C_{1-3}alkylenedioxy, nitro, cyano, carboxy, C_{2-6}alkoxycarbonyl, C_{2-6}alkoxycarbonyl(C_{1-6})alkyl, C_{2-6}alkylcarbonyloxy, arylcarbonyloxy, C_{2-6}alkylcarbonyl, arylcarbonyl, C_{1-6}alkylthio, C_{1-6}alkylsulphinyl, C_{1-6}alkylsulphonyl, arylsulphonyl, trifluoromethanesulphonyloxy, —NR^vR^w, —NR^vCOR^w, —$NR^vCO_2R^w$, —$NR^vSO_2R^w$, —$CH_2NR^vSO_2R^w$, —$NHCONR^vR^w$, $PO(OR^v)(OR^w)$, —$CONR^vR^w$, —$SO_2NR^vR^w$ and —$CH_2SO_2NR^vR^w$ in which R^v and R^w independently represent hydrogen, C_{1-6}alkyl, aryl or aryl(C_{1-6})alkyl.

5,712,286
NAPHTHYRIDINE DERIVATIVES

Julie Carolyn Gill, and Bruce William Leslie, both of Nottingham, Great Britain, assignors to Knoll Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/03769, § 371 Date Mar. 24, 1997, § 102(e) Date Mar. 24, 1997, PCT Pub. No. WO96/11198, PCT Pub. Date Apr. 18, 1996

PCT Filed Sep. 23, 1995, Ser. No. 809,581

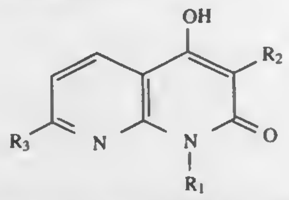
Claims priority, application United Kingdom, Oct. 6, 1994, 4920172

Int. Cl.^{6} A61K *31/435;* C07D *471/04*

U.S. Cl. 514—300 **7 Claims**

1. Compounds of formula I

I



including pharmaceutically acceptable salts thereof in which

R_1 represents a C_{1-6} alkyl group;

R_2 represents a group of formula $COOR_4$ in which R_4 represents a C_{1-5} alkyl group; and

R_3 represents a group of formula $COOR_5$ in which R_5 represents a C_{1-5} alkyl group.

5,712,287
METHOD OF TREATING URINARY BLADDER DYSFUNCTIONS

Mark A. Muhlhauser, 4811 Basil Ct., Indianapolis, Ind. 46237; Harlan E. Shannon, 4229 Rolling Springs Dr., Carmel, Ind. 46234, and Karl B. Thor, 4959 Jennings Dr., Carmel, Ind. 46033

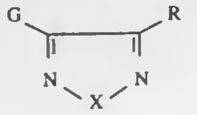
Division of Ser. No. 336,357, Nov. 8, 1994, Pat. No. 5,612,351. This application Oct. 3, 1996, Ser. No. 725,525

Int. Cl.^{6} A61K *31/44;31/51;31/41;31/415*

U.S. Cl. 514—304 **11 Claims**

I. A method of treating a urinary bladder dysfunction in a subject in need thereof comprising administering to the subject an effective amount of a compound of formula I

(I)



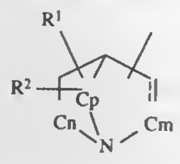
wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, —NO_2, —R^4, —Y, —NHCO—R^4, —OR^4, —SR^4, —SOR^4, —SO_2R^4, C_{3-10}-cycloalkyl, C_{4-10}-cycloalkenyl, C_{4-10}-(cycloalkylalkyl), —Z^1—C_{3-10}-cycloalkyl, —Z^1—C_{4-10}-cycloalkenyl, —Z^1—C_{4-10}-(cycloalkylalkyl), —Z^1—C_{4-10}-(cycloalkenylalkyl), —Z^1—C_{4-10}-(methylenecycloalkylalkyl), —NH—R^4, —NR^4R^5, —NH—OR^4, —CH═NOR^4, or an aromatic ring selected from the group consisting of phenyl, benzyloxycarbonyl, phenoxy, benzoyl, tetrahydronaphthyl, naphtyl, and indenyl, wherein each aromatic ring is optionally substituted with halogen, —NO_2, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$, —$CSNH_2$, phenoxy or phenyl; or R is —Z^1—R^6—Z^2—R^5, —Z^1—R^6—Z^2—R^7—Z^3—R^5, —Z^1—CO—R^5, —Z^1—R^6—CO—R^5, —Z^1—R^6—CO_2—R^5, —Z^1—R^6—O_2C—R^5, —Z^1—R^6—COHN—R^5, —Z^1—R^6—NHCO—R^5, —Z^1—R^6—Y, —Z^1—R^6—Z^2—Y, wherein Z^1 and Z^2 independently are oxygen or sulphur, and R^4 and R^5 independently are straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen(s), C_{1-6}-alkoxy, —CF_3, —CN, —COOH, —OH, —NH_2, C_{1-6}-alkyl ester, —SH, —NHR^4, —NR^4R^5, or a phenyl or phenoxy group, wherein the phenyl or phenoxy group is optionally substituted with halogen, —NO_2, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$, —$CSNH_2$, phenyl or phenoxy, and wherein R^6 and R^7 independently are straight or branched C_{1-10}-alkylene, straight or branched C_{2-10}-alkenylene, straight or branched C_{2-10}-alkynylene, each of which is optionally substituted with one or more halogen(s), —CF_3, —CN, —COOH, —OH, —NH_2, C_{1-6}-alkyl ester, —SH, —NHR^4, —NR^4R^5, phenyl or phenoxy, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched C_{1-6}-alkyl, phenyl or benzyl, or a carbon atom of the heterocyclic group together branched C_{1-6}alkyl, phenyl or benzyl, or a carbon atom of the heterocyclic group together with an oxygen atom form a carbonyl group, or wherein the heterocyclic group is optionally fused with a phenyl group; and

G is an azabicyclic ring of formula II

(II)



wherein

the thiadiazole or oxadiazole ring is attached to any carbon atom of the azabicyclic ring;

R^1 and R^2 may be present at any appropriate position and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, —NH_2, carboxy or straight or branched C_{1-5}-alkyl substituted with —OH; m, n and p are 1; and fheight..... is a single or double bond; or

a pharmaceutically acceptable salt thereof.

5,712,288
QUATERNARY BASIC AMIDES, METHOD OF PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Xavier Emonds-Alt, Combaillaux; Patrick Gueule, Teyran; Vincenzo Proietto, Saint Georges d'Orques, and Didier Van Broeck, Murviel les Montpellier, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 239,417, May 6, 1994, Pat. No. 5,583,134, which is a continuation-in-part of Ser. No. 129,311, Sep. 30, 1993, abandoned. This application Oct. 18, 1996, Ser. No. 734,029

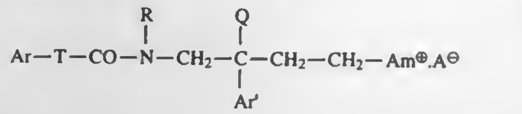
Claims priority, application France, Sep. 30, 1992, 92 12083

Int. Cl.^{6} A61K *31/44;* C07D *453/02*

U.S. Cl. 514—305 **19 Claims**

1. A quaternary basic amide of the formula

(I)



$$Ar-T-CO-\overset{\overset{R}{|}}{N}-CH_2-\underset{\underset{Ar'}{|}}{\overset{\overset{Q}{|}}{C}}-CH_2-CH_2-Am^{\oplus}.A^{\ominus}$$

in which

Ar is a phenyl which is mono- or di-substituted by a C_1–C_4 alkoxy, a halogen or a trifluoromethyl group;

T is a direct bond, a hydroxymethylene group, an alkoxymethylene group in which the alkoxy group is C_1–C_4, or a C_1–C_5-alkylene group;

Ar' is a phenyl which is unsubstituted or mono- or poly-substituted by a substituent selected from the group consisting of a halogen atom, a trifluoromethyl, a C_1–C_4-alkoxy and a C_1–C_4-alkyl, said substituents being identical or different; a thienyl; a benzothienyl; a naphthyl; or an indolyl;

R is hydrogen, a C_1–C_4-alkyl, an ω-(C_1–C_4)alkoxy(C_2–C_4)alkyl, or an ω-(C_2–C_4)alkanoyloxy(C_2–C_4)alkyl;

Q is hydrogen;

or else Q and R together form a 1,2-ethylene, 1,3-propylene or 1,4-butylene group;

$Am^{\oplus}$ is selected from the group consisting of a 1-azoniabicyclo[2.2.2]octane, 4-phenyl-1-azoniabicyclo[2.2.2]octane and 4-benzyl-1-azoniabicyclo[2.2.2]octane; and

$A^{\ominus}$ is a pharmaceutically acceptable anion.

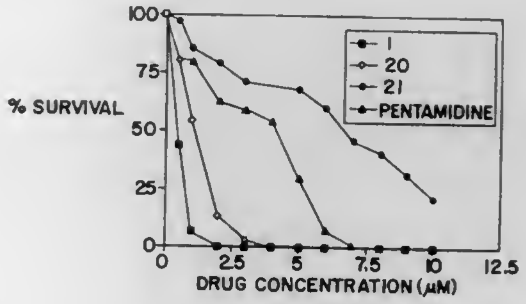
5,712,289
QUINOLINE-5,8-DIONES AND METHODS OF USING THEM

Mohammad Behforouz, Muncie, Ind., and Ronald L. Merriman, Ann Arbor, Mich., assignors to Ball State University, Muncie, Ind.

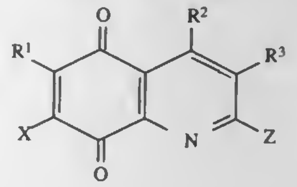
Continuation-in-part of Ser. No. 345,509, Nov. 28, 1994, Pat. No. 5,646,150, which is a continuation-in-part of Ser. No. 71,648, Jun. 4, 1993, Pat. No. 5,525,611. This application Jun. 7, 1995, Ser. No. 476,213

Int. Cl.^{6} A61K *31/47;* C07D *215/16;215/18;215/33*

U.S. Cl. 514—311 **17 Claims**

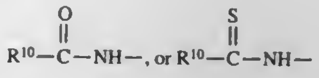


1. A compound having the following formula:



wherein,

X is



$$R^{10}-\overset{\overset{O}{\|}}{C}-NH-,\ \text{or}\ R^{10}-\overset{\overset{S}{\|}}{C}-NH-$$

or

R^1, R^2, and R^3, which may be the same or different, each is independently H, a halogen atom, NO_2, CN, OR^{13}, SR^{13}, or , $N(R^{13})_2$

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R^{10} and R^{13}, which may be the same or different, each is independently H or an alkyl, cycloalkyl, alkenyl, alkynyl, or aryl, each of which may be substituted or unsubstituted, and

Z is CHO.

5,712,290

MEDICINAL FEED FOR THE SYSTEMIC TREATMENT OF ECTOPARASITIC AND ECTOBACTERIAL DISEASES OF FISH

Hartmut Schmidt, Georgsmarienhutte, and Gunter Ritter, Bunde, both of Germany, assignors to Tetra Werke Dr. rer. nat. U. Baensch GmbH, Melle, Germany

Continuation-in-part of Ser. No. 499,985, Jul. 10, 1995, which is a division of Ser. No. 287,754, Aug. 9, 1994, abandoned, which is a division of Ser. No. 949,324, Sep. 22, 1992, Pat. No. 5,618,847, which is a continuation of Ser. No. 709,867, Jun. 4, 1991, abandoned. This application Aug. 23, 1995, Ser. No. 519,832

Claims priority, application Germany, Jun. 5, 1990, 40 17 964.8

Int. Cl.^{6} A61K *31/47;47/00;* **A23K** *1/165*

U.S. Cl. 514—311 **3 Claims**

1. A composition comprising and enteral solid medicinal food preparation for fish containing an active compound, a quinoline derivative, in a concentration of 0.005 to 10% by weight wherein the active compound is very strongly adsorptively bound by carriers and feed materials so no leaching out by the water takes place.

5,712,291

METHODS AND COMPOSITIONS FOR INHIBITION OF ANGIOGENESIS

Robert D'Amato, Lancaster, Pa., assignor to The Children's Medical Center Corporation, Boston, Mass.

Continuation of Ser. No. 168,817, Dec. 15, 1993, Pat. No. 5,629,327, which is a continuation-in-part of Ser. No. 25,046, Mar. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,792

Int. Cl.^{6} A61K *31/445*

U.S. Cl. 514—323 **80 Claims**

1. A method of treating undesired angiogenesis in a human or animal comprising the step of administering to the human or animal with the undesired angiogenesis a composition comprising an effective amount of an angiogenesis-inhibiting compound selected from the group consisting of 3-aminothalidomide, and 3-hydroxythalidomide, and metabolites or hydrolysis products of 3-aminothalidomide and metabolites or hydrolysis products of 3-hydroxythalidomide, and mixtures thereof.

5,712,292

N-SUBSTITUTED AZAHETEROCYCLIC CARBOXYLIC ACIDS AND ESTERS THEREOF

Knud Erik Andersen, Smørum; Uffe Bang Oisen, Vallensbæk; Hans Petersen, Vanløse; Frederik Christian Grønvald, Vedbæk, all of Denmark; Ursula Sonnewald, Trondheim, Norway; Tine Krogh Jørgensen, Herlev, and Henrik Sune Andersen, København Ø, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

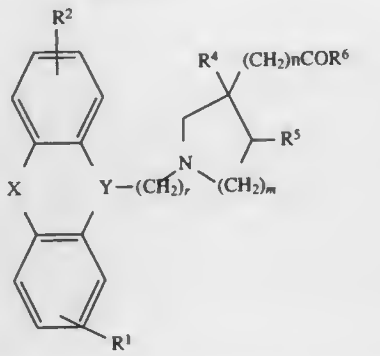
Division of Ser. No. 367,648, Jan. 3, 1995, Pat. No. 5,595,989. This application Oct. 18, 1995, Ser. No. 544,905

Claims priority, application Denmark, Jan. 4, 1994, 0019/94; Nov. 9, 1994, 1290/94

Int. Cl.^{6} C07D *207/08;211/32;* **A61K** *31/40;31/445*

U.S. Cl. 514—325 **42 Claims**

1. A compound of formula I



(I)

wherein

R^1 and R^2 independently are hydrogen, halogen, trifluoromethyl, C_{1-6}-alkyl or C_{1-6}-alkoxy;

Y is $>\underline{C}H—CH_2—$ or $>\underline{C}=CH—$ wherein only the underscored atom participates in the ring system;

X is $—CH_2CH_2—$, $—CH=CH—CH_2—$, $—CH_2—CH=CH—$, $—CH_2CH_2CH_2—$, $—(C=O)—$ or $—CR^7R^8—$, wherein R^7 and R^8 independently are hydrogen or C_{1-6}-alkyl;

r is 1, 2, or 3;

m is 1 or 2;

n is 1 when m is 1 and n is 0 when m is 2;

R^4 and R^5 are hydrogen when m is 1;

R^4 and R^5 are hydrogen or form a bond when m is 2; and

R^6 is OH or C_{1-8}-alkoxy; or

a pharmaceutically acceptable salt thereof.

5,712,293

METHODS FOR TREATING GASTRO-ESOPHAGEAL REFLUX DISEASE AND OTHER DISORDERS ASSOCIATED WITH THE DIGESTIVE TRACT USING OPTICALLY PURE (-) NORCISAPRIDE

John R. McCullough, Worcester, and A.K. Gunnar Aberg, Westborough, both of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Filed Jun. 7, 1995, Ser. No. 485,570

Int. Cl.^{6} A61K *31/445*

U.S. Cl. 514—327 **25 Claims**

1. A method of treating gastro-esophageal reflux disease in a human which comprises administering to said human an effective amount of (–) norcisapride, or a pharmaceutically acceptable salt thereof, substantially free of its (+) stereoisomer.

5,712,294

N-PYRIDYL CARBOXAMIDES AND DERIVATIVES

Jean-Michel Robert; Odile Rideau; Sylvie Robert-Piessard; Jacqueline Courant, all of Nantes; Guillaume Le Baut, Saint Sebatien Sur Loire; Daniel-Henri Caignard, Paris; Pierre Renard, Versailles, and Gérard Adam, Le Mesnil Le Roi, all of France, assignors to Adir Et Compagnie, Courbevoie, France

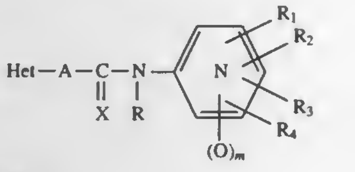
Filed May 25, 1995, Ser. No. 450,346

Claims priority, application France, May 27, 1994, 94 06412

Int. Cl.^{6} C07D *409/12;401/12;* **A61K** *31/44*

U.S. Cl. 514—336 **12 Claims**

1. A compound selected from those of formula (I):

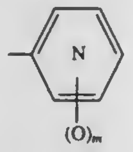


(I)

in which

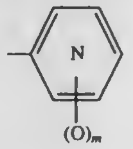
m is equal to 0 or 1,

the symbol



representing the pyridine ring when m is equal to 0 and pyridine N-oxide when m is equal to 1,

the pyridine system



being connected to the group

$$\overset{}{\underset{\displaystyle R}{\underset{|}{—N—}}}$$

which bears it either in the 2-position or in the 3-position of the pyridine;

R_1 and R_2, which may be identical or different, are chosen, independently of each other, from hydrogen, amino, alkylamino, dialkylamino, alkyl, hydroxy, alkoxy, nitro, and halogen,

R_3 and R_4, which may be identical or different, are chosen, independently of each other, from amino, alkylamino, dialkylamino, alkyl, hydroxy, alkoxy, nitro, and halogen,

R represents hydrogen or alkyl,

A represents alkylene which is unsubstituted or substituted with one or more alkyl, or alkenylene which is unsubstituted or substituted with one or more alkyls; and

Het represents a group chosen from thiophene, substituted thiophene, benzothiophene and substituted benzothiophene,

X represents oxygen, sulfur, imino or imino substituted with a group chosen from alkyl, alkoxy, hydroxy, amino, arylalkyloxy and aryloxy,

an enantiomer and a diastereoisomer thereof and an addition salt thereof with a pharmaceutically-acceptable acid or base,

it being understood that, except where otherwise mentioned:

the term "substituted" relating to the thiophene and benzothiophene systems means that these systems are substituted with one or more groups chosen from alkyl, alkoxy, trifluoromethyl, hydroxy, halogen, thiol and alkylthio,

the terms "alkyl", "alkoxy" and "alkylene", denote linear or branched groups containing 1 to 6 carbon atoms, inclusive,

the term "aryl" denotes phenyl or naphthyl, and

the term "alkenylene" denotes a linear or branched unsaturated chain containing 2 to 6 carbon atoms, inclusive.

5,712,295

AGONISTS AND ANTAGONISTS OF THE NICOTINIC ACETYLCHOLINE RECEPTORS OF INSECTS TO CONTROL ENDOPARASITES

Norbert Mencke, Leverkusen; Achim Harder, Köln, both of Germany, and Terence Hopkins, Tambourene, Australia, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/02014, § 371 Date Nov. 21, 1996, § 102(e) Date Nov. 21, 1996, PCT Pub. No. WO95/33453, PCT Pub. Date Dec. 14, 1995

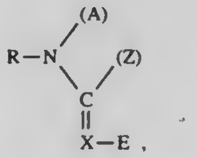
PCT Filed May 26, 1995, Ser. No. 750,012

Claims priority, application Germany, Jun. 7, 1994, 44 19 814.0

Int. Cl.^{6} A61K *31/44;31/675;31/54;31/425*

U.S. Cl. 514—338 **20 Claims**

1. A method of combating endoparasites in a warm-blooded animal infected with said endoparasites, said method comprising administering to said warm-blooded animal an endoparasiticidally effective amount of an agonist or antagonist of the nicotinergic acetylcholine receptor of an insect of the formula:



(I)

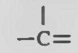
which

R represents hydrogen, and optionally substituted radicals selected from the group consisting of acyl, alkyl, aryl, aralkyl, heteroaryl or heteroarylalkyl,

A represents a monofunctional group selected from the group consisting of hydrogen, acyl, alkyl and aryl or represents a bifunctional group linked to the radical Z, wherein the bifunctional group is optionally interrupted by heteroatoms selected from the group consisting of N, O and S,

E represents an electron-attracting radical,

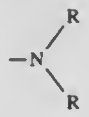
X represents the radicals —CH=, =N—, or the radical



$$\overset{|}{—C=}$$

linked to the radical Z,

Z represents a monofunctional group selected from the group consisting of alkyl, —O—R, —S—R,



or represents a bifunctional group linked to the radical A or the radical X.

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SUBSTITUTED PYRIDINES AND 2-OXO-1,2-DIHYDROPYRIDINES

Peter Fey, Wuppertal; Jürgen Dressel, Radevormwald; Rudolf Hanko, Essen; Walter Hübsch, Wuppertal; Thomas Krämer, Wuppertal; Ulrich Müller, Wuppertal; Matthias Müller-Gliemann, Solingen; Martin Beuck, Erkrath; Hilmar Bischoff, Wuppertal; Stefan Wohlfeil, Hilden; Dirk Denzer; Stanislav Kazda, both of Wuppertal; Johannes-Peter Stasch, Solingen; Andreas Knorr, Erkrath, and Siegfried Zaiss, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

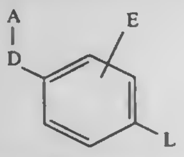
Division of Ser. No. 235,831, Apr. 29, 1994, Pat. No. 5,492,923. This application Oct. 27, 1995, Ser. No. 549,381

Claims priority, application Germany, May 6, 1993, 43 14 963.4

Int. Cl.^{6} A61K *31/44*

U.S. Cl. 514—340 **10 Claims**

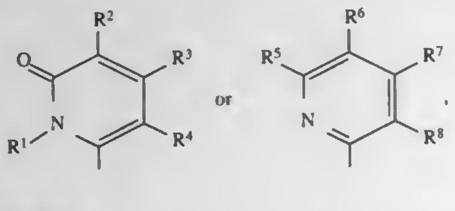
1. A method of treating arterial hypertension and atherosclerosis in a patient in need thereof which comprises administering an effective amount of a compound of the formula



(I)

in which A represents a radical of the formula in which

A represents a radical of the formula



wherein

R^1 denotes alkyl having up to 10 carbon atoms, which is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, hydroxyl or by alkoxy or alkylthio having in each case up to 6 carbon atoms, or denotes cycloalkyl having 3 to 6 carbon atoms,

R^2, R^5 and R^6 are identical or different and denote hydrogen, hydroxyl, nitro, cyano, formyl or halogen, or denote alkyl, alkenyl, alkinyl, alkoxy or alkylthio having in each case up to 8 carbon atoms, which are optionally substituted up to 3 times in an identical or different manner by hydroxyl, cyano, halogen, carboxyl, alkoxy, acyl or alkoxycarbonyl having in each case up to 6 carbon atoms, or by cycloalkyl having 3 to 6 carbon atoms, benzyl, phenyl, phenoxy, or benzoyl wherein the cyclic radicals are optionally substituted up to 2 times in an identical or different manner by trifluoromethyl, trifluoromethoxy, halogen, nitro, cyano, hydroxyl, hydroxymethyl or by alkyl or alkoxy having in each case up to 6 carbon atoms, or denote acyl or alkoxycarbonyl having in each case up to 8 carbon atoms, phenoxycarbonyl, benzyloxycarbonyl or carboxyl, or denote tetrazolyl, which is optionally substituted by triphenylmethyl or by alkyl having up to 6 carbon atoms, which is optionally substituted by cyano, halogen, carboxyl, phenoxycarbonyl, hydroxyl or by straight-chain or branched alkoxy or alkoxycarbonyl having in each case up to 6 carbon atoms, or denote a group of the formula

$$\underset{|}{HC}{=}N{-}OH,$$

$-NR^9R^{10}$, $-CO-NR^{11}R^{12}$, $-CH_2-OR^{13}$ or $-S(O)_a-R^{14}$ wherein

R^9, R^{10}, R^{11} and R^{12} are identical or different and denote hydrogen, cycloalkyl having 3 to 8 carbon atoms or alkyl having up to 8 carbon atoms, which is optionally substituted by phenyl,

R^{13} denotes acyl having up to 6 carbon atoms or benzoyl,

R^{14} denotes alkyl having up to 8 carbon atoms,

a denotes a number 1 or 2,

R^3 and R^7 are identical or different and denote hydrogen, hydroxyl, carboxyl, alkoxy or alkoxycarbonyl having in each case up to 8 carbon atoms, or denote a group of the formula $-NR^{15}R^{16}$, wherein

R^{15} and R^{16} have the abovementioned meaning of R^9 and R^{10} and are identical to or different from these, or

denote aryl having 6 to 10 carbon atoms, which is optionally substituted up to 2 times in an identical or different manner by trifluoromethyl, trifluoromethoxy, halogen, nitro, cyano, hydroxyl, hydroxymethyl or by straight-chain or branched alkyl or alkoxy having in each case up to 6 carbon atoms, or

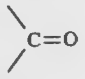
denote straight-chain or branched alkyl or alkenyl having in each case up to 8 carbon atoms, which is optionally substituted up to 3 times in an identical or different manner by hydroxyl, cyano, halogen, carboxyl, straight-chain or branched alkoxy, acyl or alkoxycarbonyl having in each case up to 6 carbon atoms, or by cycloalkyl having 3 to 6 carbon atoms, benzyl, phenyl, phenoxy, or benzoyl wherein the cyclic radicals in turn are optionally substituted up to 2 times in an identical or different manner by trifluoromethyl, trifluoromethoxy, halogen, nitro, cyano, hydroxyl, hydroxymethyl or by alkyl or alkoxy having in each case up to 6 carbon atoms, R^4 denotes hydrogen, nitro, carboxyl or alkoxycarbonyl having up to 8 carbon atoms, or denotes a group of the formula $-NR^{17}R^{18}$, wherein

R^{17} and R^{18} have the abovementioned meaning of R^9 and R^{10} and are identical to or different from these, or

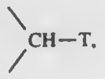
denotes alkyl or alkenyl having in each case up to 8 carbon atoms, which is optionally substituted up to 3 times in an identical or different manner by hydroxyl, cyano, halogen, carboxyl, straight-chain or branched alkoxy, acyl or alkoxycarbonyl having in each case up to 6 carbon atoms, or by cycloalkyl having 3 to 6 carbon atoms, benzyl, phenyl, phenoxy, or benzoyl wherein the cyclic radicals are optionally substituted up to 2 times in an identical or different manner by trifluoromethyl, trifluoromethoxy, halogen, nitro, cyano, hydroxyl, hydroxymethyl or by straight-chain or branched alkyl or alkoxy having in each case up to 6 carbon atoms,

R^8 has the abovementioned meaning of R^1 and R^4 and is identical to or different from these,

D represents the



group or represents a group of the formula

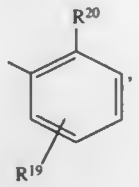


wherein

T denotes hydrogen or alkyl having up to 8 carbon atoms,

E represents hydrogen, halogen, cyano, nitro, trifluoromethyl, hydroxyl, trifluoromethoxy or amido, or represents alkyl, alkoxy or alkoxycarbonyl having in each case up to 6 carbon atoms,

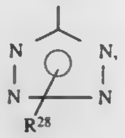
L represents a radical of the formula



wherein

R^{19} has the abovementioned meaning of E and is identical to or different from this, and

R^{20} denotes a radical of the formula



wherein

R^{28} denotes hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by acyl having up to 6 carbon atoms, or denotes the triphenylmethyl group,

or a salt thereof.

5,712,297

PIPERDINE COMPOUNDS AND THEIR PREPARATION AND USE

Per Sauerberg, Valby, and Preben H. Olesen, København, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

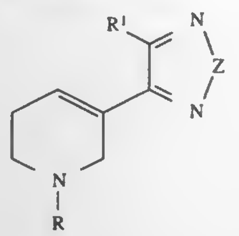
Division of Ser. No. 472,356, Jun. 7, 1995, Pat. No. 5,559,138, which is a continuation of Ser. No. 144,951, Oct. 29, 1993, abandoned, which is a division of Ser. No. 745,568, Aug. 15, 1991, Pat. No. 5,284,859, which is a continuation of Ser. No. 482,272, Feb. 20, 1990, Pat. No. 5,041,455, which is a continuation-in-part of Ser. No. 401,370, Aug. 31, 1989, Pat. No. 5,043,345. This application Sep. 23, 1996, Ser. No. 717,647

Claims priority, application Denmark, Feb. 22, 1989, 0825/89; May 12, 1989, 2315/89

Int. Cl.^{6} A61K *31/44;* **C07D** *417/04*

U.S. Cl. 514—342 **23 Claims**

1. A compound of formula I



(I)

wherein

Z is oxygen or sulphur;

R is H, C_{1-3}-alkyl, C_{3-4}-cycloalkyl, C_{2-4}-alkenyl or C_{2-4}alkynyl; and

R^1 is H, $-C_{1-15}$-alkyl, $-C_{2-15}$-alkenyl, $-C_{3-7}$-alkynyl, $-C_{3-7}$-cycloalkyl, morpholino, $-C_{1-6}$-alkyl substituted piperidino, $-C_{1-6}$acylamino, $-C_{1-15}$-alkylamino, $-C_{1-5}$-dialkylamino, $-C_{1-15}$-alkoxyamino, $-S-R^2$ or $-O-R^2$ wherein R^2 is straight or branched $-C_{1-15}$-alkyl, straight or branched $-C_{2-15}$-alkenyl, or straight or branched $-C_{2-15}$alkynyl; or a pharmaceutically acceptable salt thereof.

5,712,298

FLUOROALKOXY-SUBSTITUTED BENZAMIDES AND THEIR USE AS CYCLIC NUCLEOTIDE PHOSPHODIESTERASE INHIBITORS

Hermann Amschler, Radolfzell, Germany, assignor to BYK Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany

PCT No. PCT/EP94/02169, § 371 Date Dec. 19, 1995, § 102(e) Date Dec. 19, 1995, PCT Pub. No. WO95/01338, PCT Pub. Date Jan. 12, 1995

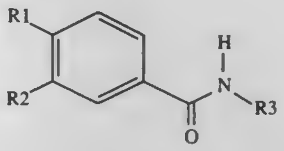
PCT Filed Jul. 2, 1994, Ser. No. 564,322

Claims priority, application Switzerland, Jul. 2, 1993, 01 996/99

Int. Cl.^{6} C07D *213/75;* **C07C** *235/56;* **A61K** *31/44;31/165*

U.S. Cl. 514—352 **8 Claims**

1. A compound of formula I



(I)

in which

R1 is 1–4C-alkoxy which is completely or partially substituted by fluorine,

R2 is 3–5C-cycloalkylmethoxy or benzyloxy, and

R3 is 2-bromophenyl, 2,6-dichloro-4-ethoxycarbonylphenyl, 2,6-dimethoxyphenyl, 4-cyano-2-fluorophenyl, 2,4,6-trifluorophenyl, 2-chloro-6-methylphenyl, 2,6-dimethylphenyl, 2,6-difluorophenyl, 2,6-dichlorophenyl, 3,5-dichloropyrid-4-yl, 3-methylpyrid-2-yl, 2-chloropyrid-3-yl, 3,5-dibromopyrid-2-yl, 2,3,5,6-tetrafluoropyrid- 4-yl, 3-chloro-2,5,6-trifluoropyrid- 4-yl, 3,5-dichloro-2,6-difluoropyrid-4-yl or 2,6-dichloropyrid-3-yl,

a salt thereof, and the N-oxide of a pyridine or a salt thereof.

5,712,299

(1-PHENYL-1-HETEROCYCLYL)METHANOL AND (1-PHENYL-1-HETEROCYCLYL METHYLAMINE DERIVATIVES

Robin Bernad Boar, Herts; Alan John Cross, Surrey; Duncan Alastair Gray, Powys, and Richard Alfred Green, Oxon, all of Great Britain, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE94/00665, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO95/01968, PCT Pub. Date Jan. 19, 1995

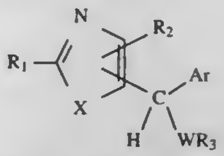
PCT Filed Jul. 5, 1994, Ser. No. 379,469

Claims priority, application Sweden, Jul. 3, 1993, 9302324

Int. Cl.^{6} C07D *203/30;277/30;* **A61K** *31/42;31/425*

U.S. Cl. 514—365 **6 Claims**

1. A compound having the formula (1)



(1)

or a pharmaceutically acceptable acid salt or solvate thereof, in the form of an optical isomer or a racemate, wherein

X is O, S or Se;

R_1 is H, lower alkyl, lower alkoxy-lower alkyl, aryl-lower alkyl or CF_3;

R_2 is H, lower alkyl, lower alkoxy-lower alkyl, aryl-lower alkyl or CF_3;

W is O, S, NH or N-lower alkyl;

R_3 is H, lower alkyl or lower acyl;

Ar is phenyl, furyl, thienyl, naphthyl, pyridyl or pyrrolyl, optionally substituted by R_6;

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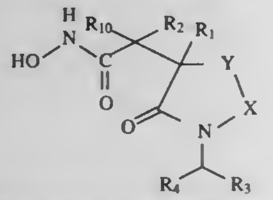
R_6 is one or more groups selected from lower alkyl, lower acyl, halogen, lower alkoxy, CF_3, OH, NO_2 or NR_4R_5, wherein R_4 and R_5 independently are H, lower alkyl or lower acyl; and with the proviso that the following five compounds are excluded:
1-(4-methyl-5-thiazolyl)-1-phenylmethanol;
1-(2,4-dimethyl-5-oxazolyl)-1-phenylmethanol;
1-(5-thiazolyl)-1-1-phenylmethanol;
1-(4-oxazolyl)-1-phenylmethanol;
1-(2,4-dimethyl-5-thiazolyl)-1-(2-chlorophenyl)methanol.

5,712,300
HYDROXAMIC ACID DERIVATIVES USEFUL FOR THE TREATMENT OF DISEASES RELATED TO CONNECTIVE TISSUE DEGRADATION

E. Jon Jacobsen, Plainwell, Mich., assignor to Pharmacia & Upjohn Company, Kalamazoo, Mich.

Filed Mar. 4, 1997, Ser. No. 811,821
Int. Cl.^{6} C07D *403/06;* A61K *31/415;31/40*
U.S. Cl. 514—389 **21 Claims**

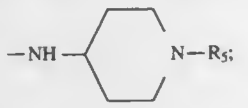
1. A compound of formula 1



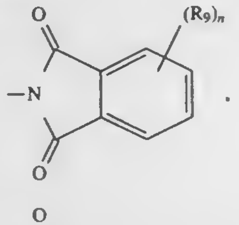
1

or pharmaceutical acceptable salts thereof wherein
- X is
  - a) —(CH_2)—,
  - b) —NR_5—, or
  - c) —C(=O)—;
- Y is
  - a) —(CH_2)—, or
  - b) —NR_5—;

with the prociso that when X is —NR_5—, then Y is —(CH_2)—;
- R_1 is
  - a) H,
  - b) C_{1-20} alkyl,
  - c) —$(CH_2)_i$-Aryl,
  - d) —$(CH_2)_i$—O—R_5,
  - e) —$(CH_2)_i$—Het,
  - f) —$(CH_2)_i$—CO_2R_5,
  - g) —$(CH_2)_i$—C(=O)NHR_5,
  - h) —$(CH_2)_i$—NR_6R_7,
  - i) —$(CH_2)_i$—SO_2-Aryl,
  - j) —$(CH_2)_j$ cycloalkyl, or
  - k) —$(CH_2)_j$-Aryl-Aryl;
- R_2 is
  - a) H,
  - b) C_{1-20} alkyl,
  - c) —$(CH_2)_j$—R_8,
  - d) —$(CH_2)_j$—OR_5,
  - e) $CH_2CR_5{=}CR_5R_5$,
  - f) —NHR_5,
  - g) —$(CH_2)_jNR_6R_7$,
  - h) —$NHSO_2R_5$,
  - i) —$(CH_2)_j$—C(=O)NR_6R_7,
  - j) —$(CH_2)_j$—NR_5C(=O)R_5,
  - k) —$(CH_2)_j$—$NR_5SO_2R_5$, or
  - l) —$(CH_2)_j$—$N(COR_5)_2$;
- R_3 is
  - a) H,
  - b) C_{1-6} alkyl,
  - c) —$(CH_2)_j$-Aryl,
  - d) —$(CH_2)_j$—Het,
  - e) —$(CH_2)_j$—C_{3-6} cycloalkyl, or
  - f) —C(=O)NHR_5;
- R_4 is
  - a) H,
  - b) —C(=O)NHR_5,
  - c) —C(=O)NR_6R_7,
  - d) —C(=O)$NH(CH_2)_kNR_6R_7$,
  - e) —C(=O)$NH(CH_2)_j$-Aryl,
  - f) —C(=O)$NH(CH_2)_k$—O—$(CH_2)_kNR_6R_7$,
  - g) —C(=O)$NH(CH_2)_k$—S—$(CH_2)_jNR_6R_7$,
  - h) —C(=O)$NH(CH_2)_k$—$NHSO_2$-Aryl,
  - i) C(=O)$NH(CH_2)_k$—$NHSO_2$—NR_6R_7, or
  - j)



- R_5 is
  - a) H,
  - b) C_{1-6} alkyl,
  - c) —$(CH_2)_j$-Aryl,
  - d) —$(CH_2)_j$-Aryl-Aryl,
  - e) —$(CH_2)_j$-Aryl-$(CH_2)_j$-Aryl,
  - f) $(CH_2)_j$—Het, or
  - g) —$(CH_2)_j$-cycloalkyl
- R_6 and R_7 may be the same or differently
  - a) H,
  - b) C_{1-6} alkyl,
  - c) —$(CH_2)_j$-Aryl,
  - d) Q, or
  - e) R_6 and R_7 taken together with the linking N-atom form azetidinyl, pyrrolidinyl, piperazinyl, piperidinyl, or morpholinyl, optionally substituted with one or more C_{1-4} alkyl;
- R_8 is
  - a) —S—R_5,
  - b) —SO—R_5,
  - c) —SO_2—R_5,
  - d) —S—$(CH_2)_j$—Het,
  - e) —$NHCO_2R_5$,
  - f) piperidinyl,
  - g)



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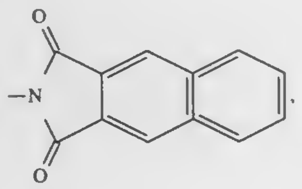
h)



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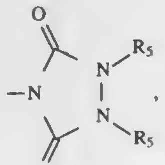
i)



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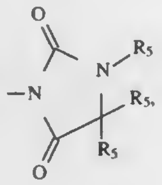

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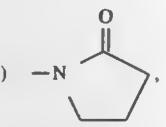
k)



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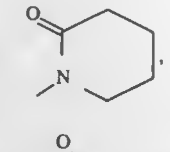

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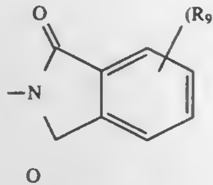
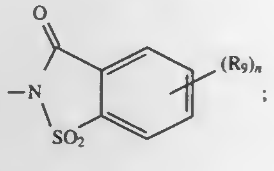
m)



, or

o)



;

- R_9 is
  - a) halogen,
  - b) C_{1-6} alkyl,
  - c) —OR_5,
  - d) —NR_5R_5,
  - e) —$CONHR_5$,
  - f) —SO_2NHR_5,
  - g) —$NHSO_2R_5$,
  - h) —NO_2,
  - i) —CO_2R_5, or
  - j) —CF_3;
- R_{10} is
  - a) H,
  - b) OH,
  - c) OR_5,
  - d) NHR_5, or
  - e) —$(CH_2)_j$—OR_5;
- Aryl is phenyl, optionally substituted with one or more of the following:
  - a) halogen,
  - b) C_{1-10} alkyl,
  - c) —OR_5,
  - d) —NR_5R_5,
  - e) —$CONHR_5$,
  - f) —SO_2NHR_5,
  - g) —$NHSO_2R_5$,
  - h) —NO_2,
  - i) —CO_2R_5, or
  - j) —CF_3;
- Het is
  - a 5-, or 6-membered heteroaromatic moiety having one or more atoms selected from the group consisting of N, O, and S;
- Q is
  - a saturated 5, or 6-membered heterocyclic moiety having 1–2 atoms selected from the group consisting of N, O, and S;
- i is 1, 2, 3, 4, 5 or 6;
  - j is 0, 1, 2, 3, or 4;
  - k is 2, 3, or 4;
  - n is 0, 1, 2, 3, or 4;

C_{1-6} alkyl, C_{1-10} alkyl, or C_{1-20} alkyl in each of the above definitions, may be each and independently substituted with one to three halogen, hydroxy, or cyano; and with the proviso that when R_1 is methylbutyl R_4 is other than H.

5,712,301
USE OF DEXMEDETOMIDINE FOR TREATING ETHANOL-INDUCED NEURODEGENERATION

Pia Helena Jaatinen, Tampere; Esa Henrik Heinonen, Turku; Antti Lauri Juhani Hervonen, Tampere, and Lauri Sakari Nieminen, Lieto, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

PCT No. PCT/FI94/00371, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/05820, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 24, 1994, Ser. No. 602,745
Claims priority, application United Kingdom, Aug. 25, 1993, 9317636
Int. Cl.^{6} A61K *31/415*
U.S. Cl. 514—396 **26 Claims**

1. A method of prevention of neurodegeneration in a subject induced by ethanol consumption comprising administration to said subject of an amount of dexmedetomidine or a pharmaceutically acceptable acid addition salt thereof effective to prevent such neurodegeneration.

5,712,302
COMPOSITIONS USING OPTICALLY PURE R(+) ONDANSETRON

James W. Young, Still River, Mass., assignor to Sepracor Inc., Marlborough, Mass.

Continuation of Ser. No. 164,734, Dec. 7, 1993, Pat. No. 5,470,868, which is a continuation of Ser. No. 750,387, Aug. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 721,868, Jun. 26, 1991, abandoned. This application Aug. 10, 1995, Ser. No. 513,368
Int. Cl.^{6} A61K *31/45*
U.S. Cl. 514—397 **9 Claims**

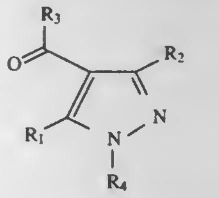
1. A pharmaceutical composition suitable for administration to a mammal which comprises an amount of R(+) ondansetron or a pharmaceutically acceptable salt thereof, substantially free of its S(−) stereoisomer; and a pharmaceutically acceptable carrier, wherein the amount is about 2.0 mg to about 8.0 mg.

5,712,303
PYRAZOLES AND PYRAZOLOPYRIMIDINES HAVING CRF ANTAGONISTIC ACTIVITY

William Stephen Faraci, East Lyme, and Willard McKowan Welch, Jr., Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/10359, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/13643, PCT Pub. Date Jun. 23, 1994
Continuation of Ser. No. 992,225, Dec. 17, 1992, abandoned. This PCT application Nov. 3, 1993, Ser. No. 448,529
Int. Cl.^{6} C07D *231/44*
U.S. Cl. 514—407 **7 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein:
- R_1 is hydrogen, C_1–C_6 alkyl, amino, C_1–C_6 alkoxy, —$NH(C_1$–C_6 alkyl), —$N(C_1$–C_6 alkyl) (C_{1-C6} alkyl), wherein the alkyl moieties of said R_1 groups optionally may contain 1 or 2 double or triple bonds and may be substituted by 1 to 3 substituents independently selected from hydroxy, amino,

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C_1—C_3 alkoxy, dimethylamino, diethylamino, methylamino, ethylamino, —NHC(O)CH_3, fluoro, chloro, bromo and C_1–C_3 thioalkyl;

R_2 is —SH or —S(O)$_n$(C_1–C_6 alkyl) wherein n is an integer ranging from 0 to 2;

R_3 is phenyl or naphthyl, wherein said R_3 groups are optionally substituted by 1 to 3 substituents of which 1 to 3 may be R_5 groups and 1 may be an R_6 group;

R_4 is 2,4-disubstituted phenyl, 2,4,6-trisubstituted phenyl or naphthyl, wherein 1 substituent for said phenyl groups may be an R_6 group and 1 to 3 substituents for said phenyl groups may be R_5 groups, and wherein said naphthyl group is optionally substituted by 1 to 3 substituents of which 1 to 3 may be R_5 groups and 1 may be an R_6 group;

each R_5 is independently selected from fluoro, chloro, bromo, trifluoromethyl, C_1–C_6 alkyl, and C_1–C_6 alkoxy, wherein the alkyl moieties of the foregoing R_5 groups are optionally substituted by 1 or 2 substituents independently selected from fluoro, chloro, hydroxy, amino, methylamino, dimethylamino, and acetyl; and,

each R_6 is independently selected from cyano, nitro, amino, —NH(C_1–C_6 alkyl), —N(C_1–C_4 alkyl) (C_1–C_2 alkyl), —C(O)O(C_1–C_4 alkyl), —C(O) (C_1–C_4 alkyl), —SO_2NH(C_1–C_6 alkyl), —SO_2N(C_1–C_4 alkyl) (C_1–C_2 alkyl), —SO_2NH_2, —$NHSO_2$(C_1–C_4 alkyl), —S(C_1–C_6 alkyl), and —SO_2(C_1–C_6 alkyl), wherein the alkyl moieties of the foregoing R_6 groups are optionally substituted by 1 or 2 substituents independently selected from fluoro, chloro, hydroxy, amino, methylamino, dimethylamino, and acetyl.

5,712,304

CARBOXYLIC ACID AMIDE BENZOTHIOPHENECARBOXAMIDE S-OXIDES

Hans-Ludwig Elbe; Reinhard Lantzsch, both of Wuppertal; Ralf Tiemann, Leverkusen; Heinz-Wilhelm Dehne, Bonn; Martin Kugler, Leichlingen; Wilfried Paulus, and Heinrich Schrage, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP94/01488, § 371 Date Nov. 14, 1995, § 102(e) Date Nov. 14, 1995, PCT Pub. No. WO94/27986, PCT Pub. Date Dec. 8, 1994

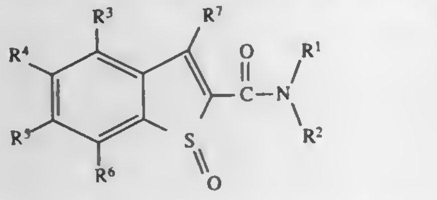
PCT Filed May 9, 1994, Ser. No. 553,593

Claims priority, application Germany, May 21, 1993, 43 17 076.5

Int. Cl.^{6} A01N *43/12;* **C07D** *333/70*

U.S. Cl. 514—272.4 **4 Claims**

1. A benzothiophenecarboxamide-S-oxide of the formula



(I)

in which

R^1 represents straight-chain or branched alkyl having 1 to 18 carbon atoms,

or

represents cycloalkyl having 3 to 6 carbon atoms,

or

represents arylalkyl, or aryl, each of which has carbon atoms in the aryl moiety and up to 8 carbon atoms in the straight-chain or branched alkyl, moiety and each of which is optionally mono- to trisubstituted in the aryl moiety by identical or different substituents, selected from the group consisting of halogen, nitro, straight-chain or branched alkyl, or alkoxy each of which has 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, straight-chain or branched halogenoalkoxy which has 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, or straight-chain or branched alkylcarbonyl,

R^2 represents hydrogen or represents straight-chain or branched alkyl having 1 to 4 carbon atoms,

R^3, R^4 R^5 and R^6 represent hydrogen, and

R^7 represents hydrogen or chlorine.

5,712,305

ANTINEOPLASTIC COCOA EXTRACTS AND METHODS FOR MAKING AND USING THE SAME

Leo J. Romanczyk, Jr., Hackettstown, N.J.; John F. Hammerstone, Jr., Nazareth, Pa., and Margaret M. Buck, Morristown, N.J., assignors to MARS, Incorporated, McLean, Va.

Division of Ser. No. 317,226, Oct. 3, 1994, Pat. No. 5,554,645. This application Jul. 26, 1996, Ser. No. 687,885

Int. Cl.^{6} A01N *43/16;* **A61K** *31/35*

U.S. Cl. 514—453 **18 Claims**

1. A method for treating a patient in need of treatment with an antineoplastic agent comprising administering to the patient an antineoplastic composition comprising an effective quantity of a substantially pure cocoa extract or synthetic cocoa polyphenol(s) consisting essentially of oligomers 3 through 12, and a suitable carrier.

5,712,306

PHYSIOLOGICALLY ACTIVE SUBSTANCES PF1092A, PF1092B AND PF1092C, AND CONTRACEPTIVES AND ANTICANCER DRUGS CONTAINING THE SAME AS ACTIVE INGREDIENTS

Yuji Tabata; Masahiro Hatsu; Naoko Miike; Takashi Yaguchi; Ayako Someya, and Yasushi Kurata, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

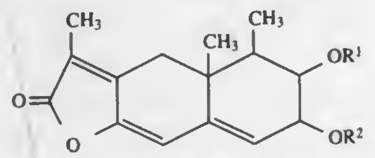
Filed Jan. 11, 1996, Ser. No. 585,411

Claims priority, application Japan, Jan. 17, 1995, 7-020860

Int. Cl.^{6} A61K *31/34;* **C07D** *307/77*

U.S. Cl. 514—468 **5 Claims**

1. A compound represented by formula (A):



(A)

wherein R^1 is an acetyl group and R^2 is a hydrogen atom; R^1 is a hydrogen atom and R^2 is an acetyl group; or R^1 is a hydrogen atom and R^2 is a hydrogen atom.

5,712,307

METHODS OF INDUCING THE PRODUCTION OF HEMOGLOBIN AND TREATING PATHOLOGIES ASSOCIATED WITH ABNORMAL HEMOGLOBIN ACTIVITY USING PHEMYLACETIC ACIDS AND DERIVATIVES THEROF

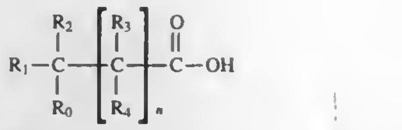
Dvorit Samid, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 135,661, Oct. 12, 1993, which is a continuation-in-part of Ser. No. 779,744, Oct. 21, 1991. This application Jun. 6, 1995, Ser. No. 465,924

Int. Cl.^{6} A01N *37/12;37/44;* **A61K** *31/24*

U.S. Cl. 514—538 **40 Claims**

1. A method of inducing the production of fetal hemoglobin in a subject comprising administering to the subject a fetal hemoglobin inducing amount of a compound of the formula I:



(I)

$$R_1-\overset{R_2}{\underset{R_0}{C}}-\left[\overset{R_3}{\underset{R_4}{C}}\right]_n-\overset{O}{\overset{\|}{C}}-OH$$

wherein

R_0 is aryl, phenoxy, substituted aryl or substituted phenoxy;

R_1 and R_2 are, independently, H, hydroxy, lower alkoxy, lower straight or branched chain alkyl or halogen;

R_3 and R_4 are, independently, H, lower alkoxy, lower straight or branched chain alkyl or halogen; and

n is an integer from 0 to 2;

a pharmaceutically-acceptable salt thereof or a mixture thereof.

5,712,308

Patent Not Issued For This Number

5,712,309

COMPOSITION FOR TREATMENT OF HANGOVERS

Barrie Charles Finnin, and Timothy Frederick Horewood, both of Victoria, Australia, assignors to Musashi Pty Ltd., Victoria, Australia

PCT No. PCT/AU94/00461, § 371 Date Apr. 18, 1996, § 102(e) Date Apr. 18, 1996, PCT Pub. No. WO95/04529, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 10, 1994, Ser. No. 592,421

Claims priority, application Australia, Aug. 10, 1993, PM0450

Int. Cl.^{6} A61K *31/195*

U.S. Cl. 514—562 **26 Claims**

1. An amino acid-containing composition for administration to mammals to prevent or treat symptoms of alcohol-induced hangovers consisting essentially of L-methionine and L-alanine or pharmaceutically acceptable salts thereof as active ingredients and a pharmaceutically acceptable solvent, carrier or diluent.

9. A method for preventing and alleviating symptoms of an alcohol-induced hangover, comprising administering orally a prophylactically effective or a therapeutically effective amount of an amino-acid containing composition consisting essentially of L-methionine and L-alanine or pharmaceutically acceptable salts thereof as active ingredients to a person in need thereof.

5,712,310

SUSPENSION OF SUBSTANTIALLY WATER-INSOLUBLE DRUGS AND METHODS OF THEIR MANUFACTURE

Edward A. Koch, New Freedom, Pa., assignor to Alpharma USPD, Inc., Baltimore, Md.

Filed Jun. 14, 1996, Ser. No. 664,338

Int. Cl.^{6} A61K *9/107;31/19*

U.S. Cl. 514—570 **56 Claims**

52. A stabilized suspension comprising ibuprofen in amounts between about 0.5% and about 8% w/v, hydroxypropyl methylcellulose in an amount of between about 0.4% and about 1% w/v, xanthan gum provided in an amount of between about 0.1% and about 1.0% w/v, polyoxyethylene sorbitan monooleate in an amount of between about 0.025% and about 0.4% w/v, sucrose in an amount of between about 25% and about 35% w/v, glycerin in an amount of between about 1% and about 15% w/v, a antimicrobial agent in an amount of between about 0.05% and about 0.5% w/v; a pH modifier in an amount of between about 0.05% and about 0.5% w/v, at least one flavoring and water.

5,712,311

COSMETIC OR DERMATOLOGICAL COMPOSITION WITH CONTROLLED RELEASE OF ACTIVE PRINCIPLE CONTAINING A PHOTOCONVERTIBLE CAROTENOID

Etienne Soudant, Fresnes, and Constantin Koulbanis, Le Kremlin Bicetre, both of France, assignors to L'Oreal, Paris, France

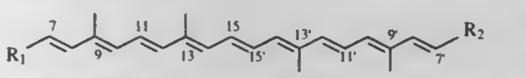
Filed Jun. 14, 1996, Ser. No. 662,257

Claims priority, application France, Jun. 16, 1995, 95 07211

Int. Cl.^{6} A61K *31/19;31/215;31/045;31/015*

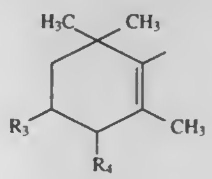
U.S. Cl. 514—572 **16 Claims**

1. A process for the cosmetic treatment of the skin for the purpose of protecting it against photoaging which comprises applying to the skin an effective amount for protecting it of a photoconvertible carotenoid capable of being converted to retinol and retinoic acid or its isomers of formula:

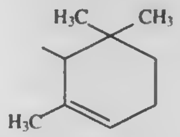


(I)

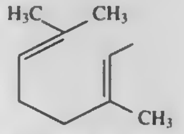
in which the R_1 and R_2 substituents denote one of the following groups:



(II)



(III)



(IV)

at least one of the R_1 and R_2 substituents denoting a β-ionone group of formula (II), the R_3 and R_4 substituents being selected from the group consisting of hydrogen, hydroxyl, carboxyl and C_1–C_4 alkoxy or forming, with the carbon atom of the ring, a carbonyl group.

5,712,312

TRICYCLIC AMIDES

Michel Langlois, Sceaux; Monique Mathe-Allainmat, Massy; Philippe Delagrange, Issy-les-Moulineaux; Pierre Renard, Versailles, and Béatrice Guardiola, Saint-Cloud, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Apr. 12, 1996, Ser. No. 631,196

Claims priority, application France, Apr. 14, 1995, 95 04503

Int. Cl.^{6} H61K *31/165;* **C07C** *233/06*

U.S. Cl. 514—585 **10 Claims**

1. A compound selected from those of formula (I):

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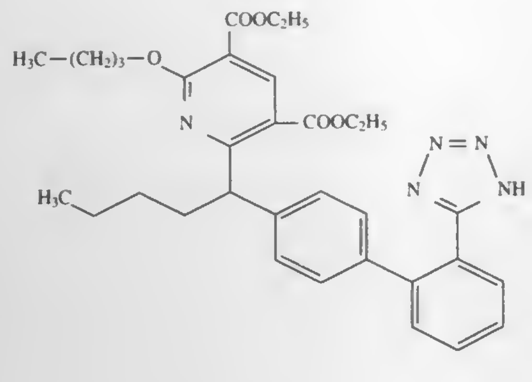
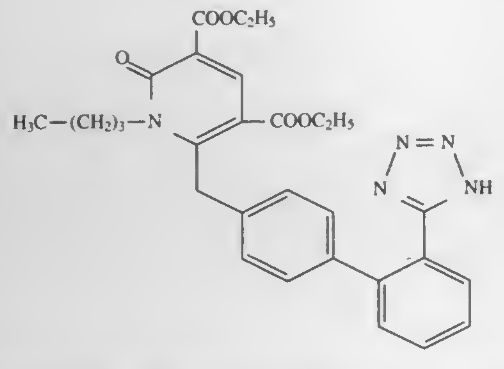
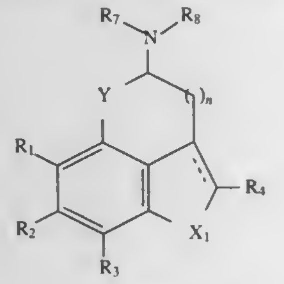
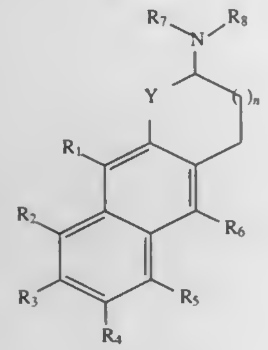




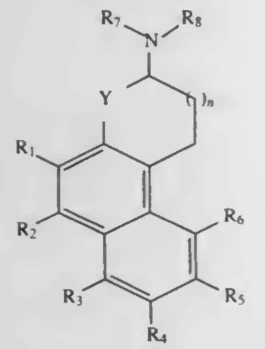
in which A forms, with the group to which it is attached, a tricyclic compound chosen from (A_1) through (A_4):



(A_1)

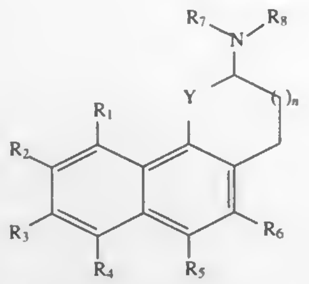


(A_2)



(A_3)

-continued



(A_4)

in which:

R_1, R_2, R_3, R_4, R_5, and R_6 represent, independently of each other, hydrogen or a radical chosen from halogen, hydroxyl, Ra and —O—Ra; with Ra representing a radical chosen from alkyl, alkyl substituted with one or more halogens, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl;

X_1 represents a group chosen from $—C(R_5)═C(R_6)—$, $—C(R_5)(R_5')—$ $C(R_6)(R_6')$, $—C(R_5)(R_5')—C(R_6)═$, and $—C(R_5)(R_5')—$, wbere R_5 and R_6 are as defined above and R_5' and R_6' are chosen from the same meanings as those of R_1, R_2, R_3, R_4, R_5, and R_6, as defined above,

the bond - - - - means that this bond may be single or double bond,

Y represents a group $—C(R_9)(R_{10})—$ in which R_9 and R_{10} represent, independently of each other, hydrogen, alkyl, or alkoxy,

n represents 1 to 3, inclusive,

R_7 represents hydrogen or a radical R_7' chosen from alkyl, aryl, arylalkyl, substituted aryl, and substituted arylalkyl, and R_8 represents:

a group of formula $—CO—R_{11}$ in which R_{11} represents a radical R_{12} with R_{12} representing hydrogen or a radical chosen from alkyl, alkyl substituted with one or more halogens, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl,

or R_{11} represents a radical $—NH—R_{13}$, with R_{13} representing hydrogen or a radical chosen from alkyl, alkyl substituted with one or more halogens, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl;

or R_8 represents a group of formula $—CS—R_{11}$ in which R_{11} is as defined above,

with the proviso that the compound of formula (1) cannot represent N-(4-methyl-1H-2,3-dihydro-phenalen-2-yl)acetamide or the compound N-(trans 2,3,7,8,9,9a-hexahydro-1H-phenalen-2-yl)acetamide, its enantiomers and diastereoisomers and its addition salts with a pharmaceutically-acceptable base, it being understood that:

the terms "alkyl" and "alkoxy" denote linear or branched radicals of 1 to 6 carbon atoms, inclusive,

the terms "alkenyl" and "alkynyl" represent unsaturated linear or branched radicals of 2 to 6 carbon atoms, inclusive,

the term "cycloalkyl" denotes a cyclic group of 3 to 8 carbon atoms, inclusive,

the term "aryl" denotes naphthyl, phenyl, or pyridyl,

the expression "substituted" associated with the terms "aryl" and "arylalkyl" means that these groups are substituted with one or more radicals chosen from halogen, alkyl, alkyl substituted with one or more halogens, alkoxy, and hydroxyl.

5,712,313

PROCESS FOR CARRYING OUT CHEMICAL EQUILIBRIUM REACTIONS

Gert Jan Kramer, and Jean Paul Lange, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 26, 1996, Ser. No. 550,135

Int. Cl.⁶ B01J *8/04;* **C07C** *29/151;29/152*

U.S. Cl. 518—706 **7 Claims**

1. A process for carrying out a chemical equilibrium reaction in which, in a first stage, one or more reactants are contacted with a fixed arrangement of a catalyst under conditions such that the reactants and the products of the reaction are gaseous, the unconverted reactants and products of the first stage being passed to a second stage, in which they are contacted with a fixed arrangement of a catalyst and the reaction allowed to proceed in the presence of an absorbent capable of absorbing a product of the reaction; and wherein the two fixed beds of catalyst arrangements are retained within a single reaction vessel.

5,712,314

FORMULATION FOR CREATING A PLIABLE RESIN PLUG

Billy Wayne Surles, and Philip Daniel Fader, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 9, 1996, Ser. No. 695,388

Int. Cl.⁶ C08J *11/04;* **C09K** *7/00*

U.S. Cl. 521—41 **15 Claims**

1. A resin composition useful in well completion and remedial methods, having improved flexibility upon setting which comprises a polymerizable resin,

an oil soluble acid catalyst capable of causing polymerization of the resin at formation temperatures, and

10 to 70% by volume rubber, wherein the rubber is selected from the group consisting of cis-1,4-polvisoprene, styrene-butadiene rubber, cis-1,4-polybutadiene, high styrene resin, butyl rubber, ethylene-propylene rubbers, neoprene rubber, nitrile rubber, cis-/trans 1,4 polyisoprene rubber, silicone rubber, chlorosulfonated polyethylene rubber, crosslinked polyethylene rubber, epichlorohydrin rubber, fluorocarbon rubber, fluorosilicon rubber, polyurethane rubber, and polyacrylic rubber.

5,712,315

POLYTETRAFLUOROETHYLENE MOLDING RESIN AND PROCESSES

John W. Dolan, Boothwyn, Pa., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 323,462, Oct. 12, 1994, which is a continuation-in-part of Ser. No. 21,409, Feb. 23, 1993, abandoned. This application Oct. 18, 1995, Ser. No. 546,391

Int. Cl.⁶ C08J *9/22;9/16*

U.S. Cl. 521—57 **1 Claim**

1. Process for preparing a molding resin which consists of providing a porous, stretched polytetrafluoroethylene material having a coating of a thermoplastic fluoropolymer thereon,

grinding and shearing said material into irregularly shaped, elongated particulate in which the elongated particulate is entangled with one another, and in which the elongated particulate has a mean particulate size between 5 and 500 micrometers.

5,712,316

POWDER-FORM CROSS-LINKED POLYMERS CAPABLE OF ABSORBING AQUEOUS LIQUIDS AND BODY FLUIDS, METHOD OF PREPARING THEM AND THEIR USE

Kurt Dahmen, Mönchengladbach; Edgar Herrmann, Nettetal, and Klaus Pflüger, Krefeld, all of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

PCT No. PCT/EP94/02096, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/02002, PCT Pub. Date Jan. 19, 1995

PCT Filed Jun. 28, 1994, Ser. No. 569,130

Claims priority, application Germany, Jul. 9, 1993, 43 23 001.6; May 31, 1994, 44 18 818.8

Int. Cl.⁶ C08J *9/08;* **C08F** *20/02;8/00*

U.S. Cl. 521—72 **23 Claims**

1. A powdery, water-swellable, cross-linked polymer having a microcellular structure obtainable by polymerizing a composition comprising

a) 55–99.9%-wt. of unsaturated, polymerizable acid-groups-containing monomers, said monomers being present as salts neutralized to the extent of at least 50 mole-%,

b) 0–40%-wt. of unsaturated monomers which are copolymerizable with a),

c)0.1–5.0%-wt. of at least one cross-linking agent,

d) 0–30%-wt. of a water-soluble polymer, with the sum of a)–d) amounting to 100%-wt,

and e) 0.1–5.0%-wt., relative to the sum of a)–d), of a blowing agent based on carbon dioxide, drying the polymer, adding one or more secondary surface-cross-linking agents for surface cross-linking, and heating to a temperature of 100°–300° C.

5,712,317

CURABLE, SPRAYABLE COMPOSITIONS FOR REINFORCING THIN RIGID PLATES

Joseph M. Makhlouf, Mars, and John R. Schneider, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 220,656, Mar. 31, 1994. This application Jun. 7, 1995, Ser. No. 475,475

Int. Cl.⁶ C08J *9/24;9/32*

U.S. Cl. 521—76 **18 Claims**

1. A method for reinforcing a thin rigid plate comprising: spraying a curable composition onto one side of the rigid plate followed by curing said composition while only in contact with said rigid plate; wherein the curable composition comprises:

(i) a thermosetting resinous composition; and

(ii) thermoplastic polymeric expandable microspheres.

5,712,318

TWO-PART NUCLEATING AGENT SYSTEM

Marlin Dwight Buckmaster, Vienna, W. Va.; Donald Leonidas Henry, Elkton, Md., and Stuart Karl Randa, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 631,726, Apr. 10, 1996. This application Oct. 30, 1996, Ser. No. 742,421

Int. Cl.⁶ C08J *9/00;9/04*

U.S. Cl. 521—85 **11 Claims**

1. A foamable thermoplastic resin composition, comprising thermoplastic resin and a nucleating agent system consisting essentially of a nucleating effective amount of (a) at least one sulfonic or phosphonic acid or salt thereof and (b) at least one inorganic salt containing a polyatomic anion, said composition being free of boron nitride.

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5,712,319
RESIN COMPOSITION FOR LOW EXPANSION MOLDINGS

Makoto Suzuki, and Osamu Matsumoto, both of Ibaraki-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 523,983

Claims priority, application Japan, Sep. 6, 1994, 6-238522

Int. Cl.^{6} C08J *9/06;* **C08F** *16/06*

U.S. Cl. 521—141 **12 Claims**

1. A resin composition for low expansion moldings which comprises:

(A) 20 to 80 parts by weight of a vinyl chloride resin having an average degree of polymerization of from 500 to 1700;

(B) correspondingly from 80 to 20 parts by weight of a copolymer which is made of 10 to 40 parts by weight of a crosslinked acrylic rubber and correspondingly 90 to 60 parts by weight of a polymerizable monomer mixture comprising 20 to 40 wt % of acrylonitrile, 20 to 60 wt % of α-methylstyrene, 20 to 40 wt % of styrene and 0 to 40 wt % of a methacrylic ester;

(C) 0.5 to 30 parts by weight of an acrylic resin having a reduced viscosity of not less than 3.0 dl/g when measured by use of a chloroform solution of the acrylic resin at a concentration of 0.1 g/100 ml;

(D) 0.1 to 10 parts by weight of a thermally decomposable foaming agent; and

(E) from 1 to 10 parts by weight of a stabilizer wherein the amounts of the components (C), (D) and (E) are each based on 100 parts by weight of a mixture of the components (A) and (B); wherein said resin composition has a specific gravity ranging from 0.35 to 7.0 g/cm^3.

5,712,320
LOW FOGGING POLYESTER POLYURETHANE FOAMS

Peter James Green, 28 Stanway Close, Worcester, England, WR4 9XL

PCT No. PCT/GB94/02481, § 371 Date Sep. 20, 1996, § 102(e) Date Sep. 20, 1996, PCT Pub. No. WO95/14050, PCT Pub. Date May 26, 1995

PCT Filed Nov. 11, 1994, Ser. No. 646,233

Claims priority, application United Kingdom, Nov. 16, 1993, 9323603

Int. Cl.^{6} C08G *18/34;18/36*

U.S. Cl. 521—172 **17 Claims**

1. A polyester polyurethane foam with low fogging characteristics comprising the product of reaction of a polyester polyol and a diisocyanate wherein said polyester polyol consists essentially of, as repeating units, residues of the following reactants:

I (b) adipic acid and optionally at least one diacid other than adipic acid;

(c) at least one diol or polyol; and

(d) pentaerythritol; or

II (a) at least one hydroxy acid;

(b) at least one diacid; and

(c) at least one diol or polyol

wherein said reactants cannot combine to provide a cyclic ester comprising a 12 to 14 member ring.

5,712,321
DUAL-CURING COATING FORMULATION AND METHOD

Stephen E. Cantor, Cheshire, and Brian Bachmann, Harwinton, both of Conn., assignors to Dymax Corporation, Torrington, Conn.

Filed Feb. 1, 1996, Ser. No. 595,393

Int. Cl.^{6} C08F *2/46*

U.S. Cl. 522—28 **39 Claims**

1. A liquid formulation that is innately curable, in air, to a dry, adhesive solid, comprising: a polymerizable composition that includes at least one oxygen-containing ethylenically unsaturated polymerizable ingredient; a tertiary aromatic amine compound; an air-curing polyether-ene polymer containing at least three activated double bonds per molecule, said amine compound and said polyether-ene polymer being present in said formulation in a molar ratio of amine compound to polyether-ene polymer of less than 0.4:1.0; a transition metal compound; and an acid ingredient that is substantially soluble in said polymerizable composition and that forms a coordination compound with the metal of said metal compound, said formulation being devoid of any free-radical, active-oxygen polymerization catalyst, and of any acrylated carbonate polymer.

5,712,322
COMPOSITIONS OF MATTER

Pushpito Kumar Ghosh, New Bombay, India; Iain Andrew Weddell, Culcheth, and John Edward Yates, Rochdale, both of United Kingdom, assignors to Zeneca Limited, London, United Kingdom

PCT No. PCT/GB94/00730, § 371 Date Dec. 12, 1995, § 102(e) Date Dec. 12, 1995, PCT Pub. No. WO94/24170, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 6, 1994, Ser. No. 530,356

Claims priority, application United Kingdom, Apr. 8, 1993, 9307479

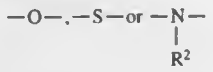
Int. Cl.^{6} C08F *265/10*

U.S. Cl. 522—69 **10 Claims**

1. A composition of matter comprising 100 parts by weight of camphorquinone and from 1 to 50 parts by weight of an anthraquinone compound having in the 2-position a substituent of the formula:

$$\text{—X—COR}^1 \qquad (1)$$

wherein R^1 represents an optionally substituted hydrocarbyl radical and X represents



$$\text{—O—, —S— or —}\underset{\displaystyle R^2}{\underset{|}{N}}\text{—}$$

wherein R^2 represents hydrogen or an optionally substituted hydrocarbyl radical.

5,712,323
CROSS -LINKED ATACTIC OR AMORPHOUS PROPYLENE POLYMERS

Vittorio Braga, and Franco Sartori, both of Ferrara, Italy, assignors to Montell North America Inc., Wilmington, Del.

Filed Jul. 11, 1996, Ser. No. 679,690

Claims priority, application Italy, Jul. 12, 1995, MI95A1490

Int. Cl.^{6} C08F *8/06*

U.S. Cl. 522—73 **20 Claims**

1. An essentially atactic cross-linked propylene homopolymer or amorphous random copolymer of propylene with ethylene and/or at least one C_4–C_{10} α-olefin.

5,712,324
U-V CURABLE WEATHER RESISTANT COATINGS MADE BY A COLD-CAST PROCESS

Kenneth L. Lilly, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 416,424, Apr. 4, 1995, abandoned. This application Nov. 21, 1996, Ser. No. 753,168

Int. Cl.^{6} C09D *4/00;* **C08F** *2/50*

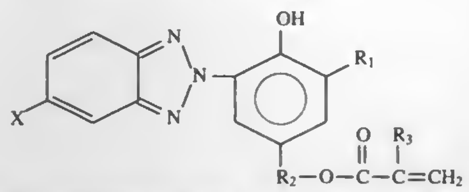
U.S. Cl. 522—75 **7 Claims**

1. A radiation curable, organic coating composition, which comprises;

A. 100 parts by weight of a photopolymerizable composition, which comprises;

(i) a cross-linking, polymerizable mixture of trimethylolpropane triacrylate, hexanediol diacrylate and a diacrylate urethane oligomer; and a proportion of

(ii) a compound of the formula:



(I)

wherein X represents hydrogen or halogen; R1 is selected from the group consisting of hydrogen, and alkyl of 1 to 6 carbon atoms; R2 represents alkylene of 2 to 10 carbon atoms; and R3 represents hydrogen or methyl;

B. 0.01 to 10 parts by weight of a photo-initiator; and

C. 0.1 to 15 parts by weight of an ultra-violet light absorbing compound.

5,712,325
METHOD FOR MAKING RADIATION CURABLE SILICON CONTAINING POLYACRYLATE HARDCOAT

Larry Nell Lewis, Scotia; Gautam Ambalal Patel; Gregory Ronald Gillette, both of Clifton Park, and George Fredric Medford, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 578,790, Dec. 26, 1995, abandoned, which is a continuation of Ser. No. 304,298, Sep. 12, 1994, abandoned. This application Mar. 13, 1997, Ser. No. 816,602

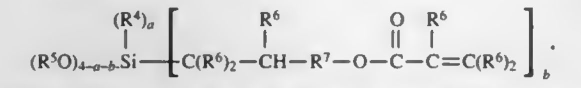
Int. Cl.^{6} C08J *3/09;* **C08K** *3/36;* **C08L** *83/07*

U.S. Cl. 522—83 **9 Claims**

1. A method for making a curable silicon-containing composition comprising removing volatiles, at a temperature of 25°–100° C. and a pressure of 1–760 torr, from a silicon-containing polyacrylate mixture comprising by weight,

(A) 100 parts of the product of reaction at a temperature of about 20°–100° C. of a mixture of

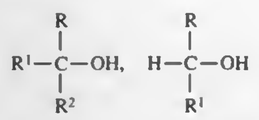
(i) about 5–20% by weight of alkoxysilylacrylate having the formula



$$(R^5O)_{4-a-b}\overset{\displaystyle (R^4)_a}{\overset{|}{\text{Si}}}\text{—}\left[C(R^6)_2\text{—}\overset{\displaystyle R^6}{\overset{|}{\text{CH}}}\text{—}R^7\text{—O—}\overset{\displaystyle O}{\overset{\|}{C}}\text{—}\overset{\displaystyle R^6}{\overset{|}{C}}\text{=}C(R^6)_2\right]_b, \qquad (1)$$

where R^4 is a $C_{1\text{-}13}$ monovalent organic radical; R^5 is a $C_{1\text{-}8}$ alkyl radical; R^6 is selected from hydrogen and R^4; R^7 is a $C_{1\text{-}8}$ alkylene radical; a is an integer equal to 0–2 inclusive; b is an integer equal to 1–3 inclusive; and a +b is 1–3; and

(ii) correspondingly about 80–95% by weight of a colloidal silica alcoholic dispersion consisting essentially of colloidal silica, water in an amount sufficient to hydrolyze said alkoxysilylacrylate and no greater than 5% by weight of said product and a $C_{3\text{-}5}$ branched aliphatic alcohol selected from the group consisting of



$$R^1\text{—}\underset{\displaystyle R^2}{\underset{|}{\overset{\displaystyle R}{\overset{|}{C}}}}\text{—OH},\quad H\text{—}\underset{\displaystyle R^1}{\underset{|}{\overset{\displaystyle R}{\overset{|}{C}}}}\text{—OH}$$

wherein each of R, R^1 and R^2 is independently methyl or ethyl, or a mixture of said $C_{3\text{-}5}$ branched aliphatic alcohol and a $C_{1\text{-}5}$ straight chain alcohol, where the colloidal silica is present in said dispersion at about 5–70% by weight;

(B) about 10 to about 400 parts of at least one polyfunctional reactive acrylic monomer and

(C) an effective amount of gelation inhibitor.

5,712,326
POLYMERIC BLENDS WITH ZWITTERIONIC GROUPS

Stephen Alister Jones; Peter William Stratford, both of Middlesex, and Stephen Rimmer, Lancs, all of United Kingdom, assignors to Biocompatibles Limited, Middlesex, England

PCT No. PCT/GB93/02652, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO94/14897, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 23, 1993, Ser. No. 290,901

Claims priority, application United Kingdom, Dec. 23, 1992, 9226791

Int. Cl.^{6} C08L *101/02;101/00*

U.S. Cl. 523—105 **71 Claims**

1. A biocompatible polymer blend consisting essentially of:

(A) a polymer bearing zwitterionic pendant groups; and

(B) a polymer having desirable mechanical and/or physical properties and which is less hydrophilic than the polymer (A), and whereby polymer (B) in the blend has improved biocompatibility rendered by polymer (A).

5,712,327
SOFT GAS PERMEABLE CONTACT LENS HAVING IMPROVED CLINICAL PERFORMANCE

Sing-Hsiung Chang, and Mei-Zyh Chang, both of 6 Buckskin Heights Dr., Danbury, Conn. 06811

Continuation of Ser. No. 551,156, Jul. 11, 1990, which is a continuation-in-part of Ser. No. 407,261, Sep. 14, 1989, abandoned, Ser. No. 381,587, Jul. 18, 1989, abandoned, and Ser. No. 132,174, Dec. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 1,149, Jan. 7, 1987, abandoned. This application Jun. 16, 1992, Ser. No. 899,217

Int. Cl.^{6} C08K *3/00;5/54;* **C08F** *130/08;* **B29D** *11/00*

U.S. Cl. 523—107 **14 Claims**

1. A hydrophilic soft gas permeable contact lens comprised of a polymerization product of a composition comprising a polymerizable vinylic siloxane monomer and a hydrophilic vinylic monomer, and having at least 25% water by weight and characterized by high oxygen permeability, softness, rebound elasticity and a high degree of clinical performance, said lens comprising a hydrophilic lens body and a tear-wettable surface layer integral therewith, said lens body being comprised of said polymerization product and said tear-wettable surface layer being comprised of polymeric material containing hydroxy acrylic monomer units, and wherein the proportion of hydroxy acrylic monomer units to silicon units in said tear-wettable surface layer is greater than that of said lens body.

5,712,328
AQUEOUS BALL POINT INK COMPOSITION

Shigeyasu Inoue, Kashiwara, and Toshimitsu Kawasumi, Toyonaka, both of Japan, assignors to Sakura Color Products Corporation, Osaka, Japan

Continuation of Ser. No. 445,944, May 22, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 747,744

Claims priority, application Japan, May 30, 1994, 6-116898

Int. Cl.^{6} C09D *11/18*

U.S. Cl. 523—161 **6 Claims**

1. In an aqueous ball point ink composition comprising

(i) a colorant selected from the group consisting of (a) a pigment and a dispersant (b) a precolored emulsion resin and (c) a mixture of (a) and (b);

(ii) a water-soluble organic solvent;

(iii) a pseudoplastic imparting agent; and

(iv) water;

the improvement wherein the composition further comprises

a cross-linked polyacrylate salt having a number average molecular weight ranging from about 2,000,000 to 6,000,000, as a free acid, in an amount of about 0.05–0.5% by weight based on the weight of said colorant, solvent, pseudoplastic imparting agent and water.

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5,712,329

PROCESS FOR THE PRODUCTION OF A THERMALLY INSULATING MATERIAL ABLE TO WITHSTAND A TRANSIENT THERMAL STRESS, AND THE CORRESPONDING MATERIAL

Rémo Cargnello, Les Mureaux, and Bertrand Carel, Paris, both of France, assignors to Cryospace L'Air Liquide Aerospatiale, Les Mureaux, France

Filed Mar. 20, 1996, Ser. No. 618,895

Claims priority, application France, Apr. 6, 1995, 95 04097

Int. Cl.^{6} C09K *21/14*

U.S. Cl. 523—179 **10 Claims**

1. A process for preparing a thermally insulating material, comprising the steps of:

- a) mixing to form a homogenous mixture:
  - i) 50 to 80 parts by weight of an elastomeric binder, with respect to the total weight of the homogeneous mixture;
  - ii) 10 to 25 parts by weight of a silica filler, with respect to the total weight of the homogeneous mixture; and
  - iii) 18 to 45 parts by weight of a solubility agent, with respect to the total weight of the homogeneous mixture, said solubility agent comprising:
    - 3 to 20 parts by weight of a mineral salt saturated with water of hydration, with respect to the total weight of the homogeneous mixture, and
    - 15 to 25 parts by weight of water in excess of the water of hydration, with respect to the total weight of the homogeneous mixture; and
- b) polymerizing the elastomeric binder in the homogeneous mixture to provide a thermally insulating material.

5,712,330

STYRENIC RESIN PELLET AND MOLDING PRODUCED THEREFROM

Michio Funayama, and Hiroki Fukui, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02140, § 371 Date Jun. 14, 1996, § 102(e) Date Jun. 14, 1996, PCT Pub. No. WO96/12597, PCT Pub. Date May 2, 1996

PCT Filed Oct. 19, 1995, Ser. No. 652,463

Claims priority, application Japan, Oct. 20, 1994, 6-255070

Int. Cl.^{6} C08K *9/04*

U.S. Cl. 523—206 **9 Claims**

1. A styrenic resin pellet comprising a (A) styrenic polymer having syndiotactic configuration and containing a polar group and at least 10% by weight of a (B) glass fiber which is surface treated with coupling agent, wherein said styrenic resin pellet has a length in the range of 2 to 100 mm, and wherein said glass fiber is impregnate with said styrenic polymer and has a length equal to the length of said pellet.

5,712,331

CURABLE EPOXY COMPOSITIONS CONTAINING AZIRIDINE IN SUPERCRITICAL FLUID CARBON DIOXIDE

Hong-Son Ryang, Camarillo, Calif., assignor to Rockwell International Corporation, Costa Mesa, Calif.

Filed Aug. 15, 1995, Ser. No. 515,440

Int. Cl.^{6} C08K *3/00;63/00;* **C08G** *59/50;59/56*

U.S. Cl. 523—400 **11 Claims**

1. A curable epoxy composition, comprising:

an epoxy resin;

a co-reactant selected from the group consisting of poly N-substituted aziridines, wherein the aziridine:epoxy ratio is in the range of 1:2 to 3:1;

a catalyst to promote cure at ambient temperature, selected from the group consisting of salts and complexes of acids; electron accepting compounds; non-halogen containing boron derivatives; and combinations of a silicon hydride with a complex of a metal selected from the group consisting of Al, Fe, Pt, Pd, Rh, Ru, Ti, and Zr; and further comprising;

supercritical fluid carbon dioxide as a diluent for spray application.

5,712,332

METHOD FOR ABSORBING HEAT RADIATION

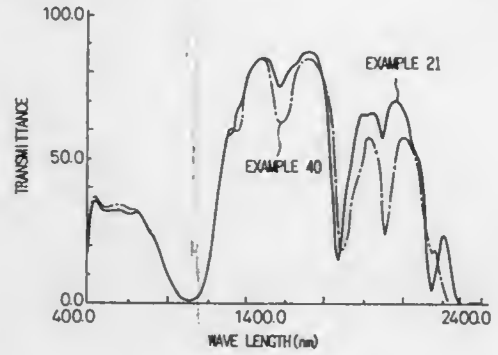
Osamu Kaieda; Takashi Yodoshi, both of Tsukuba; Ken Morita, Toyonaka, and Michio Matsuura, Sanda, all of Japan, assignors to Nippon Shokubai Co., Osaka, Japan

Continuation-in-part of Ser. No. 180,488, Jan. 12, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,739

Claims priority, application Japan, Jan. 13, 1993, 5-4326

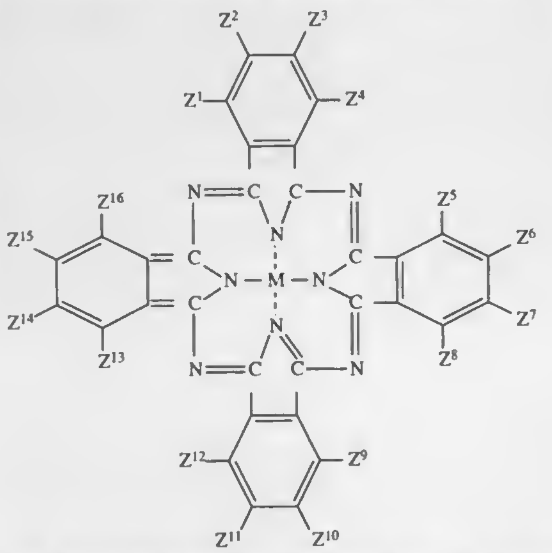
Int. Cl.^{6} C08K *5/3495*

U.S. Cl. 524—88 **18 Claims**



1. A method for absorbing heat radiation comprising the steps of:

(1) dissolving into a transparent resin a phthalocyanine compound represented by the following general formula 1:



(1)

so as to prepare a resin composition into which said phthalocyanine compound has been dissolved,

wherein Z^1–Z^{16} independently represent SR^1, OR^2, a hydrogen atom, a halogen atom, or NHY where Y independently represents a phenyl group which may have one or more substituents selected from the group consisting of 1–3 alkyl groups having 1–4 carbon atoms, 1–2 alkoxy groups having 1–4 carbon atoms, 1–2 alkoxycarbonyl groups having 1–8 carbon atoms, and 1–5 halogen atoms, or an alkyl group having 1–8 carbon atoms; R^1 and R^2 independently represent a phenyl group which may have one or more substituents selected from the group consisting of 1 to 3 alkyl groups having 1 to 4 carbon atoms, 1 or 2 alkoxy groups having 1 to 4 carbon atoms, 1 or 2 alkoxycarbonyl group having 1 to 4 carbon atoms, 1 or 2 alkoxycarbonyl group having 1 to 8 carbon atoms and 1 to 5 halogen atoms or an alkyl group having 1–20 carbon atoms; and M represents metal, metal oxide, metal halide or two hydrogen atoms; provided that at least one of Z^1–Z^{16} is NHY;

2) forming the resin composition into a heat radiation-absorbing material, which is semi-transparent or transparent for visible light but blocks heat rays, wherein the content of the phthalocyanine in the material is 0.06 to 2.4 g/m^2, and

(3) locating the heat radiation absorbing material at a location at which heat radiation absorption is necessary to thereby absorb heat-radiation.

5,712,333

BLENDS OF POLYCARBONATE AND LINEAR ETHYLENE POLYMERS

Frank M. Hofmeister, Richwood; Hani Farah, Sugarland; Morgan M. Hughes, Angleton, and Steve R. Ellebracht, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 419,070, Apr. 7, 1995. This application Aug. 12, 1996, Ser. No. 689,224

Int. Cl.^{6} C08L *69/00;23/04*

U.S. Cl. 524—140 **25 Claims**

1. A composition of matter comprising, in admixture,

- (a) a polycarbonate,
- (b) a linear ethylene polymer which has:
  - (i) a density of less than 0.93 g/cm^3;
  - (ii) a molecular weight distribution, M_w/M_n, of less than about 3.0; and
  - (iii) a Composition Distribution Branch Index of greater than about fifty percent;
  - (iv) no long chain branching
- (c) a polymer selected from the group consisting of:
  - (i) a styrenic copolymer;
  - (ii) a supplemental impact modifier; and
  - (iii) blends of (i) and (ii); and
- (d) optionally one or more molding polymers.

5,712,334

LACTON-MODIFIED POLYVINYL ALCOHOL AND PERMANENTLY ANTI-STATIC RESIN COMPOSITION

Kazushi Watanabe, Hiroshima-ken; Takaaki Fujiwa, Niigata-ken; Tomohisa Isobe, Yamaguchi-ken, and Hiroshi Sagane, Osaka-fu, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka-fu, Japan

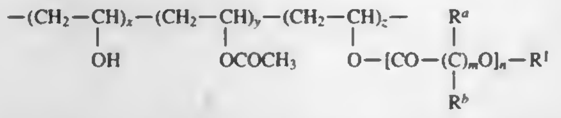
Division of Ser. No. 476,676, Jun. 7, 1995, Pat. No. 5,612,412. This application Dec. 26, 1996, Ser. No. 774,675

Claims priority, application Japan, Sep. 30, 1994, 6-261424; Oct. 20, 1994, 6-281322; Nov. 22, 1994, 6-311305; Feb. 16, 1995, 7-51959; Mar. 22, 1995, 7-87655

Int. Cl.^{6} C08K *3/24;3/30;* **C08L** *29/04*

U.S. Cl. 524—161 **7 Claims**

1. A resin composition which comprises mixing (A) 5–30 parts by weight of a lactone-modified polyvinyl alcohol having the structure represented by General Formula (1) described below



$$-(CH_2-\underset{OH}{CH})_x-(CH_2-\underset{OCOCH_3}{CH})_y-(CH_2-\underset{O-[CO-(\overset{R^a}{\underset{R^b}{C}})_mO]_n-R^1}{CH})_z- \qquad (1)$$

[wherein, x, y, and z are a composition by mol in the respective components, having a range of $0\leqq x\leqq 95$, $0\leqq y\leqq 30$, $5\leqq z\leqq 100$, x+y+z is 100, respective components shown by x, y, and z are randomly connected, R^a and R^b are each an independent hydrogen atom or a methyl group, m is a natural number ranging from 2 to 10, and R^1 is a hydrogen atom or an acetyl group, n is an average number of a lactone monomer to be added, and a range of $1\leqq n\leqq 100$, (B) 95–70 parts by weight of a hydrophilic polymer or a polar polymer.

5,712,335

AQUEOUS FLUORINE-CONTAINING POLYMER DISPERSION

Nobuhiko Tsuda; Yasushi Yonei; Ryuzi Iwakiri, and Katsuhiko Imoto, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/02152, § 371 Date Jun. 21, 1996, § 102(e) Date Jun. 21, 1996, PCT Pub. No. WO96/12773, PCT Pub. Date May 2, 1996

PCT Filed Oct. 19, 1995, Ser. No. 666,356

Claims priority, application Japan, Oct. 24, 1994, 6-258173

Int. Cl.^{6} C08K *5/54;9/06;* **C08L** *27/16;27/12*

U.S. Cl. 524—269 **7 Claims**

1. An aqueous dispersion of a fluorine-containing polymer, wherein 1 to 20 parts by weight of an organosilicon compound is admixed on the basis of 100 parts by weight of solids in a fluorine-containing-polymer-dispersed aqueous composition; said fluorine-containing polymer in said fluorine-containing-polymer-dispersed aqueous composition is a fluorine-containing seed polymer obtained by seed-polymerizing a monomer having a reactive a, unsaturated group in the presence of particles of fluorine-containing polymer obtained by polymerizing a fluoroolefin or by copolymerizing a fluoroolefin with a monomer copolymerizable therewith, said organosilicon compound is admixed after said seed-polymerization; and 0.1 to 50% by weight of said monomer having said reactive α,β-unsaturated group is an organosilicon compound having a reactive α,β-unsaturated group.

5,712,336

FLAMEPROOFED THERMOPLASTIC MOLDING MATERIALS

Brigitte Gareiss, Obersülzen; Manfred Knoll, Wachenheim, and Christoph Plachetta, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 624,252, Mar. 29, 1996, abandoned. This application Apr. 14, 1997, Ser. No. 843,298

Int. Cl.^{6} C08K *5/11*

U.S. Cl. 524—373 **9 Claims**

1. A flameproofed thermoplastic molding material containing

A) from 10 to 97.9% by weight of a thermoplastic polyester,

B) from 1 to 20% by weight of decabromodiphenylthane,

C) from 1 to 15% by weight of a metal oxide or metal sulfide or metal borate or a mixture thereof,

D) from 0.1 to 5% by weight of an ester of at least one alcohol having at least 3 OH groups and one or more aliphatic mono- or dicarboxylic acids of 5 to 34 carbon atoms and

E) from 0 to 70% by weight of stabilizers, antioxidants, lubricants, mold release agents, plasticizers, fluorine-containing ethylene polymers, minerals and fillers E,

the percentages by weight of the components A) to E) summing to 100%.

5,712,337

HARDENABLE ACRYLIC MONOMER COMPOSITIONS

Karoly Dischö , Effretikon, Switzerland, assignor to MBT Holding AG, Zurich, Switzerland

Division of Ser. No. 479,054, Jun. 6, 1995, Pat. No. 5,596,036, which is a continuation of Ser. No. 309,276, Sep. 20, 1994, abandoned, which is a continuation of Ser. No. 135,040, Oct. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 897,209, Jun. 11, 1992, abandoned. This application Oct. 30, 1996, Ser. No. 739,845

Int. Cl.^{6} C08K *3/04;* **C08L** *67/00;33/06;* **C08F** *26/02*

U.S. Cl. 524—496 **4 Claims**

1. A concrete coating or flooring composition comprising a hardenable monomer composition which comprises

(a) an acrylic monomer binder which comprises a (meth)acrylic ester of Formula 1

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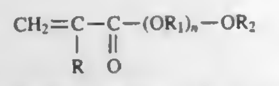


$$CH_2{=}\underset{\underset{R}{|}}{C}{-}\underset{\underset{O}{\|}}{C}{-}(OR_1)_n{-}OR_2 \qquad (1)$$

wherein R is hydrogen or methyl; R_1 is $C_{2\text{-}6}$alkylene; n is an integer of from 0–3; and R_2 is a radical of an aromatic or alicyclic dicarboxylic acid ester or a dicyclopentenyl radical, n being able to be 0 only when R_2 is a dicyclopentenyl radical; and

- (b) at least one component selected from the group consisting of
  - (i) carbon blacks with a BET surface area of from 20–460 M^2/g, this being present to the extent of from 0.01–7 weight % of the acrylic monomer binder; and
  - (ii) aliphatic and aromatic polyester- and polyether-urethane oligomers of molecular weight 500–5000 and a viscosity of 2,000–100,000 mPa s at 25° C., having at least two ethylenically unsaturated double bonds, said oligomer being present in an amount of 7–60% by weight based on the total weight of the acrylic binder and oligomer, an effective amount of a polymerization catalyst for the acrylic monomer binder and inert aggregate in amount of 40–95% by weight of the total composition.

5,712,338

INK JET INKS CONTAINING POLYACRYLAMIDES

David Herbert Donovan, Barcelona, Spain; Gregg Allen Lane, San Diego, Calif., and Chaucer C. Tang, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 27, 1996, Ser. No. 774,994

Int. Cl.^{6} C08L *53/00;51/00;33/26*

U.S. Cl. 524—505 **10 Claims**

1. An ink jet ink comprising:

(a) an aqueous carrier medium;

(b) an aqueous carrier medium insoluble colorant;

(c) a structured polymer dispersant; and

(d) a film-forming polyacrylamide polymer having a weight average molecular weight of 500–100,000.

5,712,339

AQUEOUS POLYMER DISPERSIONS

Patrick Guerin, Meerbusch, Germany; Paul Sutton, Cardiff, United Kingdom; Emmanuelle Reynolds, Cardiff, United Kingdom, and Philip Cossar, Cardiff, United Kingdom, assignors to Sartomer Company, Exton, Pa.

Filed Apr. 5, 1996, Ser. No. 628,358

Int. Cl.^{6} C08F *8/00;* **C08L** *23/26;31/02*

U.S. Cl. 524—515 **12 Claims**

1. An aqueous polymer dispersion containing polymer particles formed of at least two polymers, the polymer particles of the dispersion having a minimum film-forming temperature below 60° C. and being formed of two different polymers, each prepared by polymerization of at least one ethylenically unsaturated monomer, namely polymer A having a glass transition temperature (T_{gA}) of not more than 10° C., and forming from 5 to 65% by weight of the total polymer; and polymer B having a glass transition temperature (T_{gB}) of more than 25° C., and forming from 5 to 65% by weight of the total polymer; together with a multifunctional material (C) present in an amount of from 5 to 70% by weight of the total polymer system, said multifunctional material having at least two ethylenically unsaturated groups.

5,712,340

AQUEOUS DISPERSION OF POLYMER COMPOSITION

Hiroaki Gyotoku; Satoshi Kuriyama; Kaoru Murata, and Tatsuya Ohsumi, all of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

PCT No. PCT/JP94/01308, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO95/09203, PCT Pub. Date Apr. 6, 1995

PCT Filed Aug. 8, 1994, Ser. No. 612,854

Claims priority, application Japan, Sep. 27, 1993, 5-264204

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;3/10;* **C08L** *33/00*

U.S. Cl. 524—521 **17 Claims**

1. An aqueous dispersion of a polymer composition comprising (A) a copolymer which comprises (a_1) a unit derived from a vinyl monomer having a hydrolyzable silyl group and (a_2) another vinyl monomer copolymerizable with (a_1), and (B) a water-soluble polymer having an amineimide group, the copolymer (A) and the water-soluble polymer (B) being different from each other, with the water-soluble polymer (B) not containing a hydrolyzable silyl group, and the copolymer (A) not containing an amineimide group.

5,712,341

PREPARATION OF MIXTURES OF HIGH MOLECULAR WEIGHT POLYISOBUTYLENE AND THERMOPLASTIC POLYMERS

Jürgen Hofmann, Ludwigshafen; Thomas Kessler, Schifferstadt; Bernd Lothar Marczinke, Speyer; Sibylle Brosius, Ludwigshafen, and Karl-Heinz Fauth, Wattenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 19, 1995, Ser. No. 529,978

Claims priority, application Germany, Sep. 19, 1994, 44 33 273.4

Int. Cl.^{6} C08J *3/20*

U.S. Cl. 524—528 **9 Claims**

1. A process for the continuous preparation of a mixture of high molecular weight polyisobutylene and a thermoplastic polymer in an extruder, which process consists essentially of motoring the high molecular weight polyisobutylene as meterable, non-tacky granules or milled material in the absence of the thermoplastic polymer into the extruder and homogenizing the polyisobutylene in at least one kneading stage, heating and subjecting the polyisobutylene to controlled molecular weight degradation, and thereafter introducing the thermoplastic polymer into the polyisobutylene melt by means of a side feed and subsequently homogenizing the thermoplastic polymer together with said melt.

5,712,342

PROCESS FOR PRODUCING A WATER-DISPERSION OF POLYURETHANE RESIN AND A PAINT COMPOSITION CONTAINING THE RESIN PRODUCED BY THAT PROCESS

Yang Bae Kim, and Jong Myung Park, both of Kyunggi-do, Rep. of Korea, assignors to Korea Chemical Co., Ltd., Kyeongsangnam, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 578,916

Claims priority, application Rep. of Korea, Dec. 27, 1994, 37415

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **16 Claims**

1. A process for production of a water-dispersion of polyurethane resin, which comprises reacting polyisocyanate with the following polyols:

a) polyol grafted with a long chain alkyl group obtained by an organic acid-oxirane ring opening reaction;

b) neutralized dimethylol alkyl acid of 0.1 to 100 millequivalents and polyethyleneglycol having a number average molecular weight of 300 to 2,000 as a water-dispersible functional groups;

c) polyol having at least one or more hydroxyl groups at a terminus, and having a number average molecular weight of 62 to 2000.

5,712,343

PREPARATION OF ORGANOPOLYSILOXANE MICROEMULSIONS

Michael Geck, Burghausen; Hans-Juergen Lautenschlager, Haiming; Bernward Deubzer, Burghausen; Petra Stinglhammer, Simbach; Peter Habereder, Krailling, and Kurt Ullrich, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Continuation of Ser. No. 287,311, Aug. 8, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 633,353

Claims priority, application Germany, Aug. 27, 1993, 43 28 917.7

Int. Cl.^{6} C08L *83/00;* **B01J** *13/00*

U.S. Cl. 524—837 **21 Claims**

1. A process for the preparation of an organopolysiloxane microemulsion without the prior preparation of an organpolysiloxane/emulsifier concentrate, comprising mixing together in any desired sequence without external heating,

A) from 10% to about 40% by weight organopolysiloxane relative to the weight of said microemulsion;

B) an emulsifier comprising diethylene glycol monobutyl ether;

C) water;

D) optionally, a cosurfactant; and

E) optionally, acid.

5,712,344

MODIFIED POLYPROPYLENE IMPACT COPOLYMER COMPOSITIONS

James Douglas McCullough, Jr., Houston, and Jackson Gordon Bowers, Simonton, both of Tex., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danburt, Conn.

Filed Jan. 4, 1996, Ser. No. 582,749

Int. Cl.^{6} C08L *53/00*

U.S. Cl. 525—88 **24 Claims**

1. A composition comprising:

a) a base polypropylene impact copolymer comprising a homopolymer phase of predominantly homopolymeric polypropylene and a copolymer phase comprising an ethylene-propylene copolymer, wherein the copolymer phase contains from about 77% to about 90% by weight ethylene based on the total copolymer phase, and

b) a modifier comprising a hydrogenated block copolymer having at least one polymeric block containing predominantly polymerized monoalkenyl aromatic hydrocarbon monomer units and at least one polymeric block containing predominantly polymerized conjugated diolefin monomer units, wherein the modifier is present in an amount of about 0.3 to about 10% by weight of the base polypropylene impact copolymer; wherein the composition has an SW10 of less than about 0.45 inch and SW20 of less than about 0.60 inch, wherein SW10 is the diameter of the white spot on the opposite side of a 2.5 inch diameter by 0.125 inch thick disk which is measured 24 hours after molding based on 10 in-lb of impact, Gardner ring out, and SW20 is the same as SW10 except at 20 in-lb of impact.

5,712,345

BINDER SYSTEM FOR MAGNETIC MEDIA

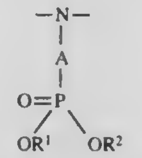
Ruth M. Erkkila, Lilydale; James G. Carlson, Lake Elmo, both of Minn.; Christopher M. Evans, Essex, United Kingdom; James A. Greczyna, Vadnais Heights; Ramesh C. Kumar, Maplewood, both of Minn.; Colin F. Norman, Essex, United Kingdom, and Nelson T. Rotto, North St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 457,568, Jun. 1, 1995, abandoned, which is a division of Ser. No. 282,958, Jul. 29, 1994, Pat. No. 5,501,903. This application Nov. 12, 1996, Ser. No. 748,069

Int. Cl.^{6} C08L *33/18;75/12*

U.S. Cl. 525—131 **24 Claims**

1. A polymeric binder system useful for a magnetic recording medium, the polymeric binder system comprising (a) a hard resin component comprising a nonhalogenated vinyl copolymer consisting essentially of a carbon backbone, a plurality of pendant nitrile groups, a plurality of pendant-hydroxyl groups, at least one pendant dispersing group, and, optionally, nonhalogenated, nondispersing pendant groups selected from the group consisting of alkyls, aryls, and carboxyl esters, and b) a soft resin component comprising a polyurethane polymer comprising a plurality of units of the formula:



in which the nitrogen atom forms part of the backbone chain of the polymer,

A represents a single bond or divalent linking group, and R^1 and R^2 independently represent an alkyl group, cycloalkyl group, an aryl group or together comprise the necessary carbon atoms to complete a ring.

5,712,346

ACRYLIC EMULSION COATINGS

Ivan Lee, Arcadia, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 389,571, Feb. 14, 1995. This application Jun. 7, 1995, Ser. No. 486,948

Int. Cl.^{6} C08F *565/00*

U.S. Cl. 525—288 **1 Claim**

1. A mixture of copolymers formed for use as coating for rubber articles said mixture comprising a first emulsion copolymer which is the reaction product formed by copolymerizing a first monomer mixture comprising styrene, butyl acrylate, methyl acrylate, methacrylic acid, acrylic acid and at least one copolymerizable silicone oligomer in emulsion, said first emulsion copolymer having a glass transition temperature less than about 0° C. and a second emulsion copolymer which is the reaction product of a second monomer mixture comprised of styrene, butyl acrylate, methylacrylate, methacrylic acid, acrylic acid and at least one copolymerizable silicone oligomer, said second emulsion copolymer having a glass transition temperature of from about 0° C. to about 100° C., said mixture of first and second acrylic based emulsion copolymers being formed by sequential emulsion polymerization in the presence of at least two anionic surfactants and when deposited from suspension on a rubber article form when dry a non-tacky coating.

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GRAFTED METHYLENEDIPHOSPHONATE ION EXCHANGE RESINS

Andrzej W. Trochimcznk, Knoxville, Tenn.; Ralph C. Gatrone, Plymouth, Pa.; Spiro Alexandratos, Knoxville, Tenn., and E. Philip Horwitz, Naperville, Ill., assignors to ARCH Development Corp., Chicago, Ill., and University of Tennessee Research Corp., Knoxville, Tenn.

Division of Ser. No. 383,798, Feb. 6, 1995, Pat. No. 5,618,851. This application Apr. 3, 1997, Ser. No. 829,998

Int. Cl.^{6} C08F *8/40;* **C08G** *79/04*

U.S. Cl. 525—340 **11 Claims**

1. A process for using tetra-C_1–C_8 alkyl methylenediphosphonate carbanion to prepare an ion exchange resin comprised of an insoluble cross-linked copolymer containing grafted pendent tetra-C_1–C_8 alkyl methylenediphosphonate groups comprising the steps of:

(a) forming a reaction mixture by admixing insoluble cross-linked copolymer particles containing about 10 to about 95 mole percent copolymerized vinylbenzyl halide or glycidyl acrylate or methacrylate monomer and a sufficient amount of tetra-C_1–C_8 alkyl methylenediphosphonate carbanion in a hydrocarbon solvent to form 1.0 to about 10 mmol/g of said pendent groups,, said particles being sized to pass through a 4 millimeter sieve opening and be retained on a sieve having an opening of about 0.004 millimeters;

(b) maintaining said reaction mixture at a temperature of about 25° to about 250° C. for a time period sufficient for an ion exchange resin with said amount of pendent groups to form as product; and

(c) recovering said product containing pendent tetra-C_1–C_8 alkyl methylenediphosphonate groups.

5,712,348

MALEIC ACID COPOLYMERS WITH FLUORINATED THIOETHER END-CAP

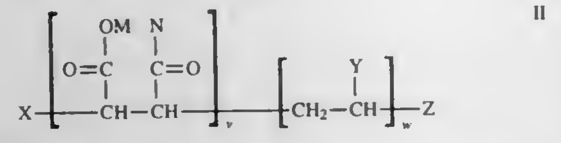
Engelbert Pechbold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 13, 1996, Ser. No. 617,518

Int. Cl.^{6} C08F *8/14*

U.S. Cl. 525—384 **4 Claims**

1. A composition comprising a copolymer for providing soil resistance and resistance to staining by acid dyes to fibers, said copolymer having units of Formula II:



$$X-\Big[\overset{\substack{\mathrm{OM}\\|\\\mathrm{O{=}C}\\|}}{\mathrm{CH}}-\overset{\substack{\mathrm{N}\\|\\\mathrm{C{=}O}\\|}}{\mathrm{CH}}\Big]_v-\Big[\mathrm{CH_2}-\overset{\substack{\mathrm{Y}\\|}}{\mathrm{CH}}\Big]_w-Z \qquad \text{II}$$

wherein

M is H, alkali metal, ammonium cation, or a mixture thereof;

N is OM or a mixture of OM, OR, and NR_1R_2 in a molar ratio of (OM):(OR):(NR_1R_2) of [1–(e+f)]:e:f, wherein e and f are each independently 0 to 0.5, provided that (e+f) is less than 0.8;

R, R_1, and R_2 are each independently H or a branched or straight chain $C_{1\text{-}20}$ alkyl;

Y is a $C_{2\text{-}10}$ alkyl, $C_{6\text{-}12}$ aryl, or $C_{4\text{-}12}$ alkoxy;

X is a fluorinated thiol radical;

Z is H; and

v and w are each a positive number such that the molar ratio of v to w is from about 0.4:1 to about 1.3:1.

5,712,349

WATER DISPERSIBLE BINDERS FOR CATIONIC ELECTROCOATING FINISHES AND A PROCESS FOR THEIR PREPARATION

Horst Diefenbach, Nottuln; Arnold Dobbelstein, and Michael Geist, both of Münster, all of Germany, assignors to BASF Farben Fasern Aktiengesellschaft, Hamburg, Germany

Continuation of Ser. No. 474,202, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 296,620, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 163,191, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 956,828, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 809,091, Dec. 10, 1991, abandoned, which is a continuation of Ser. No. 689,125, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 547,325, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 393,061, Jul. 31, 1989, abandoned, which is a continuation of Ser. No. 727,460, Apr. 26, 1985, abandoned, which is a division of Ser. No. 432,960, Sep. 27, 1982, abandoned. This application Nov. 6, 1996, Ser. No. 744,554

Claims priority, application Germany, Mar. 4, 1981, 31 08 073.1

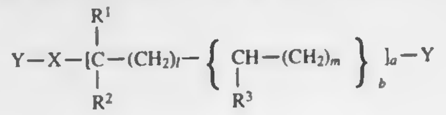
Int. Cl.^{6} C08G *59/14;* **C08L** *63/00*

U.S. Cl. 525—523 **20 Claims**

1. A water dispersible binder for cationic electrocoating finishes having thick-build characteristics comprising the sequential reaction product of:

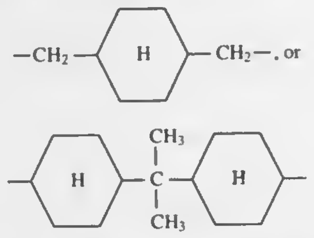
(A) a low molecular weight epoxide resin A containing aromatic groups and having an epoxide equivalent weight of below 375;

(B) a first polyfunctional compound B having a molecular weight below 350 and having the formula



$$Y-X-[\overset{\substack{R^1\\|}}{\underset{\substack{|\\R^2}}{C}}-(CH_2)_l-\left\{\underset{\substack{|\\R^3}}{CH}-(CH_2)_m\right\}_b]_a-Y$$

wherein Y is OH or CO_2H and X is $(CH)_2n$,



wherein each of R^1, R^2, and R^3 is H or an alkyl radical having 1 to 5 carbon atoms, a is 0 or 1, b is 0 or 1, 1 is 0–10, and m and n are 1–10;

(C) from 10 to 50% by weight, relative to the total binder, of a second polyfunctional compound C having a molecular weight of 500 to 5,000 selected from the group consisting of a poly alcohol, a poly carboxylic acid and a poly SH compound which is the reaction product of an organic dihalide and a sodium polysulfide; and

(D) a component D selected from the group consisting of an amine, a salt of an amine, a sulfide/acid mixture and a phosphine/acid mixture;

wherein, resin A and compound B are first reacted together to form an intermediate which is then reacted with compound C and then with component D to form said binder, said intermediate containing 10–45% of aromatic groups, calculated as phenylene group.

5,712,350

OXIDATION OF POLYARYLENE SULFIDES

Dietrich Fleischer, Darmstadt; Heinz Strutz, Usingen; Jürgen Kulpe, Frankfurt am Main, and Andreas Schleicher, Einhausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 237,065, May 3, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 591,162

Claims priority, application Germany, May 4, 1993, 43 147 36.4

Int. Cl.^{6} C08F *283/00;* **C08L** *81/00*

U.S. Cl. 525—535 **16 Claims**

1. A process for oxidizing a polymer containing thioether groups, which comprises oxidizing the polymer in solid form in a suspension medium with ozone at a temperature from −10° C. to 80° C., for forming polyarylene sulfoxides.

5,712,351

Patent Not Issued For This Number

5,712,352

POLYMERIZATION PROCESS

Patrick Brant, Seabrook; John R. Griffin, Baytown; Michael Elroy Muhle, Kingwood; Dwayne Lee Litteer, Baytown; Agapios Kyriacos Agapiou, Humble, and Gary Thomas Renola, Seabrook, all of Tex., assignors to Exxon Chemical Patents Inc., Houston, Tex.

Continuation-in-part of Ser. No. 306,055, Sep. 14, 1994. This application Oct. 30, 1995, Ser. No. 549,991

Int. Cl.^{6} C08F *2/34*

U.S. Cl. 526—68 **65 Claims**

1. A continuous gas phase or slurry process for polymerizing one or more olefin(s) in a reactor in the presence of a metallocene catalyst system, said process operating essentially free of a scavenger and producing greater than 500 to about 200,000 lbs. per hour of polymer.

5,712,353

GAS PHASE POLYMERIZATION PROCESS

Eugene Edmond Poirot, Baytown; Vispi Ruston Sagar, League City, and Scott Kevin Jackson, Baytown, all of Tex., assignors to Exxon Chemical Patents Inc., Houston, Tex.

Filed Oct. 31, 1994, Ser. No. 332,162

Int. Cl.^{6} C08F *2/34*

U.S. Cl. 526—88 **47 Claims**

1. A continuous gas phase process for polymerizing two or more olefins without the addition of pulverant inorganic materials and in the presence of a metallocene catalyst system to produce a polymer having a density less than 0.88 g/cc and a melt index less than 20 dg/min, the process operating essentially free of a scavenger.

5,712,354

BRIDGED METALLOCENE COMPOUNDS

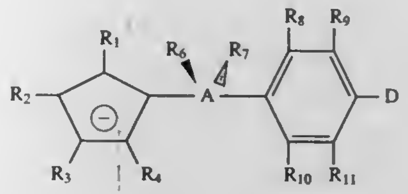
James M. Boncella; David E. Richardson, and Faisal A. Shafiq, all of Gainesville, Fla., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 10, 1996, Ser. No. 677,800

Int. Cl.^{6} C08F *4/44;* **C07F** *17/00;7/00*

U.S. Cl. 526—127 **19 Claims**

16. A salt in which the anion is characterized by the formula



wherein each of R_1, R_2, R_3, R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, alkylene of 2 to 10 carbon atoms which form bridged bicyclic or tricyclic moieties;

A is C, Si, Ge; and each of R_6 and R_7 is the same or different and is alkyl of 1 to 20 carbon atoms, aryl of 6 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms or alkynyl of 3 to 20 carbon atoms;

each of R_8, R_9, R_{10}, R_{11}, is the same or different, and is fluorine, hydrogen, alkyl of 1 to 6 carbon atoms;

D is hydrogen, alkyl of 1 to 6 carbon atoms, alkali metal; halogen; alkyl halide in which the alkyl has 1 to 6 carbon atoms and halide is chlorine or bromine; and BG_3 or AlG_3 in which B is boron (B) or Al is aluminum (Al), and

G is pentafluorophenyl, bis-trifluoromethylphenyl, phenyl or alkyl of 1 to 6 carbon atoms.

5,712,355

FLUOROMONOMER/FUNCTIONALIZED HYDROCARBON MONOMER COPOLYMERIZATION PROCESS AND COPOLYMER PRODUCT

Clay Woodward Jones, Washington, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 383,281, Feb. 3, 1995, abandoned. This application Aug. 11, 1995, Ser. No. 514,374

Int. Cl.^{6} C08F *14/18*

U.S. Cl. 526—254 **25 Claims**

1. Copolymer comprising 15 to 90 wt % of fluoromonomer of the formula $CF_2{=}CR_1R_2$, wherein R_1 is H, F, or Cl and R_2 is H or F, with 85 to 10 wt % of hydrocarbon monomer of the formula $CH_2{=}CHOC(O)R_3$ wherein R_3 is an alkyl group containing 1 to 4 carbon atoms, to total 100 wt % of these monomers, said copolymer being amorphous and highly branched as indicated by said copolymer being thermoplastic but without melt flow through a 2.0955 mm diameter orifice at 215° C. within 10 min., using a 5000 g weight, said copolymer being made by aqueous dispersion polymerization in water and in the absence of organic co-solvent.

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5,712,356
CROSS-LINKABLE COPOLYMERS AND HYDROGELS

Harald Bothe, Wiesbaden; Achim Müller, Aschaffenburg; Bernhard Seiferling, Goldbach; Sharla Borghorst, Frankfurt am Main; John Golby, Aschaffenburg; Peter Hagmann, Erlenbach am Main; Peter Herbrechtsmeler, Königsteln, and Otto Kretzschmar, Einhausen, all of Germany, assignors to CIBA Vision Corporation, Duluth, Ga.

Filed Nov. 14, 1994, Ser. No. 339,384

Claims priority, application Germany, Nov. 26, 1993, 93810827.1

Int. Cl.^{6} C08F *226/10;226/06;224/00;228/02;226/02;220/04;220/18*

U.S. Cl. 526—264 **25 Claims**

1. A cross-linkable copolymer comprising a copolymerization product of a monomer mixture consisting substantially of a vinyl lactam (a) and at least one further vinyl monomer (b) of a different type selected from the group consisting of hydrophobic, hydrophilic and functional vinyl monomers, wherein the monomers are present in the copolymer in the form of statistically distributed building blocks in accordance with the Lewis-Mayo equation, and, if a functional vinyl monomer is present as a building block in the copolymer, that building block is, where appropriate, modified with a reactive vinyl monomer (c), the reactive vinyl monomer (c) being linked to a building block of a functional vinyl monomer with retention of its vinylic group and with the formation of a covalent bond, wherein the cross-linkable copolymer is water-soluble, and wherein the hydrophilic vinyl monomer (b) is selected from hydroxy-substituted lower alkyl acrylates and methacrylates, acrylamide, methacrylamide, lower alkyl-acrylamides and -methacrylamides, ethoxylated acrylates and methacrylates, hydroxy-substituted lower alkyl-acrylamides and -methacrylamides, hydroxy-substituted lower alkyl vinyl ethers, sodium ethylenesulfonate, sodium styrenesulfonate, 2-acrylamido-2-methylpropanesulfonic acid, N-vinylpyrrole, 2- and 4-vinylpyridine, vinylically unsaturated carboxylic acids having a total of from 3 to 5 carbon atoms, amino-lower alkyl, mono-lower alkyl and di-lower alkylamino-lower alkyl acrylates and methacrylates and allyl alcohol.

5,712,357
METHOD FOR METATHETICALLY PREPARING SULPHUR CONTAINING POLYMERS OR ORGANIC COMPOUNDS

Jean-Marie Basset, Villeurbanne; Jean-Luc Couturier, Valleiry; Michel Leconte, Villeurbanne; Jean Ollivier, Arudy, all of France, and Katsumi Tanaka, Chofu, Japan, assignors to Elf Aquitaine, Courbevole, France

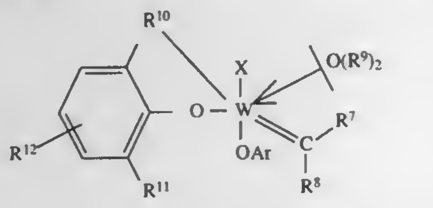
Continuation of Ser. No. 362,413, Feb. 24, 1995, abandoned. This application Apr. 10, 1997, Ser. No. 835,590

Claims priority, application France, Jun. 26, 1992, 92 07898

Int. Cl.^{6} C08F *28/02;* **C07C** *6/04*

U.S. Cl. 526—286 **17 Claims**

1. A process for the preparation of organic compounds or polymers containing one or more sulfur atoms, including one or more double bonds in a hydrocarbon chain, by metathesis of an acyclic sulfur-containing olefin or an unsaturated non-aromatic sulfur-containing cyclic hydrocarbon, characterized in that metathesis is carried out in the presence of a tungsten complex catalyst having the structure:



wherein X represents halogen Ar represents an aryl group; —R^7 and —R^8 independently represent hydrogen atoms or alkyl groups; —R^9 represents an alkyl group; —R^{10} represents an aryl group; and —R^{11} and —R^{12} independently represent hydrogen or an arylene group.

5,712,358
PROCESS FOR PRODUCING AN OIL SORBENT COPOLYMER AND THE PRODUCT THEREOF

Milan F. Sojka, Algonquin, Ill., assignor to Amcol International Corporation, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 486,107, Jun. 7, 1995, abandoned. This application Mar. 3, 1997, Ser. No. 811,129

Int. Cl.^{6} C08F *20/10*

U.S. Cl. 526—323.2 **19 Claims**

1. A process for producing a microporous oleophilic and hydrophilic adsorbent copolymer comprising allyl methacrylate and an ethylene glycol dimethacrylate in a mole ratio of about 1 to 1.5–4 comprising the steps of:

dissolving at least two polyunsaturated monomers including allyl methacrylate and an ethylene glycol dimethacrylate in a substantially water-immiscible organic solvent to provide a monomer mixture containing more than about 60% by weight polyunsaturated monomers;

combining said monomer mixture with an aqueous solution to form a biphasic liquid system comprising a water-immiscible organic phase containing dissolved monomers and an aqueous phase;

vigorously stirring said biphasic liquid system at a rate sufficient to cause said water-immiscible organic phase, containing said dissolved monomers, to be suspended as micro-droplets in said aqueous phase;

polymerizing said monomers in said suspended micro-droplets during vigorous stirring to produce a microporous, copolymer micro-particle therein; and

separating said microporous polymer micro-particle from said substantially water-immiscible organic solvent to produce a microporous oleophilic and hydrophilic adsorbent polymer micro-particle characterized by having a mean unit diameter of less than about 50 microns and having a total sorption capacity for mineral oil that is 72% by weight or greater, based on the total weight of copolymer plus mineral oil.

5,712,359
CO-OLIGOMERS AND COPOLYMERS HAVING DISPERSANT ACTIVITY

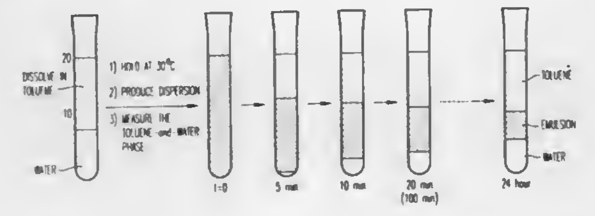
Clemens Auschra, Mainz; Horst Pennewiss, Darmstadt, and Susanne Graner, Buettelborn, all of Germany, assignors to Roehm GmbH Chemische Fabrik, Kirschenallee, Germany

Continuation of Ser. No. 498,292, Jul. 3, 1995, abandoned. This application Mar. 10, 1997, Ser. No. 813,292

Claims priority, application Germany, Jul. 4, 1994, 44 23 358.2

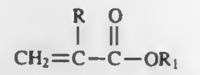
Int. Cl.^{6} C08F *220/10;210/00*

U.S. Cl. 526—329 **5 Claims**



1. A co-oligomer or copolymer having co-oligomer or copolymer activity, and having a weight average molecular weight of 1,000 to 30,000 Dalton comprising the following monomer units:

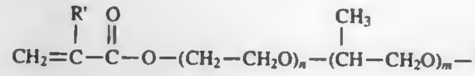
(A) 60–95 wt. % of at least one (meth) acrylic acid ester of formula I



$$CH_2{=}\overset{\overset{\Large R}{|}}{C}{-}\overset{\overset{\Large O}{\|}}{C}{-}OR_1 \qquad (I)$$

R_1 is a straight-chain or branched alkyl group or a cycloalkyl group with 4–32 carbon atoms in the alkyl group; and

(B) 5–40 wt. % of at least one (meth) acrylic acid ester of formula Il



$$CH_2{=}\overset{\overset{\Large R'}{|}}{C}{-}\overset{\overset{\Large O}{\|}}{C}{-}O{-}(CH_2{-}CH_2O)_n{-}(\overset{\overset{\Large CH_3}{|}}{C}H{-}CH_2O)_m{-}R_5 \qquad (II)$$

where

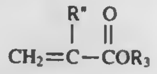
R' is hydrogen or methyl,

R_2 is an alkyl or aryl group with 1–50 carbon atoms,

n is a number from 5 to 100, and

m is a number form 0 to 100;

and, in the amount of 0–90 mol % of the monomers of formula Il, a hydroxyalkyl ester of (meth) acrylic acid of formula III:



$$CH_2{=}\overset{\overset{\Large R''}{|}}{C}{-}\overset{\overset{\Large O}{\|}}{C}OR_3 \qquad (III)$$

where

R" is hydrogen or methyl, and

R_3 is an alkyl group substituted with at least one hydroxyl group and having 2–30 carbon atoms;

with the proviso that (A) and (B) together make 100 wt. %; and

(C) an additional 0–75 wt. %, based on the weight of (A)+ (B), of at least one 1-alkene having 4–42 carbon atoms.

5,712,360
METHOD OF MANUFACTURING A COHYDROLYZED POLYSILOXANE CHARGE TRANSPORTING MATERIAL

Hideki Kobayashi, Chiba Prefecture, and Nobuo Kushibiki, Kanagawa, both of Japan, assignors to Dow Corning Asia, Ltd., and Dow Corning Toray Silicone Co., Ltd., both of Tokyo, Japan

Filed Nov. 4, 1996, Ser. No. 743,262

Claims priority, application Japan, Nov. 6, 1995, 7-287668

Int. Cl.^{6} C08G *77/26*

U.S. Cl. 528—38 **12 Claims**

1. A method of manufacturing a polysiloxane material having charge transporting properties, the method comprising cohydrolyzing and condensing in an organic solvent, a mixture comprising:

(I) an organosilicon compound or a partially hydrolyzed product of the organosilicon compound where the organosilicon compound is selected from a group consisting of R_3SiZ, R_2SiZ_2, $RSiZ_3$ and SiZ_4, wherein R is a monovalent hydrocarbon group and Z is a hydrolyzable group and

(II) a charge transporting silicon compound represented by the formula:

$$A{-}(R^1SiR^2_{3-n}Q_n)_p$$

wherein A denotes an organic group derived from a charge transporting compound having the ionization potential of 4.5 to 6.2 eV, which is an aromatically substituted, tertiary amine having a plurality of aromatic groups, where at least one of the aromatic hydrocarbon groups is bonded to R^1 which is an alkylene group having 1 to 18 carbon atoms; R^2 is a monovalent hydrocarbon group having 1 to 15 carbon atoms; Q is a hydrolyzable group; n is an integer from 1 to 3; p is an integer from 1 to 3, thereby providing polysiloxane resin having a ratio of monovalent hydrocarbon groups to silicon atoms of 0.5 to 1.5.

5,712,361
CONJUGATED POLYMERS CONTAINING ANSA SUBSTRUCTURES AND THEIR USE AS ELECTROLUMINESCENCE MATERIALS

Roland Stern, Wiesbaden; Donald Lupo, Frankfurt am Main; Josef Salbeck, Kelkheim; Hermann Schenk, Hofheim; Thomas Steblin, Kriftel; Klaus Müllen, Mainz; Ullrich Scherf, Mainz-Kastel, and Joachim Huber, Ingelheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 28, 1995, Ser. No. 496,202

Claims priority, application Germany, Jun. 30, 1994, 44 22 670.5

Int. Cl.^{6} C08G *61/02;61/12*

U.S. Cl. 528—86 **5 Claims**

1. A conjugated polymer comprising ansa substructures, which comprises aromatic groups and in which adjacent aromatic groups are connected to one another in such a way that one ring atom of one aromatic group is directly linked to one ring atom of the other aromatic group and any further linkages of these two aromatic groups are possible only via a bridge containing at least one tetravalent carbon atom and/or heteroatom.

5,712,362
PROCESS FOR THE PRODUCTION OF UV-STABLE POLYCARBONATES

Thomas Scholl, Bergisch Gladbach, and Peter Bier, Krefeld, both of Germany, assignors to Bayer AG, Leverkusen, Germany

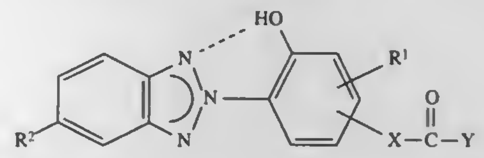
Filed Aug. 10, 1995, Ser. No. 513,257

Claims priority, application Germany, Aug. 22, 1994, P 44 29 697.5

Int. Cl.^{6} C08G *64/00*

U.S. Cl. 528—196 **10 Claims**

1. A process for the production of UV-stable polycarbonates, characterized in that thermoplastic aromatic polycarbonates with $\bar{M}w$ values (weight average molecular weights, as determined by light scattering) in the range from 1,500 to 250,000 are reacted with compounds corresponding to formula (I):



(I)

in which

R^1 represents H, C_{1-18} alkyl, C_{5-6} cycloalkyl, or C_{6-12} aryl,

R^2 represents H, Cl, or C_{1-12} alkyl,

X is a single bond, C_{1-12} alkylene, C_{5-6} cycloalkylene or phenylene and

Y is OH, O-alkali, —O—ammonium or O-(½alkaline earth metal), in quantities of 0.01% by weight to 35% by weight, based on 100% by weight of thermoplastic polycarbonate, and also reacted with 0.5 to 1.5 moles of diaryl carbonates per mole of compound (I) at temperatures of 200° to 420° C., under pressures of 0.01 mbar to 1,000 mbar and over reaction times of 1 to 60 minutes.

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5,712,363

OLIGOMERIC STERICALLY HINDERED POLYAMINE CROSSLINKERS AND COATING COMPOSITIONS CONTAINING THE SAME

Arie Noomen, Voorhout; Thomas Mezger, Westervoort, both of Netherlands; Klaus Hobel, Erlenbach, Germany, and Keimpe Jan van den Berg, Duiven, Netherlands, assignors to Akzo Nobel NV, Armhem, Netherlands

PCT No. PCT/EP94/00015, § 371 Date Aug. 28, 1995, § 102(e) Date Aug. 28, 1995, PCT Pub. No. WO94/15974, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 4, 1994, Ser. No. 481,540

Claims priority, application European Pat. Off., Jan. 6, 1993, 93200027

Int. Cl.^{6} C08F *8/30;* **C08G** *12/00*

U.S. Cl. 528—229 **21 Claims**

1. A method of lowering the volatile organic content (VOC) of a coating composition comprising using an oligomeric sterically hindered polyamine as a polyamine crosslinker in a coating composition based upon an amine crosslinkable resin and a polyamine crosslinker wherein the oligomeric sterically hindered polyamine comprises an oligomeric backbone having pendant therefrom at least two amino groups, wherein

(A) the amino groups pendant from the backbone are sterically hindered, and

(B) the oligomeric sterically hindered polyamine has a molecular weight (Mn) of about 200–10,000.

5,712,364

Patent Not Issued For This Number

5,712,365

PROCESS FOR PRODUCING ETHYLENE ALPHA-OLEFIN COPOLYMER

Koichi Arai, and Makoto Toshimitsu, both of Mie, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Mar. 20, 1996, Ser. No. 618,821

Claims priority, application Japan, Mar. 27, 1995, 7-067930

Int. Cl.^{6} G08F *6/28*

U.S. Cl. 528—498 **4 Claims**

1. A process for producing an ethylene/α-olefin copolymer comprising steps of copolymerizing ethylene with an α-olefin of three or more carbons in a reactor in the presence of an olefin polymerization metallocene catalyst at a reaction pressure ranging from 300 to 4000 kgf/cm^2 at a reaction temperature ranging from the melting point of the copolymer to 300° C.; reducing the pressure of the reaction product to 40–300 kgf/cm^2; separating an unreacted monomer mixture from the copolymer by a high-pressure separator; separating an entrained copolymer from the unreacted monomer mixture by a separator in a high-pressure recycling system to recover unreacted monomer mixture; and feeding the recovered unreacted monomer mixture together with the starting ethylene and α-olefin to the reactor, wherein a saturated hydrocarbon of four or less carbons having a density lower than that of the unreacted monomer mixture (hereinafter referred to as a "low-density saturated hydrocarbon") is allowed to coexist in the high-pressure separator.

5,712,366

FABRICATION OF NANOSCALE MATERIALS USING SELF-ASSEMBLING PROTEINS

Kevin P. McGrath, Grafton, and David L. Kaplan, Stow, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 68,948, May 25, 1993, abandoned. This application May 25, 1995, Ser. No. 452,592

Int. Cl.^{6} A61K *38/00;* **C07K** *5/00;7/00;16/00*

U.S. Cl. 530—324 **3 Claims**

1. A method of fabricating a self-assembling protein-based structural material comprising the steps of:

a) providing a multiplicity of a first artificial polypeptide sequence having a coiled-coil alpha helical secondary structure comprised of a first peptide series having at least two heptad subunits characterized by the generic formula (a-b-c-d-e-f-g) wherein d is Leu and e and g are charged residues;

b) providing a multiplicity of a second artificial polypeptide sequence having a coiled-coil alpha helical secondary structure comprised of a second peptide series having at least two heptad subunits characterized by the generic formula (a-b-c-d-e-f-g) wherein d is Leu and e and g are charged residues, said second artificial polypeptide sequence being different from said first artificial polypeptide sequence and being designed to spontaneously heterodimerize with said first artificial polypeptide sequence when admixed therewith;

wherein said first and second artificial polypeptide sequences are synthesized by a recombinant process comprising the steps of:

i) obtaining a DNA sequence by reverse translation;

ii) using a mixed site synthetic approach to generate either a Lys or Glu codon at the e and g positions of each heptad;

iii) constructing the DNA sequence from smaller synthetic DNA fragments; and

iv) inserting the DNA sequence thus constructed into a host vector;

v) expressing the first and second polypeptide sequences by the host cells; and

vi) isolating the first and second polypeptide sequences thus expressed by chemical separation means;

c) admixing said multiplicities of said first and second artificial polypeptide sequences, whereby said first and said second artificial polypeptide sequences spontaneously heterodimerize into a self-assembled protein-based structural material.

5,712,367

PROCESS FOR THE SOLUBILIZATION OF PEPTIDES AND PROCESS FOR PEPTIDE SYNTHESIS

Jean-Marie Bernard, Mornant; Kamel Bouzid, Lyon, and Christian Gervais, Villeurbanne, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 103,306, Aug. 9, 1993, abandoned, which is a continuation of Ser. No. 998,757, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 592,028, Oct. 2, 1990, abandoned. This application Oct. 25, 1994, Ser. No. 329,674

Claims priority, application France, Oct. 2, 1989, 89 13054

Int. Cl.^{6} C07K *1/02*

U.S. Cl. 530—338 **21 Claims**

9. A process for the synthesis of a peptide in a liquid medium comprising the steps of:

a) coupling, in a water-immiscible organic solvent, an amino acid or peptide with a lipophilic substituent to form a reaction product P—CO—A—L, in conformance with the following reaction:

P—COOH+A—L→P—CO—A—L

wherein

P—COOH represents an amino acid or peptide, and

L represents a non-polymeric lipophilic group which bears a linking moiety A, subject to the proviso that A and L together contain at least 18 carbon atoms, and wherein said process the C-terminal carboxyl group of said amino acid or peptide is bonded via ester or amide linkage to the group A—L in the reaction product, and wherein said reaction product is soluble in said water-immiscible organic solvent to the extent of at least 50 g/L;

b) coupling, in a water-immiscible organic solvent, an activated carboxyl group of a second peptide or amino acid P′—COOH with a free amino group of the reaction product from step (a);

c) washing the peptide reaction product of step (b) with a neutral, acidic, or basic aqueous solution while the peptide remains dissolved in the water-immiscible organic solvent at a solubility of at least 50 g/L;

d) repeating steps (b) and (c) until the desired amino acid sequence is obtained; and

e) removing the group A—L from the peptide in a suitable organic solvent.

5,712,368

Patent Not Issued For This Number

5,712,369

ISOLATED PROTEIN WHICH BINDS TO A33 ANTIBODY, AND PEPTIDES CORRESPONDING TO PORTIONS OF THE PROTEIN

Lloyd J. Old; Sydney Welt; Gerd Ritter, all of New York, N.Y.; Richard J. Simpson, Victoria, Australia; Edouard Nice, Victoria, Australia; R. L. Moritz, Victoria, Australia; B. Catimel, Victoria, Australia; Hong Ji, Victoria, Australia; Anthony W. Burgess, Victoria, Australia; Joan K. Heath, Victoria, Australia; Sara J. White, Victoria, Australia, and Cameron Johnstone, Victora, Australia, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 511,876, Aug. 4, 1995, abandoned. This application Feb. 2, 1996, Ser. No. 597,495

Int. Cl.^{6} C07K *14/00;* **A61K** *39/00;39/38;38/00*

U.S. Cl. 530—350 **7 Claims**

1. Isolated protein containing molecule the protein portion of which has a molecular weight of about 43 kD as determined by SDS-PAGE under non-reducing conditions, wherein said molecule binds to monoclonal antibody A33.

5,712,370

ERYTHROPOIETIN (EPO) PEPTIDES AND ANTIBODIES DIRECTED AGAINST THESE

Mathias Fibi, Marburg, and Werner Stüber, Lahntal, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 135,121, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 830,895, Feb. 4, 1992, abandoned, which is a division of Ser. No. 556,423, Jul. 24, 1990, Pat. No. 5,106,954. This application Jun. 29, 1994, Ser. No. 267,539

Claims priority, application Germany, Jul. 26, 1989, 39 24 746.5

Int. Cl.^{6} C07K *16/26;16/24*

U.S. Cl. 530—388.23 **2 Claims**

1. A monoclonal antibody directed against an erythropoietin (EPO) peptide, wherein said antibody neutralizes the biological activity of EPO, and wherein said EPO peptide consists essentially of a peptide of less than the complete erythropoietin protein, said peptide having an amino acid sequence consisting of amino acid positions 138 to 166 (P2) in accordance with the numbering of the amino acid positions of natural EPO.

2. A monoclonal antibody directed against an erythropoietin (EPO) peptide, wherein said antibody neutralizes the biological activity of EPO, and wherein said EPO peptide consists essentially of a peptide of less than the complete erythropoietin protein, said peptide having an amino acid sequence consisting of amino acid positions 152 to 166 (P2/1) in accordance with the numbering of the amino acid positions of natural EPO.

5,712,371

Patent Not Issued For This Number

5,712,372

HUMAN THYROID HORMONE RECEPTOR

Leslie J. DeGroot, and Akira Nakai, both of Chicago, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Division of Ser. No. 830,766, Feb. 3, 1992, Pat. No. 5,438,126, which is a continuation of Ser. No. 405,342, Sep. 11, 1989, abandoned. This application Mar. 21, 1995, Ser. No. 407,909

Int. Cl.^{6} C07K *16/00;14/00*

U.S. Cl. 530—388.22 **5 Claims**

1. A polypeptide having the amino acid sequence of FIG. 1.

5,712,373

HIV MONOCLONAL ANTIBODY SPECIFIC FOR THE HTLV-III$_{MN}$ GP120 ENVELOPE GLYCOPROTEIN

Yasuyuki Eda, Kumamoto-ken; Kiyoshi Osatomi, Nagasaki; Kouichi Shiosaki, Kumamoto-ken; Sachio Tokiyoshi; Shuzo Matsushita, both of Kumamoto; Toshio Hattori, Kyoto, and Kiyoshi Takatsuki, Kumamoto, all of Japan, assignors to Juridical Foundation The Chemo-Sero-Therapeutic Research Institute, Kumamoto, Japan

Continuation-in-part of Ser. No. 723,916, Jul. 1, 1991, abandoned. This application Jun. 2, 1994, Ser. No. 253,030

Claims priority, application Japan, Jul. 2, 1990, 2-175075; Jul. 16, 1990, 2-188300

Int. Cl.^{6} C07K *16/10;* **C12N** *5/20*

U.S. Cl. 530—388.35 **1 Claim**

1. A murine monoclonal antibody which is produced by the hybridoma FERM BP-3402 and which is capable of neutralizing human T-lymphotropic virus III$_{MN}$ (HTLV-III$_{MN}$) and has the following characteristics:

(a) immunoglobulin class: IgG, K,

(b) specifically binds to an epitope which is present in the region represented by the amino acid sequence 303 to 325 (Tyr Ash Lys Arg Lys Arg Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Lys Asn Ile Ile Gly) of a glycoprotein antigen having a molecular weight of about 12×10^4 daltons of gp120 of HTLV-III$_{MN}$, SEQ ID NO:1,

(c) specifically binds to the surface of HTLV-III$_{MN}$ viral particles and thereby inhibits the infection of CD4-positive cells by HTLV-III$_{MN}$,

(d) specifically binds to the surface of cells infected with HTLV-III$_{MN}$ and thereby inhibits the syncytium formation induced by interaction between the infected cells and uninfected cells as determined by in vitro inhibition of syncytium formation, and

(e) does not bind to any HTLV-III strain other than HTLV-III$_{MN}$, or an antigen-binding fragment thereof.

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5,712,374
METHOD FOR THE PREPARATION OF SUBSTANTIALLLY MONOMERIC CALICHEAMICIN DERIVATIVE/CARRIER CONJUGATES

Martin P. Kuntsmann, Pearl River; Irwin Hollander, Monsey, and Philip Hamann, Garnerville, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Filed Jun. 7, 1995, Ser. No. 475,005

Int. Cl.⁶ C07K *16/00;* **A01N** *43/04;* **C07G** *11/00;* **C07H** *15/00*

U.S. Cl. 530—391.7 **30 Claims**

1. A method for preparing monomeric calicheamicin derivative/carrier conjugates with higher drug loading/yield and decreased aggregation having the formula,

$$Pr(—X—S—S—W)_m$$

wherein:

Pr is a proteinaceous carrier,

X is a linker that comprises a product of any reactive group that can react with a proteinaceous carrier,

W is the calicheamicin residue formed when a calicheamicin is cleaved at a methyl trisulfide linkage, and

m is from 0.1 to 15;

said method comprising the steps of:

(1) incubating a calicheamicin derivative (X—S—S—W) and a proteinaceous carrier (Pr) in a phosphate buffered solution which solution further comprises (a) a cosolvent comprising propylene glycol, and (b) an additive comprising at least one C_6–C_{25} carboxylic acid, wherein the incubation is conducted at a temperature ranging from about 25° C. to about 37° C. for a period of time ranging from about 2 hours to about 18 hours to produce a calicheamicin derivative/carrier conjugate; and

(2) purifying the calicheamicin derivative/carrier conjugate produced in step (1) to produce a monomeric calicheamicin derivative/carrier conjugate.

5,712,375
SYSTEMATIC EVOLUTION OF LIGANDS BY EXPONENTIAL ENRICHMENT: TISSUE SELEX

Kirk B. Jensen; Hang Chen, both of Boulder, Colo.; Kevin N. Morris, Schworzach, Austria; Andrew Stephens, Denver, and Larry Gold, Boulder, both of Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned, and a continuation-in-part of Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938. This application May 3, 1995, Ser. No. 434,001

Int. Cl.⁶ C07K *1/14;* **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 530—412 **7 Claims**

1. A method for purifying and isolating a protein component of a biological tissue comprising:

a) identifying a nucleic acid ligand to a protein component of a biological tissue by the method comprising:
  i) preparing a candidate mixture of nucleic acids;
  ii) contacting said candidate mixture of nucleic acids with said biological tissue, wherein nucleic acids having an increased affinity to the biological tissue relative to the candidate mixture may be partitioned from the remainder of the candidate mixture and wherein said nucleic acids have a specific affinity to a protein component of said biological tissue;
  iii) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture;
  iv) amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acids with an increased affinity and an increased specificity for binding to said protein component; and
  v) identifying said nucleic acid ligand of said protein component; and

b) purifying and isolating said protein component of said biological tissue away from said biological tissue on the basis of affinity between said protein component and said nucleic acid ligand.

5,712,376
AZO REACTIVE DYES, THEIR PREPARATION AND USE

Edmond Ruhlmann, Saint-Louis, France, and Laszlo Fekete, Bettingen, Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

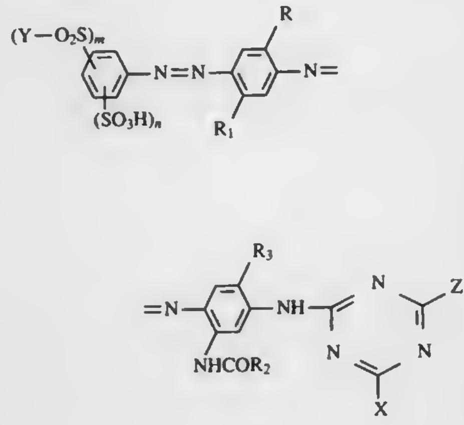
Filed Aug. 20, 1996, Ser. No. 699,957

Claims priority, application Switzerland, Aug. 22, 1995, 2395/95

Int. Cl.⁶ C09B *62/09;* **D06P** *1/382;3/66;3/10*

U.S. Cl. 534—634 **16 Claims**

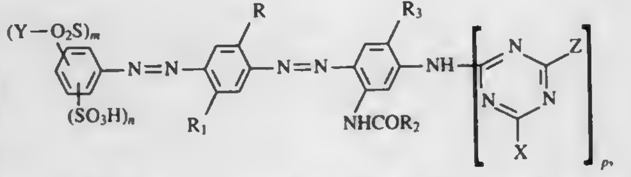
1. A compound of formula



(1)

wherein R is C_1–C_4alkyl or C_1–C_4alkoxy which is unsubstituted or substituted in the alkyl moiety by hydroxy, C_1–C_4alkoxy or sulfato, R_1 is —NHCOR$_2$' group, R_2 and R_2' are each independently of the other C_1–C_4alkyl or —NH$_2$, R_3 is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy or halogen, X is fluoro, Y is vinyl or a —CH$_2$—CH$_2$—U radical and U is a leaving group, m is 0 or 1, and n is a number from 0 to 2, the sum of (n+m) being ≧ 1, and Z is a non-reactive amino radical, or a radical of formula

(1)



wherein R, R_1, R_2, R_3, X, m and n have the meaning given above, B is the radical of an aliphatic, aromatic, araliphatic or cycloaliphatic diamine, and p is 0 or 1.

5,712,377
GLYCOSIDES ISOLATED FROM POLLEN, THEIR SUGAR-FREE DECOMPOSITION PRODUCTS AND DERIVATIVES THEREOF

Jean-Claude Jaton, Thonex; Fabrizio Marazza, Navaggio; Ari Lewenstein, Zurich, all of Switzerland; Francis M. Sirotnak, New York, N.Y., and Bernhard Jaun, Fallanden, Switzerland, assignors to Cerbios-Pharma SA, Barbengo, Switzerland

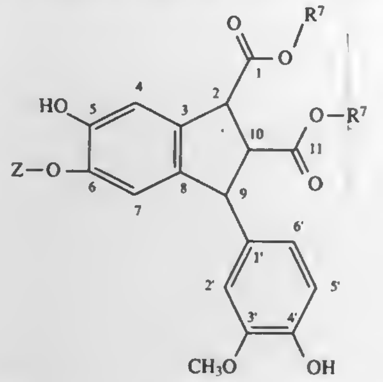
Filed Jun. 28, 1996, Ser. No. 672,651

Claims priority, application Switzerland, Jun. 30, 1995, 1930/95

Int. Cl.⁶ C07H *17/08;* **C07C** *315/00*

U.S. Cl. 536—7.1 **13 Claims**

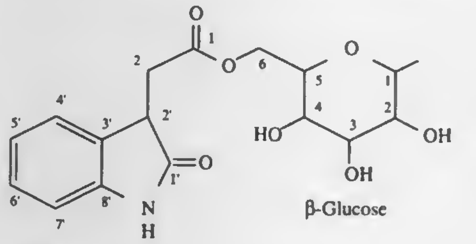
1. A compound having the structural formula C



C

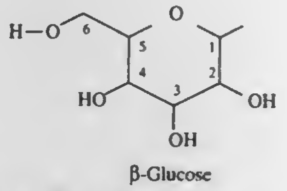
wherein

Z is selected from the group consisting of formula A



A

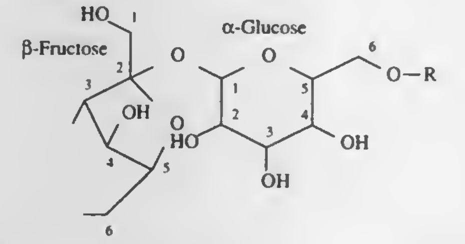
and formula B



B

and each R^7 is a hydrogen atom or

Z is selected from the group consisting of a hydrogen atom, formula A, and formula B; and R^7 collectively have the formula D

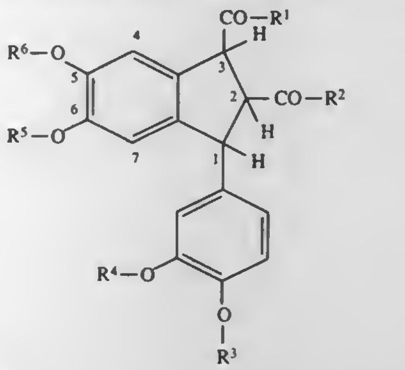


D

wherein

R is selected from the group consisting of a hydrogen atom, one or more hexose residues bonded in a glycosidal linkage, and two or more hexose residues.

3. An indan derivative having the structural formula III



III

wherein

R^1 and R^2 represent independently from each other the formula

—O—X

wherein X is selected from the group consisting of
  a) hydrogen,
  b) a substituted or unsubstituted alkyl group having 1–6 carbon atoms,
  c) an aralkyl group,
  d) a substituted or unsubstituted aryl group, and
  e) a hexose residue

or

R^1 and R^2 both represent a bivalent group of the formula

—O— or —O—Y—O

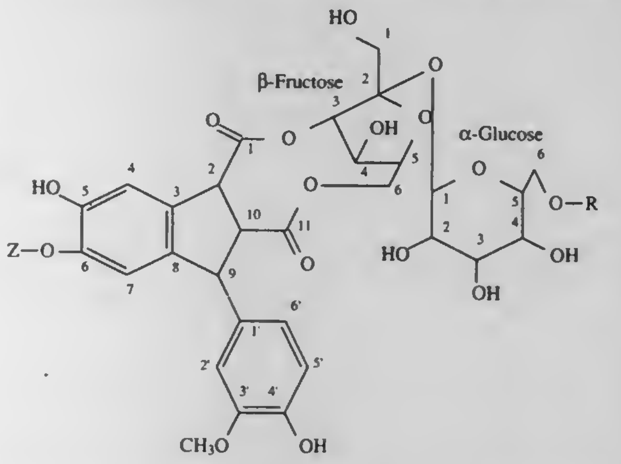
wherein Y is a bivalent organic radical selected from the group consisting of

an aliphatic, a cycloaliphatic and an aromatic diradical

and

R^3, R^4, R^5, and R^6 are independently selected from the group consisting of:
  i) a hydrogen atom,
  ii) an alkyl residue,
  iii) a cycloalkyl residue,
  iv) an aryl residue,
  v) an acyl residue of an aliphatic, a cycloaliphatic, or an aromatic carboxylic acid, and
  vi) hexose residue.

7. A method for the isolation of glycosides having the formula



wherein the glycosides are derived from an aqueous extract of vegetable pollen and R is selected from the group consisting of a hydrogen atom and a hexose residue bonded by a glycosidal linkage and Z represents a glucosidal moiety of the formula A

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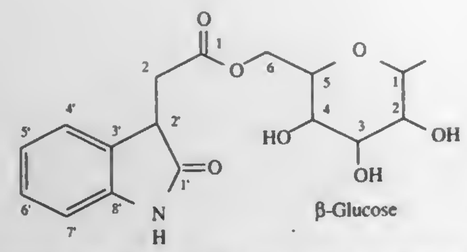
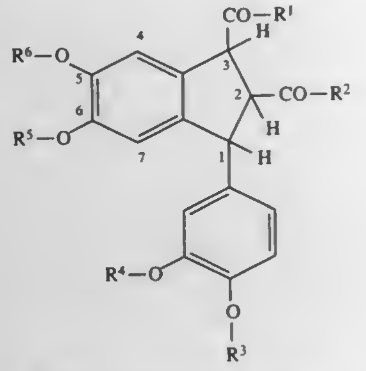


A

comprising the steps of: (i) subjecting the aqueous extract of vegetable pollen to dialysis by diffusing the extract through a first membrane which retains substances having a molecular weight greater than 1000 Daltons, (ii) diffusing the retained substances through a second membrane which passes substances having a molecular weight less than 3500 Daltons to obtain a dialysate, and (iii) isolating the glycosides from the dialysate by high-pressure liquid chromatography.

11. A process for the production of an aglycone of the formula III



III

in which

R^1 and R^2 represent hydroxy groups,

R^3, R^5 and R^6 represent hydrogen and

R^4 represents a methyl group, comprising the step of subjecting the isolated glycosides of claim 7 to an acid hydrolytic cleavage to produce said aglycone.

5,712,378

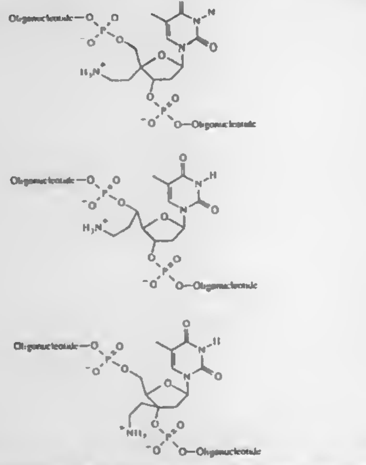
SUGAR MODIFIED NUCLEOSIDES AND THEIR USE FOR SYNTHESIS OF OLIGONUCLEOTIDES

Guangyi Wang, Irvine, Calif., assignor to ICN Pharmaceuticals, Costa Mesa, Calif.

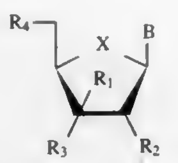
Continuation-in-part of Ser. No. 333,545, Nov. 2, 1994, Pat. No. 5,681,940. This application Nov. 2, 1995, Ser. No. 552,363

Int. Cl.^{6} C12Q *1/68;* **C07H** *19/00;21/02;21/04*

U.S. Cl. 536—22.1 **6 Claims**



1. An oligonucleotide which contains at least one nucleotide having the structure:



wherein:

R$_1$ is selected from the group consisting of substituted alkyl, aralkyl, substituted aralkyl, aryl, and substituted alkyl;

R$_2$ is selected from the group consisting of H, OH, alkoxy, aralkoxy and aryloxy;

R$_3$ and R$_4$ are independently selected from the group consisting of OH, internucleotide linkage and a hydroxyl blocking group;

X is selected from the group consisting of O and CH$_2$;

B is a nucleoside base selected from the group consisting of Adenine, Guanine, Cytosine Uracil and Thymine;

wherein:

the substituted portion of the substituted alkyl is other than OH when X is O;

any alkyl portion of R$_1$ and R$_2$ is C1 to C10 linear or branched, saturated or unsaturated; and

any aryl portion of R$_1$ and R$_2$ is a phenyl, polycyclic ring or heterocycle.

5,712,379

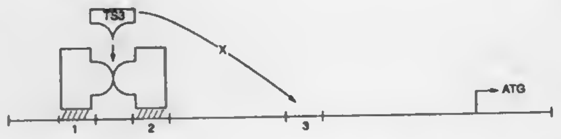
METHOD AND COMPOSITIONS FOR CONTROLLING GENE EXPRESSION

Eric H. Davidson, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jun. 7, 1996, Ser. No. 660,275

Int. Cl.^{6} C07H *21/04;* **C12P** *21/02*

U.S. Cl. 536—23.4 **10 Claims**



1. A nucleic acid molecule encoding an antibody derivative molecule, wherein said antibody derivative molecule specifically binds to a first cis-regulatory DNA sequence element of a eukaryotic gene and wherein said antibody derivative molecule comprises:

(a) an N-terminal nuclear localization signal;

(b) a variable region of an antibody molecule, wherein said antibody molecule specifically binds to a transcription factor protein and wherein said transcription factor protein specifically binds to a second cis-regulatory DNA sequence element of said gene; and

(c) a C-terminal DNA binding domain derived from a protein that specifically binds to said first cis-regulatory DNA sequence element.

5,712,380

DNA ENCODING A SOLUBLE VEGF INHIBITOR

Richard L. Kendall, Edison, and Kenneth A. Thomas, Jr., Chatham Borough, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 38,769, Mar. 25, 1993, abandoned. This application Apr. 21, 1994, Ser. No. 232,538

Int. Cl.^{6} C12N *15/12*

U.S. Cl. 536—23.5 **5 Claims**

1. An isolated nucleic add sequence encoding a polypeptide having SEQ ID NO.:6.

5,712,381

MADD, A TNF RECEPTOR DEATH DOMAIN LIGAND PROTEIN

Lih-Ling Lin, Concord; Jennifer Chen, Chestnut Hill; Andrea R. Schievella, Winchester, and James Graham, Somerville, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 602,228, Feb. 15, 1996, which is a continuation-in-part of Ser. No. 533,901, Sep. 26, 1995, which is a continuation-in-part of Ser. No. 494,440, Jun. 19, 1995, which is a continuation-in-part of Ser. No. 327,514, Oct. 19, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 698,551

Int. Cl.^{6} C07M *21/04;* **C12N** *15/12;15/85;* **C07K** *14/715*

U.S. Cl. 536—23.5 **24 Claims**

1. A composition comprising an isolated polynucleotide encoding a protein having TNF-R1-DD ligand protein activity, wherein said polynucleotide is selected from the group consisting of:

(a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1 from nucleotide 2 to nucleotide 1231;

(b) a polynucleotide comprising a fragment of the nucleotide sequence of SEQ ID NO:1;

(c) a polynucleotide encoding an TNF-R1-DD ligand protein comprising the amino acid sequence of SEQ ID NO:2; and

(d) a polynucleotide encoding an TNF-R1-DD ligand protein comprising a fragment of the amino acid sequence of SEQ ID NO:2.

5,712,382

PLANT ADENYLOSUCCINATE LYASE AND DNA CODING THEREFOR

Charles David Guyer, and Eric R. Ward, both of Durham, N.C., assignors to Novartis Finance Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 355,770, Dec. 14, 1994, abandoned. This application Oct. 26, 1995, Ser. No. 548,509

Int. Cl.^{6} C12N *15/29;15/60;15/63;1/21;1/19*

U.S. Cl. 536—23.6 **18 Claims**

1. An isolated DNA molecule encoding a protein from an Arabidopsis plant having adenylosuccinate lyase(ADSL) activity, wherein said DNA molecule encodes a protein comprising the amino acid sequence set forth in SEQ ID No. 2.

3. An isolated DNA molecule encoding a protein from a maize plant having adenylosuccinate lyase(ADSL) activity.

5,712,383

PROCESS FOR IMMOBILIZING NUCLEIC ACID PROBES ON POLYSTYRENE SURFACES

Patrick Sheridan, San Leandro; Chu-An Chang, Piedmont; Joyce Running, Concord, and Michael S. Urdea, Alamo, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 813,338, Dec. 23, 1991. This application May 10, 1995, Ser. No. 438,639

Int. Cl.^{6} C07H *21/04;21/02;* **G01N** *33/53;* **C12Q** *1/68*

U.S. Cl. 536—24.3 **10 Claims**

1. A process for immobilizing a nucleic acid probe having a first functional group on a polystyrene surface for use in a solution phase nucleic acid sandwich hybridization assay comprising the steps:

(a) cleansing the polystyrene surface by washing it sequentially with a strong acid, a strong base, and water;

(b) passively adsorbing a polypeptide having second functional groups onto the cleansed polystyrene surface; and

(c) covalently bonding the nucleic acid probe to the adsorbed polypeptide via a base-stable linkage involving said first and second functional groups.

5,712,384

RIBOZYMES TARGETING RETROVIRAL PACKAGING SEQUENCE EXPRESSION CONSTRUCTS AND RECOMBINANT RETROVIRUSES CONTAINING SUCH CONSTRUCTS

Geoffrey P. Symonds, Rose Bay, and Lun-Quan Sun, Ryde, both of Australia, assignors to Gene Shears Pty Ltd., North Ryde, Australia

Filed Jan. 5, 1994, Ser. No. 178,082

Int. Cl.^{6} C12Q *1/68;* **C07H** *21/04;* **A61K** *48/00*

U.S. Cl. 536—24.5 **8 Claims**

1. A compound which comprises at least the following sequences:

CCTAGGCTCTGATGAGTCCGTGAGGACGAAACTTCCTGTTAG
GATCCTGATGAGTCCGTGAGGACGAAACTGGCTCGCTATGTT
CTGATGAGTCCGTGAGGACGAAACACCCAA (SEQ. ID. NO.5)

and

GTCAAAAATTGGCGCTGATGAGTCCGTGAGGACGAAACTCAC
CAGTCGCCA (SEQ. ID. NO.6)

wherein each of T, G, A and C represents a nucleotide and wherein all the sequences are in either a sense or an anti-sense orientation.

3. A compound which comprises at least the following sequence:

TTAGGATCCTGATGAGTCCGTGAGGACGAAA-
CTGGCTC (SEQ ID NO. 4)

wherein each of T, G, A and C represents a nucleotide and wherein the sequence is in either a sense or an anti-sense orientation.

5,712,385

DETECTION OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 1

Sherrol H. McDonough, San Diego; Thomas B. Ryder, Escondido, and Yeasing Yang, San Diego, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 40,745, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 379,501, Jul. 11, 1989, abandoned, and Ser. No. 550,837, Jul. 10, 1990, Pat. No. 5,480,784. This application Jun. 7, 1995, Ser. No. 479,852

Int. Cl.^{6} C07H *21/04;21/02;* **C12Q** *1/68*

U.S. Cl. 536—24.32 **46 Claims**

1. An oligonucleotide of 23 to 100 nucleotides comprising a sequence selected from the group consisting of:

(SEQ ID NO: 3) ATTTGCATGGCTGCTTGATGTCCCCCCACT,

(SEQ ID NO: 5) GTCATCCATCCTATTTGTTCCTGAAGGGTACTAGTAG,

(SEQ ID NO: 6) CTCCCTGACATGCTGTCATCATTTCTTCTAGTG,

(SEQ ID NO: 7) GTGGAAGCACATTGTACTGATATCTAATCCC,

(SEQ ID NO: 8) GCTCCTCTATTTTTGTTCTATGCTGCCCTATTTCTAA,

(SEQ ID NO: 9) CCTTTGTGTGCTGGTACCCATGC,

(SEQ ID NO: 11) AAAGCCTTAGGCATCTCCTATGGCAGGAA,

(SEQ ID NO: 13) CAAGGCAAGCTTTATTGAGGCTTAAGCAGTGGG,

(SEQ ID NO: 14) ATCTCTAGCAGTGGCGCCCGAACAGGGA,

(SEQ ID NO: 55) AGTGGGGGGACATCAAGCAGCCATGCAAAT,

(SEQ ID NO: 57) CTACTAGTACCCTTCAGGAACAAATAGGATGGATGAC,

(SEQ ID NO: 58) CACTAGAAGAAATGATGACAGCATGTCAGGGAG,

(SEQ ID NO: 59) GGGATTAGATATCAGTACAATGTGCTTCCAC,

(SEQ ID NO: 60) TTAGAAATAGGGCAGCATAGAACAAAAATAGAGGAGC,

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(SEQ ID NO: 61) GCATGGGTACCAGCACACAAAGG,
(SEQ ID NO: 63) TTCCTGCCATAGGAGATGCCTAAGGCTTT,
(SEQ ID NO: 65) CCCACTGCTTAAGCCTCAATAAAGCTTGCCTTG,
(SEQ ID NO: 66) TCCCTGTTCGGGCGCCACTGCTAGAGAT,
(SEQ ID NO: 69) AUUUGCAUGGCUGCUUGAUGUCCCCCCACU,
(SEQ ID NO: 71) GUCAUCCAUCCUAUUUGUUCCUGAAGGGUACUAGUAG,
(SEQ ID NO: 72) CUCCCUGACAUGCUGUCAUCAUUUCUUCUAGUG,
(SEQ ID NO: 73) GUGGAAGCACAUUGUACUGAUAUCUAAUCCC,
(SEQ ID NO: 74) GCUCCUCUAUUUUUGUUCUAUGCUGCCCUAUUUCUAA,
(SEQ ID NO: 75) CCUUUGUGUGCUGGUACCCAUGC,
(SEQ ID NO: 77) AAAGCCUUAGGCAUCUCCUAUGGCAGGAA,
(SEQ ID NO: 79) CAAGGCAAGCUUUAUUGAGGCUUAAGCAGUGGG,
(SEQ ID NO: 80) AUCUCUAGCAGUGGCGCCCGAACAGGGA,
(SEQ ID NO: 83) AGUGGGGGGACAUCAAGCAGCCAUGCAAAU,
(SEQ ID NO: 85) CUACUAGUACCCUUCAGGAACAAAUAGGAUGGAUGAC,
(SEQ ID NO: 86) CACUAGAAGAAAUGAUGACAGCAUGUCAGGGAG,
(SEQ ID NO: 87) GGGAUUAGAUAUCAGUACAAUGUGCUUCCAC,
(SEQ ID NO: 88) UUAGAAAUAGGGCAGCAUAGAACAAAAAUAGAGGAGC,
(SEQ ID NO: 89) GCAUGGGUACCAGCACACAAAGG,
(SEQ ID NO: 91) UUCCUGCCAUAGGAGAUGCCUAAGGCUUU,
(SEQ ID NO: 93) CCCACUGCUUAAGCCUCAAUAAAGCUUGCCUUG, and
(SEQ ID NO: 94) UCCCUGUUCGGGCGCCACUGCUAGAGAU,

wherein under hybridization assay conditions said oligonucleotide hybridizes to a nucleic acid from HIV-1 to form a detectable probe:target duplex and does not hybridize to non-target nucleic acid from Human Immunodeficiency Virus type 2, Human T-Cell leukemia virus type 1, Human T-cell virus type 2, and Human Hepatitis B virus serotype ADW to form a detectable probe:non-target duplex indicating the presence of said non-target nucleic acid under said conditions.

5,712,386

KITS FOR DETECTING A TARGET NUCLEIC ACID WITH BLOCKING OLIGONUCLEOTIDES

Chang-Ning J. Wang, Chelmsford, and Kai-Yuan Wu, Lowell, both of Mass., assignors to Biotronics Corporation, Lowell, Mass.

Division of Ser. No. 250,849, May 26, 1994, Pat. No. 5,567,583, which is a continuation-in-part of Ser. No. 808,463, Dec. 16, 1991, Pat. No. 5,348,853. This application May 4, 1995, Ser. No. 434,474

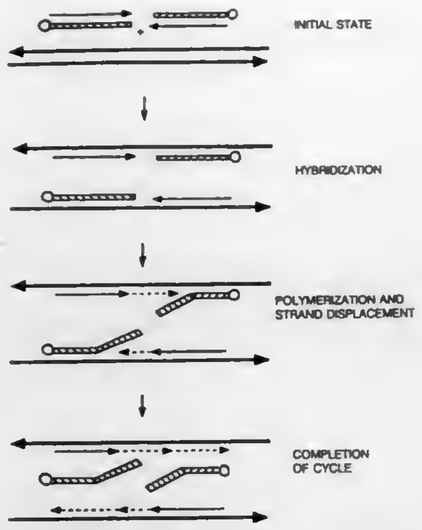
Int. Cl.^{6} C07H *21/04;* C12P *19/34*

U.S. Cl. 536—24.33 **18 Claims**

1. A kit for detecting a target nucleic acid, said kit comprising:

a first primer with or without a segment noncontiguous to a first priming sequence, and a second primer with or without a segment noncontiguous to a second priming sequence, which said first and second primers are to be used with a polymerase for the amplification of the target nucleic acid; and

an oligonucleotide which is incapable of acting as a primer for said polymerase and has at least 5 consecutive nucleotides fully complementary to at least 5 consecutive nucleotides of said first primer; wherein each of said first primer, said second primer and said oligonucleotide contains 10–50 nucleotides.



5,712,387

HIGH YIELD STEREOSPECIFIC MANNOSYLATION

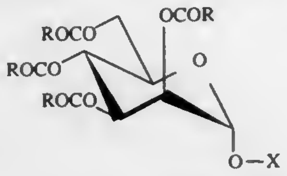
Ian L. Scott, Houston; Timothy P. Kogan, Sugarland, both of Tex., and Harold Meckler, Delmar, N.Y., assignors to Texas Biotechnology Corporation, Houston, Tex.

Filed May 20, 1996, Ser. No. 650,653

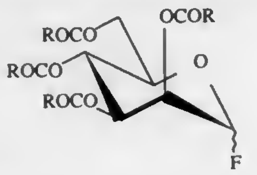
Int. Cl.^{6} C07H *113/02;1/00*

U.S. Cl. 536—119 **4 Claims**

1. A process of preparing a compound of the formula:



where X is alkyl or aryl and R is branched alkyl, aryl, aralkyl or OG where G is lower alkyl, branched alkyl, aryl or aralkyl, comprising reacting a mannosyl fluoride compound of the formula:



where R is as defined above, with a compound of the formula XOH in the presence of a Lewis acid where X is alkyl or aryl.

5,712,388

METHOD OF PREPARING A DERIVATIVE OF OPTICALLY ACTIVE AZETIDIN-2-ONE

Takaji Matsumoto; Toshiyuki Murayama, and Takashi Miura, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed May 13, 1996, Ser. No. 648,516

Claims priority, application Japan, May 11, 1995, 7-135614

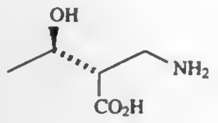
Int. Cl.^{6} C07D *205/08*

U.S. Cl. 540—362 **8 Claims**

1. A method of preparing a derivative of optically active azetidin-2-one comprising the steps of:

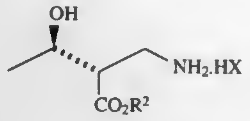
a) reacting (2S,3R)-2-aminomethyl-3-hydroxybutyric acid having formula (II):

(II)



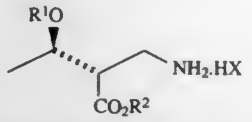
with an alcohol having 1 to 5 carbon atoms in the presence of at least one compound selected from the group consisting of thionyl chloride, hydrogen chloride and p-toluene sulfonic acid thereby obtaining a salt of (2S,3R)-2-aminomethyl-3-hydroxybutyric acid ester having formula (III):

(III)



where R^2 is an alkyl group having 1 to 5 carbon atoms and X is selected from the group consisting of a chlorine atom and a p-toluene sulfonyloxy group;

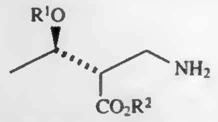
b) reacting said salt (III) with a tri-alkyl or aryl substituted silane compound in the presence of a metallic catalyst selected from the group consisting of palladium, palladium-carbon, palladium chloride, palladium acetate, palladium-alumina and palladium-silica-alumina, thereby obtaining a salt of (2S,3R)-2-aminomethyl-3-(tri-substituted silyloxy)butyric acid ester having formula (IV):



(IV)

where R^1 is a tri-alkyl or aryl substituted silyl group, and R^2 and X are as indicated in the preceding formula;

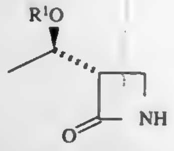
c) reacting said salt (IV) with a base selected from the group consisting of an alkali metal hydroxide or a basic alkyl metal salt thereby obtaining an ester of (2S,3R)-2-aminomethyl-3-(tri-substituted silyloxy)butyric acid having formula (V):



(V)

where R^1 and R^2 are as indicated in the preceding formula; and

d) transforming the said ester (V) into a lactam in the presence of a member selected from the group consisting of a Grignard reagent selected from the group consisting of alkyl, aralkyl or aryl magnesium halides and a lithium metal amide, thereby obtaining (1R,3S)-3-(tri-substituted silyoxyethyl)azetidin-2-one having formula (I):



(I)

where R^1 is as indicated in the preceding formula.

5,712,389

POLYAMINATED LIGANDS AND METAL COMPLEXES THEREOF

Dominique Meyer, Saint-Maur; Olivier Rousseaux, Senlis; Michel Schaefer, Lagny, and Christian Simonot, Paris, all of France, assignors to Guerbet S.A., Villepinte, France

Continuation of Ser. No. 366,732, Dec. 30, 1994, abandoned.

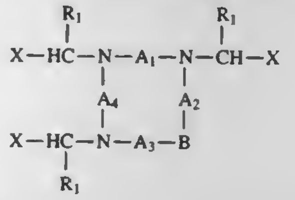
This application Feb. 28, 1997, Ser. No. 808,568

Claims priority, application France, Dec. 30, 1993, 93 15933

Int. Cl.^{6} C07D *403/04;* A61K *49/00*

U.S. Cl. 540—474 **18 Claims**

1. A macrocyclic compound of formula II



II

$$\begin{array}{ccccccccccccc} & & R_1 & & & & & & & & R_1 & & \\ & & | & & & & & & & & | & & \\ X & - & HC & - & N & - & A_1 & - & N & - & CH & - & X \\ & & & & | & & & & | & & & & \\ & & & & A_4 & & & & A_2 & & & & \\ & & & & | & & & & | & & & & \\ X & - & HC & - & N & - & A_3 & - & B & & & & \\ & & | & & & & & & & & & & \\ & & R_1 & & & & & & & & & & \end{array}$$

wherein

R_1 and X groups are identical or different,

X represents CO_2R_a, $CONR_bR_c$ or $P(R_d)O_2H$ and R_a, R_b and R_c, which are identical or different, represent H or optionally hydroxylated $(C_1–C_8)$ alkyl, R_4 represents OH, $(C_1–C_8)$alkyl or $(C_1–C_8)$alkoxy;

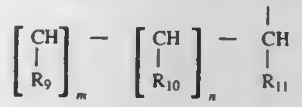
R_1 represents a group having a molecular weight greater than 200 selected from the group consisting of polyoxy$(C_2–C_3)$alkylene moiety with a molecular weight less than 150,000, polyol moiety with a molecular weight less than 20,000, monofunctionalized oligosaccharide moiety of 2 to 4 units, monofunctionalized polysaccharide moiety with a molecular weight less than 20,000 and $R_2—G—R_3$ in which

R_2 represents a covalent bond, alkylene, alkoxyalkylene, polyalkoxyalkylene, alkylene interrupted by phenylene, phenylene or a saturated or unsaturated heterocyclic moiety;

G represents an O, CO, OCO, COO, SO_3, OSO_2, CONR', NR'CO, NR'COO, OCONR', NR', NR'CS, CSNR', SO_2NR', $NR'SO_2$, NR'CSO, OCSNR', NR'CSNR', P(O)(OH)NR' or NR'P(O)(OH) functional group, in which R' is H, $(C_1–C_8)$alkyl or R_3;

R_3 represents alkyl, phenyl, alkyl substituted or interrupted by one or more groups selected from the group consisting of phenyl, alkyleneoxy, amino, amido, alkyl-substituted amino, and alkyl-substituted amido wherein alkyl is optionally substituted or interrupted by one or more groups selected from the group consisting of phenyl, alkyleneoxy, amino, amido, alkyl-substituted amino or alkyl-substituted amido; or R_3 is selected from the group consisting of an optionally monofunctionalized saccharide, oligosaccharide, peptide, biocompatible natural and synthetic macromolecule selected from the group consisting of polyoxy$(C_2–C_3)$ alkylene, polyether, polysaccharide, poly(aminoacid), protein, glycoprotein, oligomer and starburst polymer, and a molecule, capable of binding to an endogenous bioreceptor moiety, selected from the group consisting of a hormone, prostaglandin, steroid, antibody, lipid, arabinogalactan, glucose and glycoprotein without sialic acid,

A_1, A_2, A_3 and A_4, which are identical or different, represent



$$\left[\begin{array}{c} CH \\ | \\ R_9 \end{array}\right]_m - \left[\begin{array}{c} CH \\ | \\ R_{10} \end{array}\right]_n - \begin{array}{c} | \\ CH \\ | \\ R_{11} \end{array}$$

m and n being integers from 0 to 2, the sum of which has a value of 1 or 2, R_9, R_{10} and R_{11} independently represent H, alkyl, alkoxyalkyl, phenyl or phenylalkylene, and R_{10} may also represent OH or alkoxy or one of the R_9 and R_{11} groups represents the formula

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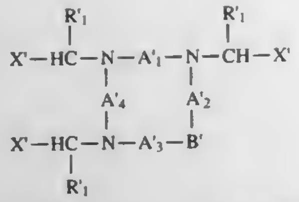


II'

in which the letters can have the meanings of the letters with the same index number of the formula II, with the exception of R'_9 or R'_{11} which is bonded to the macrocycle II and represents (C_1–C_8)alkylene, optionally substituted by one or more alkoxy groups,

B represents N-W and W represents H, alkyl, alkoxy-alkyl, optionally substituted amidoalkyl, or polyoxy-(C_2–C_3)alkylene wherein W is optionally additionally substituted with phenyl, (C_1–C_6)alkylene-Y, or Y, Y being a saturated or unsaturated heterocycle, optionally substituted by OH, alkyl, alkoxy, or alkoxyalkyl and selected from the group consisting of thiophene, furan, pyran, pyrrole, pyrrolidine, morpholine, piperazine, imidazole, pyridine, pyrimidine, pyrazine, pyrizadine, thiazole, oxazole, imidazoline, dioxan, tetrazole, benzofuran, indole, quinoline and more saturated and less saturated derivatives and isomers thereof, provided that when W represents Y, the carbon atom bonded to N is bonded to 2 carbon atoms of the heterocycle,

or, when R_9 and R_{11} are different from formula II', W may represent the formula II' in which the letters can have the meanings of the letters with the same index number of the formula II, with the exception of B' which represents N—(C_1–C_8)alkylene, optionally substituted by one or more alkoxy groups,

or W represents $CH(R_1)X$,

or A_2—B—A_3 represents a heterocyclic group in which B is a saturated or unsaturated heterocycle selected from the group consisting of thiophene, furan, pyrrole, pyrrolidine, pyridine, tetrahydrofuran, and tetrahydrothiophene, and A_2 and A_3 represent a group CH-R_e in which R_e is H or (C_1–C_6)alkyl,

wherein phenyl, phenylene and heterocyclic groups may be substituted by one or more OH, Cl, Br, I (C_1–C_8)alkyl, (C_1–C_8)alkoxy, NO_2, NR_xR_y, NR_xCOR_y, $CONR_xR_y$ or $COOR_x$, with R_x and R_y being H or (C_1–C_8)alkyl, and wherein linear, branched or cyclic C_1 to C_{14} alkyl, alkylene or alkoxy groups may be hydroxylated, with the proviso that at least 3 of the X groups are acid functional groups, or a salt thereof.

5,712,390

PROCESS FOR PREPARING 2-SUBSTITUTED BENZO [B] THIOPHENE COMPOUNDS AND INTERMEDIATES THEREOF

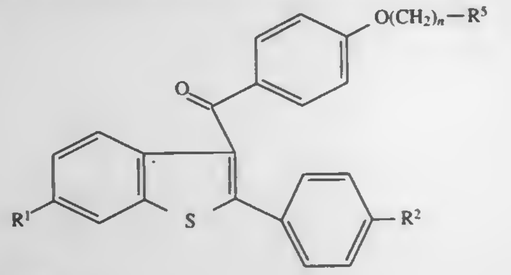
Kenneth L. Hauser, Greencastle; Alan D. Palkowitz, Carmel; Daniel J. Sall, Greenwood, and Kenneth J. Thrasher, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 415,014, Mar. 31, 1995, Pat. No. 9,614,639. This application Oct. 27, 1995, Ser. No. 549,596

Int. Cl.^{6} C07D *409/12;413/12;333/52;333/56*

U.S. Cl. 540—596 **10 Claims**

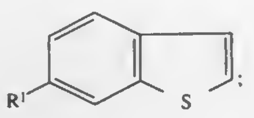
1. A process for preparing a compound of formula VII



VII

comprising

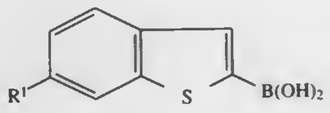
a) forming a 2-position boronic acid derivative of a compound of formula II



II

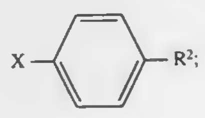
and

b) coupling the reaction product from step a), a compound of formula III



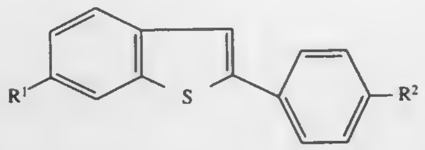
III

with a compound of formula IV



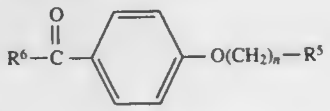
IV

c) acylating the reaction product from step b) a compound of formula I



I

with a compound of formula VIII



VIII

wherein

R^1 is —H, —OH, or —OR^3, in which R^3 is a hydroxy protecting group;

R^2 is —H, —OH, or OR^4, in which R^4 is a hydroxy protecting group;

R^5 is 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, dimethylamino, diethylamino, diisopropylamino, or 1-hexamethyleneimino;

R^6 is bromo, chloro, iodo, or an activating ester group;

n is 2 or 3; and

X is bromo, iodo, or triflate;

d) optionally removing the R^3 and/or R^4 hydroxy protecting groups; and

e) optionally forming a pharmaceutically acceptable salt of said formula VII compound.

5,712,391

SILICONE DERIVATIVES, THEIR PRODUCTION AND USE

Hiroyuki Ohno; Natsue Kawahara, both of Tokyo; Isaburo Amano, Chiba; Takanao Suzuki, Kanagawa, and Koji Chiba, Chiba, all of Japan, assignors to Chiba Flour Milling Co., Ltd., Mihama-Ku, Japan

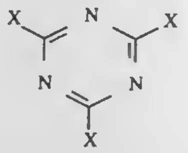
Filed Jun. 28, 1996, Ser. No. 671,001

Claims priority, application Japan, Jun. 30, 1995, 7-165886

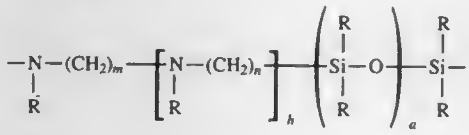
Int. Cl.^{6} C07D *251/00;251/40;251/54;* **C07F** *7/04*

U.S. Cl. 544—194 **17 Claims**

1. A compound represented by the formula:



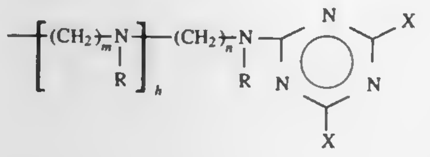
wherein at least one X is



and each remaining X is independently selected from the group consisting of hydrogen, halogen, hydroxyl, amino which may be substituted by a linear or branched alkyl group of 1 to 6 carbon atoms, carboxyl, alkyl having 1 to 6 carbon atoms, and alkoxy having 1 to 6 carbon atoms;

each R, which may be the same or different, represents hydrogen or a linear, branched-chain or cyclic hydrocarbon group of 1 to 8 carbon atoms; m, n and h each represents integers from 1 to 6; "a" represents an integer from 1 to 400; and

wherein B is R or



5,712,392

CERTAIN 4-PIPERIDINE- AND PIPERAZINOALKYL-2-PHENYL IMIDAZOLE DERIVATIVES; DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

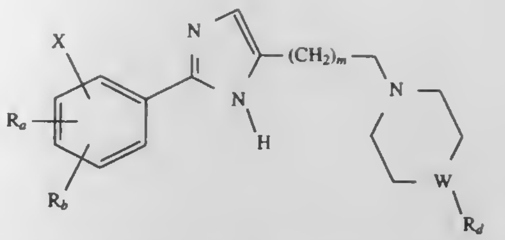
Andrew Thurkauf, Danbury; Raymond F. Horvath, North Branford; Jun Yuan, Clinton, and John M. Peterson, New Haven, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 344,154, Nov. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 81,317, Nov. 8, 1993, Pat. No. 5,428,164, which is a continuation-in-part of Ser. No. 635,256, Dec. 28, 1990, Pat. No. 5,159,083. This application Jun. 5, 1995, Ser. No. 464,548

Int. Cl.^{6} C07D *403/04;403/06;401/04;401/06;233/64;* **A61K** *31/415*

U.S. Cl. 544—295 **4 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein

W is nitrogen, COH or CH;

R_a and R_b independently represent hydrogen or alkoxy;

X is halogen or hydrogen

m is 0, 1, or 2; and

R_d is pyridyl, pyrimidinyl, phenylalkyl, or phenyl, each of which is unsubstituted or substituted with halogen, hydroxy, lower alkyl or lower alkoxy.

5,712,393

DERIVATIVES OF 2-AMINOBENZENESULPHONIC ACID AND OF 2-AMINOBENZENESULPHONYL CHLORIDE, THEIR PREPARATION AND THEIR USE AS SYNTHETIC INTERMEDIATES

Jean Michel Altenburger, Meudon, and Gilbert Lassalle, Clamart, both of France, assignors to Synthelabo, Le Plessis Robinson, France

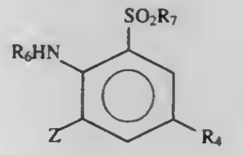
Filed Nov. 24, 1995, Ser. No. 562,455

Claims priority, application France, Nov. 25, 1994, 94 14129

Int. Cl.^{6} A61K *31/505;31/44;31/425;31/38;* **C07D** *239/02;213/62;213/72;277/22;277/32;333/12;333/30;* **C07C** *15/12*

U.S. Cl. 544—316 **3 Claims**

1. A compound of formula (1)



(1)

in which:

R_4 represents a hydrogen atom, a halogen atom or a nitro group;

R_6 represents a hydrogen atom or a straight or branched (C_1-C_6) alkyl group;

R_7 represents a chlorine atom or a hydroxyl group; and

Z represents a 5- to 6-membered heterocyclic ring bonded to the phenyl nucleus of formula I thru a carbon atom in the heterocyclic ring and having one or more heteroatoms, which may be the same or different, selected from the group consisting of nitrogen oxygen and sulfur, optionally substituted with one or more halogen atoms, straight or branched (C_1-C_4) alkyl groups, straight or branched (C_1-C_4) alkoxy groups, or trifluoromethyl, formyl, —CH_2OR,

—CH_2OCOR, —CH_2CONRR', —CH_2ONCOR, —COOR, nitro, —NHR, —NRR' or —NHCOR groups, wherein R and R' are each, independently, a hydrogen atom or a (C_1-C_7) alkyl group.

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PROCESS FOR PREPARING 2,4,6-TRICHLOROPYRIMIDINE

Wilfried Hansmann, Leverkusen; Stefan Ehrenberg, Frankfurt, and Frank-Michael Stöhr, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 3, 1996, Ser. No. 656,746

Claims priority, application Germany, Jun. 9, 1995, 195 21 036.0

Int. Cl.^{6} C07D *239/30*

U.S. Cl. 544—334 **10 Claims**

1. Process for preparing 2,4,6-trichloropyrimidine, wherein in a first reaction step, barbituric acid is reacted, with phosphorus oxychloride whereby the reaction is carried out in the presence or absence of a catalyst and subsequently, in a second reaction step, with phosphorus pentachloride or with reactants forming the latter.

5,712,395

COMPOUNDS FOR THE TREATMENT OF DISORDERS RELATED TO VASCULOGENESIS AND/OR ANGIOGENESIS

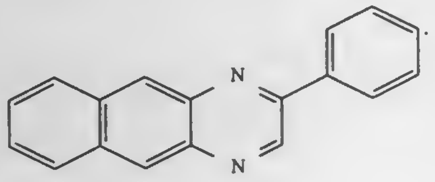
Harald App, Hillsborough; Gerald M. McMahon, San Francisco; Peng Cho Tang, Moraga, all of Calif.; Aviv Gazit, Jerusalem, Israel, and Alexander Levitzki, Patomic, Mass., assignors to Yissum Research Development Corp., Jerusalem, Israel, and Sugen, Redwood City, Calif.

Continuation-in-part of Ser. No. 193,829, Feb. 9, 1994, abandoned, , which is a continuation-in-part of Ser. No. 38,596, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 975,750, Nov. 13, 1992, abandoned. This application Feb. 9, 1995, Ser. No. 386,021

Int. Cl.^{6} C07D *241/38*

U.S. Cl. 544—344 **1 Claim**

1. The compound 2-phenyl-1,4-diazaanthracene having the structure:



5,712,396

ALPHA-PHOSPHONOSULFONATE SQUALENE SYNTHETASE INHIBITORS

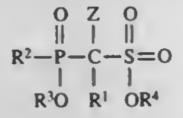
David R. Magnin, 40 Cottage Ct., Hamilton, N.J. 08690; Scott A. Biller, 136 Nancy La., Ewing, N.J. 08638; John K. Dickson, Jr., 105 Dawn Dr., Mount Holly, N.J. 08060; R. Michael Lawrence, 48 W. Crown Terrace, Yardley, Pa. 19067, and Richard B. Sulsky, 71 Gregory La., Franklin Park, N.J. 08823

Continuation of Ser. No. 109,762, Aug. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 967,904, Oct. 28, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 266,888

Int. Cl.^{6} C07F *9/38;9/553;9/6506;9/6512;* **A61K** *31/66*

U.S. Cl. 546—22 **26 Claims**

1. A compound having the structure



$$\begin{array}{ccccccc} & & O & & Z & & O \\ & & \| & & | & & \| \\ R^2 & - & P & - & C & - & S{=}O \\ & & | & & | & & | \\ & & R^3O & & R^1 & & OR^4 \end{array}$$

wherein R^2 is OR^5 or R^{5a},

R^3 and R^5 are independently H, alkyl, arylalkyl, aryl, cycloalkyl, metal ion or other pharmaceutically acceptable salt, or prodrug ester;

R^{5a} is H, alkyl, arylalkyl or aryl;

R^4 is H, alkyl, aryl, cycloalkyl, arylalkyl, metal ion, or other pharmaceutically acceptable salt, or prodrug ester;

R^1 is a lipophilic group containing at least 7 carbons;

Z is H, halogen, lower alkyl or lower alkenyl.

26. A combination comprising a compound as defined in claim I and a cholesterol lowering agent and/or a triglyceride lowering agent which is an antihyperlipoproteinemic agent, and/or antiatherosclerotic agent.

5,712,397

AMINO ACID DERIVATIVES, PROCESSES FOR PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Franz Esser, Ingelheim am Rhein; Gerd Schnorrenberg, Gau-Algesheim; Horst Dollinger, Ingelheim am Rhein; Birgit Jung, Bingen am Rhein; Erich Burger, Bingen am Rhein, and Georg Speck, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

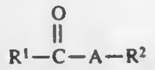
Continuation of Ser. No. 398,257, Mar. 3, 1995. This application Jun. 6, 1995, Ser. No. 467,428

Claims priority, application Germany, Mar. 3, 1994, 44 06 884.0

Int. Cl.^{6} C07D *491/56;221/06;215/227*

U.S. Cl. 546—90 **2 Claims**

I. An amino acid derivative of formula (I)

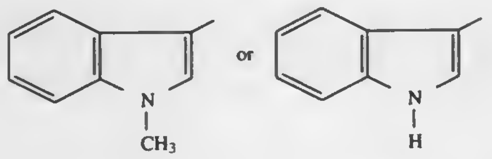


$$R^1-\overset{\overset{\displaystyle O}{\|}}{C}-A-R^2 \qquad (I)$$

or a pharmaceutically acceptable salt thereof,

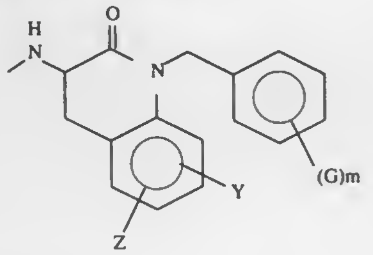
wherein

R1 is



A is 3,4-didehydroproline (Δ(3,4)-Pro), 3-hydroxyproline (Pro(3 OH)), 3-aminoproline (Pro (3NH$_2$)), 4-aminoproline (Pro(4NH$_2$)), 5-hydroxypiperidine-2-carboxylic acid, or 4-mercaptoproline (Pro(4SH))

and R^2 is an amino of formula II



wherein

G is fluorine, chlorine, bromine, methyl, ethyl or methoxy

m is an integer 1,2,3,4 or 5

Y and Z, independent of one another, are hydrogen, (C_{1-5}) alkyl, (C_{1-5})alkyloxy, benzyloxy, [wherein the phenyl group is unsubstituted or has 1, 2, or 3 substituents which, independently of each other, are (C_{1-5})alkyl, (C_{1-5})alkyloxy, dimethylamine, halogen, trifluoromethyl, —CN or —OCF_3], —OCF_3, halogen, —CF_3, —CN, —CH_2NH_2, —$CONH_2$,— N—$(C_{1-5}$-alkyl$)_2$, —NH—(C_{1-4})-alkylcarbonyl, —N—(C_{1-5})-alkyl-N-(C_{1-4})-alkylcarbonyl, —NH_2 or a —NH—(C_{1-5})-alkyl, or, if Y and Z are arranged vicinally to each other, they together represent —OCH_2O—, —OCH_2CH_2O— or —$(CH_2)_4$—.

5,712,398

Patent Not Issued For This Number

5,712,399

N-SUBSTITUTED PHENYLCARBAMIC ACID DERIVATIVES, A PROCESS FOR PRODUCTION THEREOF, AGRICULTURAL AND HORTICULTURAL FUNGICIDES, INTERMEDIATES OF THE DERIVATIVES AND A PROCESS FOR PRODUCTION THEREOF

Masanobu Ohnishi, Oak Park, Ill.; Sohkichi Tajima, Osaka, Japan; Tsutomu Nishiguchi, Kawachinagano, Japan, and Kenji Tsubata, Ibaraki, Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

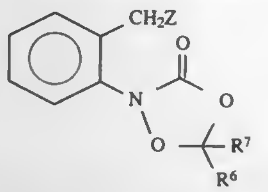
Division of Ser. No. 529,048, Sep. 15, 1995, Pat. No. 5,650,434. This application Mar. 13, 1997, Ser. No. 816,969

Claims priority, application Japan, Oct. 1, 1994, 6-261083

Int. Cl.^{6} C07D *273/01*

U.S. Cl. 548—124 **3 Claims**

2. A compound represented by the general formula (V):



(V)

wherein R^6 and R^7, which may be the same or different, are hydrogen atoms, (C_{1-6})alkyl groups, (C_{3-6})cycloalkyl groups, unsubstituted phenyl groups, or substituted phenyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group and (C_{1-6})alklyl groups, R^6 and R^7 being able to be taken together to represent a (C_{2-6})alkylene group, and Z is a halogen atom.

5,712,400

PROCESS FOR PREPARATION OF 5-HYDROXYMETHYLTHIAZOLE

M. Robert Leanna, Grayslake; Howard E. Morton, Gurnee, both of Ill., and Michael S. Allen, Silver Lake, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 343,690, Nov. 22, 1994, abandoned. This application May 22, 1996, Ser. No. 651,439

Int. Cl.^{6} C07D *277/24;277/22*

U.S. Cl. 548—202 **20 Claims**

I. A process for preparing 5-hydroxymethylthiazole comprising:

(a) reacting 2-chloro-5-chloromethylthiazole with a carboxylic acid salt;

(b) reacting the resulting product of step (a) with an ester hydrolyzing agent; and

(c) dechlorinating the product of step (b).

5,712,401

PROCESSES FOR PREPARING THIOXANTHONE AND DERIVATIVES THEREOF

Amy Lisa Bearson; John Robert Ira Eubanks, both of Ocean Springs; Alan Daniel Farmer, Biloxi, all of Miss.; Franklin Dewitt Ford, Grand Bay, Ala.; Diana Boney Haydel, Ocean Springs, Miss., and August John Muller, Mobile, Ala., assignors to First Chemical Corporation, Pascaquola, Mich.

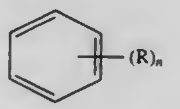
Filed Apr. 29, 1996, Ser. No. 641,165

Int. Cl.^{6} C07D *335/12;* **C08F** *2/50*

U.S. Cl. 549—27 **16 Claims**

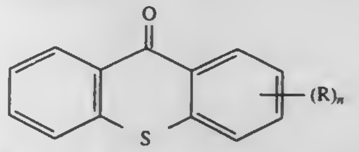
1. A process for preparing thioxanthone and derivatives thereof, comprising:

reacting a compound of Formula (I)



(I)

wherein R is independently selected from the group consisting of H, halogen, C1 to C10 alkyl, C6 to C10 aryl, C7 to C24 alkylaryl, and C1 to C10 alkoxy, and n is 1 to 4, with thiosalicylic acid (TSA) or dithiosalicylic acid (DTSA) in the presence of sulfuric acid to form a reaction mixture that includes a substantially non-volatile compound of Formula (II)



(II)

wherein R and n are the same as defined above;

adding water to said reaction mixture in an amount less than an amount sufficient to precipitate said compound of Formula (II);

extracting said compound of Formula (II) from said reaction mixture with an organic solvent to form an organic extract product; and

distilling said organic extract product under conditions sufficient to separate the compound of Formula (II) from said organic extract product.

5,712,402

CATALYTIC APPLICATIONS OF MESOPOROUS METALLOSILICATE MOLECULAR SIEVES AND METHODS FOR THEIR PREPARATION

Thomas J. Pinnavaia; Peter T. Tanev; Wenzhong Zhang; Jialiang Wang, all of East Lansing, and Malama Chibwe, Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 355,979, Dec. 14, 1994, and Ser. No. 293,806, Aug. 22, 1994, abandoned. This application Mar. 23, 1995, Ser. No. 409,173

Int. Cl.^{6} C07C *50/02*

U.S. Cl. 552—309 **20 Claims**

1. A process for catalytic peroxide oxidation or hydroxylation reaction of organic molecules to form a reaction product which comprises:

a) providing a mesoporous metal silicate molecular sieve composition with hexagonal mesopores, wherein the metal is present in place of some of the silicon in the silicate and capable of undergoing a change of oxidation number in an oxidation or reduction reaction, having a framework wall thickness of at least about 17 Å, an x-ray scattering domain size of less than about 400 Å, a ratio of textural to framework-confined mesopores of at least about 0.2 and a specific surface area of 300 to 1500 square meters per gram prepared from a neutral template which forms the mesopores which is removed from the composition;

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b) mixing the mesoporous silicate molecular sieve composition with an organic substrate at a temperature from 0° to 100° C. to form a mixture;

c) adding an oxygen containing oxidant to the mixture;

d) performing said reaction in a liquid phase at temperatures between 0° and 100° C. for at least 10 min to produce the reaction product;

e) separating the reaction product from the the reaction media.

5,712,403

PHOSPHONITE COMPOUNDS AND THEIR COMPLEXES

Keiichi Sato; Yoko Seto, and Iwao Nakajima, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

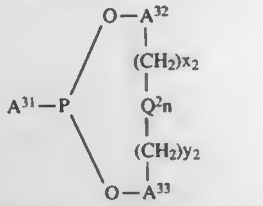
Division of Ser. No. 475,619, Jun. 7, 1995, Pat. No. 5,600,032. This application Oct. 8, 1996, Ser. No. 727,042

Claims priority, application Japan, May 29, 1994, 6-147732

Int. Cl.^{6} C07F *9/02;15/00*

U.S. Cl. 556—19 **10 Claims**

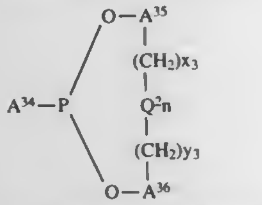
1. A phosphonite compound of the formula (7):



(7)

wherein A^{31} is an aryl group or an alkyl group, which may be substituted, provided that the alkyl groups has no branch at the β-position, each of A^{32} and A^{33} is an arylene group having an alkyl substituent and A^{32} and A^{33} are not the same, each of x^2 and y^2 which are independent of each other, is an integer of 0 or 1, Q^2 is a bivalent linking group of the formula $—CR^{41}R^{42}—$, —O—, —S—, $SO_2—$, $—NR^{43}—$, $—SiR^{44}R^{45}—$ or —CO—, each of R^{41} and R^{42} which are independent of each other, is hydrogen, a C_{1-12} alkyl group, a phenyl group, a tolyl group or an anisyl group, and each of R^{43}, R^{44} and R^{45} which are independent of one another, is hydrogen or a methyl group, and n is an integer of from 0 to 1.

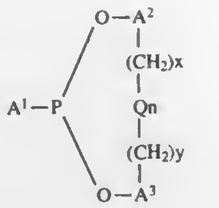
2. A phosphonite compound of the formula (8):



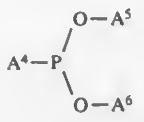
(8)

wherein A^{34} is an alkyl group or an aralkyl group, which has a branch at the β-position, each of A^{35} and A^{36} which are independent of each other, is an arylene group which may be substituted, each of x^3 and y^3 which are independent of each other, is an integer of 0 or 1, Q^2 is a bivalent linking group of the formula $—CR^{46}R^{47}—$, —O—, —S—, $—SO_2—$, $—NR^{48}—$, $—SiR^{49}R^{50}—$ or —CO—, each of R^{46} and R^{47} which are independent of each other, is hydrogen, a C_{1-12} alkyl group, a phenyl group, a tolyl group or an anisyl group, each of R^{48}, R^{49} and R^{50} which are independent of one another, is hydrogen or a methyl group, and n is an integer of 0 or 1.

5. A bis(phosphonite)palladium complex comprising a phosphonite compound of the formula (1) or (2);



(1)



(2)

wherein each of A^1 and A^4, which are independent of each other, is an aryl group or an alkyl group, which may be substituted, each of A^5 and A^6, which are independent of one another, is an aryl group which may be substituted, each of A^2 and A^3, which are independent of one another, is an arylene group which may be substituted, each of x and y which are independent of one another, is an integer of 0 or 1, Q is a bivalent linking group of the formula $—CR^1R^2—$, —O—, —S—, $—SO_2—$, $—NR^3—$, $—SiR^4R^5—$ or —CO—, each of R^1 and R^2 which are independent of each other, is hydrogen, a C_{1-12} alkyl group, a phenyl group, a tolyl group or an anisyl group, each of R^3, R^4 and R^5, which are independent of one another, is hydrogen or a methyl group, and each of n, m and k, which are independent of one another, is an integer of 0 or 1.

5,712,404

CYCLOPENTADIENYL-TYPE LIGANDS, METALLOCENE COMPOUNDS CATALYST SYSTEMS, PREPARATION AND USE

Bernd Peifer; Helmut G. Alt, both of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 15, 1995, Ser. No. 441,166

Int. Cl.^{6} C09F *17/00*

U.S. Cl. 556—53 **24 Claims**

1. A process for preparing a metallocene compound said process comprising reacting a fulvene-type compound, an alkali metal compound, and a transition metal-containing compound:

wherein said fulvene-type compound contains two cyclopentadienyl-type groups, wherein said cyclopentadienyl-type groups which are bridged by a bridging group, wherein said bridging group contains at least one unsaturated carbon—carbon bond, and wherein said at least one unsaturated carbon—carbon bond is attached to at least one of said cyclopentadienyl-type groups, and wherein said bridging group reacts to form an aliphatic acyclic structural connection between said two cyclopentadienyl-type groups,

wherein said cyclopentadienyl-type groups are cyclopentadienyl, substituted cyclopentadienyl, indenyl, substituted indenyl, fluorenyl, substituted fluorenyl, tetrahydroindenyl, or octahydrofluorenyl groups,

wherein said substituents are hydrocarbyl groups containing 1 to 12 carbon atoms, alkoxy groups containing 1 to 12 carbon atoms, silyl groups, alkyl halide groups where said alkyl contains 1 to 12 carbon atoms, or halide;

wherein said alkali metal compound is a hydrocarbyl compound of sodium, potassium, or lithium, wherein said hydrocarbyl group contains from 1 to 12 carbon atoms; and

wherein said transition metal-containing compound is represented by the formula MX_x, wherein M is a Group IVB or VB transition metal, each X is individually selected from the group consisting of hydrocarbyl groups containing 1 to 12 carbon atoms, alkoxy groups containing 1 to 12 carbon atoms, aryloxy groups containing 6 to 12 carbon atoms, halide and hydride, and x is the valence of the transition metal.

5,712,405

PREPARATION OF SILANES

Hiroshi Nakayama; Hiroshi Tsumura, both of Annaka; Tetsuo Nakanishi, Usui-gun, and Yukinori Satoh, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1997, Ser. No. 781,207

Claims priority, application Japan, Jan. 12, 1996, 8-022111

Int. Cl.^{6} C07F *7/16*

U.S. Cl. 556—472 **13 Claims**

1. A process for preparing a silane of the general formula

$$R_nSiX_{4-n} \qquad (1)$$

wherein R is a lower alkyl group having 1 to 4 carbon atoms, X is a halogen atom, and letter n is an integer of 0 to 4, using a fluidized bed reactor equipped with a feed line for reactant gas and a delivery line for product gas, comprising the steps of

charging the fluidized bed reactor with a contact mass comprising metallic silicon powder and a copper catalyst,

feeding a reactant gas containing an alkyl halide through the feed line into the reactor at a linear velocity and a density such that the linear velocity multiplied by the density ranges from 0.2 to 2 $kg/m^2·sec$ whereby the silane is formed by direct synthesis,

delivering the product gas out of the reactor through the delivery line, some of the contact mass being carried over along with the product gas,

collecting the contact mass by means of a dust collector connected to the delivery line, and

feeding the collected contact mass back to the reactor.

5,712,406

METHOD OF EXTRACTIVE SEPARATION OF DIARYL CARBONATES AND THE ORIGINAL AROMATIC HYDROXY COMPOUNDS FROM REACTION SOLUTIONS

Hans-Josef Buysch; Carsten Hesse, both of Krefeld, and Johann Rechner, Kempen, all of Germany, assignors to Bayer Aktiengesellschaft

Filed Feb. 5, 1997, Ser. No. 794,435

Int. Cl.^{6} C07C *68/08*

U.S. Cl. 558—274 **7 Claims**

1. A method of simultaneously separating a diaryl carbonate having the formula

$$R^1—O—CO—O—R^1 \qquad (I)$$

and the original aromatic hydroxy compound having the formula

$$R^1—OH \qquad (II),$$

wherein

R^1 denotes $C_6–C_{12}$ aryl, $HO—C_6H_4—C_1–C_6$-alkylidene-C_6H_4— or $C_6–C_{12}$-aryl substituted once or twice in each aryl ring by $C_1–C_4$-alkyl, $C_1–C_4$-alkoxy or halogen or similarly substituted $HO—C_6H_4—C_1–C_6$-alkylidene-C_6H_4,

from crude reaction mixtures for oxidatively reacting the aromatic hydroxy compound (II) with carbon monoxide in the presence of a catalyst system containing noble metal, comprising the steps of (1) mixing the crude reaction mixture with a proportion by weight of 0.1–20 parts, per part of reaction mixture, with a covalent aprotic extraction agent at 20°–150° C. and 1–200 bar, whereafter spontaneous phase separation into a lower donor phase and an upper recipient phase is brought about at 20°–150° C. and (2) isolating the diaryl carbonate (I) and the aromatic hydroxy compound from the recipient phase.

5,712,407

METHOD FOR THE PREPARATION OF ALPHA-CHLORINATED CHLOROFORMATES

Charles B. Kreutzberger, Pittsburgh; Seetha Eswarakrishnan, Allison Park, and Suresh B. Damle, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 14, 1997, Ser. No. 782,991

Int. Cl.^{6} C07C *68/02;69/96*

U.S. Cl. 558—283 **12 Claims**

1. In the method of synthesizing alpha-chlorinated chloroformate by the reaction of phosgene with an aldehyde in the presence of a catalyst, the improvement wherein the catalyst is selected from the group consisting of: tetrasubstituted guanidine, pentasubstituted guanidine, hexasubstituted guanidinium halide, substituted biguanidinium halide, phenyldialkyliminiumtetraalkylguanidinium halide, dialkylimidazoliniumtetraalkylguanidinium halide, phenyltetraalkylamidinium halide, N,N-dialkyl-N'-alkylpyrrolidinium halide and the hydrochloride or hydrobromide salts of such catalysts, the halide of such catalysts being the chloride or bromide.

5,712,408

DIAMINOMALEONITRILE DERIVATIVE COMPOUNDS, POLYMERS, AND METHOD OF PRODUCING SAME

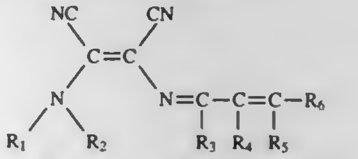
Paul G. Rasmussen; Sarah E. Reybuck; Taeseok Jang, and Richard G. Lawton, all of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Aug. 20, 1996, Ser. No. 709,441

Int. Cl.^{6} C07C *251/12*

U.S. Cl. 558—446 **8 Claims**

1. A compound of the formula 1:



FORMULA I

where R_1, R_2, R_4, R_5, and R_6 are identical or different and are each independently selected from hydrogen, and substituted or unsubstituted alkyl having 1 to 4 carbons, R_3 is hydrogen, and where at least one of said R_1 through R_6 is selected from said alkyl.

5,712,409

NAPHTHYL AND ETHER CHAIN-CONTAINING CARBOXYL DERIVATIVES

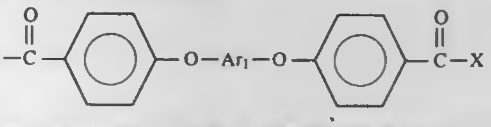
Guey-Sheng Liou, Hsinchu; Sheng-Huei Hsiao, and Jen-Chang Yang, both of Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Aug. 14, 1996, Ser. No. 702,388

Int. Cl.^{6} C07C *69/773;63/22;51/60;63/38*

U.S. Cl. 560—56 **5 Claims**

1. A napththyl and ether chain-containing carboxy derivative having the following formula:



(I)

wherein X represents CL, OH or OR wherein R is a $C_1–C_6$ alkyl and Ar_1 represents:

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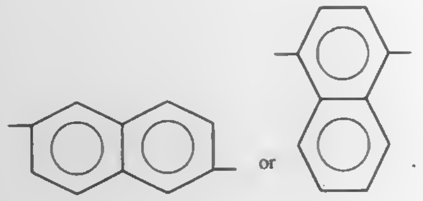


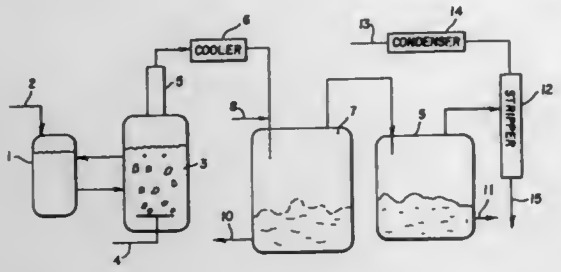
5,712,410
GAS PHASE CRYSTALLIZATION OF DIMETHYL TEREPHTHALATE

Andrius A. Naujokas, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1997, Ser. No. 811,085

Int. Cl.^{6} C07C *67/60*

U.S. Cl. 560—78 **6 Claims**



1. A process for recovering monomer components from polyethylene terephthalate polyester, the process comprising the steps of:

a) reacting scrap polyethylene terephthalate polyester oligomers melt with alcohol at a temperature at 230° C. to 290° C. by passing excess alcohol vapor through the melt;

b) obtaining the gas phase reactor product of DMT and EG;

c) directly crystallizing DMT from the gas phase reactor by introducing an inert gas to the reactor product stream at a temperature of from 20° C. to 90° C.; and

d) collecting the resulting DMT crystals and condensing the ethylene glycol and alcohol vapor in a separate condenser.

5,712,411
N-VINYLFORMAMIDOPROPIONATES AND PROCESS FOR THEIR SYNTHESIS

Ning Chen, Allentown; Walter Louis Renz, Macungie; Robert Krantz Pinschmidt, Jr., Allentown, and William Eamon Carroll, Orefield, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 14, 1995, Ser. No. 572,416

Int. Cl.^{6} C07C *229/30*

U.S. Cl. 560—172 **9 Claims**

1. A process for preparing N-vinylformamidopropionates comprising reacting N-vinylformamide with an acrylic or methacrylic acid ester in the presence of a metal hydride catalyst.

5,712,412
PROCESS FOR PRODUCING HIGHLY PURE TEREPHTHALIC ACID

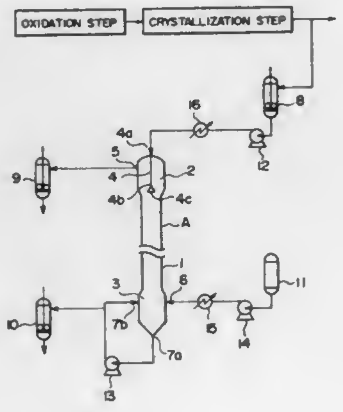
Masato Inary; Fumio Ohkoshi, and Fumiya Zaima, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo; Toyo Boseki Kabushiki Kaisha, Osaka, and Mizushima Aroma Company, Ltd., Kurashiki, all of Japan

Filed Nov. 27, 1995, Ser. No. 562,764

Claims priority, application Japan, Dec. 26, 1994, 6-321950

Int. Cl.^{6} C07C *51/42*

U.S. Cl. 562—485 **4 Claims**



1. A method for replacing a dispersion medium wherein an original slurry comprising solid particles and an original dispersion medium is introduced in a dispersion medium replacement column at the top portion thereof, a replacing dispersion medium is introduced in said column at the bottom portion thereof to replace the original dispersion medium contained in the original slurry with the replacing dispersion medium, the resultant replaced slurry comprising the solid particles and the replacing dispersion medium is taken out from said column at the bottom portion thereof, and the original dispersion medium is taken out from said column at the top portion thereof, which method comprises stirring the internal slurry in the bottom portion of said column to maintain the slurry as uniform as possible, and controlling the feed rate of the replacing dispersion medium and the discharge rate of the replaced slurry so as to maintain the internal slurry in the bottom portion of said column at a concentration higher than that of the internal slurry in the intermediate portion of said column.

5,712,413
PROCESS FOR THE PREPARATION OF N-HYDROCARBYL-SUBSTITUTED AMIDES SUCH AS TERT-BUTYLACRYLAMIDE VIA THE RITTER REACTION USING SOLID HETEROPOLYACID CATALYSTS

James D. Burrington, Mayfield Village; Douglas C. Rhubright, Chardon, and Chester E. Ramey, Bainbridge Township, Geauga County, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 4, 1996, Ser. No. 757,407

Int. Cl.^{6} C07C *231/06*

U.S. Cl. 564—131 **68 Claims**

1. A process for the preparation of a hydrocarbyl-substituted amide, comprising contacting:

(a) a nitrile with

(b) a hydrocarbylating agent, in the presence of

(c) a catalyst comprising a heteropolyacid or salt thereof

under conditions leading to the formation of the hydrocarbyl-substituted amide.

5,712,414
HYDROXYCARBOXYLIC ACID ANILIDES

Andreas Dierdorf, and Theodor Papenfuhs, both of Frankfurt, Germany, assignors to Hoechst Aktiengesellschaft, Germany

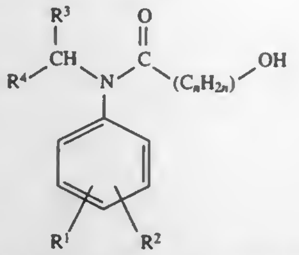
Filed Jul. 10, 1996, Ser. No. 677,515

Claims priority, application Germany, Jul. 10, 1995, 195 25 098.2

Int. Cl.^{6} C07C *231/02*

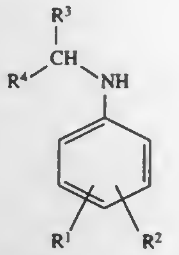
U.S. Cl. 564—138 **22 Claims**

1. A process for the preparation of hydroxycarboxylic acid amides of the general formula (1):



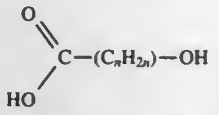
(1)

in which R^1 and R^2 are identical or different and are hydrogen, halogen, cyano, a linear or branched alkyl, alkenyl, alkynyl or alkoxy group having 1 to 12 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, a cycloalkyl group having 6 to 12 carbon atoms or an aryl group having 6 to 12 carbon atoms, R^3 is hydrogen or a linear or branched alkyl group having 1 to 4 carbon atoms, R^4 is hydrogen or a linear or branched alkyl group having 1 to 6 carbon atoms, or R^3 and R^4, together with the carbon atom to which they are attached, form a five- or six-membered cycloalkane ring, and n is an integer from 1 to 12, which comprises reacting an aniline of the general formula (2)



(2)

in which R^1, R^2, R^3 and R^4 are as defined in the formula (1), is reacted with a hydroxycarboxylic acid of the general formula (3):



(3)

in which n is as defined in the formula (1), optionally in the presence of an inert solvent, at 150° to 250° C., and the constituents which are volatile under the reaction conditions are distilled out of the reaction mixture.

5,712,415
PROCESS FOR THE SIMULTANEOUS SELECTIVE HYDROGENATION OF DIOLEFINS AND NITRILES

Magdalena Ramlrez De Agudelo; Zaida C. Hernandez, both of Caracas, Venezuela, and Alejandro Granado, Miranda, Brazil, assignors to Intevep, S.A., Venezuela

Continuation-in-part of Ser. No. 585,950, Jan. 16, 1996, Pat. No. 5,663,446, which is a division of Ser. No. 354,969, Dec. 13, 1994, Pat. No. 5,523,271. This application Jan. 29, 1997, Ser. No. 789,398

Int. Cl.^{6} C07C *209/00*

U.S. Cl. 564—490 **11 Claims**

1. A process for the simultaneous and selective hydrogenation of diolefins and nitriles from a hydrocarbon feedstock, comprising the steps of:

(a) providing a hydrocarbon feedstock having a diolefin content of greater than or equal to about 0.1 wt % and a nitrile content of greater than or equal to about 2 ppm (wt);

(b) providing a catalyst in a reactor, the catalyst comprising:

  (1) a support material selected from the group consisting of an inorganic oxide-zeolite composite, carbon and zeolite;

  (2) a catalytically active metal phase selected from the group consisting of partially reduced Group IB metals and completely reduced Group VIII metals, said active metal being present in an amount of greater than or equal to about 0.03 wt %;

(c) feeding a stream of said hydrocarbon feedstock and a stream of hydrogen in countercurrent flow to said reactor so as to mix said hydrocarbon feedstock with said hydrogen in the presence of said catalyst at a temperature and pressure so as to selectively and simultaneously react said diolefins and said nitriles with said hydrogen, thereby providing a treated hydrocarbon wherein said diolefin content and said nitrile content are reduced.

5,712,416
PREPARATION OF BENZOQUINONES BY OXIDATION OF PHENOLS

Thomas Gessner, Heldelberg, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

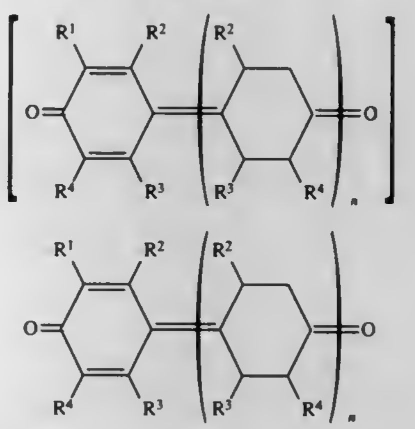
Continuation of Ser. No. 360,368, Dec. 21, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 562,639

Claims priority, application Germany, Dec. 21, 1993, 43 43 667.6

Int. Cl.^{6} C07C *46/02;46/04;46/06;46/08*

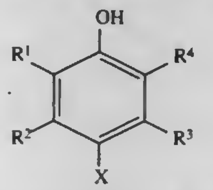
U.S. Cl. 568—31 **10 Claims**

1. A process for preparing benzoquinones of the formula I



(I)

where R, R^2, R^3 and R^4 are, independently of one another, each hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, aryloxy, C_1–C_4-alkylsulfonyl, arylsulfonyl, hydroxysulfonyl, hydroxyl or halogen, and n is 0 or 1, by oxidizing a phenol of the formula II



(II)

where X is hydrogen or hydroxyl, and R^1, R^2, R^3 and R^4 each have the above-mentioned meanings, using an oxidizing agent selected from the group consisting of oxygen, hydrogen peroxide, a compound which liberates hydrogen peroxide, an organic hydroperoxide, a percarboxylic acid or peroxomonosulfuric acid or salts thereof in the presence of a diluent containing acid other than the recited reactants and from about 0.1 to 5 mol % based on the phenol of formula II of an oxygen-transferring catalyst selected from the group consisting of iron, manganese and chromium dihydrodibenzotetraaza(14)annulenes.

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5,712,417
INHIBITORS OF RETROVIRAL PROTEASES

Karl-Heinz Budt, Kelkheim; Bernd Stowasser, Gross-Umstadt; Dieter Ruppert, Kronberg; Christoph Meichsner, Hofheim am Taunus; Arnold Paessens, Haan; Jutta Hansen, Wuppertal, and Jochen Knolle, Kriftel, all of Germany, assignors to Abbott Laboratories, Abbott Park, Ill.

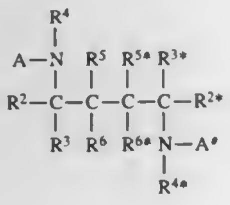
Continuation of Ser. No. 984,252, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 845,823, Mar. 6, 1992, abandoned, which is a continuation of Ser. No. 588,206, Sep. 26, 1990, abandoned. This application Jul. 11, 1994, Ser. No. 272,760

Claims priority, application Germany, Sep. 28, 1989, 39 32 390.0; Apr. 25, 1990, 40 13 149.1

Int. Cl.^{6} C07C *233/01;233/16;233/19;* **A61K** *31/165*

U.S. Cl. 564—154 **7 Claims**

1. A compound of the formula:



$$\begin{array}{ccccccc} & R^4 & & & & & \\ & | & & & & & \\ A- & N & R^5 & R^{5*} & R^{3*} & & \\ & | & | & | & | & & \\ R^2- & C- & C- & C- & C & -R^{2*} & \\ & | & | & | & | & & \\ & R^3 & R^6 & R^{6*} & N & -A^* & \\ & & & & | & & \\ & & & & R^{4*} & & \end{array}$$

wherein;

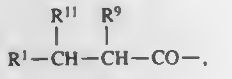
A is a radical of the formula D-G-, and

A^* is a radical of the formula D^*-G^*-,

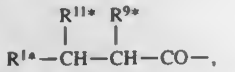
in which:

G and G^* are the same and are each an amino acid selected from the group consisting of Val and Ile; and

D is a radical of the formula VI and D^* is a radical of the formula VI^*:



$$\begin{array}{cccc} & R^{11} & R^9 & \\ & | & | & \\ R^1- & CH- & CH- & CO-, \end{array} \qquad (VI)$$



$$\begin{array}{cccc} & R^{11*} & R^{9*} & \\ & | & | & \\ R^{1*}- & CH- & CH- & CO-, \end{array} \qquad (VI^*)$$

where R^1 and R^{1*} are the same and are selected from the group consisting of $(C_1$–$C_{12})$-alkylsulfonyl optionally substituted with hydroxyl;

R^9 and R^{9*} are the same and are 1-naphthylmethyl or 2-naphthylmethyl; and

R^{11} and R^{11*} are each hydrogen;

R^2 and R^{2*} are the same and are selected from the group consisting of benzyl, 2-phenylethyl, 2-methylbenzyl, 3-methylbenzyl, 4-methylbenzyl, 2,4,6-trimethylbenzyl, 4-tert-butylbenzyl, 4-tert-butoxybenzyl, 4-hydroxybenzyl, 4-methoxybenzyl, 2,4-dimethoxybenzyl, 3,4-dihydroxybenzyl, and 3,4-dimethoxybenzyl;

R^3, R^{3*}, R^4, R^{4*}, R^6 and R^{6*} are each hydrogen; and

R^5 and R^{5*} are each hydroxyl;

or a physiologically tolerated salt of said compound.

5,712,418
SYNTHESIS AND USE OF AMINO ACID FLUORIDES AS PEPTIDE COUPLING REAGENTS

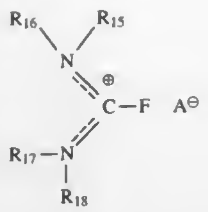
Louis A. Carpino, and Ayman Ahmed El-Faham, both of Amherst, Mass., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 426,121, Oct. 23, 1989, Pat. No. 5,360,928. This application Aug. 2, 1994, Ser. No. 284,964

Int. Cl.^{6} C07D *233/02;207/02;* **C07C** *257/14;257/18*

U.S. Cl. 564—225 **18 Claims**

1. A fluoroformamadinium salt of the formula:



wherein

R_{15}, R_{16}, R_{17} and R_{18} are independently lower alkyl, aryl, aryl lower alkyl, cycloalkyl, or cycloalkyl lower alkyl or

R_{15} and R_{16} taken together with the nitrogen atom to which they are attached form a 5- or 6-membered ring containing a nitrogen ring atom and 4 or 5 carbon ring atoms and up to a total of 10 carbon atoms, or

R_{17} and R_{18} taken together with the nitrogen atom to which they are attached form a 5- or 6-membered ring containing a nitrogen ring atom and 4–5 ring carbon atoms and up to a total of 10 carbon atoms or

R_{16} and R_{17} taken together with the nitrogen atoms to which they are attached and the carbon atom attached to said nitrogen atoms form a 5- or 6-membered ring containing 2 nitrogen ring atoms and 3–4 ring carbon atoms and up to a total of 10 carbon atoms and

A is a counterion.

5,712,419
METHOD OF MAKING COUPLED 4,6-DIBENZOYLRESORCINOLS

James Edward Pickett, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

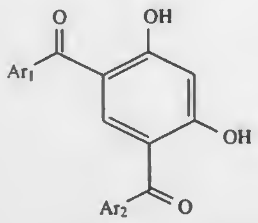
Filed Dec. 23, 1996, Ser. No. 780,031

Int. Cl.^{6} A61K *35/35*

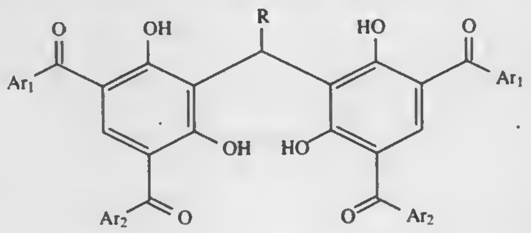
U.S. Cl. 568—313 **20 Claims**

1. An improved method of making a methylene-bridged dimer of a 4,6-dibenzoylresorcinol comprising the step of:

heating a mixture of a 4,6-dibenzoylresorcinol and about one-half molar equivalent or greater of an alkyl para-aldehyde or aromatic aldehyde with an acid in a solvent at a temperature between about 80° C. and reflux for a sufficient amount of time to make a methylene-bridged dimer of 4,6-dibenzoylresorcinol, said 4,6-dibenzoylresorcinol having the formula



where Ar_1 and Ar_2 are independently substituted or unsubstituted monocyclic or polycyclic aryl groups, and said methylene-bridged dimer of 4,6-dibenzoylresorcinol having the formula



where Ar_1 and Ar_2 are independently substituted or unsubstituted monocyclic or polycyclic aryl groups, and R is H, an aryl group or a linear or branched alkyl chain having less than about 10 carbons.

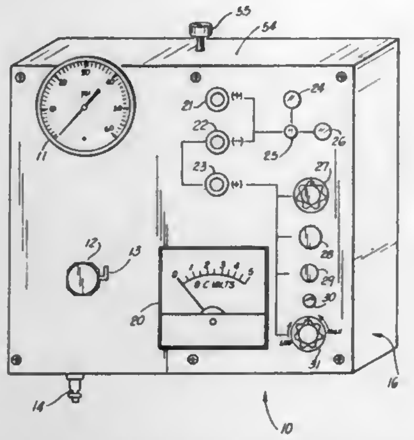
5,712,420
ON/OFF AND MODULATED/DUTY-CYCLED SOLENOID TESTER

Larry Schaffer, 5905 Magnolia La., Lakeland, Fla. 33809-6216

Filed Jun. 27, 1996, Ser. No. 671,523

Int. Cl.^{6} G01M *13/02*

U.S. Cl. 73—1.72 **7 Claims**



1. An apparatus having first and second test modes for testing a solenoid in a computer controlled transmission comprising:

(a) first connection means for connecting a first test mode circuit means to a positive side of the solenoid for said first test mode when the solenoid is of a first mode of operation;

(b) second connection means for connecting said first test mode circuit means and a second test mode circuit means to a negative side of the solenoid for said first test mode when the solenoid is of said first test mode of operation or for said second test mode when the solenoid is of a second mode of operation, wherein said first and second test modes are variable voltage and modulated/duty-cycled, respectively;

(c) third connection means for connecting said second test mode circuit means to the positive side of the solenoid for said second test mode when the solenoid is of said second mode of operation; and,

(d) switch means coupled to the second connection means wherein actuation of said switch means initiates a diode test through said second connection means to said first connection means.

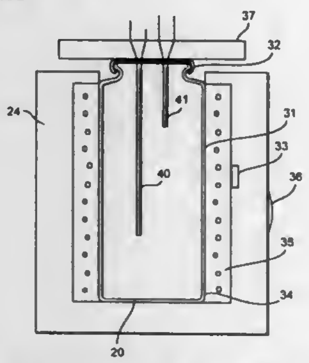
5,712,421
MOISTURE ANALYZER

Walfred R. Raisanen, Paradise Valley, Ariz., assignor to Arizona Instrument Corporation, Phoenix, Ariz.

Filed Jan. 30, 1996, Ser. No. 593,834

Int. Cl.^{6} G01N *7/00*

U.S. Cl. 73—19.01 **34 Claims**



1. An analyzer for determining the amount of a volatile fluid in a test sample, said apparatus comprising:

a container containing said sample;

means for heating said sample for causing said volatile fluid to evolve from said sample;

means for conveying a carrier gas through said container at a predetermined flow rate to carry said evolved volatile fluid therefrom;

a sensor for continuously sensing the instantaneous relative amount of said volatile fluid in said carrier gas; and

computing means coupled to said sensor for determining said volatile fluid content in said test sample.

5,712,422
ENGINE SENSOR

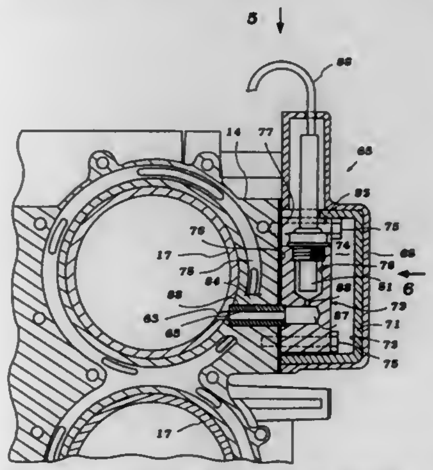
Masahiko Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 5, 1996, Ser. No. 708,646

Claims priority, application Japan, Sep. 30, 1995, 7-242009

Int. Cl.^{6} G01M *15/00*

U.S. Cl. 73—23.32 **14 Claims**



1. A combustion condition sensor for an internal combustion engine having an engine body forming a combustion chamber, a sensor body affixed to said engine body and defining a sensor chamber, a sensor element protruding into said sensor chamber, and conduit means for communicating said combustion chamber with said sensor chamber comprising an insulated section.

5,712,423

Patent Not Issued For This Number

5,712,424
METHOD AND APPARATUS FOR MEASURING DIESEL ENGINE CYLINDER PRESSURE

Jay R. Reed, Mullica Hill, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1996, Ser. No. 621,276

Int. Cl.^{6} G01M *15/00*

U.S. Cl. 73—115 **20 Claims**

1. In an internal combustion engine, the combination including an engine cylinder, a block for housing said cylinder, a nozzle for introducing fuel into said cylinder, a head for holding said nozzle in relation to said cylinder, a fastening assembly for fixing said nozzle with respect to said head, and a strain gage unit, said combination being for transducing the pressure in said cylinder, said head having a passage and an aperture, said fastening assembly including a stud-bolt-type member, a nut-type member and a securing member, said securing member having a sleeve and a peripheral bore, said head being mounted on an approximately transverse side of said block, said securing member being positioned above said head so that said sleeve is in approximate

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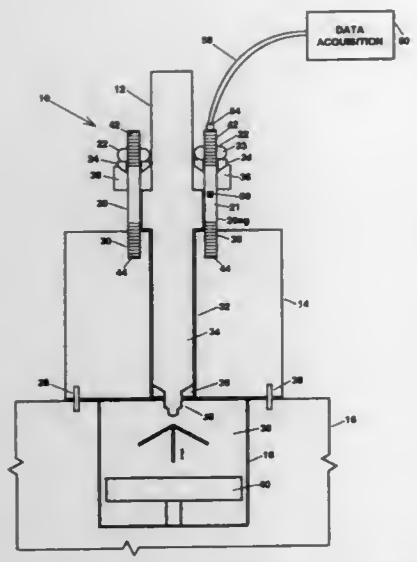


alignment with said passage and said bore is in approximate alignment with said aperture, said nozzle being positioned approximately normal to said approximately transverse side and through said sleeve and said passage so as to protrude into said cylinder, said stud-bolt-type member being positioned approximately parallel to said nozzle and through said bore so as to engage said nut-type member over said bore and to engage said aperture, said cylinder containing a piston capable of reciprocation in a bidirection which is approximately normal to said approximately transverse side, said reciprocation causing a deforming force generally emanating through said combination in an upward direction which is approximately normal to said approximately transverse side, said deforming force thereby stretching said stud-bolt-type member, said strain gage unit being coupled with said stud-bolt-type member, said strain gage unit thereby being responsive to said stretching so as to be indicative of said pressure.

5,712,425
DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

Hans Hecht, Korntal-Muenchingen; Heinz Rilling, Eberdingen; Stefan Lehenberger, Ludwigsburg, and Uwe Konzelmann, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/01477, § 371 Date Aug. 26, 1996, § 102(e) Date Aug. 26, 1996, PCT Pub. No. WO96/16317, PCT Pub. Date May 30, 1996

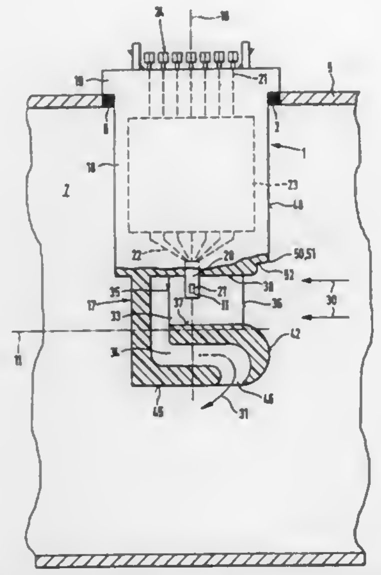
PCT Filed Oct. 24, 1995, Ser. No. 682,599

Claims priority, application Germany, Nov. 24, 1994, 44 41 874.4

Int. Cl.^{6} G01M *19/00*

U.S. Cl. 73—118.2 **7 Claims**

1. A device for measuring the mass of a flowing medium, in particular an aspirated air mass of an internal combustion engine, comprising a carrier body that protrudes into the medium flow from a wall that bounds the flow and extends crosswise to a flow of the medium, a measuring channel (**33**) is provided in the carrier body through which the flowing medium flows, said measuring channel includes an inlet opening (**36**), a temperature-dependent measuring resistor, said temperature-dependent measuring resistor is accommodated in said measuring channel, a flow obstacle (**50**), said flow obstacle is provided upstream of a measuring element (**20**) supported on the carrier body in a region of the inlet opening (**36**) of said measuring channel, said flow obstacle (**50**) creates a defined flow separation (**54**) of said flowing medium that is operative in the measuring channel (**33**) in order to reduce signal noise.



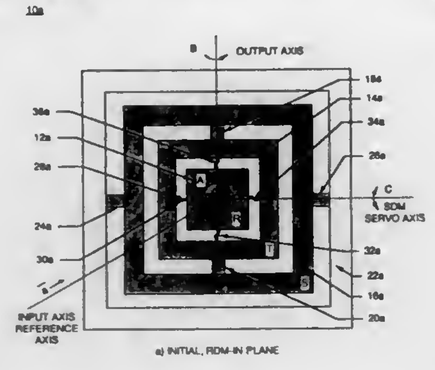
5,712,426
PENDULOUS OSCILLATING GYROSCOPIC AND ACCELEROMETER MULTISENSOR AND AMPLITUDE OSCILLATING GYROSCOPE

Michele S. Sapuppo, Andover; Thomas E. Reed, Charlton, and Donato Cardarelli, Medfield, all of Mass., assignors to Milli Sensory Systems and Actuators, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 101,392, Aug. 3, 1993, Pat. No. 5,457,993. This application Oct. 16, 1995, Ser. No. 551,878

Int. Cl.^{6} G01P *15/14;9/02*

U.S. Cl. 73—504.03 **36 Claims**



SCHEMATIC 1

1. A pendulous oscillating gyroscope and accelerometer multisensor having an accelerometer input axis and a gyroscopic input axis, comprising:

a fixed case;

a servo driven member mounted to said case for sinusoidal oscillation about an accelerometer servo axis which is the same as the gyroscopic input axis;

a torque summing member mounted to said servo driven member to allow rotational motion about an output axis transverse to said servo axis;

a rotor driven member mounted to said torque summing member for sinusoidal oscillation about a reference axis transverse to both said output axis and said servo axis;

a pendulosity carried by at least one of said torque summing member and said rotor driven member to create a mass imbalance about the output axis, in which pendulosity torque due to acceleration along the accelerometer input axis causes a DC rotation of said torque summing member about said output axis;

first oscillation means for sinusoidally oscillating said rotor driven member about said reference axis, the oscillation having a first amplitude, a first frequency and a first phase;

second oscillation means for sinusoidally oscillating said servo driven member about said servo axis, the oscillation having a second amplitude, a second frequency and a second phase;

wherein the oscillations of said rotor driven member and of said servo driven member create a first gyroscopic torque, which causes DC rotation of said torque summing member about said output axis, and wherein DC rotation of said fixed case about said gyroscopic input axis creates a second gyroscopic torque, which causes an AC oscillation of said torque summing member about said output axis;

measurement means for determining the rotational motion of said torque summing member about said output axis;

control means, responsive to said measurement means, for altering the oscillation of at least one of said first and second oscillation means to create a change in said first gyroscopic torque to counterbalance pendulosity torque;

means, responsive to said control means, for determining acceleration of said multisensor along said accelerometer input axis; and

means, responsive to said measurement means, for determining the rotational rate of said multisensor about said gyroscopic input axis.

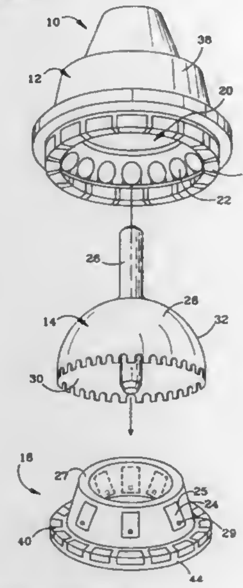
5,712,427
VIBRATORY ROTATION SENSOR WITH SCANNING-TUNNELING-TRANSDUCER READOUT

Anthony Matthews, Santa Barbara, Calif., assignor to Litton Systems Inc., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 520,452, Aug. 29, 1995, abandoned. This application Mar. 24, 1997, Ser. No. 822,049

Int. Cl.^{6} G01P *9/04*

U.S. Cl. 73—504.04 **8 Claims**



1. A rotation sensor comprising:

a resonator capable of sustaining a flexural standing wave pattern symmetrically distributed about a polar axis;

a plurality of forcer electrodes positioned to initiate and maintain a flexural standing wave pattern in the resonator;

a plurality of non-capacitive transducers positioned adjacent to the resonator to characterize the flexural standing wave pattern, each transducer being positioned adjacent to a different area on the resonator and generating a transducer signal that varies as a function of the distance between the transducer and its respective resonator area, at least one pair of the transducers having an angular separation selected from the value ranges (1) greater than 0 degrees and less than 25 degrees, (2) greater than 155 degrees and less than 180 degrees, and (3) greater than 180 and less than 205 degrees;

a controller connected to drive the plurality of forcer electrodes with voltages derived from the transducer signals.

5,712,428
PRESSURE SENSOR WITH A SOLID TO MINIMIZE TEMPERATURE-RELATED MEASUREMENT ERROR

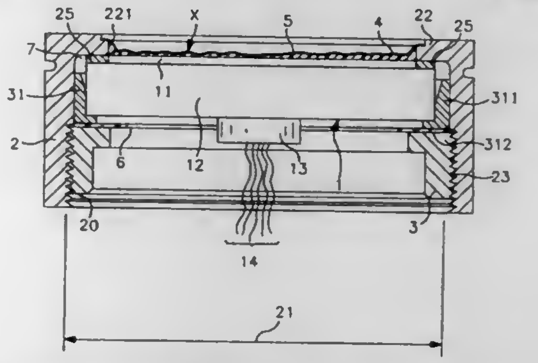
Detlef Schleiferböck, Hausen, Germany, assignor to Endress & Hauser GmbH, Maulburg, Germany

Filed Jun. 18, 1996, Ser. No. 665,463

Claims priority, application European Pat. Off., Aug. 1, 1995, 95112075; Feb. 23, 1996, 96102705

Int. Cl.^{6} G01L *19/04;7/08*

U.S. Cl. 73—708 **9 Claims**



1. A pressure sensor comprising:

a sensor element (**1**) including a sensor diaphragm (**11**) secured at its outer border and having a deflectable part that can be deflected by a pressure which is to be measured,

a housing (**2**),

fastening means (**3**) for securing the outer border of the sensor diaphragm (**11**) in the housing (**2**),

a diaphragm (**4**) which closes off the housing (**2**) and has a deflectable part that can be deflected by the pressure which is to be measured,

the diaphragm (**4**) and the sensor diaphragm (**11**) being spaced apart so that the deflectable parts form a space therebetween having a dimension for minimizing the temperature-related measurement error, and

a solid body (**5**) which fills the space between the diaphragm (**4**) and the sensor diaphragm (**11**) and transmits the pressure which is to be measured from the diaphragm (**4**) to the sensor diaphragm (**1**), the solid body (**5**) having a modules of elasticity which is determined as a function of the dimension of the space between diaphragm (**4**) and the sensor diaphragm (**11**) to minimize the temperature-related measurement error of the sensor.

5,712,429
PRESSURE-RESPONSIVE INSTRUMENT WITH FILTER

R. Randolph Pennington, Jr., P.O. Box 266724, Houston, Tex. 77207-6724, and Eugene R. Johnson, P.O. Box 2242, Pearland, Tex. 77588

Filed Mar. 25, 1996, Ser. No. 620,972

Int. Cl.^{6} G01L *7/04*

U.S. Cl. 73—732 **16 Claims**

10. A pressure instrument for connection to a process line comprising:

a gland having a means for attachment to the process line, said gland having an interior passageway;

a body connected to said gland, said body having a fluid line extending therethrough, said fluid line being in fluid communication with said interior passageway:

a pressure-responsive instrument connected to said fluid line; and

a filter means disposed in at least one of said fluid line and said interior passageway, said filler means for preventing particles

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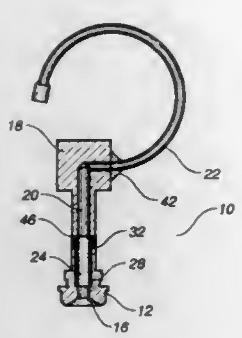
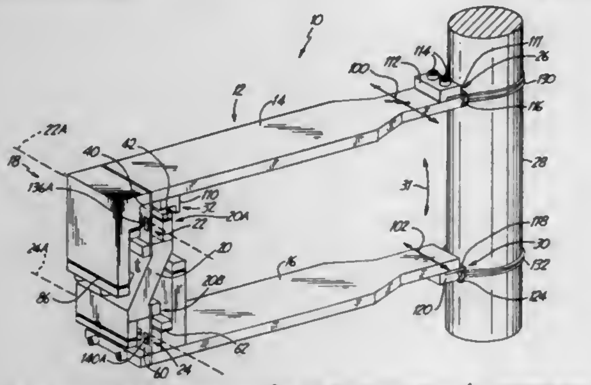


from passing to the process line, at least one of said interior passageway and said fluid line having an internal chamber formed therein of greater diameter than the other of said interior passageway and said fluid line, said filter means being received within said internal chamber.

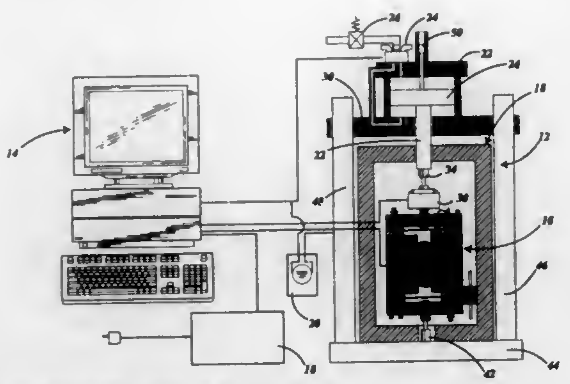
5,712,430
EXTENSOMETER STRUCTURE
Richard A. Meyer, Carver, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.
Filed Oct. 16, 1996, Ser. No. 730,789
Int. Cl.^{6} G01N *3/08*
U.S. Cl. 73—831 **16 Claims**



1. An extensometer structure for an extensometer, the extensometer structure comprising:
- a first extension arm having a first tip engageable with a test specimen and a first distal end remote from the first tip;
- a second extension arm having a second tip engageable with the test specimen and a second distal end remote from the second tip;
- a rigid support having a first end and a second end;
- a first hinge assembly joining the first distal end to the first end of the rigid support, the first hinge assembly having a first pivot axis allowing the first extension arm to pivot relative to the rigid support about the first pivot axis; and
- a second hinge assembly joining the second distal end to the second end of the rigid support, the second hinge assembly having a second pivot axis allowing the second extension arm to pivot relative to the rigid support about the second pivot axis.

5,712,431
DEVICE AND METHOD FOR TESTING THE SHEAR RESPONSE OF A MATERIAL IN RESPONSE TO AN APPLIED FORCE
Kent Vilendrer, Eden Prairie, Minn., assignor to Endura-Tec Systems Corporation, Eden Prairie, Minn.
Filed May 1, 1996, Ser. No. 640,487
Int. Cl.^{6} G01N *3/24*
U.S. Cl. 73—841 **16 Claims**

1. A device used for testing a response of a cylindrical specimen to shear forces applied to the cylindrical specimen, said device comprising:

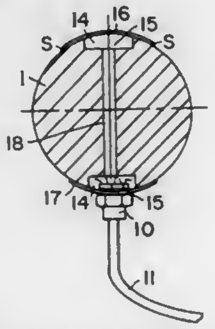


(a) upper and lower spaced cross-pieces;

(b) upper and lower spaced flexure assemblies each having a proximal and distal end, said proximal end of said upper flexure assembly being attached to a corresponding proximal end of the upper cross-piece and said distal end of said lower flexure assembly being attached to a corresponding distal end of the lower cross-piece; and

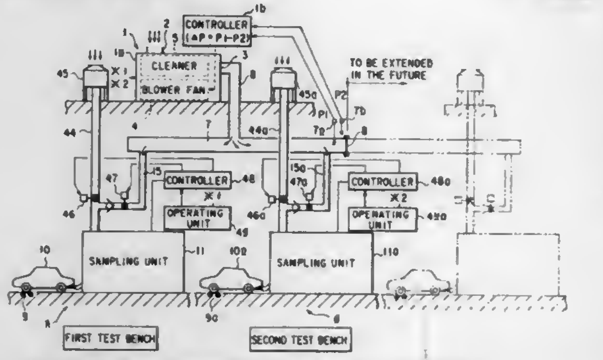
(c) first and second specimen retaining members each including a concave arcuate surface, said first specimen retaining member aligned between the proximal end of said upper and lower flexure assemblies and said second specimen retaining member aligned between the distal end of said upper and lower flexure assemblies, said first retaining member being attached to the proximal end of said upper flexure assembly and coupled to the proximal end of the lower flexure assembly, said second retaining member being attached to the distal end of said lower flexure assembly and coupled to the distal end of the upper flexure assembly, wherein the arcuate surface of each said first and second retaining members are aligned diametrically opposite one another, thereby defining a material receiving pocket adapted for containing the cylindrical specimen, whereby a downward force to the upper cross-piece causes the proximal end of the upper flexure assembly and the first retaining member to move downward and the distal end of the lower flexure assembly and the second retaining member to move upward while the upper and lower flexure assemblies maintain a relative distance and alignment between the first and second retaining members.

5,712,432
PIN LOAD CELL FOR WEIGHING
Hans-Joachim Gerlach, Hoechst; Ralf Waegner, Trebur, and Ronald Will, Alsbach, all of Germany, assignors to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Germany
Filed Dec. 13, 1995, Ser. No. 571,540
Claims priority, application Germany, Jul. 7, 1995, 295 10 678.6
Int. Cl.^{6} G01L *1/00*
U.S. Cl. 73—862.631 **17 Claims**



1. A pin load cell for a load applied substantially in an axial direction, comprising an elongated load cell body (1A) including load application end surfaces (2, 3) and an outer surface between said end surfaces, at least one surface area positioned between said load application end surfaces (2, 3) for attaching of at least one strain gage (9) to said elongated load cell body, at least one strain gage (9) attached to said at least one surface area of said elongated load cell body, a metallic cover (7, 8; 16, 17; 20, 21) covering only a portion of said outer surface of said elongated load cell body sufficient to cover said at least one surface area, and a seal (S) connecting said cover along its edges to said elongated load cell body (1A) for sealing said at least one surface area, wherein said elongated load cell body (1A) of said weighing cell (1) comprises a throughbore (4) approximately in the center between said load application end surfaces (2, 3), said throughbore extending perpendicularly to a longitudinal axis of said elongated load cell body and having a bore wall forming said at least one surface area to which said at least one strain gage (9) is applied.

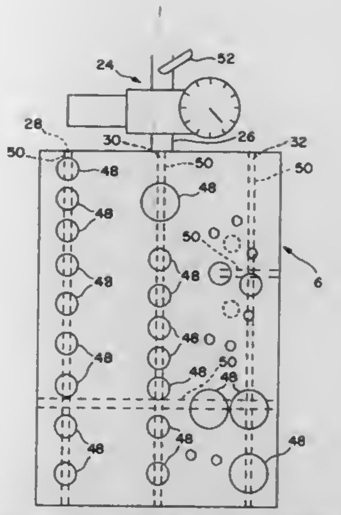
5,712,433
EXHAUST GAS MEASURING APPARATUS
Mitoku Kojima, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 7, 1996, Ser. No. 689,494
Claims priority, application Japan, Aug. 7, 1995, 7-200839; Jul. 9, 1996, 8-179234
Int. Cl.^{6} G01N *1/00*
U.S. Cl. 73—863.03 **13 Claims**



1. An exhaust gas measuring apparatus, comprising:
- an atmosphere introducing unit for taking in air in the atmosphere as diluting air;
- an air purifier for taking in and purifying air in the atmosphere, thereby generating diluting air;
- a diluting unit for diluting at least a portion of exhaust gases of an engine with the diluting air;
- selecting means for causing either one of said atmosphere introducing unit and said air purifier to communicate with said diluting unit;
- a sampling unit for collecting diluted exhaust gases; and
- measuring means for obtaining an emission amount of collected gases.

5,712,434
METHODS AND APPARATUS FOR TESTING VALVES AND SWITCHES FOR AUTOMOTIVE TRANSMISSIONS
Russell Sylvis, 4657 Barnard St., Simi, Calif. 93063
Filed Oct. 24, 1995, Ser. No. 547,568
Int. Cl.^{6} G01M *15/00*
U.S. Cl. 73—865.9 **20 Claims**

1. An apparatus for testing switches removed from an hydraulic circuit of an automotive transmission, said apparatus comprising:
- a housing including means for coupling said housing to a source of compressed gas;
- a plurality of different sized openings defined within said housing, each of said openings adapted to receive therein a different size switch removed from said automotive transmission to be tested by said apparatus; and

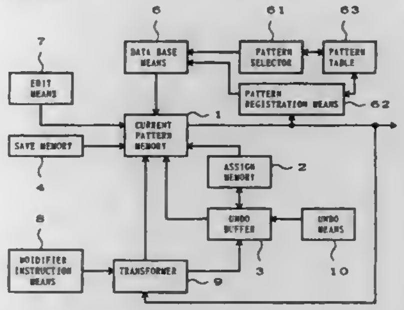


- means for removably sealing each of said plurality of openings when a switch to be tested is not received in said openings.

5,712,435
CERAMIC CORES FOR CASTING OF REACTIVE METALS
Roy C. Feagin, Boca Raton, Fla., assignor to Remet Corporation, Chadwicks, N.Y.
Division of Ser. No. 7,883, Jan. 28, 1987, Pat. No. 5,535,811. This application Jun. 1, 1995, Ser. No. 456,323
Int. Cl.^{6} G22C *29/00*
U.S. Cl. 75—230 **15 Claims**

1. A refractory core made from a refractory composition including a slurry of yttria, an acid and an inert organic solvent.

5,712,436
AUTOMATIC ACCOMPANIMENT APPARATUS EMPLOYING MODIFICATION OF ACCOMPANIMENT PATTERN FOR AN AUTOMATIC PERFORMANCE
Masao Sakama; Yutaka Tohgi; Eiichiro Aoki; Shigehiko Mizuno; Hiroyuki Ohba; Maki Kamiya, and Hironori Osakabe, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Filed Jul. 21, 1995, Ser. No. 505,585
Claims priority, application Japan, Jul. 25, 1994, 6-192283; Jul. 25, 1994, 6-192827; Aug. 22, 1994, 6-220924; Sep. 20, 1994, 6-251385
Int. Cl.^{6} G10H *1/36;7/00*
U.S. Cl. 84—610 **46 Claims**



1. An automatic accompaniment device comprising:
- accompaniment pattern storage means storing an accompaniment pattern;
- readout means for reading out the accompaniment pattern from said accompaniment pattern storage means;
- special performance designation means for designating a special performance, said special performance being at least one performance among intro, fill-in and ending performances;

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pattern modification means for applying, to the accompaniment pattern read out by said readout means, a modification corresponding to the special performance designated by said special performance designation means;

progression control means for controlling progression of an automatic accompaniment performance in accordance with the designated special performance; and

accompaniment tone generation means for generating automatic accompaniment tone on the basis of the read-out accompaniment pattern and the accompaniment pattern modified by said pattern modification means; and

wherein said pattern modification means modifies said read-out automatic accompaniment pattern in accordance with a predetermined algorithm corresponding to said designated special performance.

5,712,437
AUDIO SIGNAL PROCESSOR SELECTIVELY DERIVING HARMONY PART FROM POLYPHONIC PARTS

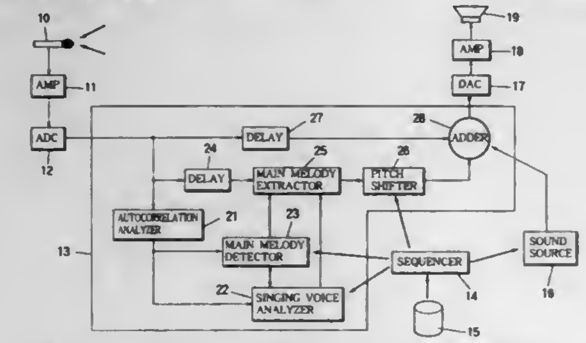
Yasuo Kageyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 12, 1996, Ser. No. 599,763

Claims priority, application Japan, Feb. 13, 1995, 7-024337; Nov. 21, 1995, 7-303046; Nov. 21, 1995, 7-303047

Int. Cl.^{6} G10H *1/08;1/36*

U.S. Cl. 84—610 **17 Claims**



11. A harmony creating method comprising the steps of:

inputting a polyphonic audio signal containing a plurality of melodic parts which constitute a music composition;

selecting a predetermined one of the plurality of the melodic parts contained in the input polyphonic audio signal;

extracting the selected melodic part from the input polyphonic audio signal;

shifting a pitch of the extracted melodic part to generate a harmony audio signal representative of an additional harmony part; and

mixing the generated harmony audio signal to the input polyphonic audio signal so as to sound the music composition which contains the additional harmony part derived from the predetermined one of the melodic parts.

5,712,438
ELECTRONIC MUSICAL INSTRUMENT WITH CLASSIFIED REGISTRATION OF TIMBRE VARIATIONS

Takuya Nakata, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Oct. 27, 1995, Ser. No. 549,256

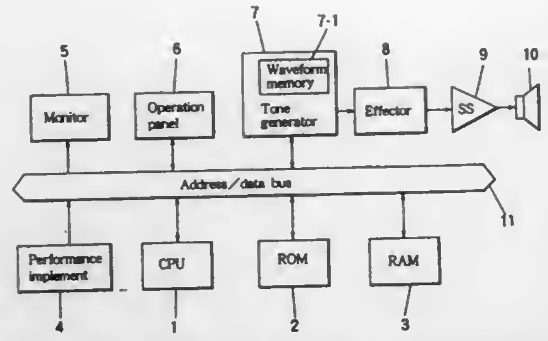
Claims priority, application Japan, Oct. 31, 1994, 6-288570

Int. Cl.^{6} G10H *1/06;1/18*

U.S. Cl. 84—622 **5 Claims**

1. An apparatus for storing timbres, including basic timbres and variations of the basic timbres, comprising:

memory means having a matrix of memory locations arranged in rows and columns for storing the timbres such that each timbre is selected by a row address and a column address;



first classification means for categorizing individual timbres into a plurality of instrument kinds such that each instrument kind contains at least one basic timbre and a plurality of variations of the basic timbre all having a common instrumental attribute type;

second classification means for categorizing basic timbres into a basic timbre group and individual variations of the basic timbres into a plurality of version groups such that each version group contains timbres that differ from the basic timbre by a similar degree;

first coordination means for assigning each instrument kind to a particular column of said matrix so that all timbres belonging to a particular instrument kind are stored in the column assigned to the particular instrument kind; and

second coordination means for assigning the basic timbre group to at least one row and each version group to a particular group of rows so that all basic timbres are stored in the at least one row assigned to the basic timbre group and all timbres belonging to a particular version group are stored in the rows assigned to the particular version group.

5,712,439
MUSICAL TONE SIGNAL PRODUCING APPARATUS FOR SIMULATING THE EFFECT OF A VIBRATING ELEMENT OF A WIND INSTRUMENT

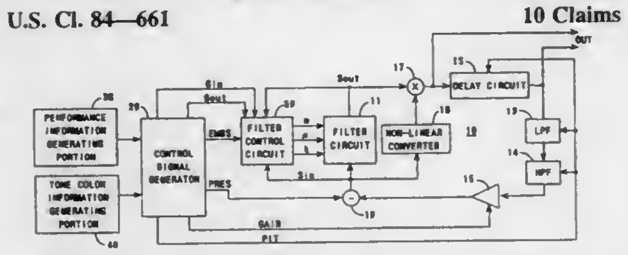
Kunimoto Toshifumi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Sep. 12, 1995, Ser. No. 527,034

Claims priority, application Japan, Sep. 13, 1994, 6-219200

Int. Cl.^{6} G10H *1/12*

U.S. Cl. 84—661 **10 Claims**



6. A musical tone signal producing apparatus including:

first means for circulating a vibratory waveform signal to be produced as a musical tone signal;

second means for generating a first control signal for effecting excitation of the waveform signal and applying the first control signal to said first means and for generating a second control signal for applying time variation to the waveform signal, and

third means for modifying the second control signal based on the vibratory waveform signal and for applying a control parameter defined by the modified second control signal to said first means for control of a signal transmission characteristic of said first means.

5,712,440
APPARATUS AND PROCESS FOR EXPLOSIVES MIXING AND LOADING

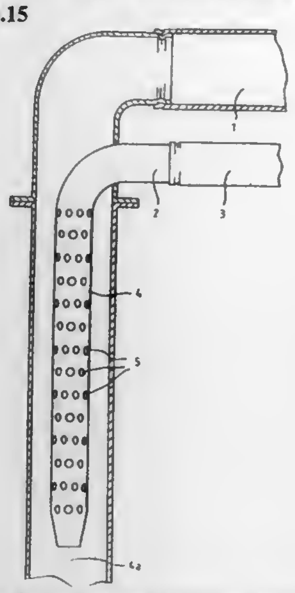
Simon Edward Eagar, Beecroft, and Andrew David Hunter, Toronto, both of Australia, assignors to ICI Australia Operations Proprietary Limited, Melbourne, Australia

Filed Nov. 17, 1995, Ser. No. 558,242

Claims priority, application Australia, Nov. 18, 1994, PM9550

Int. Cl.^{6} F42B *3/00;* **F42D** *1/08*

U.S. Cl. 86—20.15 **21 Claims**



1. An apparatus for mixing and delivering an explosives composition comprising a main conduit which can be gas pressurised, a means for introducing a solid particulate phase to said main conduit for transportation by said gas, and a means for introducing an emulsion phase into said main conduit such that turbulence of the gas in the main conduit causes uniform mixing of the solid particulate phase and emulsion phase, wherein the means for introducing the emulsion phase into the main conduit comprises a second conduit having a plurality of orifices and enclosed within the main conduit, said second conduit being adapted at one end to receive a flow of emulsion phase.

5,712,441
LAND-MINE SEARCH-AND-REMOVAL DEVICE MOUNTED ON A VEHICLE, ESPECIALLY A MILITARY TANK, AND METHOD OF LOCATING AND DESTROYING SUCH MINES WITH SUCH A DEVICE

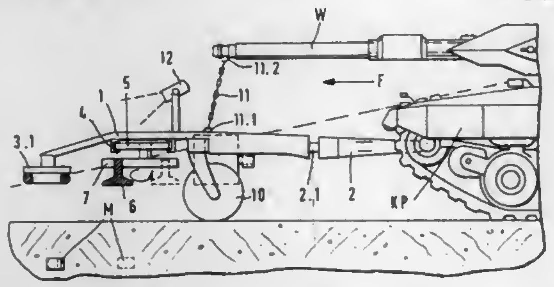
Peter Grünewald, Fuldabrück, Germany, assignor to Firma Wegmann & Co., Kassel, Germany

Filed Apr. 16, 1996, Ser. No. 632,856

Claims priority, application Germany, Apr. 20, 1995, 195 14 569.0

Int. Cl.^{6} F41H *11/16*

U.S. Cl. 89—1.13 **14 Claims**



1. A land-mine search-and-removal device mountable on a vehicle, comprising:

a) a framework attachable to a front of the vehicle by a coupling,

b) several sensors designed to detect electrically conductive objects and distributed along the front, in the direction of travel of the framework to a prescribed extent at least the width of the vehicle,

c) a carriage driven back and forth and stopped at any point along rails extending athwart the vehicle and behind the sensors,

d) a hunting detector mounted on the carriage and precisely detecting the type and position of any object sensed by the sensors,

e) a moving pickup mounted on the carriage, picking up explosive or hollow charges, and depositing them in a precise position on the ground,

f) a magazine mounted on the carriage or framework and accommodating the explosive or hollow charges equipped with detonators, and

g) an electrical operating and processing system for the sensors, the carriage-driving mechanism, the detector, the pickup, and the detonators.

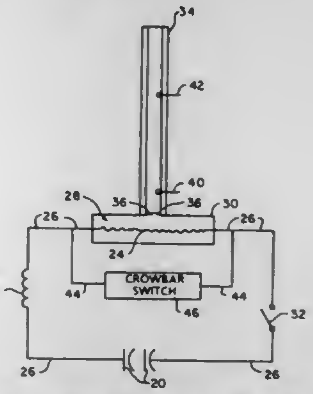
5,712,442
METHOD FOR LAUNCHING PROJECTILES WITH HYDROGEN GAS

Woodrow W. Lee, Potomac, and Richard D. Ford, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 27, 1988, Ser. No. 199,879

Int. Cl.^{6} F41F *1/00*

U.S. Cl. 89—8 **12 Claims**



1. A method of propelling a projectile from a device comprising:

(1) applying a high power pulse of electrical current to a metal fuel element causing the element to explode dispersing molten metal fuel into water surrounding the metal fuel element where the molten metal reacts with the water to generate hydrogen at high pressure in a chamber, wherein

(a) the metal fuel is selected from the group consisting of (i) aluminum, (ii) an aluminum-lithium alloy comprising from more than zero to 3.0 weight percent of lithium with the remainder of the alloy being essentially aluminum, and (iii) an aluminum-magnesium alloy comprising from more than zero to 5.0 weight percent of magnesium with the remainder of the alloy being essentially aluminum;

and wherein

(b) after the metal fuel has become molten, electrical current is supplied from an inductive electrical energy source to drive the reaction between the molten metal fuel and the water;

(2) allowing the hydrogen gas pressure in the chamber to build to a preselected level; and then

(3) using the hydrogen gas to push the projectile from the device.

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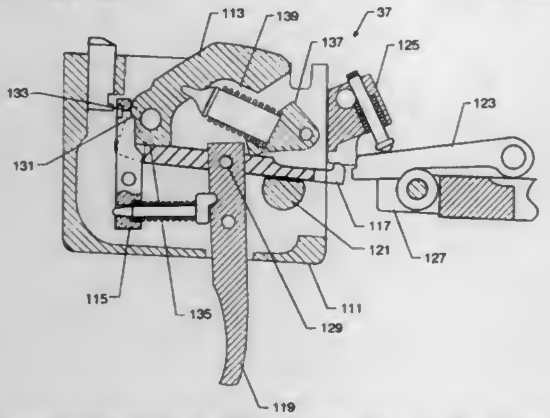
5,712,443
SHOULDER-LAUNCHED MULTIPLE-PURPOSE ASSAULT WEAPON

Michael Canaday, King George, and Fred Watson, Jr., Montross, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1995, Ser. No. 514,575
Int. Cl.^{6} F41F *3/04;* **F41A** *19/00*
U.S. Cl. 89—127 **12 Claims**

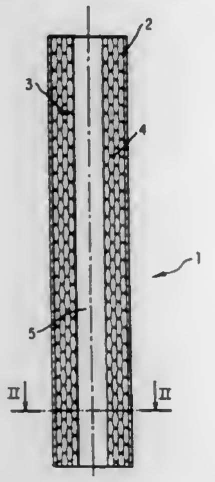


11. A shoulder-launched multi-purpose assault weapon comprising:
- a spotter rifle assembly comprising a spotting round bore alignment mechanism and dual-function subassemblies for assembling and safing, for cartridge ejecting and bolt locking back, and a dual spring breech bolt and lock assembly;
- a detachable rocket tube mounted on the top of said spotter rifle assembly;
- a combination adjustable optical and open sight system attached to said detachable tube;
- a trigger assembly having a single trigger dual firing mechanism attached to said spotter rifle assembly;
- means for selectively operating a first hammer and a second hammer connected to said trigger assembly; and
- means for locking out further trigger operation after operating said second hammer.

5,712,444
PRIMING MECHANISM FOR A PROPELLANT CHARGE NOTABLY FOR FIELD ARTILLERY AMMUNITION AND ITS MANUFACTURING PROCESS

Bernard Brion, Bourges, and Claude Julien, Vasselay, both of France, assignors to Giat Industries, Versailles, France

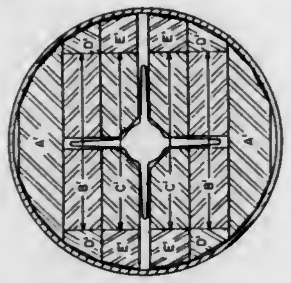
Filed Jul. 11, 1996, Ser. No. 678,679
Claims priority, application France, Jul. 20, 1995, 95 08812
Int. Cl.^{6} F42C *19/085*
U.S. Cl. 102—202 **7 Claims**



1. A priming mechanism for a propellant charge, comprising a tube (2) made of a combustible material, whose inner wall is lined with a priming charge which marks out a central channel (5) inside the tube (2), characterised in that the priming charge is formed of several successive layers (3) of black powder granules with a binder (4).

5,712,445
PROPELLANT SYSTEM

Gregory T. Kassuelke, Maple Grove; Calvin T. Candland, Eden Prairie, and James L. Kennedy, Bloomington, all of Minn., assignors to Alliant Techsystems Inc., Hopkins, Minn.
Continuation-in-part of Ser. No. 57,010, May 4, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 537,882
Int. Cl.^{6} C06B *45/00;* **C06D** *5/06*
U.S. Cl. 102—288 **22 Claims**



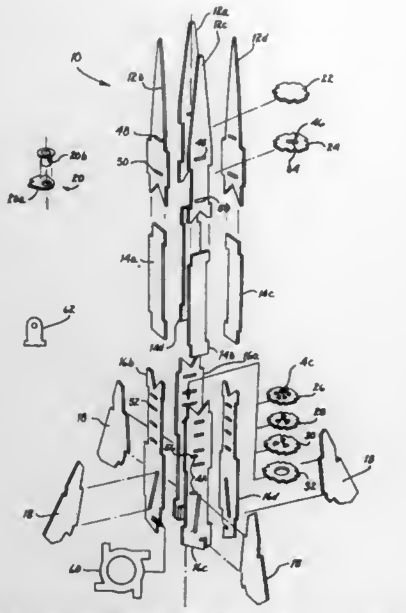
1. A propellant load arrangement for a munition cartridge having a longitudinal axis and having an internal volume for accommodating a ballistic projectile and propellant material comprising:
- (a) a plurality of relatively flat shaped slab segments of propellant material assembled face to face in an ordered arrangement, the faces of the segments of the arrangement being generally parallel to the longitudinal axis of the cartridge case and generally configured to occupy the available propellant volume of the cartridge; and
- (b) each of said slab segments of the ordered arrangement further having an outer peripheral geometry being generally shaped to accommodate the corresponding cartridge casing interior geometry and each of said slab segments of the ordered arrangement, where necessary, further having a shaped central interior recess opening of a geometry accommodating the corresponding geometry of any interfering internal cartridge element and any required projectile exterior geometry.

5,712,446
FLAT-SIDED MODEL ROCKET AND METHOD THEREFOR

David R. Spence, 3970 N. Hwy. 89, Prescott, Ariz. 86301

Filed Jan. 2, 1996, Ser. No. 581,785
Int. Cl.^{6} F42B *4/08;* **A63H** *27/00*
U.S. Cl. 102—348 **25 Claims**

1. An aerial model rocket comprising, in combination:
- an aerial model rocket body having at least four flat sides;
- propelling means for propelling said aerial model rocket in a substantially skyward direction;
- receiving means in a bottom portion of said aerial model rocket body for receiving said propelling means for propelling said aerial model rocket; and

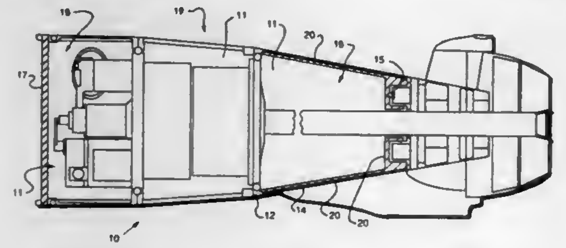


- means coupled to said serial model rocket body for removably connecting said serial model rocket to an aerial model rocket launching apparatus.

5,712,447
VIBRATIONALLY AND ACOUSTICALLY INSULATED STRUCTURE

Jeffrey S. Hanson, Wakefield, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1996, Ser. No. 645,735
Int. Cl.^{6} F42B *19/00;* **G10K** *11/16;* **E04B** *1/82*
U.S. Cl. 114—20.1 **16 Claims**

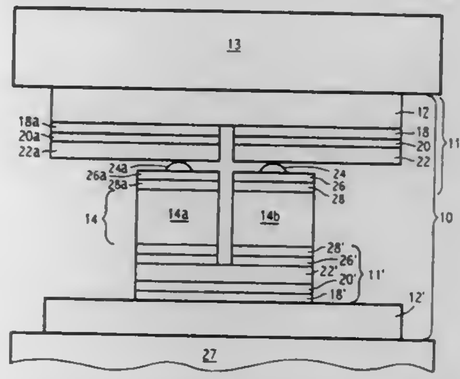


1. A vibrationally and acoustically insulated device disposed within a structure housing comprising:
- a vibration damping portion fixed to and substantially contiguous with at least a portion of a surface of said structure housing for damping vibrations transmitted through said structure housing; and
- an acoustic absorbing portion fixed proximate said vibration damping portion for reducing reverberating acoustic waves within said structure;
- said vibration damping portion comprising:
- a constrained damping layer having at least one continuous damping layer fixed to said at least a portion of a surface of said structure housing; and
- a segmented constraining layer fixed to at least a portion of said at least one continuous damping layer.

5,712,448
COOLING DEVICE FEATURING THERMOELECTRIC AND DIAMOND MATERIALS FOR TEMPERATURE CONTROL OF HEAT-DISSIPATING DEVICES

Ian W. Vandersande, Upland; Richard Ewell, Altadena; Jean-Pierre Fleurial, Duarte, all of Calif., and Hylan B. Lyon, Dallas, Tex., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 7, 1996, Ser. No. 598,193
Int. Cl.^{6} H01L *35/04;35/16;35/18;35/30*
U.S. Cl. 136—203 **16 Claims**



1. A cooling device for cooling a heat-dissipating device, comprising:
- a diamond or high thermal conductivity substrate in thermal contact with said heat-dissipating device to dissipate heat therefrom;
- a heat-pumping element in thermal contact with said diamond or high thermal conductivity substrate, having thermoelectric components; and,
- a stack structure disposed between said diamond or high thermal conductivity substrate and said heat-pumping element, said stack structure comprising thermally and electrically conductive stack layers for supplying electrical current to said heat-pumping element and conducting heat from said diamond or high thermal conductivity substrate to said heat-pumping element, said stack layers including:
  - a metallization layer attached to a surface of said diamond or high thermal conductivity substrate;
  - an outer diffusion barrier layer attached to said metallization layer;
  - an electrically conducting layer attached to said diffusion barrier layer;
  - an inner diffusion barrier layer attached to said electrically conducting layer; and,
  - a contact layer attached to said inner diffusion barrier layer.

5,712,449
WIDE AREA EMI GASKET WITH CONDUCTORS TRAVERSING CORE

Stanley R. Miska, Pittsford; Daniel T. Courtney, Palmyra, and Kenneth W. Hermann, Rochester, all of N.Y., assignors to Schlegel Corporation, Rochester, N.Y.

Filed May 24, 1995, Ser. No. 448,672
Int. Cl.^{6} H05K *9/00*
U.S. Cl. 174—35 GC **16 Claims**

1. A gasket for blocking electromagnetic radiation between at least two electrically conductive bodies over an area having a length and a width, comprising:
- a compressible core generally shaped as a sheet extending along at least part of the length and width;
- an electrically conductive surface material disposed on opposite faces of the core for bearing against the conductive bodies; and,

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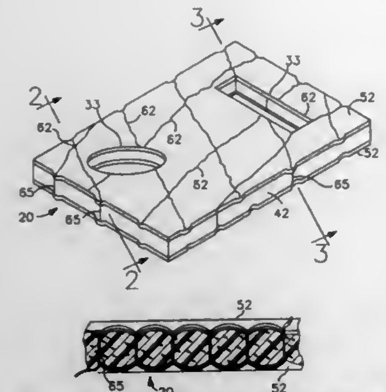


a plurality of electrically conductive connections at spaced positions, electrically coupling between the electrically conductive surface material on said opposite faces.

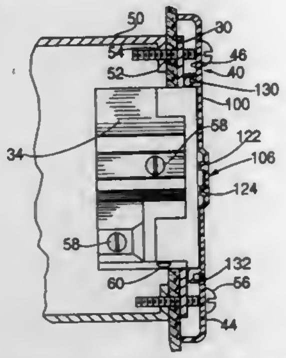
5,712,450
SPLASH GUARD FOR WIRING DEVICES

David Chan, Bellerose, N.Y., and Paul Gernhardt, Chesapeake, Va., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Aug. 5, 1996, Ser. No. 692,158

Int. Cl.^{6} H05K *5/03*

U.S. Cl. 174—66 **7 Claims**



1. A splash guard for wiring devices to prevent moisture or debris from entering into or about a wiring device comprising:

a) a wiring device having a front face of a first predetermined periphery, a rear face, two side faces, a top face and a bottom face so assembled as to provide a six-sided enclosure for the operative components of said wiring device, said front face intended to project into an aperture in a cover plate placed over said wiring device;

b) at least one mounting tab, having at least one first aperture through each of said at least one mounting tab, on said wiring device for attaching said device to a support;

c) one or more movable operating means extending through said front face for engagement and operation of said one or more movable operating means by a user;

d) one or more first spaces between each of said one or more movable operating means and said front face of said wiring device, which may permit moisture and debris to enter said enclosure and impede or prevent the proper operation of said wiring device;

e) a cover plate of a second predetermined periphery larger than said first periphery having a from face and a rear face and at least one second aperture and at least one wiring device aperture therethrough from said front face to said rear face having a third predetermined periphery greater than said first predetermined periphery and less than said second predetermined periphery into which at least said front face of said wiring device may extend;

f) one or more second spaces between said first periphery of said front face of said wiring device and the third periphery of its associated one of said at least one wiring device aperture which may permit moisture and debris to enter said enclosure and impede or prevent the proper operation of said wiring device;

g) flexible, resilient seal means extending over the entirety of said front face of said wiring device to prevent moisture and debris from passing through said one or more first spaces, said seal means further extending beyond said third periphery of said at least one wiring device aperture to prevent moisture and debris from passing through said one or more second spaces into and about said wiring device enclosure to impede or prevent proper operation of said wiring device; and

h) at least one fastening means extending through said at least one second aperture in said cover plate and an associated one of said at least one first aperture in said at least one mounting tab into said support whereby said seal means is held in place on said wiring device by the compression of said seal means between said front face of said wiring device and said rear face of said cover plate.

5,712,451
DEVICE FOR SENSING FOOD WEIGHT IN A MICROWAVE OVEN

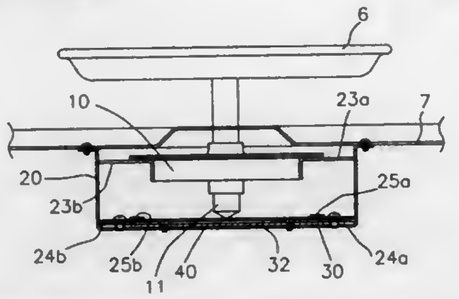
Jong Cheol Lee, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 5, 1995, Ser. No. 462,288

Claims priority, application Rep. of Korea, Jul. 25, 1994, 94-17988

Int. Cl.^{6} G01G *3/14;* **H05B** *1/02;6/50*

U.S. Cl. 177—210 C **11 Claims**



1. A device for sensing food weight in a microwave oven, said device comprising:

a bracket provided with two side walls and a bottom, a front side and a rear side of said bracket being opened;

a motor assembly having a motor axis for supporting and rotating a tray for placing a food, said motor assembly being mounted on said bracket;

a movable electrode plate fixed to said bracket below said motor assembly to be in contact with said motor axis, said movable electrode plate having an elastic supporting piece which descends by a lowering force due to a weight of said food; and

a fixed electrode plate printed in a rear portion of a printed circuit board, said printed circuit board being insertedly mounted between the movable electrode plate and the bottom of said bracket capable of adjusting an inserting distance of said printed circuit board and fixed to the bottom of said bracket,

wherein the adjustment of the inserting distance causes a change of an overlapping area between said movable electrode plate and said fixed electrode plate to set an initial value of weight,

wherein said bracket is provided with second extending pieces extended from front and lower portions of said side walls, said second extending pieces are vertically higher than the bottom of said bracket, and said movable electrode plate is fixed to said second extending pieces,

whereby said device senses the food weight according to a varied distance between said movable electrode and said fixed electrode.

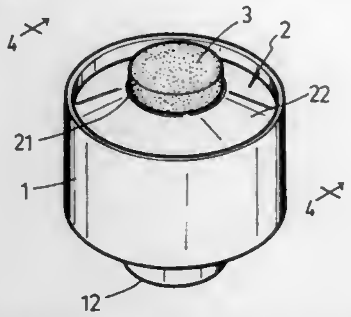
5,712,452
SOUND GENERATOR

Mo-Hsin Lin, 5th Fl., No. 4, Lane 7, Pao Kao Road, Hsintien, Taipei Hsien, Taiwan

Filed Dec. 26, 1996, Ser. No. 773,447

Int. Cl.^{6} G01K *11/00;* **A63H** *3/31*

U.S. Cl. 181—0.5 **1 Claim**



1. An improved sound generator comprising at least one vibrating plate and one casing, said vibrating plate being comprised of a convex portion and a tapered portion having its periphery fixedly connected to said casing, said convex portion becoming concave in shape when subjected to an external force and returning to its convex shape automatically to generate vibrations and thus sound, wherein an elastic plate is attached to an outer surface of said convex portion of said vibrating plate, said elastic plate being made of an elastic material so that it may quickly return to its normal state after being compressed, said elastic plate providing an indirect contact between an object or finger exerting a force and said vibrating plate so that the amplitude of said vibrating plate is not weakened by direct contact between the object or finger exerting the force and said vibrating plate, and said elastic plate being provided to absorb the external force and to release its potential energy to generate a counter force against the object of finger exerting the force thereon so that vibration of the vibrating plate is increased to enhance the amplitude and sound volume.

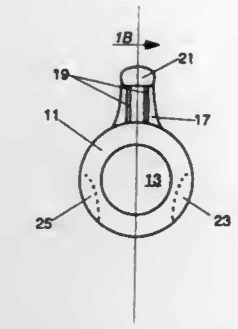
5,712,453
CONCHA HEADSET STABILIZER

Gabriele Bungardt, Aptos, Calif.; Luis Pedraza, Hyde Park; Betsy Goodrich, Roslindale, both of Mass., and Edmund J. Morrissey, III, Aptos, Calif., assignors to Plantronics, Inc., Santa Cruz, Calif.

Continuation of Ser. No. 234,302, Apr. 28, 1994, abandoned. This application Apr. 11, 1995, Ser. No. 420,241

Int. Cl.^{6} A61B *7/02*

U.S. Cl. 181—135 **15 Claims**



1. An apparatus for stabilizing a headset including a receiver sized to fit between a tragus and an anti-tragus of an ear, the apparatus comprising:

an ear cushion dimensioned to cover a portion of the receiver disposed between the tragus and the anti-tragus;

a resilient and flexible stabilizer support member coupled to the ear cushion, and dimensioned to fit within an upper concha with the ear cushion coupled to the receiver and the receiver disposed between the tragus and the anti-tragus; and,

a concha stabilizer pad coupled to the stabilizer support member, for contacting the upper concha.

5,712,454
EXHAUST SYSTEM IN INTERNAL COMBUSTION ENGINE

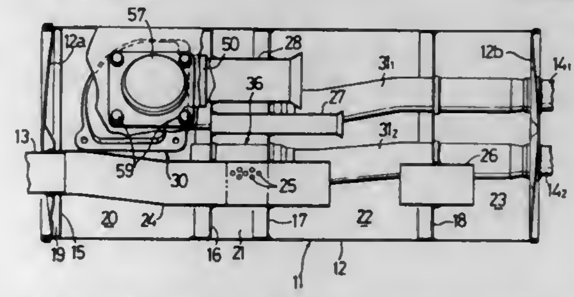
Hidenori Ozawa; Kazuhiro Tsuda, both of Wako; Isao Hirokawa, Kitsuregawa-machi; Katsunori Muramatsu, Kitsuregawa-machi, and Ryoichi Matsushima, Kitsuregawa-machi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Yutaka Giken Co., Ltd., Shizuoka, both of Japan

Filed Jan. 26, 1996, Ser. No. 592,523

Claims priority, application Japan, Jan. 27, 1995, 7-011416; Jan. 27, 1995, 7-011417; Jan. 27, 1995, 7-011418

Int. Cl.^{6} F01N *1/08*

U.S. Cl. 181—226 **5 Claims**



1. An exhaust system in an internal combustion engine, said exhaust system comprising a gas flow passage having an intermediate portion, a flow rate regulating valve means which is positioned in said intermediate portion of said exhaust gas flow passage, said valve means having a valve housing and rotary shaft rotatably supported in said valve housing, a valve member secured to said rotary shaft, a rotationally biasing spring mounted between said rotary shaft and said valve housing, to provide a spring force for rotationally biasing said rotary shaft, and an axially biasing spring mounted separately from said rotationally biasing spring between said valve housing and said rotary shaft for biasing said rotary shaft in an axial direction, wherein said rotary shaft is provided with an abutment surface facing in the axial direction, and said valve housing is provided with a limiting portion which abuts against said abutment surface to limit the axial movement of said rotary shaft.

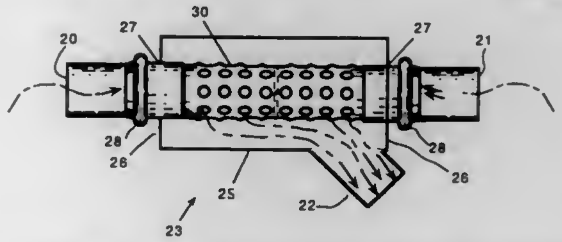
5,712,455
DUAL ENTRY PLUG MUFFLER

Dane Wagner, P.O. Box 211291, Anchorage, Ak. 99521

Continuation-in-part of Ser. No. 254,782, Jun. 6, 1994, Pat. No. 5,496,975. This application Feb. 29, 1996, Ser. No. 609,974

Int. Cl.^{6} H01N *7/00*

U.S. Cl. 181—238 **4 Claims**



1. A muffler system for a aircraft having dual exhaust manifolds for discharging an exhaust gas comprising:

a) An outer housing;

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b) a pair of oppositely disposed inlet ports, fixedly attached to said outer housing;

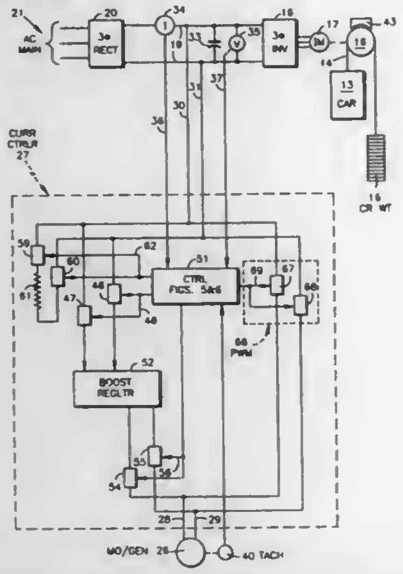
c) an exhaust gas conduit, being fixedly installed within said outer housing, said exhaust gas conduit having two ends, the two ends being fixedly attached to said pair of inlet ports, and an internal partition plate, fixedly installed therein, said exhaust gas conduit further having a plurality of holes formed wherein such that the exhaust gas is fed into said exhaust gas conduit from the pair of oppositely disposed inlet ports and said exhaust gas is then discharged through said plurality of holes, said exhaust gas conduit further including a cylindrical wall, having an outer surface, such that said plurality of holes penetrate said cylindrical wall and further such that said plurality of holes is formed such that the cylindrical wall of said exhaust gas conduit is raised upward above the outer surface of said cylindrical wall for each hole at a point in those holes closest to the pair of inlet ports, and the cylindrical wall of said exhaust gas conduit is depressed downward below the outer surface of said cylindrical wall, for each perforation, at a point in each perforation closest to the internal partition plate; and

d) an exhaust port, fixedly attached to said outer housing for discharging said exhaust gas from said muffler system.

5,712,456
FLYWHEEL ENERGY STORAGE FOR OPERATING ELEVATORS

Richard C. McCarthy, Simsbury, and Joseph Bittar, Avon, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 10, 1996, Ser. No. 632,377
Int. Cl.⁶ B66B *1/06*
U.S. Cl. 187—290 **9 Claims**



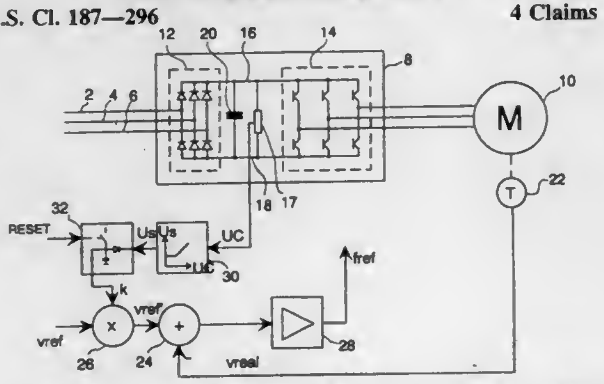
1. An energy conserving, regenerative elevator system which derives principal electric power from an AC main, comprising:

- a hoist motor;
- a motor drive system for converting power in the AC main for providing power to said hoist motor;
- a flywheel motor generator capable of storing an amount of energy as rotational inertia which is significant compared with the energy required for an elevator to accelerate and make a fully loaded up run;
- and a current controller for utilizing electrical energy generated by said flywheel motor generator to assist in driving said hoist motor during periods of high power demand, and for utilizing electric energy generated by regenerative operation of said hoist motor to drive said flywheel motor/generator so as to increase its rotational inertia, thereby to store energy therein in the form of rotational inertia and to use that energy in the form of electricity generated by said flywheel motor/generator to assist in driving said hoist motor.

5,712,457
APPARATUS FOR REGULATING AN ELEVATOR MOTOR

Seppo Suur-Askola, Riihimäki, and Ralf Ekholm, Helsinki, both of Finland, assignors to Kone Oy, Helsinki, Finland

Filed May 10, 1995, Ser. No. 438,554
Claims priority, application Finland, May 11, 1994, 942208
Int. Cl.⁶ B66B *1/28;* H02P *5/34*
U.S. Cl. 187—296 **4 Claims**



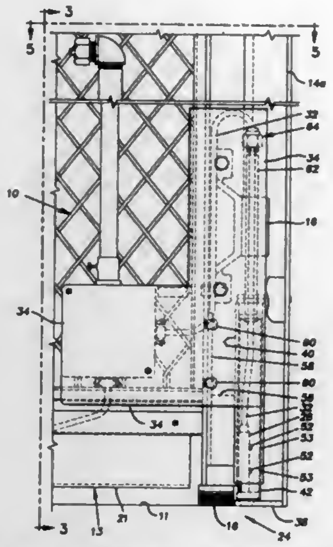
1. An apparatus for regulating the speed of an a.c. motor, comprising:

- a frequency converter having a rectifier bridge, an inverter bridge, and an intermediate circuit between the rectifier bridge and the inverter bridge, said frequency converter producing a frequency corresponding to a frequency reference;
- a motor speed detector for detecting the speed of the a.c. motor and producing a motor speed signal;
- a voltage measuring circuit for measuring a voltage of the intermediate circuit;
- a frequency reference producing circuit for receiving the motor speed signal and an external speed reference signal, and for producing the frequency reference based upon the motor speed signal and the speed reference signal, said frequency reference producing circuit including a limiter device which, based on the measured voltage produces a coefficient by which the speed reference is multiplied in a multiplier element; and
- a memory and a time-delay circuit designed to keep the coefficient at a constant value for a preset length of time.

5,712,458
DOOR SENSOR BEAM

Shan H. McCandless, Brampton, Canada, and Stefan Walkowlak, St. James, N.Y., assignors to The Peelle Company, Bay Shore, N.Y.

Filed Aug. 9, 1995, Ser. No. 513,154
Int. Cl.⁶ B60B *13/26*
U.S. Cl. 187—317 **6 Claims**

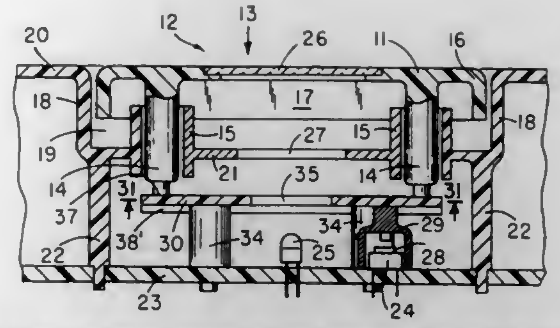


1. In an automatic power-operated gate for an elevator car having a car floor and vertical flanged side rails on which the gate is guided, said closure having means adjacent opposite ends of the closing edge of the gate for establishing a scanning beam parallel to and ahead of the closing edge of the gate at a predetermined distance sufficient to sense an interfering object in the path of the gate by interruption of the beam during closing motion of the gate and thereby provide a signal to cause the power operator of the gate to stop or reverse the motion of the gate before it strikes the interfering object, at least one end of said closing edge of said gate having, as its associated part of said beam-establishing means, at least one beam-establishing element proper comprising a beam projector or a beam receiver, and a scanner housing to carry and house said beam-establishing element proper together with cable terminal and connector means, an electrical cable leading from said car gate to said cable terminal and connector means, said at least one end of said gate also having associated with it lost-motion linkage means, one part of said linkage means being associated with said scanner housing, whereby as said closing edge approaches closed position, said one part of said linkage associated with said scanner housing may engage a stop associated with said car floor, and said one part and said scanner housing may cease movement in the closing direction and thereby, while said gate completes movement to closed position, retract from a hanging position relative to said gate to a fully retracted position relative to said gate, the improvement wherein said lost-motion. linkage means includes inner and outer telescoping members extending vertically adjacent the associated one of said vertical side rails on which the gate is guided, said outer telescoping member being mounted on and for movement with said gate, said inner telescoping member comprising said part of said linkage means associated with said scanner housing, said inner member telescoping within said outer member, as said closing edge approaches closed position and following contact between said stop and said inner member, from an extended hanging position to a retracted position, said cable leading from junction means carried by said gate through the top of said inner telescoping member and lengthwise therein to said scanner housing, said housing being fastened to said inner telescoping member, said inner telescoping member including an upper extension adapted to extend lengthwise above the outer telescoping member when said inner telescoping member is in said retracted position relative to said gate, and to follow down into said outer telescoping member as said inner telescoping member shifts to said hanging position relative to said gate, said cable leading through the top of said extension and thence lengthwise therein and in said inner telescoping member proper to said scanner housing, whereby during shifting of said inner telescoping member between retracted and hanging positions, said cable is stabilized and is isolated from contact with said outer telescoping member, and is guided and protected against chafing and scuffing.

5,712,459
PUSH-TYPE SWITCH IN PARTICULAR WITH EXTENDED PUSH COMPONENT

Wolfgang Ziegler, Karlsbad, Germany, assignor to Valeo Borg Instruments GmbH & Co. KG, Remchingen, Germany

Filed Jul. 12, 1995, Ser. No. 501,438
Claims priority, application Germany, Jul. 16, 1994, 44 25 154
Int. Cl.⁶ H01H *9/00*
U.S. Cl. 200—5 R **11 Claims**

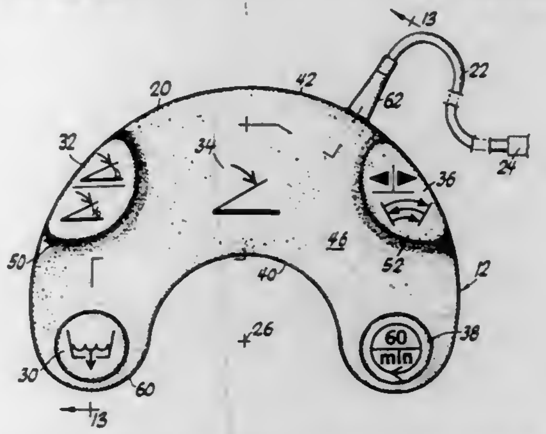


1. A push-type switch for selective activation, comprising a switching component, a lengthwise extended push component moveable in at least one direction generally perpendicular thereto, said push component in said least one direction having a push guideway, an elastic support opposing movement in said direction a lengthwise extended, torsionally and flexurally rigid transmission component interposed between said switching component and said push component, a hinge parallel with said transmission component lengthwise extended direction and crosswise to said push direction for selective flap-like support of said transmission component and plungers abutting said push component, said plungers being offset in relation to each other in said push component lengthwise direction, said plungers bearing against said transmission component.

5,712,460
MULTI-FUNCTION SURGICAL DEVICE CONTROL SYSTEM

Raymond A. Carr, Clearwater Beach, and David A. Cianciolo, Largo, both of Fla., assignors to Linvatec Corporation, Largo, Fla.

Continuation of Ser. No. 276,979, Jul. 19, 1994, abandoned. This application Sep. 17, 1996, Ser. No. 714,913
Int. Cl.⁶ H01C *10/10;* H01H *3/14*
U.S. Cl. 200—86.5 **10 Claims**



1. A foot switch for a surgical cutting apparatus comprising:

- a base plate;
- a plurality of force sensitive resistor means operatively affixed to said base plate, said force sensitive resistor means arranged in a predetermined pattern and for producing a signal having a characteristic dependent upon the force with which said force sensitive resistor means is affected;
- connecting means for operatively connecting said force sensitive resistor means to the surgical cutting apparatus;
- a flexible, integral, aperture-less cover adapted to receive and enclose at least said base plate and force sensitive resistor means, said cover comprising a plurality of predetermined function-activating areas in overlying alignment with said force sensitive resistor means, said predetermined areas being sufficiently flexible to enable selected ones of said areas to be pressed with varying selected amounts of pressure to apply variable force to a corresponding underlying one of said force sensitive resistor means to activate a predetermined function associated therewith.

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5,712,461

MOLECULAR SIEVE—PHOTOACTIVE SEMICONDUCTOR MEMBRANES AND REACTIONS EMPLOYING THE MEMBRANES

Zhenyu Zhang, Bronx, N.Y., and James R. Fehlner, Salem Township, Wayne County, Pa., assignors to Inrad, Northvale, N.J.

Division of Ser. No. 921,786, Jul. 30, 1992, Pat. No. 5,468,699. This application Nov. 17, 1995, Ser. No. 559,226

Int. Cl.^{6} C07C *1/00;* **B01J** *37/34;29/04*

U.S. Cl. 204—157.15 **18 Claims**

1. A method of conducting a chemical reaction comprising:

providing a membrane comprising an inert porous supporting substrate, wherein both semiconductor material and molecular sieve material are bonded to the substrate substantially within the pores of the substrate; directing light onto the substrate having the semiconductor material and molecular sieve material therein; contacting a quantity of reactant material with the semiconductor material and molecular sieve material to the substrate while the substrate is being illuminated with the light; and changing the composition of the reactant to a product of different composition than the reactant.

5,712,462

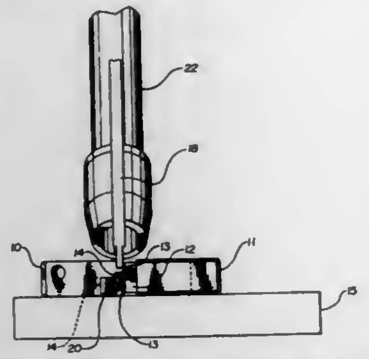
IMPLANTABLE MEDICAL DEVICE WITH HIGH RELIABILITY ELECTRICAL CONNECTION USING REACTIVE METALS

Fred J. Berkowitz, Champlin; Mark D. Bryen, Plymouth; Joseph F. Lessar, Coon Rapids, and Robert E. Kraska, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 13, 1995, Ser. No. 542,575

Int. Cl.^{6} B23K *11/00*

U.S. Cl. 219—117.1 **20 Claims**



1. A method of making an implantable medical device having a case adapted for implantation in a human or animal body and within the case an electrical connection between a pair of metal conductors, the first conductor comprised of a metal selected from the group consisting of niobium, molybdenum, tantalum, platinum, titanium, nickel and alloys thereof and the second conductor comprised of a metal selected from the group consisting of niobium, molybdenum, tantalum, titanium, nickel and alloys thereof, the method comprising:

- establishing contact between the metal comprising the first conductor and the metal comprising the second conductor;
- providing a protective atmosphere around the contacting pair of conductors,
- applying electrical energy to the contacting pair by means of a resistance welding apparatus to cause fusion of the metals comprising the conductors while maintaining the protective atmosphere; and
- enclosing the resulting fused electrical connection within the case.

5,712,463

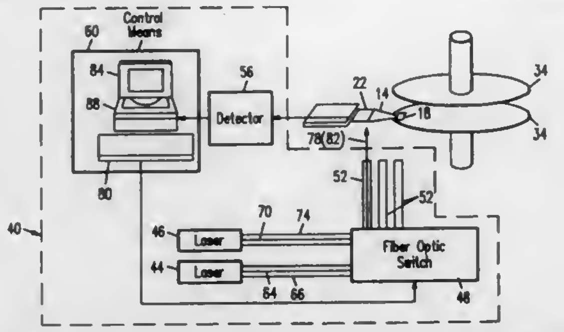
LASER APPARATUS AND METHOD FOR ADJUSTING THE GRAM LOAD STATIC ATTITUDE AND FLYING HEIGHT OF A SLIDER IN A HEAD SUSPENSION ASSEMBLY

Gurinder P. Singh; Satya P. Arya; Douglas J. Krajnovich; Timothy O'Sullivan; Pantelis S. Alexopoulos, all of San Jose, Calif., and Chih-Kung Lee, Taipel, Taiwan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1995, Ser. No. 531,214

Int. Cl.^{6} B23K *26/00*

U.S. Cl. 219—121.6 **21 Claims**



1. An apparatus for adjusting the flying heights of a plurality of sliders in a disk file comprising:

- a first laser for generating a first laser beam;
- a plurality of fiber optic lines adapted for positioning between a plurality of suspensions in a disk file and for irradiating the plurality of suspensions with the first laser beam;
- switch means for receiving the first laser beam and for redirecting the first laser beam to the plurality of fiber optic lines so that the first laser beam is transmitted to one of the plurality of suspensions at a time by one of the plurality of fiber optic lines and for switching the first laser beam from one of the fiber optic lines to another of the fiber optic lines so that each of the plurality of suspensions can be irradiated by one of the plurality of the fiber optic lines; and
- measurement means for measuring the flying height of a slider attached to one of the plurality of suspensions when the slider is flying above a magnetic disk.

5,712,464

METHOD AND APPARATUS OF COOKING FOOD IN A LIGHTWAVE OVEN

Eugene Westerberg, Palo Alto, Calif., assignor to Quadlux, Inc., Fremont, Calif.

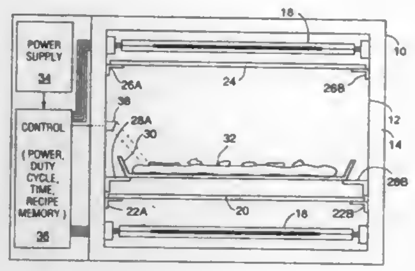
Division of Ser. No. 146,415, Nov. 1, 1993, and a continuation-in-part of Ser. No. 738,207, Jul. 30, 1991, abandoned, and Ser. No. 769,340, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 664,494, Mar. 5, 1991, abandoned, which is a continuation of Ser. No. 195,967, May 19, 1988, abandoned, said Ser. No. 738,207is a continuation-in-part of Ser. No. 350,024, May 12, 1989, Pat. No. 5,036,179. This application Jun. 7, 1995, Ser. No. 478,744

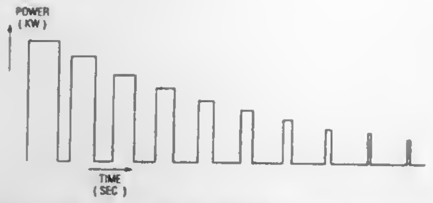
Int. Cl.^{6} H05B *3/00;* **F27B** *9/06*

U.S. Cl. 219—411 **3 Claims**

1. The method of cooking food in a lightwave oven having a plurality of high power lamps providing radiant energy in the electromagnetic spectrum including a significant portion in the near-visible and visible ranges comprising the steps of:

- irradiating the food by applying power to at least one of said lamps without vaporizing all the surface water on the food for avoiding browning in the surface thereby enabling deep penetration of the food by irradiation in the near visible and visible ranges sensing the temperature of the food to a pre-determined degree, then terminating irradiation of the food and then applying reduced irradiation to the food.





5,712,465

INSULATED ELECTRICALLY HEATED POT AND MANUFACTURING METHOD THEREFOR

Yoshiya Nishino; Masashi Yamada, and Seiichi Ito, all of Tokyo, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

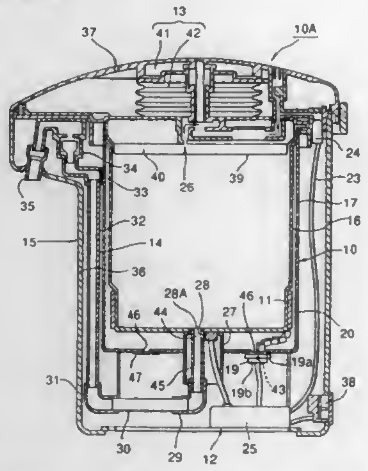
PCT No. PCT/JP94/02200, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO95/17842, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 26, 1994, Ser. No. 507,421

Claims priority, application Japan, Dec. 28, 1993, 5-350343

Int. Cl.^{6} F27D *11/00*

U.S. Cl. 219—438 **15 Claims**



1. An insulated electrically heated pot comprising an insulated container in which openings of an inner container and an outer container are made unitary, and a space between the inner and outer containers is made an insulating layer, and an electric heating apparatus which heats a liquid stored within said inner container,

- wherein the insulating layer of said insulated container is filled with at least one gas having a low heat conductivity selected from the group consisting of xenon, krypton, and argon;
- wherein the filling gas pressure of the gas having a low heat conductivity is within a range of 300–700 Torr; and
- wherein an exhaust hole is provided in the outer container and sealed by means of adhesion of a sealing plate to the exhaust hole.

5,712,466

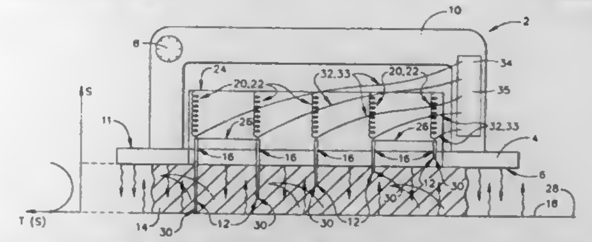
PERFECT STEAK DEVICE

James T. Spicer, 770 Shawan Rd., Morrow, Ohio 45065

Filed Oct. 30, 1995, Ser. No. 550,248

Int. Cl.^{6} H05B *3/68;* **A23L** *37/10*

U.S. Cl. 219—450 **12 Claims**



1. A cooking device having no more than a single cooking surface, the cooking device comprising:

- a plate having a top surface and a bottom surface;
- a plurality of temperature probes of different lengths projecting from said bottom surface, said temperature probes each having an end, said temperature probes configured for injecting into a piece of food such that the temperature of the food surrounding each probe end may be determined, and said temperature probes being resiliently connected to the plate in order to allow each probe to retract into the plate of the cooking device when contacting a non-penetrable surface; and
- means for indicating the temperature of at least one probe's end.

5,712,467

METHOD OF CALIBRATING AND/OR MONITORING A CONTROLLED-TEMPERATURE HEATING DEVICE

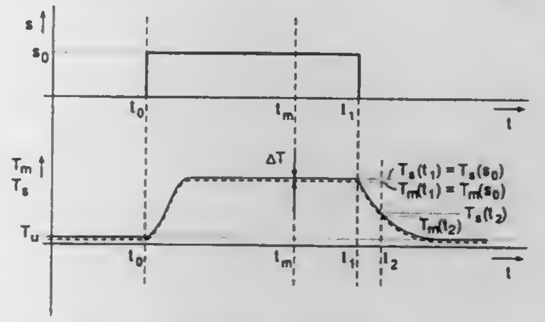
Derrick Straka, Göppingen, and Günter König, Uhingen, both of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Germany

Filed Apr. 11, 1996, Ser. No. 630,823

Claims priority, application Germany, Apr. 12, 1995, 195 13 951.8

Int. Cl.^{6} H05B *1/02*

U.S. Cl. 219—497 **6 Claims**



1. A method of monitoring a temperature controlled heating device in the form of a heated galette of a spinning-plant machine in the production of synthetic yarn, said method comprising the steps of:

- (a) disconnecting a temperature-control circuit from a heating unit of said heating device for monitoring thereof and energizing said heating unit with a constant first control ratio (s_0);
- (b) upon said heating unit attaining an equilibrium temperature with a heated part of the heating device, measuring a first actual-value temperature ($T_m(t_m)$) of the heated part with a temperature sensor;
- (c) determining a difference (ΔT) of the measured first actual-value temperature ($T_s(t_m)$) of the heated part from a setpoint temperature ($T_s(t_m)$) corresponding to said constant first control ratio (s_0) and generating a signal representing said difference;
- generating a failure signal (F) upon a detection of magnitude of said difference (ΔT) exceeding a predetermined maximum permissable value thereof;

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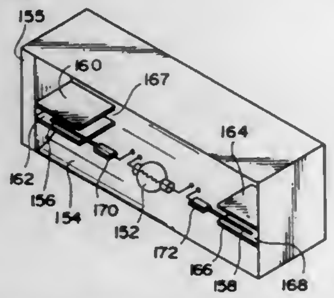
- altering the control ratio to a second constant control ratio upon the generation of said failure signal; and
- determining whether a defect resides in said heating unit or in said temperature sensor in dependence upon a comparison of the slopes of the measured actual temperature ($T_m(t \geqq t_1)$ and the setpoint temperature ($T_s(t \geqq t_1)$ characteristics after control ratio alteration at least one point or by a comparison of average slopes over a given time interval.

5,712,468
MICROWAVE OVEN ILLUMINATION

Ronald Ace, 15706 Bond Mill Rd., Burtonsville, Md. 20707
Filed Jun. 1, 1995, Ser. No. 457,585
Int. Cl.⁶ H05B *6/68;* F21V *33/00*
U.S. Cl. 219—758 **18 Claims**

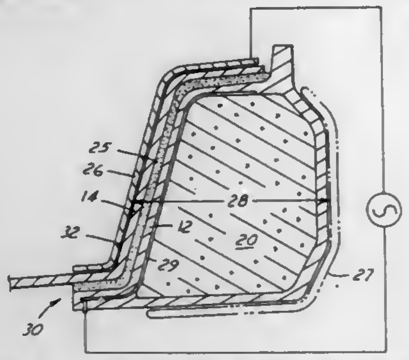


1. A lamp module for insertion in a cooking cavity of a microwave oven to illuminate the cavity, comprising:

- a housing;
- means for mounting said housing in the cooking cavity of a microwave oven for direct exposure to microwave energy in the cavity;
- a low-voltage high brightness lamp mounted in said housing;
- a microwave antenna mounted on said housing, electrically connected to said lamp, and responsive to microwave energy in the cooking cavity to supply electrical current to said lamp; and
- means for regulating the electrical current supplied to said lamp.

5,712,469
METHOD OF CURING INACCESSIBLE THERMOSET ADHESIVE JOINTS USING RADIO FREQUENCY DIELECTRIC HEATING

Kimberly Ann Chaffin, Plymouth, Minn., and Ray Alexander Dickie, Northville, Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Oct. 6, 1995, Ser. No. 540,383
Int. Cl.⁶ H05B *6/62*
U.S. Cl. 219—765 **8 Claims**

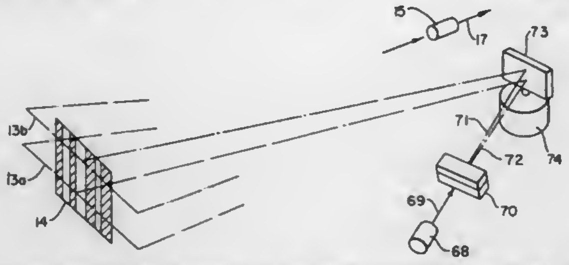


1. A method of curing inaccessible thermoset adhesive joints, comprising:

- (a) forming plastic composite structures to be bonded at mating surfaces when assembled to form a load supporting frame, the shortest distance from the mating surfaces to the exterior of the assembly inhibiting the application of radio frequency heating by exterior electrodes;
- (b) while forming said structures, embedding and molding into at least one of said structures, spaced from the surfaces to be adhered, an electrode of sufficient thickness and spacing to project radio frequency waves through said one structure to said adhesive when energized, said electrode being formed of fibers or a thin film;
- (c) assembling the surfaces together with a thermoset adhesive therebetween in intimate contact with each of the surfaces; and
- (d) connecting said fiber or thin film electrode in a circuit for passing radio frequency waves across the adhesive to effect dielectric heating of the adhesive for a controlled period of time and at a predetermined temperature rise for curing.

5,712,470
BAR CODE SCANNER UTILIZING MULTIPLE LIGHT BEAMS OUTPUT BY A LIGHT BEAM SPLITTER

Joseph Katz, Stony Brook; Boris Metlitsky, Mt. Sinai, both of N.Y., and Emanuel Marom, Tel Aviv, Israel, assignors to Symbol Technologies, Inc., Holtsville, N.Y.
Division of Ser. No. 98,991, Jul. 29, 1993, Pat. No. 5,545,886, which is a division of Ser. No. 864,367, Apr. 6, 1992, Pat. No. 5,258,605, which is a continuation of Ser. No. 493,134, Mar. 13, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,880
Int. Cl.⁶ G06K *7/10*
U.S. Cl. 235—462 **14 Claims**



1. A method for scanning a bar code symbol comprising the steps of:

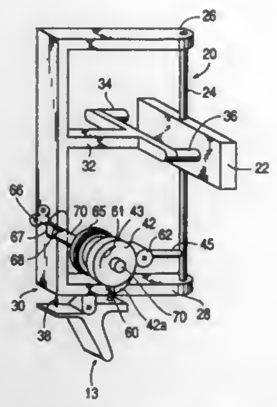
- generating a light beam;
- splitting the light beam using a liquid crystal device to produce split light beams;
- directing the split light beams toward a bar code symbol;
- detecting light reflected from the bar code symbol and producing an electrical signal;
- decoding the electrical signal;
- determining whether the step of decoding the electrical signal is successful; and
- adjusting the liquid crystal device when the decode is determined to be unsuccessful.

5,712,471
BAR CODE SCANNER HAVING A SPIRAL TORSION DEFLECTOR

Edward Bremer, Rochester, N.Y., assignor to PCS Inc., Webster, N.Y.
Filed Sep. 1, 1995, Ser. No. 522,683
Int. Cl.⁶ G06K *07/10*
U.S. Cl. 235—492 **21 Claims**

1. A bar code scanner comprising:

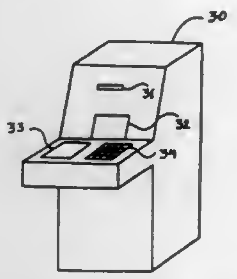
- (a) a movable component mounted in a light path for guiding light therein; and
- (b) an actuator initiating oscillations in the movable component to guide the light in the light path, at least one of the oscillations guiding the light across all parts of a bar code, wherein said actuator includes
  - a coil spring;
  - an output shaft connected with the coil spring for rotation thereby when the coil spring is released, the output shaft operably connected to the movable component to impart oscillation energy to the movable component;
  - a winding mechanism for winding up the coil spring; and



  - a trigger for releasing the coil spring for a desired number of rotations of the output shaft.

5,712,472
CARD READ/WRITE METHOD

Sung-cheoul Lee, Uijeongbu, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Feb. 12, 1996, Ser. No. 599,877
Claims priority, application Rep. of Korea, Feb. 25, 1995, 95-3766
Int. Cl.⁶ G06K *7/00*
U.S. Cl. 235—486 **20 Claims**

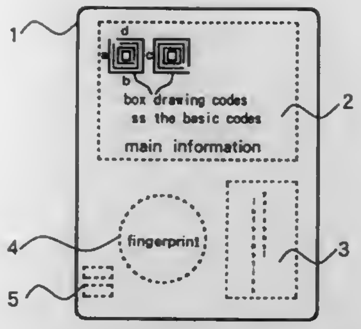


1. A data processing system for use in conjunction with a smart card and a memory card, comprising:

- a central computer for performing data processing; and
- a card terminal connected to said central computer through a communication line, said card terminal comprising a card insertion slot adapted to receive each of the smart card and the memory card, a single card read and write device for making a determination of whether a card inserted into the card insertion slot is one of the smart card and the memory card and enabling read and write operations of the card inserted in dependence upon said determination, said single card read and write device determining that the card inserted into the card insertion slot is the smart card when an answer-to-reset signal is present upon initialization of the card inserted, and determining that the card inserted into the card insertion slot is the memory card when the answer-to-reset signal is absent upon initialization of the card inserted.

5,712,473
PREPAID CARD

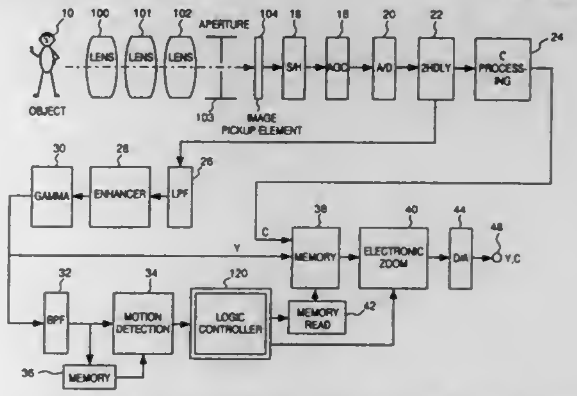
Kichinosuke Nagashio, 39-2, 3-chome Ebisu Shibuya-ku, Tokyo, Japan
Filed Jun. 11, 1996, Ser. No. 664,285
Claims priority, application Japan, Oct. 20, 1995, 7-295890
Int. Cl.⁶ G06K *19/06*
U.S. Cl. 235—494 **4 Claims**



1. A prepaid card having a transparent print pattern with box drawing codes provided as basic codes in the form of four tetrahedrons of different sizes arranged one inside another, the four sides of each tetrahedron being constituted by respective segments representing respective bit expressions, the individual bit expressions of the segments being for a predetermined digit place arrangement from the least significant digit place to provide a binary number system expression representing a corresponding decimal or hexadecimal number system expression, a predetermined numeral, character, symbol, being represented by the bit expression of each segment of a summation of some of the bit expressions.

5,712,474
IMAGE PROCESSING APPARATUS FOR CORRECTING BLURRING OF AN IMAGE PHOTOGRAPHED BY A VIDEO CAMERA

Kitahiro Naneda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 314,009, Sep. 28, 1994, abandoned. This application Jan. 9, 1997, Ser. No. 781,527
Claims priority, application Japan, Sep. 29, 1993, 5-265795; Sep. 29, 1993, 5-265796; Sep. 29, 1993, 5-265797; Sep. 29, 1993, 5-265799
Int. Cl.⁶ H04N *5/30;5/228;7/18*
U.S. Cl. 250—208.1 **44 Claims**



1. An image processing apparatus for detecting motion vectors from an image signal and correcting an image blur in real time, comprising:

- detection means for detecting motion vectors between images by executing a correlation calculation between time-serially continuous images;
- calculation means for calculating an absolute deviation of an image from a reference point on the basis of the motion vectors detected by said detection means;
- comparison means for comparing the absolute deviation with a predetermined correction amount; and
- interruption means for, when a state wherein the absolute deviation is larger than the predetermined correction mount continues for a predetermined period of time or longer, determining that the image blur has exceeded a correctable range, and interrupting correction of the image blur.

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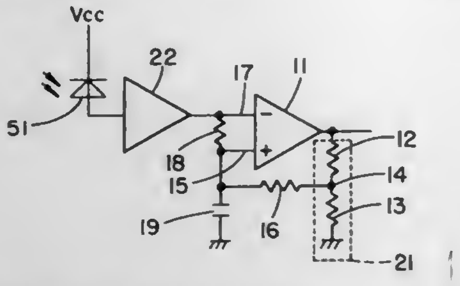
5,712,475
LIGHT RECEIVING CIRCUIT WITH VARIABLE THRESHOLD CIRCUIT

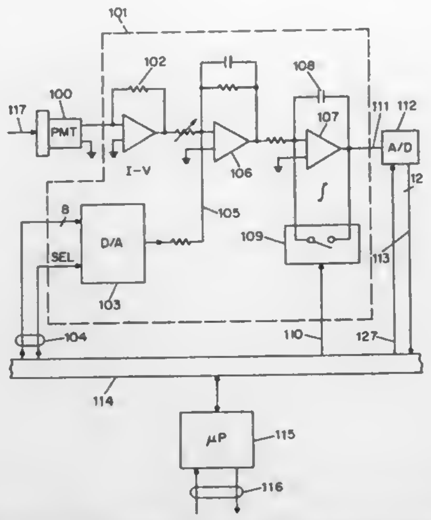
Hirosbl Ohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 6, 1995, Ser. No. 554,273
Claims priority, application Japan, Nov. 4, 1994, 6-270987
Int. Cl.^{6} H01J *40/14*
U.S. Cl. 250—214 DC **4 Claims**



1. A light receiving circuit comprising:
photoelectric conversion means for outputting a voltage signal obtained according to intensity of a received optical signal;
comparison means for inputting an output of the photoelectric conversion means from an inverting input terminal thereof, for outputting a high level signal having a predetermined voltage when a voltage applied to the inverting input terminal thereof is lower than a voltage applied to a non-inverting input terminal thereof, and for outputting a low level signal having a constant voltage lower than the predetermined voltage of the high level signal when the voltage applied to the inverting input terminal thereof is higher than the voltage applied to the non-inverting input terminal thereof;
voltage supply means for supplying a constant voltage nearly equal to one of the voltage of the high level signal and the voltage of the low level signal, which is closer to a predetermined threshold voltage to be applied to the non-inverting input terminal of the comparison means when the intensity of the optical signal increases;
first voltage dividing means for dividing a potential difference between an output voltage of the voltage supply means and an output voltage of the comparison means at a predetermined voltage division ratio and for decreasing a difference between a potential difference, which is caused between a partial voltage obtained as a result of the voltage division and the predetermined threshold voltage when a high level signal is outputted from the comparison means, and a potential difference which is caused therebetween when a low level signal is outputted from the comparison means; and
second voltage dividing means for dividing a potential difference between a partial voltage outputted by the first voltage dividing means and a voltage applied to the inverting input terminal at a predetermined voltage division ratio and for supplying a threshold voltage to the non-inverting input terminal of the comparison means.

5,712,476
ELECTROPHORESIS AND FLUORESCENCE DETECTION APPARATUS

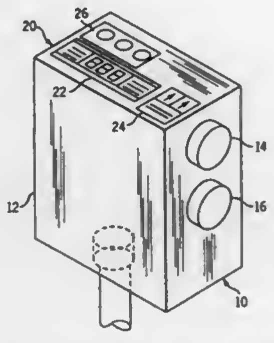
John A. Renfrew, Burlington, and James W. Cassidy, Waterloo, both of Canada, assignors to Visible Genetics Inc., Toronto, Canada
Division of Ser. No. 452,719, May 30, 1995. This application Mar. 27, 1996, Ser. No. 624,789
Int. Cl.^{6} H01J *40/14*
U.S. Cl. 250—214 R **14 Claims**



1. A detection apparatus comprising:
an electromagnetic radiation emitter, an electromagnetic radiation detector, and a detection area juxtaposed with the emitter and juxtaposed with the detector, said electromagnetic radiation detector having an electrical output indicative of detected light; and
an integrator responsive to the output, said integrator integrating over repeated short intervals and repeated long intervals, the short intervals being less than half as long in duration as the long intervals.

5,712,477
SYSTEM TO PROVIDE ALIGNMENT AND TROUBLESHOOTING AID PHOTOELECTRIC SENSORS THROUGH ALTERNATING NUMERIC DISPLAY

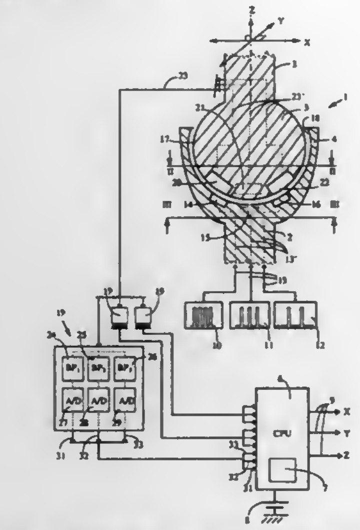
Patrick J. Delaney, III, Sudbury, and Elik I. Fooks, Lexington, both of Mass., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.
Filed May 14, 1996, Ser. No. 647,500
Int. Cl.^{6} G01V *9/04*
U.S. Cl. 250—221 **10 Claims**



1. In a photoelectric control unit for detecting targets and backgrounds in a process operating at a process speed, said unit comprising a microprocessor, a light source connected to said microprocessor for generating light pulses, a photodetector arranged for detecting return light pulses originating from said light source and providing a photoelectric output signal, a display apparatus comprising:
means for generating an average target margin and an average background margin for a predetermined number of targets and backgrounds based upon said output signal; and
an alternating display unit, said display connected to said means for generating an average target margin and an average background margin and alternately displaying said margins.

5,712,478
APPARATUS FOR MEASURING POSITION OF BALL JOINT

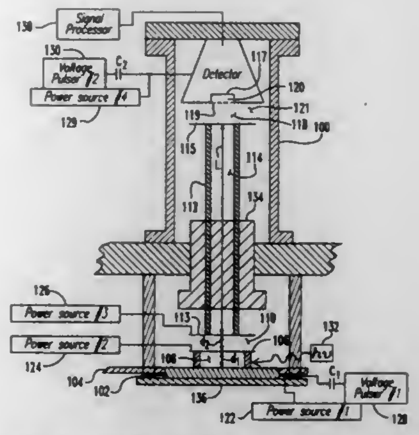
Carl Johan Olsson, Åmål, Sweden, assignor to Swedish Conrtol System AB, Amal, Switzerland
Filed Apr. 18, 1996, Ser. No. 634,182
Claims priority, application Sweden, Apr. 20, 1995, SE.A.9501442-9
Int. Cl.^{6} G01D *5/34*
U.S. Cl. 250—231.13 **18 Claims**



1. Device for measuring three dimensional movement in a joint about three mutually orthogonal axes, where the joint comprises two joint halves which are moveable in relation to each other around the three orthogonal axis, with a common centre for each joint half, which device comprises:
at least two signal emitters located at a predetermined distance from each other in a first joint half;
at least two signal collectors located at a predetermined distance from each other in a second joint half;
at least one additional signal emitter or signal collector, the additional emitter being located at a predetermined distance from said at least two signal emitters and in the same joint half, the additional signal collector being located at a predetermined distance from said at least two signal collectors and in the same joint half;
a signal generating unit connected to each signal emitter for causing the signal emitters to emit signals having unique characteristics; and
a signal processing unit connected to each signal collector for detecting signals from the signal emitters.

5,712,479
SPATIAL-VELOCITY CORRELATION FOCUSING IN TIME-OF-FLIGHT MASS SPECTROMETRY

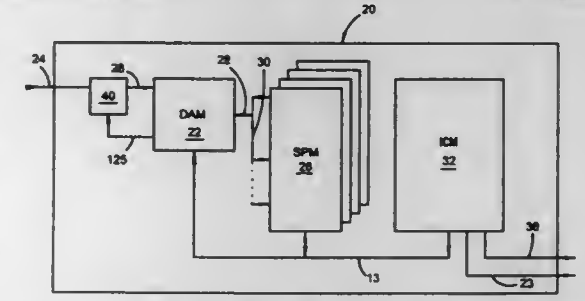
James P. Reilly; Steven M. Colby, and Timothy B. King, all of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.
Continuation of Ser. No. 327,618, Oct. 24, 1994, Pat. No. 5,504,326. This application Dec. 1, 1995, Ser. No. 566,140
Int. Cl.^{6} H01J *49/40*
U.S. Cl. 250—282 **12 Claims**



1. A method of operating a time-of-flight mass spectrometer, the spectrometer having a first region including a sample source disposed therein, and an ion detector remote from the first region, the method comprising the steps of:
establishing a non-zero field within the first region of the spectrometer;
generating ions from the sample source within the first region;
establishing an ion accelerating field within the first region after establishing said non-zero field therein, said ion accelerating field accelerating said ions generated within the first region toward the ion detector; and
detecting said accelerated ions at the ion detector and determining therefrom mass to charge ratios of said accelerated ions.

5,712,480
TIME-OF-FLIGHT DATA ACQUISITION SYSTEM

Michael Charles Mason, St. Joseph, Mich., assignor to Leco Corporation, St. Joseph, Mich.
Filed Nov. 16, 1995, Ser. No. 558,783
Int. Cl.^{6} B01D *59/44*; **H01J** *49/00*
U.S. Cl. 250—287 **27 Claims**



1. A system for detecting ions of interest in a time-of-flight mass spectrometer, comprising in combination:
a signal acquisition circuit for detecting ions as a function of time and generating output signals indicative thereof;
a sequence and storage control circuit for marking said output signals as said function of time as signals to be stored and signals to be ignored;
a buffer circuit for storing said signals to be stored; and
a digital signal processor circuit receiving said signals stored in said buffer circuit for processing and generating an output indicative thereof.

5,712,481
PROCESS AND APPARATUS FOR ANALYSIS OF HYDROCARBON SPECIES BY NEAR INFRARED SPECTROSCOPY

William T. Welch, Ashland, Ky.; Michael B. Sumner, Huntington, W. Va.; Brian K. Wilt, Ashland, Ky.; Roy Roger Bledsoe, Huntington, W. Va., and Steven M. Maggard, Ashland, Ky., assignors to Ashland Inc, Ashland, Ky.
Continuation of Ser. No. 305,233, Sep. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 506,391, Apr. 9, 1990, Pat. No. 5,349,188. This application Jul. 23, 1996, Ser. No. 685,364
Int. Cl.^{6} G01J *5/02*
U.S. Cl. 250—339.12 **18 Claims**

1. In a process for the analysis of a mixture of liquid hydrocarbons comprising a chemical species to determine species concentration, the improvement comprising in combination:

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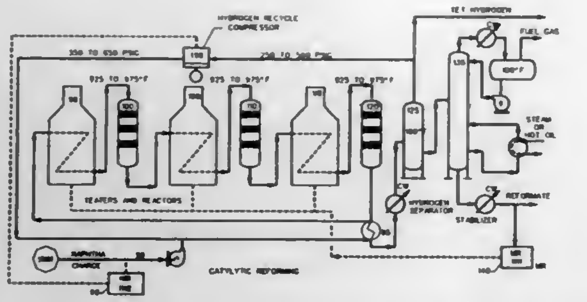


- a) measuring the near infrared absorption in at least two of the bands of:
  - 1) For benzene: 850–925 nm and/or 1120–1260 nm and/or 1600–1670 nm and/or 1780–1858 nm and/or 2100–2160 nanometers (nm);
  - 2) For toluene: 860–910 nm and/or 975–1000 nm and/or 1214–1230 nm and/or 1600–1670 nm and/or 1780–1858 nm and/or 2000–2160 nm;
  - 3) For xylenes: 850–930 nm and/or 940–990 nm and/or 1015–1045 nm and/or 1120–1214 nm and/or 1320–1530 nm and/or 1600–1670 nm and/or 1780–1858 nm and/or 2000–2040 nm and/or 2100–2160 nm;
  - 4) For alkyl benzenes: 850–900 nm and/or 1015–1045 nm and/or 1156–1264 nm and/or 1214–1230 nm and/or 1214–1264 nm, and/or 1320–1480 nm and/or 1600–1670 nm and/or 1970–2040 nm;
  - 5) For n-paraffins: 1156–1264 nm and/or 1320–1480 nm and/or 1600–1670 nm and/or 1780–1858 nm and/or 1940–2100 nm;
  - 6) For isoparaffins: 1156–1264 nm and/or 1320–1500 nm and/or 1560–1670 nm and/or 1780–1858 nm, and/or 1900–2160 nm;
  - 7) For naphthenes: 1156–1430 nm and/or 1780–1858 nm; or
  - 8) For olefins: 1132–1214 nm; and/or 1600–1670 nm;
- b) taking each of the absorbances measured, or a mathematical function thereof;
- c) performing multiple regression analysis, partial least squares analysis, or other statistical treatment using the above absorbances or functions as individual independent variables,
- d) assigning and applying weighting constants or their equivalents to said independent variables,
- e) applying the above steps using known compositions to calibrate the instrument and determine said weighting constants or equivalents,
- f) outputting a signal indicative of the species concentration in the mixture, based on said absorbances or functions.

5,712,482

PORTABLE ELECTRONIC RADIOGRAPHIC IMAGING APPARATUS

James E. Gaiser, Charlotte; William J. Root, Huntersville, and Charles W. Kinsey, Charlotte, all of N.C., assignors to Physics Technology, Inc., Huntersville, N.C.

Filed Aug. 5, 1996, Ser. No. 691,019

Int. Cl.^{6} G03B *42/02;* G01T *1/20*

U.S. Cl. 250—363.08 **31 Claims**

1. An apparatus for electronic generation of radiographic images during medical procedures, the apparatus comprising:

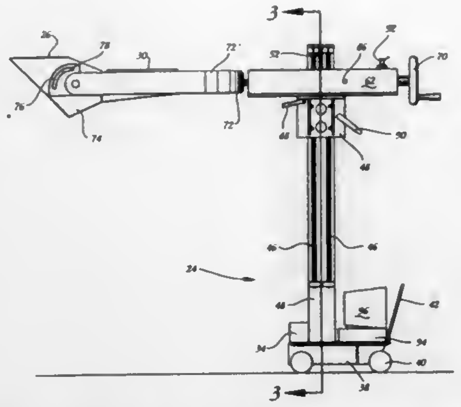
a movable support structure transportable to and from, and selectively positionable relative to, a radiation source;

an imaging screen comprising a photostimulable composition;

means mounting the screen on the support structure for selective positioning movement of the screen among various spatial orientations thereof relative to the radiation source; and

means mounted on the support structure for capturing in electronic form images produced by the screen;

wherein the means mounting the screen on the support structure comprises an upstanding stanchion fixed on the support structure, an arm extending laterally outwardly from the stanchion and defining a longitudinal arm axis, means for moving the arm vertically along the stanchion and rotatably with respect to the longitudinal arm axis, and means mounting the screen pivotably with respect to the arm.



5,712,483

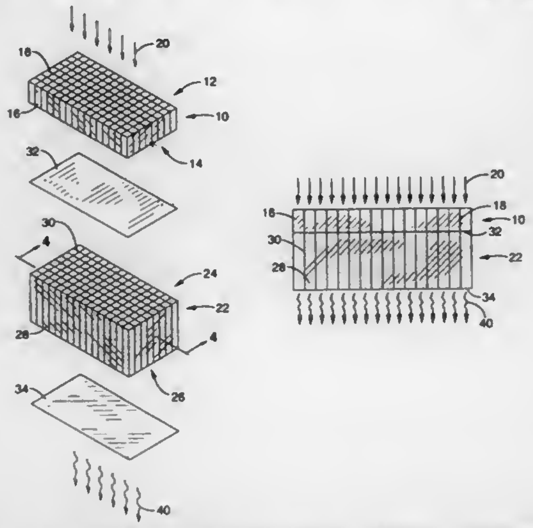
X-RAY GRID-DETECTOR APPARATUS

John M. Boone, Folsom, and Stephen M. Lane, Oakland, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 28, 1996, Ser. No. 672,633

Int. Cl.^{6} G01T *1/20*

U.S. Cl. 250—367 **28 Claims**



1. A grid-detector apparatus for x-ray imaging, comprising a plurality of adjacent channels separated by walls comprising glass containing a material of an atomic number capable of attenuating x-rays, said walls having a thickness ranging from approximately 5 μm to approximately 800 μm, said channels having a width ranging from approximately 20 μm to approximately 200 μm, said channels having first and second adjacent sections, said first sections configured to allow passage of x-rays therethrough, said second sections including means for converting x-ray energy into luminescent energy.

5,712,484

GERMANIUM DETECTOR

Hideo Harada, Naka-gun, and Isamu Sato, Tuchiura, both of Japan, assignors to Doryokuro Dakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,607

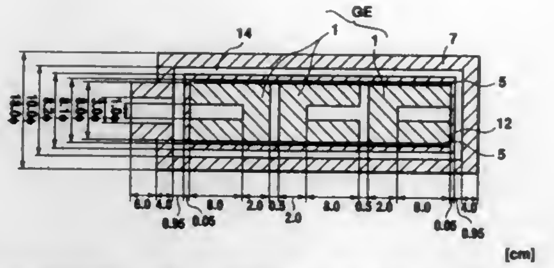
Claims priority, application Japan, Apr. 21, 1995, 7-096532

Int. Cl.^{6} G01T *1/24*

U.S. Cl. 250—370.15 **7 Claims**

1. A germanium detector comprising:

a housing;



a germanium crystal contained in the housing, said crystal having two ends and a peripheral surface extending between the two ends, said crystal further extending in an incidence direction of a gamma ray flux for detecting an energy spectrum of the gamma ray flux; and

a copper cooling layer continuous around the peripheral surface of the germanium crystal.

5,712,485

RADIATION-DOSE INDICATOR AND LAMP AND TANNING APPARATUS COMPRISING SUCH A RADIATION-DOSE INDICATOR

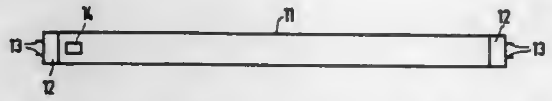
Dirk J. Broer, Eindhoven, Netherlands; Johannes A. F. Peek, San Pedro Garza Garcia, Mexico, and Ingrid E. J. R. Heynderickx, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1996, Ser. No. 652,396

Claims priority, application European Pat. Off., May 23, 1995, 95201343.1

Int. Cl.^{6} G01J *1/50*

U.S. Cl. 250—474.1 **30 Claims**



1. A radiation-dose indicator comprising an optically active layer, wherein said optically active layer includes a liquid-crystalline material and a radiation-sensitive compound which is converted under the influence of radiation in such a manner as to change the order of the liquid-crystalline material, the optically active layer exhibiting a liquid -crystalline order which is broken after conversion of the radiation-sensitive compound.

5,712,486

FLEXIBLE CASSETTE FOR HOLDING STORAGE PHOSPHOR SCREEN

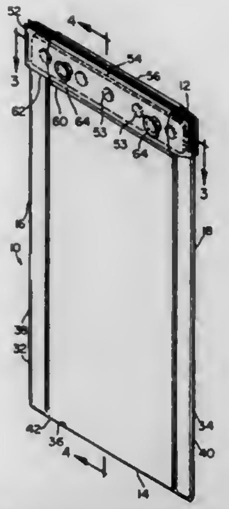
Peter K. Soltani, West Chester; Michael D. Neary, Phoenixville, both of Pa., and Ronald Jay Geil, Sr., Vermilion, Ohio, assignors to Liberty Technologies, Inc., Conshohocken, Pa.

Filed Apr. 15, 1996, Ser. No. 633,917

Int. Cl.^{6} B65D *85/00;* G03B *42/04*

U.S. Cl. 250—484.4 **63 Claims**

1. An opaque, generally flat flexible cassette for receiving and holding an imaging storage medium while the storage medium is radiographed, the flexible cassette having a width and an open end extending across at least a portion of the width, a closed end and closed edges, a first inside surface and a second inside surface opposite the first inside surface, the cassette having sufficient flexibility to be wrapped around an object to be radiographed, the flexible cassette comprising a substantially light-tight sealing device disposed near the open end, the sealing device allowing the cassette to be placed in either an open position for receiving or discharging the imaging storage medium, or a closed position for holding the imaging storage medium therein, between the first and second inside surfaces,



wherein the sealing device comprises first and second bars having pairs of oppositely poled magnets embedded therein and spaced along the bars, each bar extending across at least a portion of the width of the cassette, and attached to opposite outer facing end surfaces of the open end of the flexible cassette, magnetic attraction between the pairs of magnets causing the opposite end surfaces of the open end of the flexible cassette to be pressed together, thereby closing the open end of the cassette and inhibiting light from entering inside the flexible cassette.

5,712,487

LIGHT IRRADIATOR

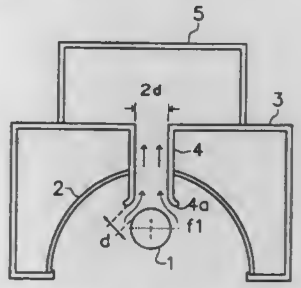
Hidehiko Adachi, and Kunihiko Yonejima, both of Yokohama, Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 548,252

Claims priority, application Japan, Oct. 25, 1994, 6-260028; Dec. 5, 1994, 6-300536

Int. Cl.^{6} G01J *1/00*

U.S. Cl. 250—492.1 **13 Claims**



1. Light irradiator having an elongated mirror with a cross section of an at least partially elliptical shape, a rod-shaped lamp with a center axis located at a first focal position of the at least partially elliptical shape of the mirror, and a lamp housing containing said mirror and lamp; wherein said mirror has a cooling opening at a vertex of the at least partially elliptical shape; wherein a cooling nozzle with an inlet for cooling air is positioned in said cooling opening projecting toward said lamp, said inlet being located a predetermined distance from said lamp; and wherein a workpiece to be irradiated is located at a second focal position of the at least partially elliptical shape of the mirror; and wherein the lamp is a high voltage lamp with an external tube diameter of less than or equal to 18 mm and wherein an electrical input source of at least 250 W/cm per unit length is connected to said high voltage lamp.

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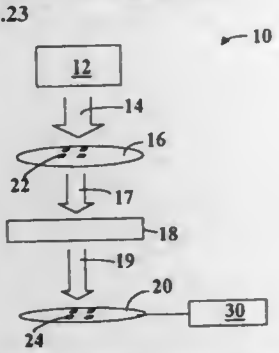
5,712,488
ELECTRON BEAM PERFORMANCE MEASUREMENT SYSTEM AND METHOD THEREOF

Werner Stickel, Ridgefield, Conn., and Christopher Frederick Robinson, Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1996, Ser. No. 725,665
Int. Cl.^{6} H01J *37/304*
U.S. Cl. 250—492.23 **20 Claims**

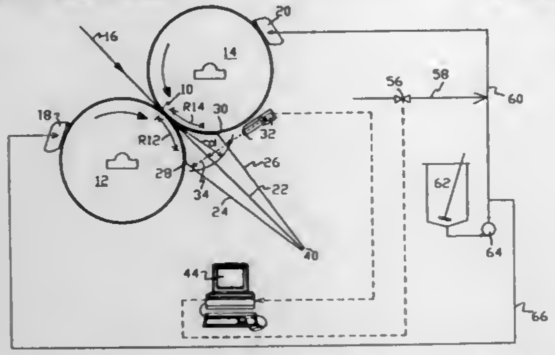


1. An electron beam performance measurement system comprising:
- a test reticle, having a series of openings that form a pattern, for producing a patterned beam when a radiation beam passes through said pattern;
- a demagnification device, capable of receiving said patterned beam, for generating a reduced patterned beam by reducing said patterned beam size;
- a reference target having a series of openings that form a pattern, for receiving said reduced patterned beam from said demagnification device; and
- a beam current detector, capable of receiving said reduced patterned beam, for measuring the amount of beam current from said reduced patterned beam that is absorbed on, backscattered from, or transmitted through said reference target.

5,712,489
WEB FLUTTER DETECTION

David Richard Elvidge, North Vancouver; Ronald Ewald Greb, Burnaby, and Malcolm Kenneth Smith, North Vancouver, all of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Nov. 21, 1995, Ser. No. 560,781
Int. Cl.^{6} G01N *21/00*
U.S. Cl. 250—559.43 **20 Claims**

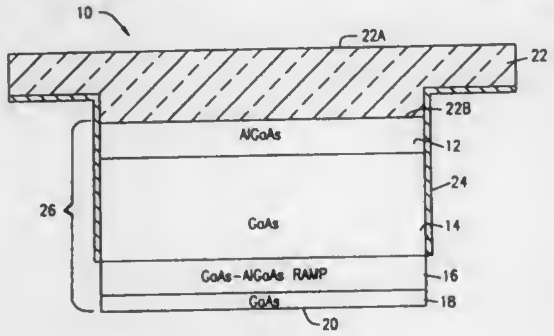


1. A system for determining web flutter of a web on an off-going side of a nip formed between a pair of rolls comprising a proximity sensor means, means mounting said proximity sensor means in a position wherein said sensor means can detect the distance between said web and said sensor means within a distance d of travel of said web from said nip of between 10 and 30 cm, said proximity sensor means including a light source means to direct a beam of light onto said web and a detector means to detect reflected dispersed light reflected from said web and originating with said light source, said proximity sensor means having protective tubular passage forming means along which said beam of light from said light source means is transmitted from said light source means toward said web and through which reflected light passes when traveling from said web to said detector means.

5,712,490
RAMP CATHODE STRUCTURES FOR VACUUM EMISSION

Arlynn W. Smith, Blue Ridge, Va., assignor to ITT Industries, Inc., White Plains, N.Y.

Filed Nov. 21, 1996, Ser. No. 754,765
Int. Cl.^{6} H01L *29/06;29/12;* **H01J** *31/00*
U.S. Cl. 257—11 **19 Claims**

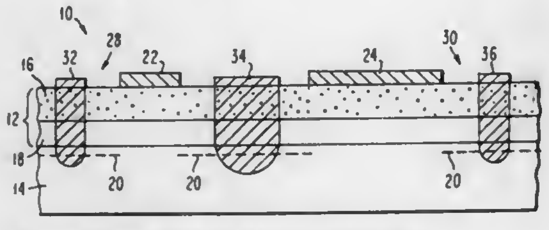


1. A photocathode device, comprising:
- a window layer, an active layer, a composition ramp layer, and an emissive layer, wherein
- said active layer is disposed over said window layer;
- said composition ramp layer is disposed over said active layer; and
- said emission layer is disposed over said ramp layer and having an emission surface, wherein said active layer, said ramp layer, and said emission layer form a compositionally graded layer in that the bandgap is widened from said active layer to said emission layer while the dopant concentration is decreased between said active layer and said emission layer so that the conduction band profile of said device is maintained substantially flat, thereby increasing the photoresponse of said device.

5,712,491
LATERAL THETA DEVICE

Mordehai Heiblum, Yorktown Heights; Alexander Palevski, Ossining, and Corwin Paul Umbach, Katonah, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 587,534, Sep. 21, 1990, abandoned, which is a continuation of Ser. No. 260,098, Oct. 20, 1988, abandoned. This application Jun. 30, 1992, Ser. No. 908,483
Int. Cl.^{6} H01L *29/24;29/68*
U.S. Cl. 257—26 **29 Claims**

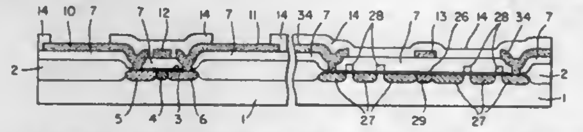


1. A lateral semiconductor device comprising:
- a sandwich of a first layer of semiconductor material having a first electron affinity and a second layer of semiconductor material having a second electron affinity different from that of said first layer, said second layer forming a heterojunction with said first layer, the difference between said first and second electron affinities allowing the formation of a two dimensional carrier gas in said second layer adjacent the heterojunction;
- first and second spaced electrodes disposed on the surface of said first layer for inducing first and second barriers to the flow of charge carriers in said carrier gas, said first and second electrodes defining a first region of said sandwich between said electrodes and second and third region of said sandwich extending beyond said electrode along the length of said device, and the width of said electrode being sufficiently narrow to induce said barrier with a sufficiently narrow width to permit tunnelling of charge carriers through said first barrier which are then ballistically transported through said first region; and
- means in electrical contact with said carrier gas for applying electrical potentials to said first, second and third regions.

5,712,492
TRANSISTOR FOR CHECKING RADIATION-HARDENED TRANSISTOR

Tetsuya Kokubun, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 24, 1996, Ser. No. 685,668
Claims priority, application Japan, Jul. 25, 1995, 7-209241
Int. Cl.^{6} H01L *29/78;23/58*
U.S. Cl. 257—48 **6 Claims**



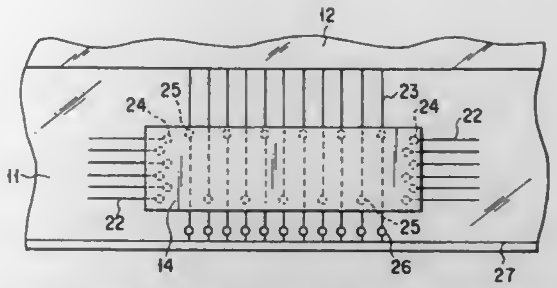
1. A checking transistor for checking selected regions of semiconductor substrate containing radiation-hardened semiconductor circuitry having a plurality of transistors, a first field oxide film for separating a plurality of said transistors, a second field oxide film, said second field oxide film being thinner than said first field oxide film, a first impurity region of one conductivity type provided below said second field oxide film, an interlayer insulating film provided on said first and second field oxide films and a first gate electrode over said interlayer insulating film, said checking transistor comprising:
- a source region of the other conductivity type and a drain region of the other conductivity type formed on said semiconductor substrate through the same fabrication steps as those used to fabricate source and drain regions of said transistors;
- a second impurity region of the one conductivity type formed between said source region of the other conductivity type and said drain region of the other conductivity type through the same fabrications steps as those used to fabricate said first impurity region of the one conductivity type;
- an oxide film on said source region of the other conductivity type, said drain region of the other conductivity type and said second impurity region of the one conductivity type, said oxide film having the same thickness as that of said second field oxide film;
- an insulating film provided on said oxide film, said insulating film having the same thickness as that of said interlayer insulating film; and
- a second gate electrode provided on said insulating film.

5,712,493
DISPLAY DEVICE HAVING DRIVING CIRCUITS AT THE PERIPHERY OF A SUBSTRATE

Miki Mori, Yokohama; Chiaki Takubo, Tokyo, and Takeshi Sasaki, Chigasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 18, 1996, Ser. No. 617,241
Claims priority, application Japan, Mar. 20, 1995, 7-059605
Int. Cl.^{6} G02F *1/1343;1/137;1/133;* **H01L** *29/04*
U.S. Cl. 257—59 **19 Claims**

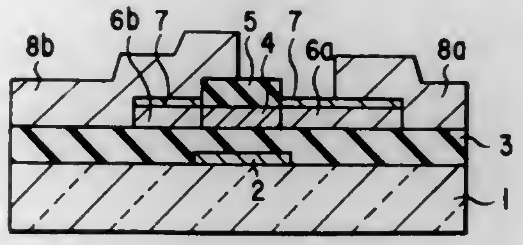
1. A display device comprising:
- a substrate;
- a rectangular display section provided on the substrate and having four sides;
- a plurality of driving semiconductor elements formed on peripheral portions of the substrate in the vicinity of the display section, each of the driving semiconductor elements having a first and a second opposite long side and two opposite short sides, the first long side being opposed to one side of the display section;
- a first plurality of output terminals formed on a first surface area portion adjacent to the first long side and a second plurality of output terminals formed on a second surface area portion adjacent to the second opposite long side, the first and second plurality of output terminals being substantially equal in number;
- a plurality of input terminals formed on third and fourth surface area portions which are, respectively, adjacent to one of the opposition short sides of each of the driving semiconductor elements;
- a plurality of output lines formed on the substrate each having one end connected to one of the first and second plurality of output terminals and an opposite end connected to the display section so as to output signals from each of the first and second plurality output terminals to the display section, the plurality of output lines crossing under the first long side; and
- a plurality of input lines formed on the substrate and connecting the plurality of input terminals on the opposite short sides of the driving semiconductor elements to an input interface area on the substrate, said input interface area being connectable with an exterior signal source to supply input signals to said input terminals on each of the opposite short sides of the driving semiconductor elements, the plurality of input lines crossing under the corresponding opposite short sides.



5,712,494
THIN FILM FIELD EFFECT TRANSISTOR HAVING AN EXTENSION PORTION ACTING AS A LIGHT SHIELD AND BACK GATE

Masahiko Akiyama, Tokyo; Yoshimi Ikeda, Yokohama, and Toshiya Kiyota, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 18, 1996, Ser. No. 618,305
Claims priority, application Japan, Mar. 22, 1995, 7-062237
Int. Cl.^{6} H01L *29/04*
U.S. Cl. 257—59 **17 Claims**



1. A thin film field effect transistor for a display device, comprising:
- a substrate having an insulating surface;
- a gate electrode formed on said insulating surface;
- a channel region, formed of a semiconductor layer, provided to be opposite to said gate electrode through a gate insulation film;
- a pair of source/drain regions, formed of a semiconductor layer, provided to sandwich said channel region therebetween;

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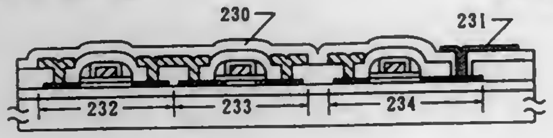
an insulating channel protection layer formed on said channel region, said channel protection layer having first and second ends opposite to said source/drain regions, respectively; and

a pair of electrodes formed on said source and drain regions to provide a source electrode and a drain electrode, wherein said drain electrode is located adjacent to said first end and has an electrode extension portion passing said first end to be arranged directly on said channel protection layer opposite to said channel region through said channel protection layer, said extension portion reducing leakage current by providing a light shielding function and functioning as a back gate in an on state of the transistor to increase on current flow in the channel region.

5,712,495
SEMICONDUCTOR DEVICE INCLUDING ACTIVE MATRIX CIRCUIT

Hideomi Suzawa, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 471,101, Jun. 6, 1995, abandoned. This application Mar. 10, 1997, Ser. No. 807,001
Claims priority, application Japan, Jun. 13, 1994, 6-154177
Int. Cl.^{6} H01L *29/04;31/36;31/376*
U.S. Cl. 257—51 **14 Claims**



1. A semiconductor device comprising:

a substrate having an insulating surface;

an active matrix circuit, having at least one first thin film transistor, formed on the insulating surface; and

a peripheral circuit, having at least one second thin film transistor, formed on the insulating surface, for driving the active matrix circuit,

wherein each of the first and second thin film transistors comprises

source and drain regions,

a channel region provided between the source and drain regions,

a gate electrode formed over the active region,

an insulating film comprising an oxide of the gate electrode formed on at least side surfaces thereof, and

side insulators formed adjacent to only sides of the gate electrode with said insulating film interposed therebetween, and

wherein the first thin film transistor further comprises offset regions formed below said side insulators without doped impurities between the source region and the channel region and between the channel region and the drain region, said offset region comprising the same material as and having the same conductivity as said channel region, and

the second thin film transistor further comprises lightly doped regions formed between the source region and the channel region and between the channel region and the drain region.

5,712,496
MOS POLY-SI THIN FILM TRANSISTOR WITH A FLATTENED CHANNEL INTERFACE AND METHOD OF PRODUCING SAME

Hiroshi Takahashi, and Yoshikazu Kojima, both of Tokyo, Japan, assignors to Seiko Instruments, Inc., Chiba, Japan
Filed Jan. 13, 1993, Ser. No. 2,400
Claims priority, application Japan, Jan. 17, 1992, 4-027288
Int. Cl.^{6} H01L *29/08*
U.S. Cl. 257—64 **6 Claims**

1. A thin field effect transistor having a three-layer structure, comprising:

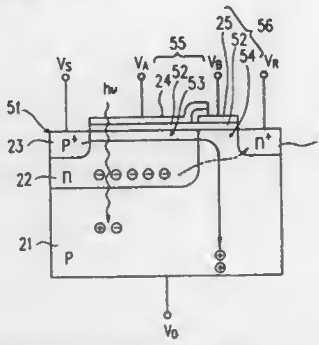
a polycrystalline semiconductor layer having a thickness of less than 0.3 μm and defining a channel region;

an insulating layer defining a gate insulating film contacting the polycrystalline semiconductor layer, so that the gate insulating film and the polycrystalline semiconductor layer contact one another at an interface; and

a conductive layer defining a gate electrode on the insulating layer so that the insulating layer is located between the channel and the gate electrode; wherein the interface is substantially flat and has a surface roughness of less than 3 nm between the channel region and the gate insulating film, and the channel region has a number of grains more than 10.

5,712,497
AMPLIFYING TYPE PHOTOELECTRIC CONVERTING DEVICE AND AMPLIFYING TYPE SOLID-STATE IMAGING APPARATUS USING THE SAME

Takashi Watanabe, Soraku-gun, and Hiroaki Kudo, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 7, 1996, Ser. No. 612,369
Claims priority, application Japan, Mar. 10, 1995, 7-051641
Int. Cl.^{6} H01L *27/148*
U.S. Cl. 257—218 **24 Claims**



1. An amplifying type photoelectric converting device, comprising:

a semiconductor substrate of a first conductive type;

a well portion of a second conductive type for accumulating signal charges generated by photoelectric conversion, the well portion being provided in one surface side of the semiconductor substrate;

a semiconductor region of the first conductive type provided in a region in one surface side of the well portion;

a first gate region including a surface-proximate portion in a region excluding the semiconductor region in the well portion, an insulating film located on the surface-proximate portion, and a first electrode located on the insulating film; and

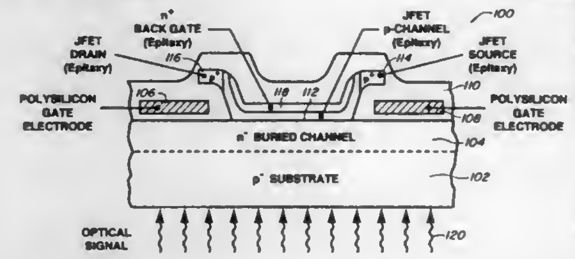
a second gate region adjacent to the first gate region in the one surface side of the semiconductor substrate, the second gate region including a surface-proximate portion in the semiconductor substrate, an insulating film located on the surface-proximate portion in the semiconductor substrate, and a second electrode located on the insulating film,

wherein an active element having the surface-proximate portion of the first gate region as a channel is formed between the semiconductor region and the semiconductor substrate, and

a change in an operational characteristic of the active element which is generated by the signal charges is used as an output signal.

5,712,498
CHARGE MODULATION DEVICE

Robert K. Reich, Chelmsford; Eugene D. Savoye, Concord, and Bernard B. Kosicki, Acton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Aug. 26, 1996, Ser. No. 703,070
Int. Cl.^{6} H01L *29/80;31/112*
U.S. Cl. 257—256 **24 Claims**



1. A charge modulation device comprising:

a semiconductor region of a first conductivity type;

an epitaxial layer of second conductivity type provided on a portion of said semiconductor region so as to define an FET channel region;

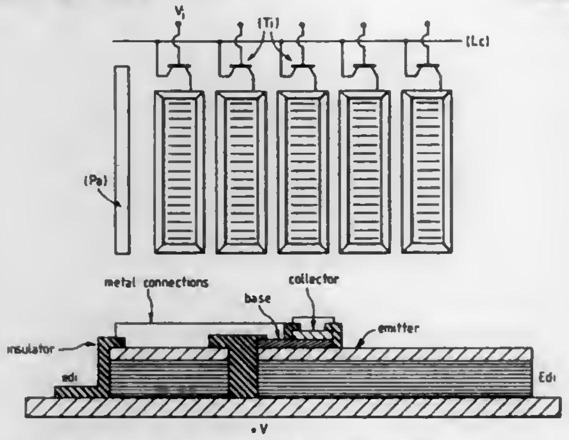
a first epitaxial region of said second conductivity type provided adjacent to and in contact with said epitaxial layer so as to define an FET drain region, said first epitaxial region being isolated from said semiconductor region;

a second epitaxial region of said second conductivity type provided adjacent to and in contact with said epitaxial layer so as to define an FET source region, said second epitaxial region being isolated from said semiconductor region; and

a third epitaxial region provided on said channel region between said source and drain regions.

5,712,499
LARGE PHOTODETECTOR ARRAY

Jean-Yves Duboz, Cachan, and Philippe Bois, Cesson, both of France, assignors to Thomson-CSF, Paris, France
Filed Nov. 8, 1995, Ser. No. 555,079
Claims priority, application France, Nov. 8, 1994, 94 13374
Int. Cl.^{6} H01L *31/062;31/113;31/00*
U.S. Cl. 257—292 **3 Claims**



1. A photodetector arrangement providing a large effective photodetecting area, said photodetector arrangement comprising:

a substrate;

a set of elementary photodetectors in an array on said substrate;

a common conductor line mounted on but insulated from said substrate;

a conductive connection portion mounted on but insulated from said substrate, said conductive connection portion providing a parallel connection from signal outputs associated with a selected plural number of the elementary photodetectors which have been found to be defect free, wherein the selected plural number is a number less than the full number of the elementary photodetectors provided in the array on said substrate;

wherein said elementary photodetectors are rectangular in shape;

a substrate surface contact, wherein the substrate surface contact and the common conductive line serve as output contacts for the photodetector arrangement;

wherein said conductive connection portion further comprises;

a connection control transistor coupled to each one of the elementary photodetectors to provide said connection from the signal outputs associated with the particular ones of the elementary photodetectors to said common conductor line only when a said control transistor is in a conductive condition;

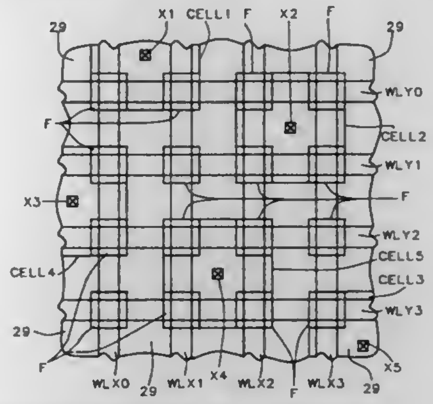
a control photodetector mounted on said substrate near each elementary photodetector;

a control connection between each control photodetector and a control input of a respective associated one of the control transistors, and

wherein each control photodetector receiving control radiation generates a control signal at an associated control photodetector output that is conducted by said control connection to said control input to control said respective associated one of the control transistors to be in said conductive condition.

5,712,500
MULTIPLE CELL WITH COMMON BIT LINE CONTACT AND METHOD OF MANUFACTURE THEREOF

Chen-Chiu Hsue, and Ming-Tzong Yang, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu City, Taiwan
Division of Ser. No. 345,127, Nov. 28, 1994, Pat. No. 5,480,822. This application Feb. 26, 1996, Ser. No. 556,326
Int. Cl.^{6} H01L *29/788*
U.S. Cl. 257—315 **15 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate;

a plurality of memory elements arranged in sets of four memory cells on the substrate;

a first array of first parallel word lines, one of the first parallel word lines controlling one of the four memory cells in one set of four memory cells and an other of the first parallel word lines controlling a second of the four memory cells;

a second array of second parallel word lines extending across the first array of parallel word lines, one of the second parallel word lines controlling a third of the four memory cells and an other of the second parallel word lines controlling a fourth of the four memory cells; and

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an array of parallel bit lines, one of the parallel bit lines contacting a common bit line contact shared by the four memory cells.

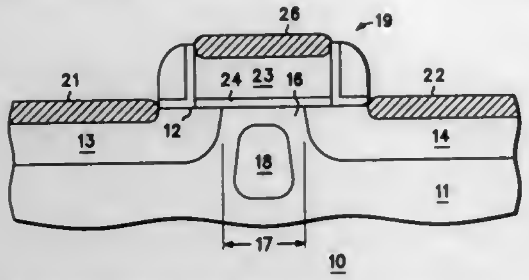
5,712,501
GRADED-CHANNEL SEMICONDUCTOR DEVICE

Robert B. Davies, Tempe, Ariz.; Frank K. Baker, Austin, Tex.; Jon J. Candelaria, Tempe, Ariz.; Andreas A. Wild, Scottsdale, Ariz., and Peter J. Zdebel, Mesa, Ariz., assignors to Motorola, Inc., Shaumburg, Ill.

Filed Oct. 10, 1995, Ser. No. 541,536

Int. Cl.^{6} H01L *29/76;29/94*

U.S. Cl. 257—335 **11 Claims**



1. A graded-channel semiconductor device comprising:
a body of semiconductor material of a first conductivity type and having a first surface;
a first doped region of a second conductivity type formed in the body of semiconductor material and extending from the first surface;
a second doped region of the second conductivity type formed in the body of semiconductor material and extending from the first surface;
a channel region between the first doped region and the second doped region;
a third doped region of the first conductivity type formed in the channel region, wherein the third doped region is vertically spaced apart from the first surface, and wherein the third doped region is vertically and laterally spaced apart from the first doped region and the second doped region, and wherein the first and second doped regions are formed absent lightly doped extension regions of the second conductivity type;
a gate structure formed on the first surface above the channel region;
a first electrode coupled to the first doped region; and
a second electrode coupled to the second doped region.

5,712,502
SEMICONDUCTOR COMPONENT HAVING AN EDGE TERMINATION MEANS WITH HIGH FIELD BLOCKING CAPABILITY

Heinz Mitlehner, München; Dietrich Stephani, Bubenreuth, and Ulrich Weinert, Hammerbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/00935, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO96/03774, PCT Pub. Date Feb. 8, 1996

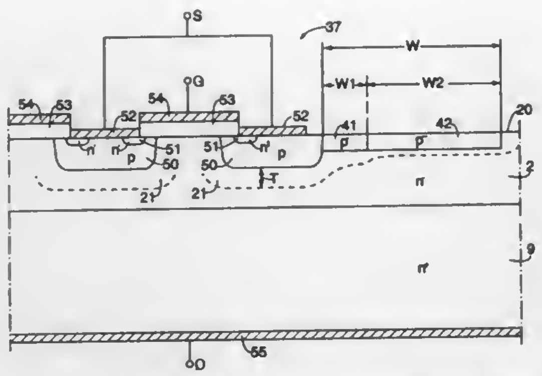
PCT Filed Jul. 14, 1995, Ser. No. 619,688

Claims priority, application Germany, Jul. 27, 1994, 44 26 866.1

Int. Cl.^{6} H01L *29/76;27/095;23/58*

U.S. Cl. 257—341 **28 Claims**

1. A semiconductor component comprising:
at least one semiconductor region including at least one first semiconductor having a first conductivity type, the at least one semiconductor region having a region width and a region height, the region width being greater than the region height;



an active area including a depletion zone extending into the at least one semiconductor region and having a depletion zone height being dependent on a blocking voltage applied to the active area; and
a junction termination member having a junction termination width and including at least one second semiconductor having a second conductivity type which is opposite in polarity to the first conductivity type, the junction termination member surrounding and positioned laterally adjacent to the active area, the junction termination member having a junction surface which is coplanar with a semiconductor region surface of the semiconductor region,
wherein the junction termination width of the junction termination member is greater than the depletion zone height of the depletion zone, and wherein the first semiconductor and the second semiconductor each have a band gap of at least 2 eV.

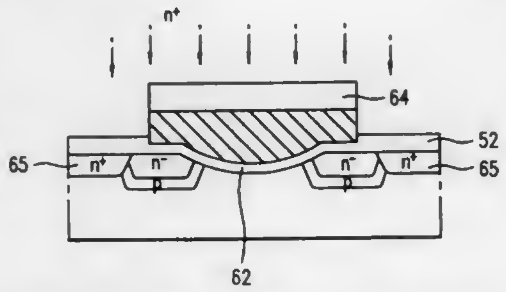
5,712,503
METAL OXIDE SEMICONDUCTOR AND METHOD OF MAKING THE SAME

Kyung Saeng Kim, and Jun Hee Lim, both of Seoul, Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Continuation of Ser. No. 180,784, Jan. 5, 1994, abandoned. This application Aug. 10, 1995, Ser. No. 513,595

Int. Cl.^{6} H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—345 **21 Claims**



1. A metal oxide semiconductor transistor comprising:
a substrate of a first conductivity-type having a channel region which has a recessed surface;
low-concentration source and drain regions of a second conductivity-type disposed on said substrate adjacent to said channel region;
high-concentration source and drain regions of the second conductivity-type disposed on said substrate laterally adjacent to said low-concentration source and drain regions;
impurity regions of the first conductivity-type enclosing said low-concentration source and drain regions, said high-concentration source and drain regions adjacent to said substrate;
an oxide film disposed on said high-concentration source and drain regions;
a gate oxide film disposed on said recessed surface and said low-concentration source and drain regions;

a gate electrode disposed on said gate oxide film, a lower surface of said gate electrode having a convex portion and at least a flat portion; and
a cap oxide film on said gate electrode.

5,712,504
PIN TYPE LIGHT-RECEIVING DEVICE, OPTO ELECTRONIC CONVERSION CIRCUIT, AND OPTO-ELECTRONIC CONVERSION MODULE

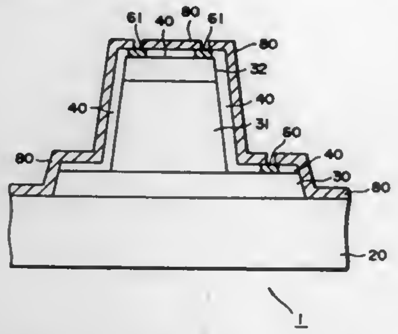
Hiroshi Yano; Kentaro Doguchi; Sosaku Sawada, and Takeshi Sekiguchi, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 2, 1996, Ser. No. 597,448

Claims priority, application Japan, Feb. 2, 1995, 7-015997; Nov. 29, 1995, 7-310755

Int. Cl.^{6} H01L *31/00*

U.S. Cl. 257—452 **12 Claims**



1. A pin type light-receiving device comprising:
a semiconductor substrate;
a first semiconductor layer formed on said semiconductor substrate and doped with an impurity of a first conduction type;
a second semiconductor layer formed in a mesa shape on said first semiconductor layer and made of a first semiconductor material without intentionally doping said first semiconductor material with an impurity;
a third semiconductor layer formed in a mesa shape on said second semiconductor layer and made of said first semiconductor material doped with an impurity of a second conduction type different from said first conduction type;
a first electrode layer formed in ohmic contact on said first semiconductor layer;
a second electrode layer formed in ohmic contact on said third semiconductor layer; and
a fourth semiconductor layer formed around said first to third semiconductor layers and made of a second semiconductor material having a band gap energy greater than that of said first semiconductor material, said second semiconductor material being un-intentionally doped with an impurity.

5,712,505
BIPOLAR TRANSISTOR HAVING RING SHAPE BASE AND EMITTER REGIONS

Shunji Nakamura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

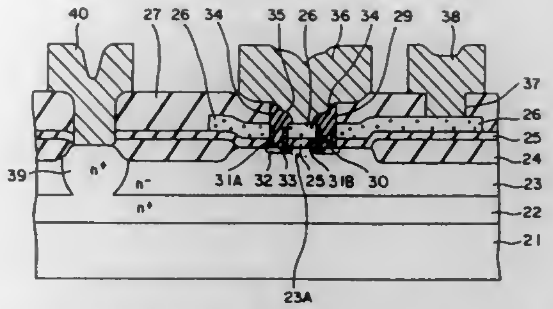
Division of Ser. No. 313,571, Sep. 27, 1994, Pat. No. 5,501,992, which is a division of Ser. No. 74,680, Jun. 10, 1993, abandoned. This application Dec. 8, 1995, Ser. No. 569,942

Claims priority, application Japan, Jun. 11, 1992, 4-151861

Int. Cl.^{6} H01L *29/70;29/739*

U.S. Cl. 257—565 **3 Claims**

1. A bipolar transistor comprising:
a semiconductor layer of a first conduction type;
a ring-shaped base region having a second conduction type which is opposite to said first conduction type formed in said



semiconductor layer, said ring-shaped base region having inner and outer peripheries, said semiconductor layer including a collector region disposed adjacent said ring-shaped base region;
a base pull-out electrode connected electrically to a portion of said ring-shaped base region that is disposed between said inner and outer peripheries thereof;
a ring-shaped emitter region of the first conduction type formed in said ring-shaped base region at a position located between said portion of the ring-shaped base region and said inner periphery thereof;
an emitter pull-out electrode connected electrically to said ring-shaped emitter region; and
a field plate structure including a field plate and a thin insulating film, said thin insulating film contacting said ring-shaped base region at a location within said ring-shaped emitter region, said field plate being separated from said base region by said thin insulating film and having the same potential as said ring-shaped emitter region.

5,712,506
SEMICONDUCTOR DEVICE WITH PASSIVATION LAYER OF BENZOCYCLOBUTENE POLYMER AND SILICON POWDER

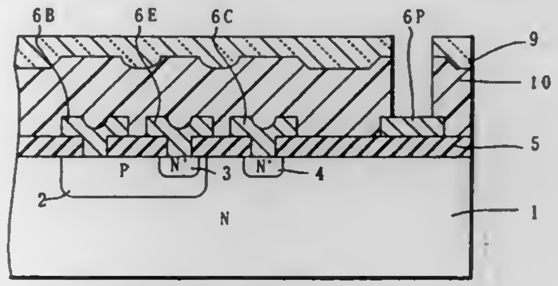
Tadanori Shimoto, and Koji Matsui, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 547,727

Claims priority, application Japan, Oct. 27, 1994, 6-286172

Int. Cl.^{6} H01L *23/58*

U.S. Cl. 257—633 **13 Claims**



1. A semiconductor device comprising:
a semiconductor substrate,
an inorganic insulating layer formed on said semiconductor substrate; and
a first passivation layer made of a mixture of benzocyclobutene polymer and silicon powder, and formed on said inorganic insulating layer, wherein a weight ratio of said silicon powder to said benzocyclobutene polymer ranges approximately from 0.01 to 0.30.

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5,712,507
SEMICONDUCTOR DEVICE MOUNTED ON DIE PAD HAVING CENTRAL SLIT PATTERN AND PERIPHERAL SLIT PATTERN FOR ABSORBING

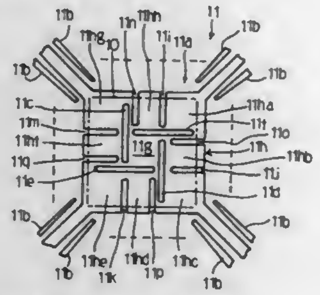
Takahiro Eguchi, and Yasuhiro Suzuki, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jan. 22, 1996, Ser. No. 589,784

Claims priority, application Japan, Jan. 25, 1995, 7-009822

Int. Cl.^{6} H01L *23/495*

U.S. Cl. 257—666 **9 Claims**



1. A semiconductor device comprising:

a semiconductor chip having an electric circuit;

a supporting means including a die pad having

a major surface defined by peripheral edges and mounting said semiconductor chip,

a first slit pattern open to said major surface and a reverse surface of said die pad and formed in said die pad so as to divide said major surface into a central area and a peripheral area, said semiconductor chip occupying said central area and an inner peripheral sub-area of said peripheral area, and

a plurality of slit groups each having a plurality of slits inwardly projecting from one of said peripheral edges through an outer peripheral sub-area of said peripheral area into said inner peripheral sub-area so as to divide a part of said outer peripheral sub-area along said one of said peripheral edges into a plurality of sections, said plurality of sections being nearly equal in length in a direction of said one of said peripheral edges,

said first slit pattern and said plurality of slit groups at least twice intercepting a force in a direction of a straight line between two of said peripheral edges opposite to each other and a force in a direction of a diagonal line on said major surface; and

a sealing means provided around said semiconductor chip mounted on said die pad for preventing said semiconductor chip from contaminants.

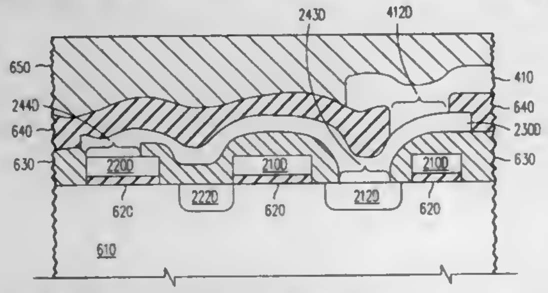
5,712,508
STRAPPING VIA FOR INTERCONNECTING INTEGRATED CIRCUIT STRUCTURES

Chuen-Der Lien, Los Altos Hills, and Kyle W. Terrill, Campbell, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Dec. 5, 1995, Ser. No. 567,649

Int. Cl.^{6} H01L *23/48;23/52;29/40*

U.S. Cl. 257—754 **9 Claims**



1. An integrated circuit structure comprising:

a semiconductor substrate having a doped region that contains dopants of a first conductivity type;

a patterned layer overlying the semiconductor substrate, wherein the patterned layer includes a conducting region adjacent the doped region;

an insulating layer overlying the patterned layer, the insulating layer having an opening to a portion of the conducting region and a portion of the doped region; and

a polysilicon layer having a first portion disposed in the opening to create an electrically conductive path from the conducting region to the doped region and a second portion which is undoped and forms a resistive element connected to said first portion.

5,712,509
SEMICONDUCTOR INTEGRATED CIRCUIT INTERCONNECTION STRUCTURES

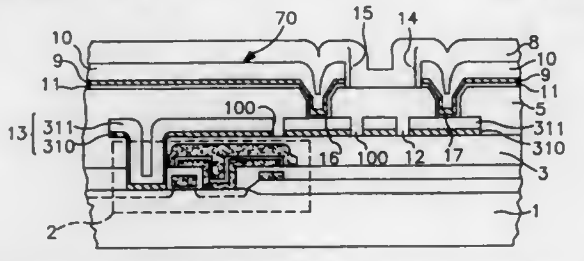
Shigeru Harada; Kenji Kishibe; Akira Ohisa; Hiroshi Mochizuki, and Eisuke Tanaka, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,015

Claims priority, application Japan, May 2, 1991, 3-100912

Int. Cl.^{6} H01L *23/48;23/52*

U.S. Cl. 257—758 **31 Claims**



1. A semiconductor integrated circuit structure comprising:

a semiconductor substrate;

an electronic element disposed in the substrate;

a first electrically insulating layer disposed on the substrate and the electronic element;

a first electrically conducting interconnection layer electrically connected to the electronic element and disposed at least partly on the first electrically insulating layer;

a second electrically insulating layer disposed on the first electrically conducting interconnection layer;

a second electrically conducting interconnection layer disposed on the second electrically insulating layer; and

a through-hole penetrating the second electrically insulating layer to the first electrically conducting interconnection layer, part of the second electrically conducting interconnection layer being disposed within the through-hole and contacting the first electrically conducting interconnection layer wherein the first electrically conducting interconnection layer includes a current barrier comprising at least one opening in the first electrically conducting interconnection layer proximate the through-hole extending through the first electrically conducting interconnection layer to the first electrically insulating layer and filled with part of the second electrically insulating layer, the current barrier in the first electrically conducting interconnection layer constraining current flowing between the first and second electrically conducting interconnection layers to flow around the current barrier.

5,712,510
REDUCED ELECTROMIGRATION INTERCONNECTION LINE

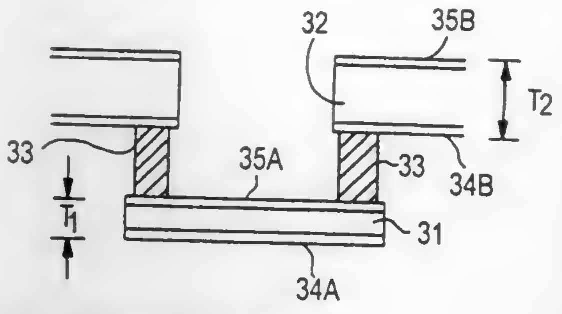
Nguyen Duc Bui, San Jose, and Donald L. Wollesen, Saratoga, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 4, 1995, Ser. No. 511,878

Int. Cl.^{6} H01L *23/528;23/535*

U.S. Cl. 257—758 **5 Claims**

1. A semiconductor device comprising:



a conductive pattern having features;

a first insulating layer formed on the conductive pattern;

a first metal interconnection line formed on the first insulating layer;

a second insulating layer formed on the first metal interconnection line;

at least two longitudinally spaced apart first conductive vias formed through the second insulating layer in electrical contact with the first metal interconnection line at first contact points separated by a first longitudinal distance which is less than the length corresponding to the minimum Backflow Potential Capacity for the first metal interconnection line; and

a second metal interconnection line formed on the second insulating layer and in electrical contact with one of the first conductive vias at a second contact point,

wherein the width of the first metal interconnection line is essentially the same as the width of the second metal interconnection line, and

the length of the second metal interconnection line (L_2) is represented by the formula:

$$L_2 = D_1\left(\frac{T_2}{T_1}\right);$$

wherein D_1 is the first longitudinal distance; T_2 is the thickness of the second metal interconnection line, and T_1 is the thickness of the first metal interconnection line.

5,712,511
PREPARATION OF FINE PARTICULATE CL-20

May L. Chan, and Alan D. Turner, both of Ridgecrest, Calif., assignors to The United States of America as Represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1997, Ser. No. 805,864

Int. Cl.^{6} C06B *21/00*

U.S. Cl. 264—3.4 **3 Claims**

1. A process for reducing the particle size of hexa-nitro-hexa-aza-isowurtizane to an average particle size of about 5 μm, comprising the steps of:

placing cylindrical ceramic beads into a SWECO mill;

adding a mixture of ethanol/distilled water to said mill having a range of 40/60% ethanol to 60/40% distilled water;

adding said hexa-nitro-hexa-aza-isowurtizane to said mill;

distributing, as evenly as possible, said hexa-nitro-hexa-aza-isowurtizane throughout said mill; and

allowing said grinding process to operate until a particle size of about 5 μm is achieved.

5,712,512
METHOD OF RESETTING A CENTRAL LOCK SYSTEM OF A MOTOR VEHICLE HAVING A REMOTE OPERATOR

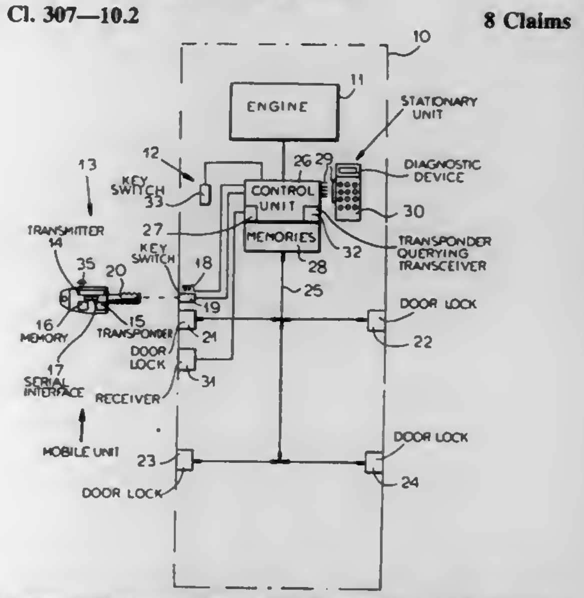
Wilfried Ostermann, Essen, and Fred Welskopf, Herne, both of Germany, assignors to Kiekert AG, Heiligenhaus, Germany

Filed Aug. 1, 1996, Ser. No. 690,970

Claims priority, application Germany, Sep. 8, 1995, 195 33 191.5

Int. Cl.^{6} G06F *17/00*

U.S. Cl. 307—10.2 **8 Claims**



1. A method of resetting a central lock system of a motor vehicle having a remote-control arrangement of locking and unlocking the central lock system and wherein the remote-control arrangement comprises a mobile part separate from the motor vehicle and a fixed part on the motor vehicle, said mobile part comprising a transmitter, a transponder and a key, said fixed part comprising a receiver, a transponder-querying transceiver and a key-operated switch operable by said key, said method comprising the steps of:

(a) temporarily connecting a diagnostic device to said fixed part for initializing same and switching said fixed part into a SETUP mode in which a previously stored code word of said fixed part and a remote control changing code word of said mobile part are extinguished;

(b) with said fixed part of said SETUP mode, inserting said key into the key-operated switch thereby interrogating said transponder with said transceiver, deriving a key-identification code word stored in said transponder and storing said key-identification code word in a memory of said transceiver;

(c) then operating said transmitter to send a remote-control changing code word advancing in said transmitter to said receiver and picking up the then-effective remote control changing code word with said receiver and storing the picked-up then-effective remote-control changing code word in a transceiver code word memory of said transceiver and a transponder code word storage of the transponder as a new transponder changing code word; and

(d) then switching said fixed part to a NORMAL mode of operation and removing said diagnostic device.

5,712,513

Patent Not Issued For This Number

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SYSTEM AND METHOD FOR SUPPLYING POWER TO STATOR SECTIONS OF A LONG-STATOR MAGNETIC LEVITATION RAILWAY SYSTEM

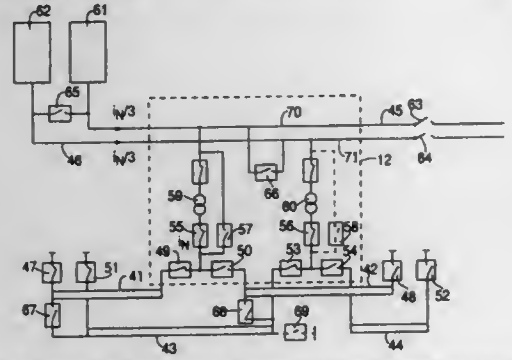
Rolf Fischperer, Berlin, and Reinhard Hoffmann, Lathen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, and Industrieanlagen Betriebsgesellschaft mbH, Ottobrunn, both of Germany

Filed May 3, 1996, Ser. No. 642,745

Claims priority, application Germany, May 3, 1995, 195 16 229.3

Int. Cl.⁶ H02K *41/00*

U.S. Cl. 307—69 **25 Claims**



1. A system for supplying power to a long-stator magnetic drive, the system comprising:

a) a plurality of stator sections arranged along a route for a magnetically levitated vehicle and having a stator section operating voltage, each stator section being individually controllable and including at least one stator feed point;

b) at least one feeder cable system having a feeder cable operating voltage, the feeder cable operating voltage being different from the stator section operating voltage;

c) at least one converter, corresponding to the at least one feeder cable system, said at least one converter being arranged along the plurality of stator sections in at least one substation;

d) a power supply network coupled to said at least one converter via an input transformer, said at least one converter being coupled to an output transformer for providing a voltage supply for the plurality of stator sections; and

e) at least one matching transformer coupled between the at least one feeder cable system and the plurality of stator sections, wherein the at least one matching transformer transforms the feeder cable operating voltage to match the stator section operating voltage.

5,712,515

POWER SOURCE ADAPTOR

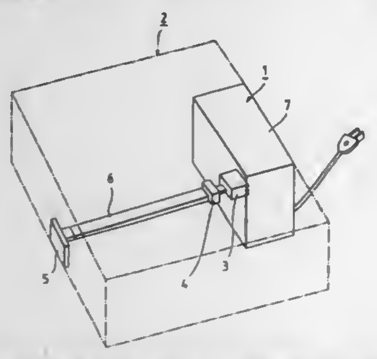
Yokoyama Kenji, and Ito Shin, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Aug. 21, 1995, Ser. No. 517,363

Claims priority, application Japan, Aug. 23, 1994, 6-221018

Int. Cl.⁶ H01H *35/00*

U.S. Cl. 307—126 **20 Claims**



1. A power source adaptor which is detachably connected to an apparatus including power on/off operating means for controlling a supply of power to the apparatus, said power source adaptor comprising:

a power source circuit including an electrical switching element;

a mechanical switch provided for starting and stopping an operation of the electrical switching element;

switch operating means provided on an adaptor housing, for operating said mechanical switch;

coupling means for coupling said switch operating means with said power on/off operating means, said coupling means being electrically insulated, wherein when said adaptor is connected to said apparatus, power to the adaptor is controlled by the power on/off operating means.

5,712,516

STATOR-ELEMENT FOR A LINEAR-ELECTRICAL-DRIVE DOOR PROVIDED WITH A STATOR-ELEMENT AS SUCH

Wim Kabout, Huizen, Netherlands, assignor to Stator B.V., Zaltbommel, Netherlands

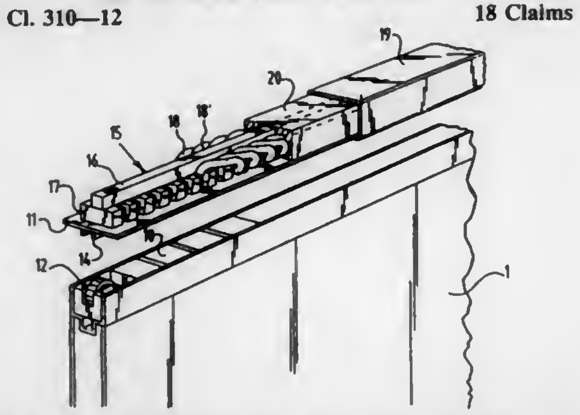
PCT No. PCT/NL93/00251, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO94/13055, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 25, 1993, Ser. No. 436,325

Claims priority, application Netherlands, Nov. 26, 1992, 9202053

Int. Cl.⁶ H02K *41/02;* **E05F** *15/18*

U.S. Cl. 310—12 **18 Claims**



1. In an assembly of a stator element and a cooperating counter element for linear-electrical-driving of a body reciprocally slidable over a limited length in a straight or curved line, such as a door, gate or carriage, the body being provided with the cooperating counter element, the improvement comprising a stator element having an elongate holder, a number of rod-like, mutually parallel and adjacent carriers fixed transversely onto the holder and a number of windings, each of which is trained in each case around at least one carrier along a side of the holder, each of the windings is connected onto a controlled voltage source, the counter element is embodied as an elongate group of blocks, each formed from a magnet of magnetizable material.

5,712,517

EPOXY INSULATOR COATING ON AN ALTERNATOR HEAT SINK

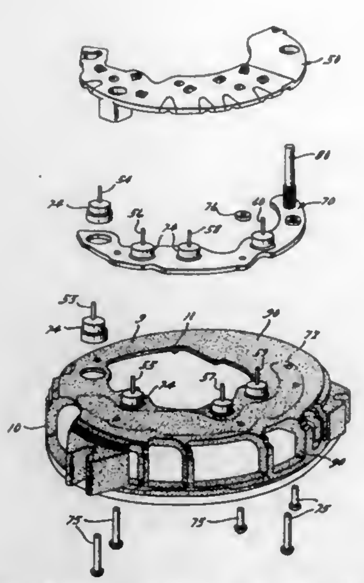
Eric Alexander Schmidt, Redford, and Jeffrey Wayne Riedel, Tecumseh, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 15, 1992, Ser. No. 945,036

Int. Cl.⁶ H02K *9/00*

U.S. Cl. 310—45 **6 Claims**

1. An improved electrical alternator including a plurality of stator windings and a rectifier assembly, the respective stator lead wires of the stator windings are connected to said rectifier assembly and are disposed within a housing, said housing is formed from an electrically and heat conducting material with a centrally apertured plate integrally formed with a cup portion having a cylindrical wall that extends parallel to a center axis and surrounds a portion of said stator windings;



said rectifier assembly includes an interconnection plate mounted on said apertured plate of said housing and said interconnection plate provides solder terminals for the connection of said stator lead wires extending from said stator windings;

said cylindrical wall portion of said housing contains a plurality of ventilation windows with some windows being sufficiently large to allow stator lead wires to extend from their respective stator windings to the interconnection plate mounted on said deck plate;

the improvement comprising a coating of a resinous material on the exposed housing surfaces of said windows through which said stator lead wires extend from their respective stator windings to said interconnection plate and thereby providing electrical insulation between said lead wires and said housing.

5,712,518

ELECTRIC MOTOR DRIVE UNIT FOR SURGICAL TOOLS

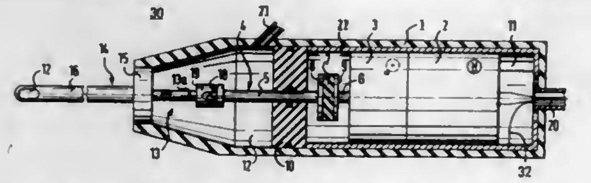
Helmut Heckele, and Jörg Kleih, both of Knittlingen, Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany

Filed Nov. 8, 1995, Ser. No. 555,473

Claims priority, application Germany, Nov. 8, 1994, 44 39 799.2

Int. Cl.⁶ H02K *7/14*

U.S. Cl. 310—50 **10 Claims**



1. An electric motor drive unit for a surgical tool, comprising:

a housing having an aperture at a distal end thereof;

a seal sealingly mounted within said housing so as to divide said housing into a first, proximal and a second, distal chamber, said seal having an aperture passing therethrough so as to connect the first and second chambers of said housing;

an electrical drive means mounted within the first chamber of said housing for providing mechanical power in response to an electrical input, said drive means being electrically insulated from said housing;

a shaft having proximal and distal ends, the proximal end thereof being operatively connected to said drive means and being comprised of electrically insulating material, said shaft extending sealingly through the aperture of said seal;

a clutch operatively connected to the distal end of said shaft, said clutch being located within said second chamber of said housing; and

a surgical tool, a proximal end thereof extending through the aperture of said housing and being operatively connected to said clutch.

5,712,519

MAGNETIC POWER TRANSFER SYSTEM

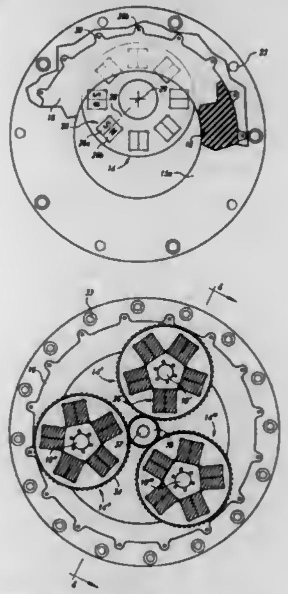
Karl J. Lamb, Port Angeles, Wash., assignor to Magna Force, Inc., Port Angeles, Wash.

Continuation-in-part of Ser. No. 546,066, Oct. 20, 1995, Pat. No. 5,668,424, which is a continuation of Ser. No. 237,031, May 3, 1994, Pat. No. 5,477,094, which is a continuation-in-part of Ser. No. 65,867, May 21, 1993, Pat. No. 5,477,093.

This application Mar. 15, 1996, Ser. No. 616,905

Int. Cl.⁶ H02K *7/10*

U.S. Cl. 310—75 **9 Claims**



1. A power transfer assembly comprising:

first and second rotary shafts having respective first and second rotary axes which are parallel and laterally spaced apart, said shafts being independently supported;

a magnet rotor and a conductor rotor mounted on said first and second shafts, respectively;

said conductor rotor having two axially spaced conductors which are centered relative to said second rotary axis and are arranged to travel in parallel-spaced circular conductor orbits, said conductors being of a non-magnetic material with good electroconductivity, and said conductor rotor having a central generally circular opening which is radially inward of one of said conductors and has a radius greater than the sum of the lateral distance between said rotary axes and the radius of said first shaft;

said first shaft extending through said opening and being spaced from said second shaft;

said magnet rotor having permanent magnets with axially facing poles which are arranged to travel two parallel-spaced circular magnet orbits overlapped in part by respective of said conductor orbits, said magnet orbits being smaller in diameter than said conductor orbits; and

said poles being spaced by equal air gaps from respective ones of said conductors.

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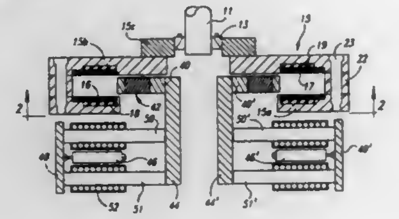
5,712,520
PERMANENT MAGNET BRAKING SYSTEM

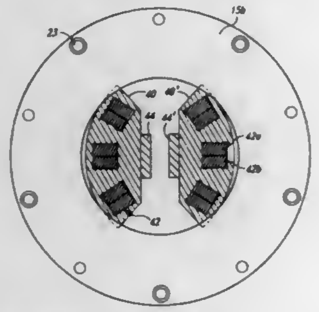
Kari J. Lamb, Port Angeles, Wash., assignor to Magna Force, Inc., Port Angeles, Wash.

Continuation-in-part of Ser. No. 546,066, Oct. 20, 1995, Pat. No. 5,668,424, which is a continuation of Ser. No. 237,031, May 3, 1994, Pat. No. 5,477,094, which is a continuation-in-part of Ser. No. 65,867, May 21, 1993, Pat. No. 5,477,093. This application Mar. 18, 1996, Ser. No. 617,314

Int. Cl.^{6} H02K *1/00;3/00*

U.S. Cl. 310—92 **10 Claims**





1. A braking system comprising:
a rotary shaft having a rotary axis;
a conductor rotor mounted on said shaft and having two axially spaced non-ferrous electroconductive rings facing one another and backed by magnetic material;
a stationary support;
a non-rotating braking shoe moveably mounted on said support and containing permanent magnets each with its poles facing in opposite directions parallel to said axis; and
an operating mechanism connected to said shoe for selectively moving said shoe in a plane perpendicular to said axis in which said magnets are not between said rings and a brake-on position between said rings in which said shoe is spaced by air gaps from said rings for inducing eddy currents in the rings by way of magnetic flux from said magnets bridging said air gaps when the conductor rotor is rotating.

5,712,521
HYBRID SYNCHRONOUS MACHINE WITH TRANSVERSE MAGNETIC FLUX

Andrej Detela, Vogelna 4, 61000 Ljubljana, Slovenia

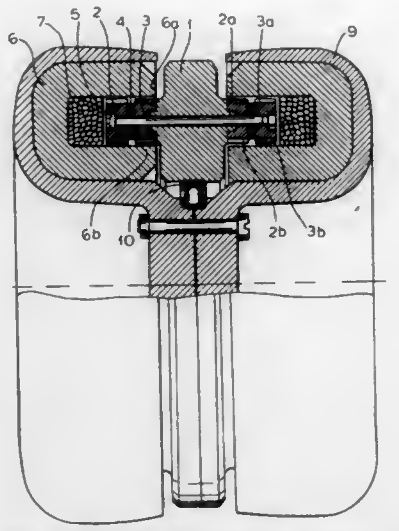
Filed Nov. 23, 1992, Ser. No. 980,457

Claims priority, application Slovenia, Nov. 22, 1991, 91 00008

Int. Cl.^{6} H02L *37/12*

U.S. Cl. 310—162 **3 Claims**

1. A hybrid synchronous machine with transverse flux, said machine comprising:
means defining an axis of rotation;
a rotor member journaled for rotation about said axis; and
an annular stator member, continuously surrounding said axis and juxtaposed with said rotor member,
said rotor member comprising:
a pair of axially spaced annular ferromagnetic bodies formed with respective symmetrical circular arrays of equal numbers of equispaced radially projecting poles along both inner and outer peripheries of the rotor member, the poles of one array being angularly offset about said axis from the poles of the other array, and



at least one ring-shaped permanent magnet coaxial with said bodies and disposed between said bodies while being magnetically coupled to said bodies,
said stator member comprising:
respective ferromagnetic bodies flanking said rotor member and having a number of equispaced salient magnetic poles equal in number to the poles of said arrays and juxtaposed therewith, and a respective annular coil surrounding the axis and individual to each of said ferromagnetic bodies and received therein with each ferromagnetic body forms an annular yoke around the respective coil.

5,712,522
STARTER WITH MULTI-LAYERED BRUSH STRUCTURE

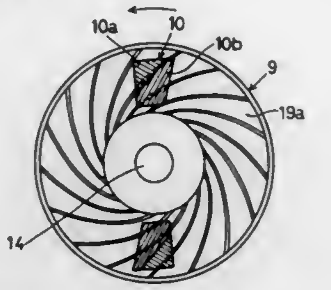
Masami Niimi, Handa, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 24, 1996, Ser. No. 653,317

Claims priority, application Japan, May 26, 1995, 7-127904; Apr. 10, 1996, 8-87767

Int. Cl.^{6} H02K *13/00;13/10*

U.S. Cl. 310—248 **14 Claims**



1. A starter comprising:
an armature having an armature core and a plurality of armature conductors accommodated on said armature core, both end portions of each of said armature conductors being connected at a predetermined winding pitch to form an armature winding; and
a brush for conducting electricity to said armature winding, wherein
first end portions of said armature conductors extend into an inner circumferential side in a radial direction along an axial end surface of said armature core as commutator bars to be contacted by said brush;
said brush being a multi-layered structure formed from a lamination of a plurality of brush materials having different specific resistances, said multi-layered structure being laminated in a circumferential directions; and

each of said brush materials is in a single layer extending in the radial direction of said armature core.

5,712,523
SURFACE ACOUSTIC WAVE DEVICE

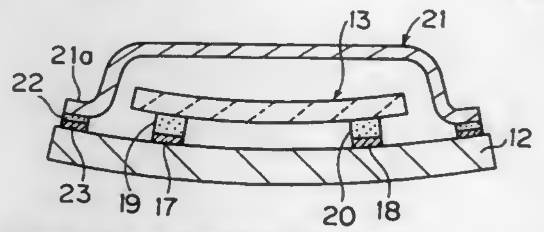
Koji Nakashima, Ishikawa-ken, and Hideya Morishita, Matto, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Jun. 28, 1995, Ser. No. 495,895

Claims priority, application Japan, Jan. 11, 1995, 7-002829

Int. Cl.^{6} H01L *41/08*

U.S. Cl. 310—313 R **5 Claims**



1. A surface acoustic wave device comprising:
a support substrate;
a surface acoustic wave element being soldered onto said support substrate to downwardly direct its surface wave propagation surface; and
a conductive cap being soldered to said support
substrate for enclosing said surface acoustic wave element, said surface acoustic wave element, said support substrate and said conductive cap being so formed as to satisfy $\alpha_3 \geqq \alpha_1$ when $\alpha_1 > \alpha_2$, or to satisfy $\alpha_3 \leqq \alpha_1$ when $\alpha_1 < \alpha_2$ assuming that α_1, α_2 and α_3 represent thermal expansion coefficients of said surface acoustic wave element, said support substrate and said conductive cap along the surface wave propagation direction respectively.

5,712,524
PIEZOELECTRIC ROTATION DRIVING APPARATUS

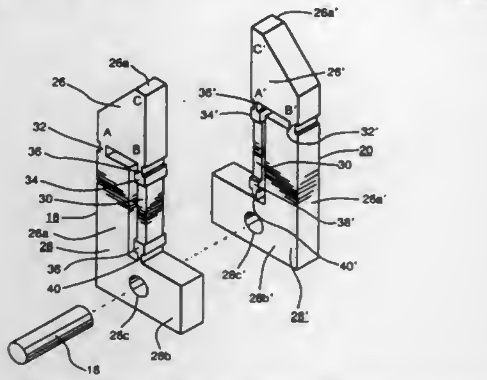
Michihisa Suga, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 26, 1995, Ser. No. 578,320

Claims priority, application Japan, Dec. 27, 1994, 6-326223

Int. Cl.^{6} H02N *2/00*

U.S. Cl. 310—328 **5 Claims**



1. A piezoelectric rotation driving apparatus comprising at least one set of piezoelectric driving bodies,
each of said piezoelectric driving bodies including: an action member having an action surface contacting with a rotor, a base member connected to said action member at a fulcrum portion thereof by a first hinge, said fulcrum portion enabling said action member to move rotatively, a piezoelectric element, one end of which is connected to said action member by a second hinge, and the other end of which is connected to said base member by a third hinge, said piezoelectric element expanding by being applied with a voltage and driving said action member thereby moving said action surface rotatively;
wherein said at least one set of the piezoelectric driving bodies is adapted integrally in the apparatus such that action surfaces of the piezoelectric driving bodies of the at least one set of driving bodies are disposed on the same line and in parallel to a central axis of said rotor and respective rotational displacement directions of said action surfaces are opposite to each other, and said action surfaces are thrust toward the central axis of said rotor by an elastic force of an elastic member.

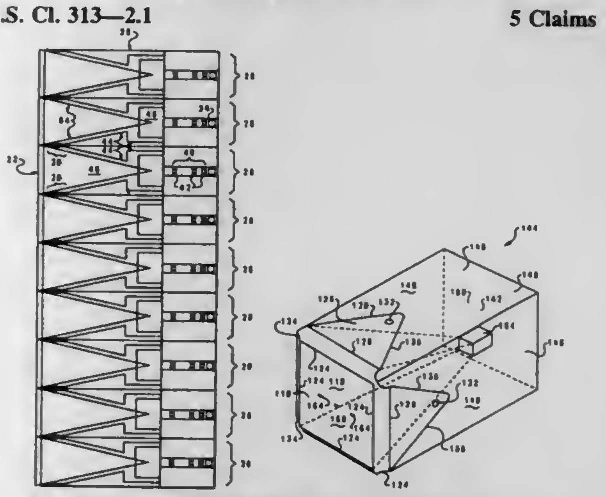
5,712,525
SHADOW MASK FOR A MUTLTIPLE ELEMENT CATHODE RAY TUBE

Otis E. Hull, 6701 Crooked La., Flowermound, Tex. 75028

Continuation-in-part of Ser. No. 64,837, May 19, 1993, Pat. No. 5,473,217. This application Sep. 8, 1995, Ser. No. 526,031

Int. Cl.^{6} H01J *29/50;29/81*

U.S. Cl. 313—2.1 **5 Claims**



1. A multiple element cathode ray tube, comprising:
a plurality of exterior walls providing a sealed, evacuated chamber, one of the exterior walls being a face plate having phosphors which emit light when struck by an electron beam, and another of the exterior walls being a planar back plate, wherein the sealed, evacuated chamber is defined to be the region between the front and back plates;
a plurality of elongate modules, each having side walls perpendicular to the face plate, a rectangular front opening and a back region, wherein the modules are connected together so that their side walls are adjacent and their front openings are aligned to form a rectangular grid parallel to and spaced from the front plate;
a plurality of electron guns and deflection units, one connected to each module back region for projecting an electron beam out from the module front opening; and
a shadow mask for each module, wherein each shadow mask is positioned to cover the module front opening parallel to and spaced from the front plate, wherein each shadow mask includes:
  a planar main body member having a plurality of apertures, and having a plurality of edges; and
  a plurality of planar arm members, each having a base edge attached to a respective edge of the main body member, and a distal end of each arm member extending outwardly from an edge of the planar main body member toward the back region;
wherein the planar arm members extend along the module side walls between them and the side walls of an adjacent module, and are attached to the module side walls to secure the main body member in position over the opening.

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5,712,526
BALLAST CIRCUIT BOARD MOUNTING ARRANGEMENT FOR AN INTEGRAL COMPACT FLUORESCENT LAMP

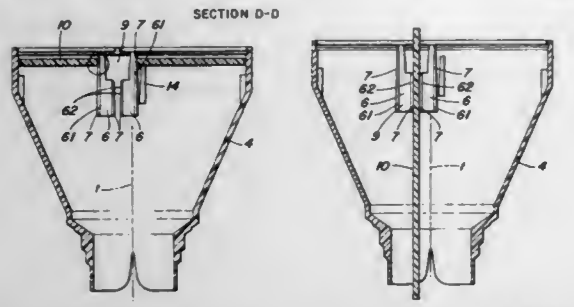
Jozsef Fulop, and Istvan Wursching, both of Budapest, Hungary, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 20, 1995, Ser. No. 504,980

Claims priority, application Hungary, Jul. 20, 1994, P 94 02141

Int. Cl.^{6} H01J *1/62*

U.S. Cl. 313—493 **17 Claims**



1. A single-ended discharge lamp with circuitry in its housing base, which discharge lamp comprises a discharge tube provided with electrodes, containing a fill and sealed in a gas-tight manner, a housing base comprising a circuitry mounted on a circuit board providing for the operation of the discharge tube where the housing base is formed in a way suitable for mechanical and electrical connection to a lamp socket on one part, and for mechanically fixing the discharge tube and connecting the output terminals of the circuitry to the electrode inleads of the discharge tube on the other part, and the housing base is built from two parts, a base and a cap, fixed to each other and the circuit board is inserted between supports formed in the inside of and protruding from one part of the housing base, wherein on each of the supports, at least one longitudinal rib is formed protruding from the surfaces thereof, which supports and ribs are so dimensioned that in the direction of inserting the circuit board, the space available for the circuit board progressively decreases, which results in the circuit board becoming fixed by the ribs over at least a part of the length thereof.

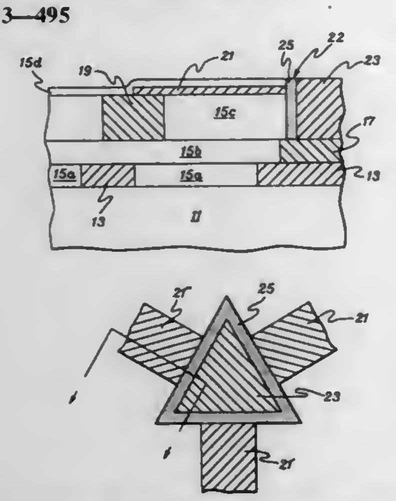
5,712,527
MULTI-CHROMIC LATERAL FIELD EMISSION DEVICES WITH ASSOCIATED DISPLAYS AND METHODS OF FABRICATION

Michael David Potter, Grand Isle, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 18, 1994, Ser. No. 324,633

Int. Cl.^{6} H01J *1/16*

U.S. Cl. 313—495 **20 Claims**



1. A field emission device ("FED") for emitting electromagnetic energy comprising:

a phosphor structure, said phosphor structure having a plurality of emission regions;

a plurality of emitters, each emitter of said plurality of emitters being separately electrically controllable, and being associated with an emission region of said plurality of emission regions, wherein electrons emitted by each emitter into said phosphor structure cause an electromagnetic emission from the associated emission region of said phosphor structure;

wherein a selected emission region of said plurality of emission regions of said phosphor structure has a filter associated therewith such that a preselected wavelength of electromagnetic energy is emitted from said filter when electrons are emitted from the emitter associated with said selected emission region;

wherein said plurality of emission regions comprises three emission regions, each emission region of said three mission regions having a different color filter associated therewith such that a first emission region of said three emission regions has a first color filter associated therewith, a second emission region of said three emission regions has a second color filter associated therewith, and a third emission region of said three emission regions has a third color filter associated therewith so as to facilitate tri-chromic emission of light from said FED when electrons are emitted into said plurality of emission regions of said FED; and

an emission surface, said phosphor structure intersecting said emission surface so as to form a triangular-shaped phosphor region thereon, said triangular-shaped phosphor region having three edges such that a different emission region of said three emission regions is associated with a different edge of said three edges of said triangular-shaped phosphor region.

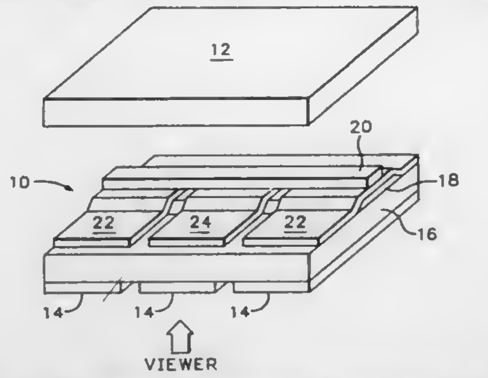
5,712,528
DUAL SUBSTRATE FULL COLOR TFEL PANEL WITH INSULATOR BRIDGE STRUCTURE

William A. Barrow, Beaverton; Carl W. Laakso, Portland, and Eric R. Dickey, Beaverton, all of Oreg., assignors to Planar Systems, Inc., Beaverton, Oreg.

Filed Oct. 5, 1995, Ser. No. 542,476

Int. Cl.^{6} H05B *33/14*

U.S. Cl. 313—506 **12 Claims**



1. In a TFEL display device comprising a laminar electroluminescent stack sandwiched between first and second electrode arrays, an electrode structure for said first one of said arrays comprising:

(a) a plurality of elongate insulator bridges forming rows extending across said laminar stack substantially in parallel;
(b) a plurality of pixel pads of conductive material deposited on each row of insulator bridges and extending laterally from said bridges onto areas of said laminar stack; and
(c) a plurality of bus bars connecting the thin pixel pads in each row and extending along said insulator bridges.

5,712,529
VACUUM ELECTRONIC TUBE WITH GETTER SUPPORT STRUCTURE

Jean-Luc Ricaud, St Ismier, and Philippe Gallet, St Nicolas de Macherin, both of France, assignors to Thomson Tubes Electroniques, Velizy, France

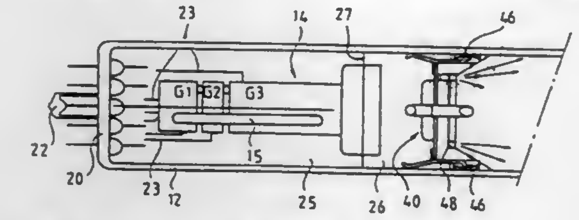
PCT No. PCT/FR95/00305, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO95/25339, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 14, 1995, Ser. No. 537,850

Claims priority, application France, Mar. 15, 1994, 94 02980

Int. Cl.^{6} H01J *19/70*

U.S. Cl. 313—558 **13 Claims**



1. Vacuum electron tube comprising:

a neck;
a bulb;
an electron gun disposed in the neck and aimed towards the bulb; and
a getter support disposed in the neck, wherein the getter support and the electron gun comprise separate assemblies not integral with one another, and wherein the getter support is disposed in front of the electron gun and is fastened rigidly to the neck said getter support including:
  - a collar concentric with an axis of the neck and having a diameter less than an internal diameter of the neck; and
  - elastic tabs disposed on the collar and extending in a rest position beyond the internal diameter of the neck, the elastic tabs being able to be brought back radially to the internal diameter of the neck in order to allow forcible insertion of the getter support into the neck, the elastic tabs bearing on and being sealed to at least one inner wall of the neck in order to center the getter support with respect to the axis of the neck.

5,712,530
MERCURY LAMP OF THE SHORT ARC TYPE HAVING AN ELECTRODE TERMINAL WITH TANTALUM THEREON

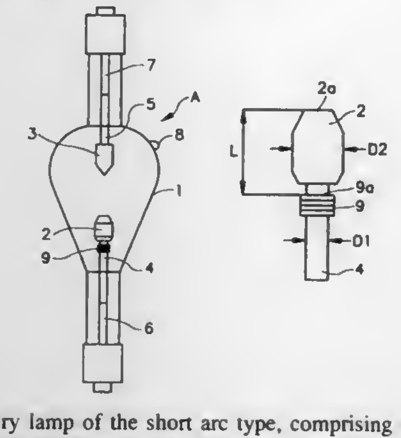
Osamu Inoue, and Toshiyuki Shima, both of Himeji, Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 564,004

Claims priority, application Japan, Nov. 29, 1994, 6-317745

Int. Cl.^{6} H01J *61/04*

U.S. Cl. 313—620 **5 Claims**



1. Mercury lamp of the short arc type, comprising an arc tube with a pair of electrodes disposed opposite each other within the arc tube, each of the electrodes being supported by a respective terminal post, tantalum being provided on the terminal post of at least one of the electrodes; and wherein both the following relationships:

$$(D2/D1) \geqq 1.3 \text{ and } 0.2 \leqq (D2/D1)^2/L \leqq 0.5$$

are satisfied at the same time for each electrode which has tantalum on the respective terminal post thereof, where D1 is an outer diameter of the respective terminal post in millimeters, D2 is an outer diameter of the electrode supported by the respective terminal post thereof in millimeters, and L is a distance between a tip of the electrode and the tantalum provided on the respective terminal post thereof.

5,712,531
HIGH-PRESSURE DISCHARGE LAMP WITH A SINTERED COMPACT CONTAINING LANTHANUM OXIDE

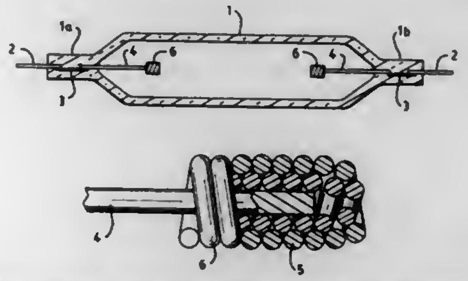
Albert Rademacher, Köln, and Ulrich Rösner, Wipperfürth, both of Germany, assignors to Patent - Truehand - Gesellshaft fuer electrishe Gluelampen mbH, Munich, Germany

Filed Jul. 30, 1996, Ser. No. 688,595

Claims priority, application Germany, Aug. 17, 1995, 195 30 293.1

Int. Cl.^{6} H01J *17/04;61/73*

U.S. Cl. 313—631 **7 Claims**



1. High-pressure discharge lamp with a light-transparent, gas-tight, sealed discharge vessel (1), an ionizable filler enclosed therein, and electrodes (4) extending into the discharge space and sealed in discharge vessel (1), and these electrodes are joined with current leads (2), whereby electrodes (4) have a sintered compact (5) containing lanthanum oxide and an electrode coil (6), which surrounds sintered compact (5),

is hereby characterized in that sintered compact (5) contains at least 90 weight % lanthanum oxide.

5,712,532
SCALABLE CRT DISPLAY DEVICE AND PHASE SYNCHRONOUS CIRCUIT FOR USE IN DISPLAY DEVICE

Masanori Ogino; Yoshiyuki Imoto; Kunio Umehara, all of Yokohama; Jiro Kawasaki, Zushi; Kiyoshi Yamamoto, Yokohama; Miyuki Ikeda, Yokohama, and Kazutaka Naka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,711

Claims priority, application Japan, Apr. 4, 1994, 6-065859; May 6, 1994, 6-094135

Int. Cl.^{6} H01V *29/98*

U.S. Cl. 315—1 **11 Claims**

1. A scalable CRT display device comprising: a scan converter unit; and a display unit,

said scan converter unit including digital memory means, output horizontal frequency unifying means, horizontal blanking period ratio converting means, output vertical frequency converting means and vertical blanking period ratio converting means;
said display unit including at least a horizontal deflection circuit, a vertical deflection circuit and an image amplifying circuit,

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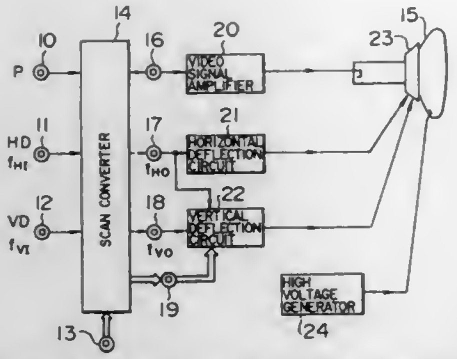


said vertical deflection circuit including vertical S-shaped distortion correcting means for correcting a vertical S-shaped distortion independently of a vertical deflection frequency,

wherein said scan converter unit serves to write, on the basis of a sampling clock signal which is generated by a first phase synchronous circuit and synchronized to a horizontal frequency of an input image signal, the input image signal to said digital memory means, and said output horizontal frequency unifying means is composed of a second phase synchronous circuit having an approximately fixed output horizontal frequency and serves to read out, on the basis of a clock signal generated by said second phase synchronous circuit, the necessary output image signal from said digital memory means;

said horizontal blanking period ratio converting means serves to determine a ratio of the number of picture elements, during the horizontal blanking period, of the output image signal to the total number of picture elements per horizontal period, and thus, said second phase synchronous circuit operates in such a way that the clock frequency generated by said second phase synchronous circuit becomes equal to the product of the output horizontal frequency and the total number of picture elements;

said output vertical frequency converting means serves to output a signal having a vertical frequency so as for the output vertical frequency to be substantially inversely proportional to the total number of output scanning lines;

said vertical blanking period ratio converting means serves to limit the number of scanning lines, during the vertical blanking period, of the output image signal in such a way that the vertical blanking period of the output image signal becomes approximately fixed; and

said vertical S-shaped distortion correcting means serves to correct the linearity of vertical deflection on the basis of a cubic component of an amplitude of a signal which has approximately one to one correspondence to the vertical position on the image screen.

5,712,533
POWER SUPPLY CIRCUIT FOR AN ELECTROLUMINESCENT LAMP

Damien Corti, Neuchâtel, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed May 18, 1995, Ser. No. 444,010

Claims priority, application Switzerland, May 26, 1994, 01 628/94

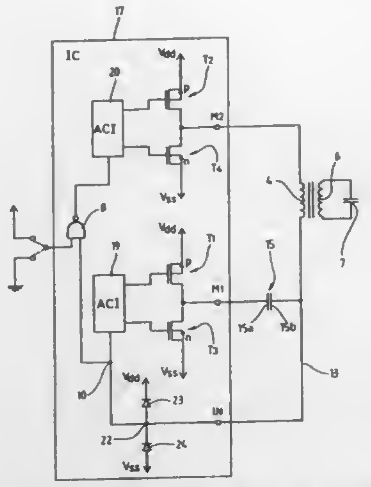
Int. Cl.^{6} H05B *33/00;33/02*

U.S. Cl. 315—169.3 **9 Claims**

1. A power supply circuit for an electroluminescent lamp (7) adapted to be supplied by a source of a continuous voltage supplied by a battery (2), said circuit comprising:

a transformer (**4**, **6**) comprising on the one hand a primary winding (**4**) and on the other hand a secondary winding (**6**) which is adapted to be connected to two electrodes of said electroluminescent lamp (**7**) so as to form a resonant LC loop;

commutation means (T1, T2, T3, T4, **8**, **19**, **20**) responding to a substantially periodic control signal to apply said continuous voltage to said primary winding (**4**) so as to generate therein an electric current of substantially periodic intensity,



wherein the commutation means is adapted to respond to said control signal by switching cyclically between a first state, where said current circulates in the primary winding (**4**) in a first direction, and a second state where said current circulates in the primary winding (**4**) in the opposite direction; and

enslaving means (**13**, **15**) for providing said control signal,

said enslaving means comprising:

a capacitor (**15**) connected by one (**15***b*) of its terminals to one end of the primary winding (**4**) of the transformer and adapted to be connected in series with the primary winding., to the terminals of the voltage source via the commutation means, and a feedback line (**13**) connected to said one (**15***b*) of the terminals of the capacitor.

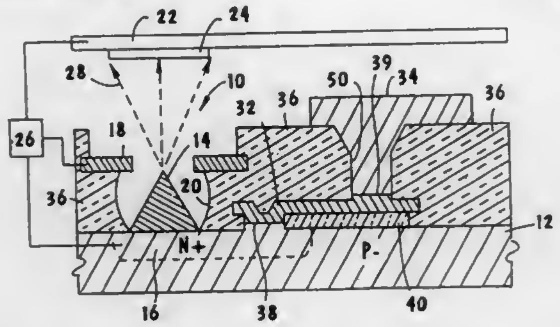
5,712,534
HIGH RESISTANCE RESISTORS FOR LIMITING CATHODE CURRENT IN FIELD EMMISION DISPLAYS

John Kichul Lee; David A. Cathey, Jr., and Kevin Tjaden, all of Boise, Id., assignors to Micron Display Technology, Inc., Boise, Id.

Continuation of Ser. No. 502,388, Jul. 14, 1995, Pat. No. 5,585,301. This application Jul. 29, 1996, Ser. No. 688,098

Int. Cl.^{6} H01J *1/30*

U.S. Cl. 315—169.3 **34 Claims**



1. A resistor in a field emission display comprising:

a resistive layer formed on a baseplate of the field emission display;

a first contact formed between the resistive layer and a conductivity region on the baseplate in electrical communication with an emitter site of the field emission display; and

a second contact formed between the resistive layer and a second circuit component of the field emission display;

said resistive layer comprising a silicon based material;

said first or second contact comprising an ohmic contact formed by diffusion of a dopant from the conductivity region.

5,712,535
FILL-IN LIGHT EMITTING APPARATUS AND STILL VIDEO CAMERA

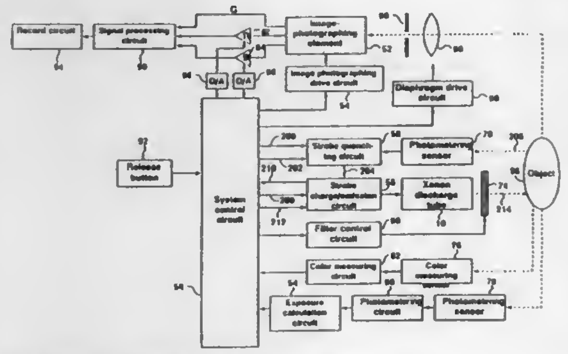
Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 113,322, Aug. 30, 1993, Pat. No. 5,485,201. This application Oct. 31, 1995, Ser. No. 550,769

Claims priority, application Japan, Aug. 28, 1992, 4-253955; Nov. 26, 1992, 4-339718; Dec. 2, 1992, 4-349789; Jan. 19, 1993, 5-23683; Jan. 19, 1993, 5-23684; Feb. 10, 1993, 5-45854; Feb. 18, 1993, 5-52958; Feb. 19, 1993, 5-55013; Feb. 22, 1993, 5-56505; Feb. 24, 1993, 5-59556

Int. Cl.^{6} H04N *9/73*

U.S. Cl. 315—241 P **11 Claims**



1. A strobe emission apparatus, comprising:

a first light emitter that emits light of a first color temperature Kc;

a second light emitter that emits light of a second color temperature Kc';

a first color temperature control filter provided in an optical path of said first light emitter and having a first color temperature conversion power Ta; and

a second color temperature control filter provided in an optical path of said second light emitter and having a second color temperature conversion power Tb, wherein said first color temperature conversion power Ta and said second color temperature conversion power Tb are determined in accordance with a color temperature of ambient light so that a resultant color temperature G of light transmitted through said first color temperature control filter and said second color temperature control filter is within a range defined by a lower limit Ka' and an upper limit Kb', said first color temperature conversion power Ta and said second color temperature conversion power Tb being defined as follows:

$$Ta \geqq (10^6/Ka') - (10^6/Kc);$$

and

$$Tb \geqq (10^6/Kb') - (10^6/Kc').$$

5,712,536
REDUCED BUS VOLTAGE INTEGRATED BOOST HIGH POWER FACTOR CIRCUIT

Kurt W. Haas, Chesterland; David J. Kachmarik, North Olmsted, and Kelvin B. Belle, Willoughbby Hills, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 31, 1995, Ser. No. 509,281

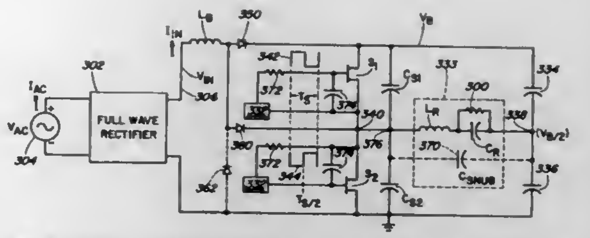
Int. Cl.^{6} H02M *5/458;* **G05F** *1/70*

U.S. Cl. 315—247 **18 Claims**

15. A condensed power supply circuit for powering a gas discharge lamp with bi-directional current, the circuit comprising:

means for supplying d.c. power from an a.c. voltage;

a series half bridge converter for alternately impressing a d.c. bus voltage from a bus conductor across a load circuit first with one polarity and then with an opposite polarity relative to said one polarity, said series half bridge converter including a



first switch, a second switch and a switching control circuit for alternately switching on said first and second switches;

a boost converter comprising a boost capacitor connected between said bus conductor and a ground conductor and whose level of charge determines the bus voltage on said bus conductor; and

a resistor-capacitor delay circuit for controlling a dead time, the dead time controlling the bus voltage, the first switch and the second switch being in an off state during the dead time.

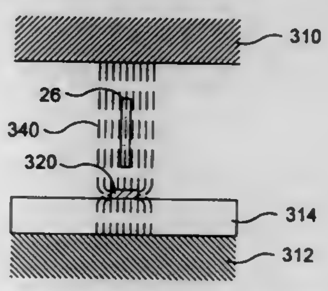
5,712,537
HIGH FREQUENCY SCAN CONVERTER

Harvey J. Horowitz, and Bernard Horowitz, both of Monroe, N.Y., assignors to Real Time Electronics, Corporation, Monroe, N.Y.

Continuation-in-part of Ser. No. 3,110, Jan. 11, 1993, abandoned. This application Jan. 11, 1994, Ser. No. 180,128

Int. Cl.^{6} H03K *17/88*

U.S. Cl. 315—374 **45 Claims**



1. An apparatus for storing a time varying analog signal n real time for later read out, comprising:

means for sequentially breaking up a time varying signal having an amplitude into discrete time intervals, said means for breaking up including means for supplying an electron beam;

means for deflecting said electron beam in accordance with said time varying signal, means for further deflecting said electron beam along an axis substantially perpendicular to that axis along which said beam is deflected with said time varying signal

means for detecting and storing said deflected electron by means of an array of rectangularly shaped charge detector elements; and

means for taking each of said charges from said detector elements so that said charges can be read at a lower rate than the rate at which said charges were originally stored.

5,712,538
CRT DISPLAY DEVICE COMPRISING A FILTER IN THE CATHODE MODULATOR

Petrus N. J. Vis; Rudolf Kemner; Edwin A. Montie; Alfred Ketting, and Adriaan J. Hoeven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,459

Claims priority, application European Pat. Off., Dec. 22, 1994, 94203719

Int. Cl.^{6} H01J *29/50*

U.S. Cl. 315—383 **17 Claims**

1. A display device, comprising:

a cathode arrangement for emitting a plurality of electron beams,

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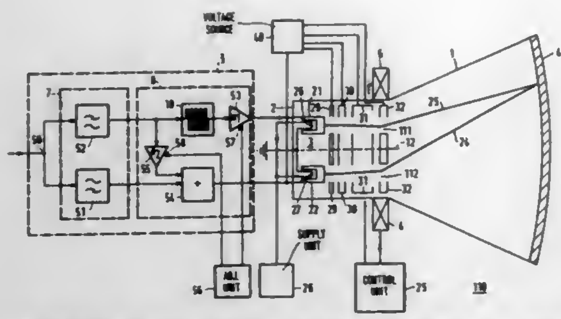


- a phosphor screen which is arranged opposite the cathode arrangement,
- a cathode modulator for modulating the electron beams on the basis of an electronic image signal,
- a deflection system for scanning substantially the same part of the phosphor screen by means of the individual electron beams, wherein
- the cathode modulator is arranged to modulate the intensity of individual electron beams on the basis of separate spatial components of the image represented by the electronic image signal in order to generate images in said part of the phosphor screen which represent different spatial frequency components of the image, and the cathode modulator comprises a frequency filter for deriving a spatial high-frequency signal component and a spatial low frequency signal component from the electronic image signal, and a drive for modulating the electron beams separately with said high-frequency and low frequency signal components, and
- said images form a superposed image.

5,712,539

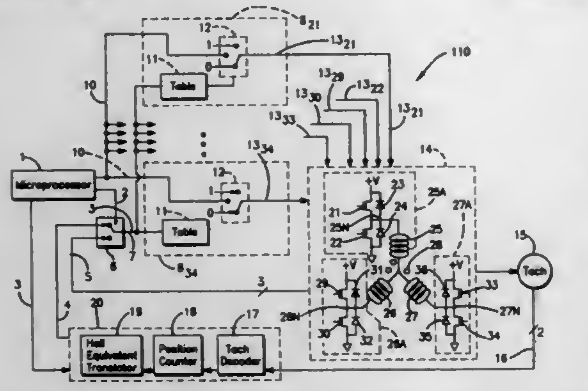
DIGITAL ACOUSTIC NOISE REDUCTION IN ELECTRIC MOTORS DRIVEN BY SWITCHING POWER AMPLIFIERS

James Zweighaft, Boulder; Mark H. Moyer, Arvada, and Christopher Koerner, Longmont, all of Colo., assignors to Exabyte Corporation, Boulder, Colo.

Filed Jun. 7, 1995, Ser. No. 483,521

Int. Cl.^{6} H02P *6/00;7/01;* **B65H** *59/38*

U.S. Cl. 318—7 **33 Claims**



1. A method for controlling a brushless DC motor, the motor having a plurality of coils and a switching amplifier coil driving circuit including a first transistor and a second transistor, the method comprising:

- generating a pulse width modulation (PWM) signal;
- using the PWM signal to generate a first gate drive PWM signal for selective application to a gate of the first transistor, the first gate drive PWM signal having a decreasing duty cycle in advance of a commutation point of the motor;
- using the PWM signal to generate a second gate drive PWM signal for selective application to a gate of the second transistor, the second gate drive PWM signal having an increasing duty cycle in advance of the commutation point of the motor; thereby obtaining a simultaneous rise in current applied to a first coil of the motor and a fall in current applied to a second coil of the motor.

5,712,540

CONTROL METHOD AND APPARATUS FOR CONTROLLING MOTORS OF AIR CONDITIONER

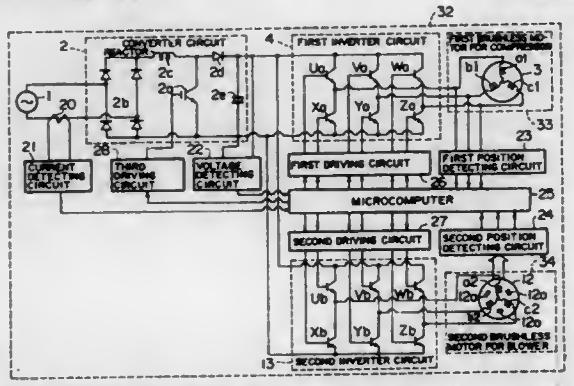
Koichi Toda, Kawasaki, and Yoshio Ogawa, Tokyo, both of Japan, assignors to Fujitsu General Limited, Japan

Filed Jul. 21, 1995, Ser. No. 505,397

Claims priority, application Japan, Jul. 26, 1994, 6-193664

Int. Cl.^{6} H02K *17/34*

U.S. Cl. 318—46 **23 Claims**


CONVERTER CIRCUIT
REACTOR
FIRST INVERTER CIRCUIT
FIRST BRUSHLESS MOTOR FOR COMPRESSOR
CURRENT DETECTING CIRCUIT
THIRD DRIVING CIRCUIT
VOLTAGE DETECTING CIRCUIT
FIRST DRIVING CIRCUIT
FIRST POSITION DETECTING CIRCUIT
MICROCOMPUTER
SECOND DRIVING CIRCUIT
SECOND POSITION DETECTING CIRCUIT
SECOND BRUSHLESS MOTOR FOR BLOWER
SECOND INVERTER CIRCUIT

1. A method of controlling a plurality of motors of an air conditioner having a converter for converting AC power to DC power, comprising the steps of: setting an input alternating current waveform to a sine wave having the same phase as that of an input voltage of the alternating current waveform using a switching means; driving a plurality of motors to operate at least a compressor and a blower of the air conditioner; converting the converted DC power to AC power using an inverter associated with each of the respective motors and supplying the AC power to the respective motors; and controlling at least the compressor and the blower of the air conditioner with a single microcomputer by outputting a control signal from the microcomputer for controlling the switching means in accordance with the input alternating current and the output DC voltage of the converter, and outputting control signals from the microcomputer for controlling the plurality of inverters.

5,712,541

METHOD AND APPARATUS FOR ACTUATING SYNCHRONOUS MOTORS

Krister Larsson, Huddinge, Sweden, assignor to Landis & Gyr Technology Innovation AG, Sweden

Filed Mar. 13, 1996, Ser. No. 614,509

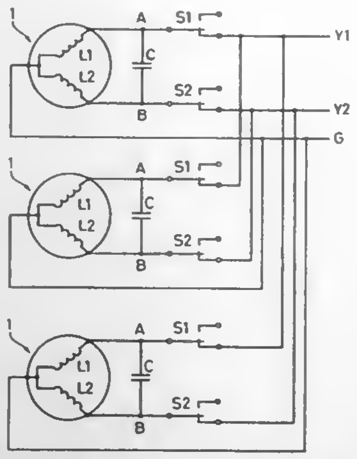
Claims priority, application Sweden, Apr. 19, 1995, 1118/95

Int. Cl.^{6} H02P *05/46*

U.S. Cl. 318—65 **5 Claims**

1. Apparatus for actuating at least two synchronous electric motors which are connected to a common alternating current power supply, each said motor being operably connected for displacing an associated element between two limit positions, and being adapted to operate in a forward direction and in a reverse direction, said apparatus comprising:

- first circuit means for connecting said power supply to each said motor for producing forward direction operation thereof;
- second circuit means for connecting said power supply to each said motor for producing reverse direction operation thereof;
- switching means for selectively and alternately connecting one of said first and second circuit means to the power supply;
- a first limit switch means connected in said first circuit means of each said motor and adapted to interrupt said power supply to said associated motor in response to said first limit switch means being actuated by the element reaching one of said two limit positions; and,



- a second limit switch means connected in said second circuit means of each said motor and adapted to interrupt said power supply to said associated motor in response to said second limit switch means being actuated by the element reaching the other of said two limit positions;
- wherein said power supply to one of said two motors is unaffected when one of said first and second limit switch means of another of said two motors interrupts said power supply to said another motor.

5,712,542

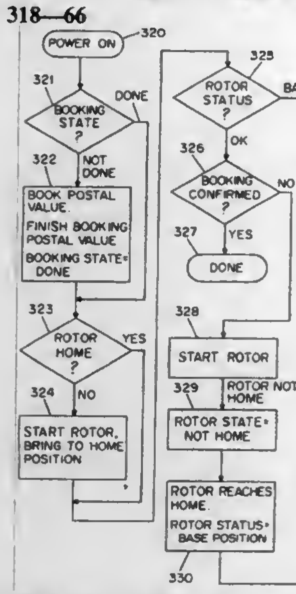
POSTAGE METER WITH IMPROVED HANDLING OF POWER FAILURE

Peter Stutz, Hinterkappelen; Martin Müller, Langenthal, and Andre Flückiger, Bern, all of Switzerland, assignors to Ascom Hasler Mailing Systems AG, Bern, Switzerland

Continuation-in-part of Ser. No. 450,129, May 25, 1995. This application Nov. 27, 1995, Ser. No. 562,854

Int. Cl.^{6} H02P *5/46*

U.S. Cl. 318—66 **5 Claims**



1. A postage meter having a processor executing a stored program, the meter having a print rotor for printing postage value, the rotor rotation defining a home rotor position, the rotor operatively coupled with a motor startable and stoppable by the processor, the meter further comprising a mail piece sensor, the meter further comprising a rotor home position sensor, the meter further comprising a nonvolatile memory, the nonvolatile memory comprising an accounting register indicative of the printing of postage value, the nonvolatile memory further comprising first and second state storage locations, said meter further comprising:

- means responsive to actuation of the mail piece sensor for setting the first state storage location and for commencing updating of the accounting register after the first state storage location has been set; and for setting the second state storage location and for turning on the motor after the second state storage location has been set;
- means responsive to the rotor home position sensor indicating arrival of the rotor at the home position for turning off the motor and clearing the second state storage location;
- means responsive to completion of the updating of the accounting register for clearing the first state storage location; and
- means responsive to the application of electric power to the meter, to the condition of the first state storage location, to the condition of the second state storage location, and to the condition of the rotor home position sensor, such that:
  - in the event the rotor is in the home position and the second state storage location is clear, the meter enters a quiet state;
  - in the event the first state storage location is set, the completes the updating of the accounting register and, after completing the updating of the accounting register, the first state storage location is cleared and the motor is started;
  - in the event the rotor is in its home position and the second state storage location is set, the motor is started; and
  - in the event the rotor is not in its home position, the motor is started.

5,712,543

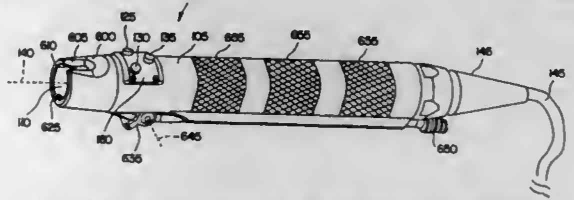
MAGNETIC SWITCHING ELEMENT FOR CONTROLLING A SURGICAL DEVICE

Douglas D. Sjostrom, Reading, Mass., assignor to Smith & Nephew Endoscopy Inc., Andover, Mass.

Filed Apr. 10, 1996, Ser. No. 630,125

Int. Cl.^{6} H02P *5/50;* **A61B** *17/32*

U.S. Cl. 318—71 **24 Claims**



1. Apparatus for controlling a surgical device, comprising:

- a housing; and
- a magnetic switching element mounted on the housing, the magnetic switching element including:
  - a magnet,
  - a magnetic sensor configured to produce a control signal for controlling the surgical device, and
  - an actuator mounted on the housing for movement between a first position in which a magnetic field of the magnet is decoupled from the magnetic sensor to a second position to couple the magnetic field to the magnetic sensor so as to change a value of the control signal produced by the magnetic sensor.

5,712,544

Patent Not Issued For This Number

5,712,545

ELECTRONICALLY COMMUTATED MOTOR AND METHOD OF CONTROLLING SUCH A MOTOR

Hermann Rappenecker, Vöhrenbach, Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Germany

Filed Apr. 25, 1996, Ser. No. 638,916

Claims priority, application Germany, May 2, 1995, 195 15 944.6; May 13, 1995, 195 17 665.0

Int. Cl.^{6} H02P *6/08*

U.S. Cl. 318—254 **22 Claims**

1. A method of operating an electronically commutated motor having at least three stator winding strands and a rotor (35) which,

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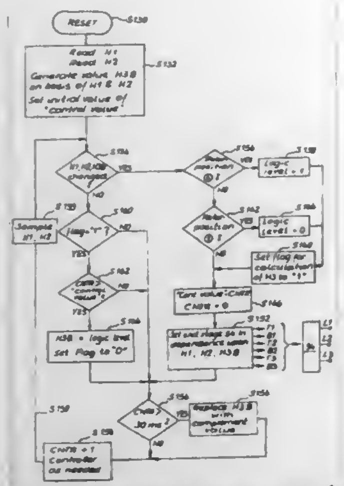

RESET
Set Flag to "0"
Replace H3B with complement value
Cnt# +1 Controller as needed
30 ms?
NO
YES

to detect an instantaneous position of said rotor, has a number of signal-producing rotor position sensors (37, 38) which is smaller, by at least one, than a number of rotor position sensors intrinsically necessary for this number of strands in order to control commutation of said motor, having the following steps:

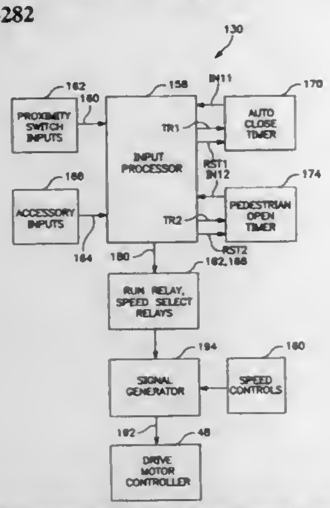
(a) within each range (120) of rotor positions in which an adequate association between sensor output signals and rotor position is possible, a virtual rotor position signal (H3B') is derived from the output signals (H1 H2) of said rotor position sensors (37, 38), as a substitute for the output signal of a sensor which is not present;

(b) within each range (122, 124) of rotor positions in which an adequate association is not possible, an estimated value (H3B") is used for the virtual rotor position signal, which value is a function of an output signal (H1) of at least one of the existing rotor position sensors (37, 38).

5,712,546
CONTROL SYSTEM FOR DOOR POSITIONING ASSEMBLY

Jeffery A. Holthouse, Richmond, Ind., and David C. Rice, Springbro, Ohio, assignors to American Metal Door Company, Inc., Richmond, Ind.

Filed Jan. 3, 1995, Ser. No. 367,953
Int. Cl.^{6} H02P *1/00*
U.S. Cl. 318—282 **28 Claims**



1. A control system for a door positioning assembly having a door mounted on a track, the door being movable between an open position and a closed position, the door having a leading edge adjacent a door opening, an edge arranged to define a second opening, a pass door pivotably coupled to the second opening, the control system comprising:

proximity means for providing a door position signal in response to the position of the door on the track system,

a user input for providing user input signals including open inputs, stop inputs including signals provided by a stop button of a user-operated switch, and close inputs in response to user commands,

a plurality of sensors for providing stop input signals in response to the position of an object located within a detection zone adjacent the door opening, in response to contact between an object and the leading edge of the door, and in response to the position of the pass door,

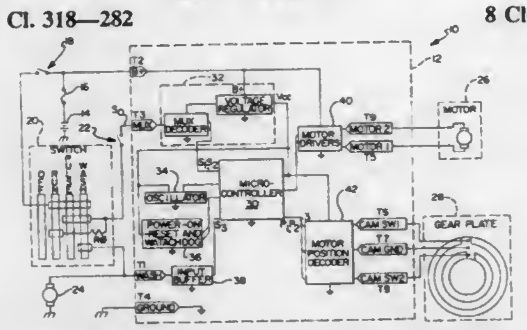
a signal processor to provide controller instructions in response to the door position signal and the user input signals, and

a controller configured to vary the speed and direction of travel of the door in response to the controller instructions, the controller instructions instructing the controller to move the door in an open direction in response to open inputs, to stop the movement of the door in response to stop inputs, and to move the door in a closed direction in response to close inputs.

5,712,547
SOFTWARE CONTROLLED LATCHED VOLTAGE REGULATOR HAVING WIPER SWITCH DECODING

Eugene Bryan Porter, Beavercreek; Robert John Disser, Dayton, both of Ohio, and Michael Bernard Monahan, Webster, N.Y., assignors to ITT Automotive Electrical Systems Inc., Auburn Hills, Mich.

Filed May 31, 1995, Ser. No. 455,301
Int. Cl.^{6} B60S *1/58*
U.S. Cl. 318—282 **8 Claims**



1. A motor-operated wiper control system, comprising:

switch means responsive to user actuation for selecting one of a plurality of wiper functions and for generating in response thereto a switch multiplexed signal corresponding to the selected wiper function;

wiper position detecting means for detecting a position of the wiper and generating a position signal indicative of the detected position;

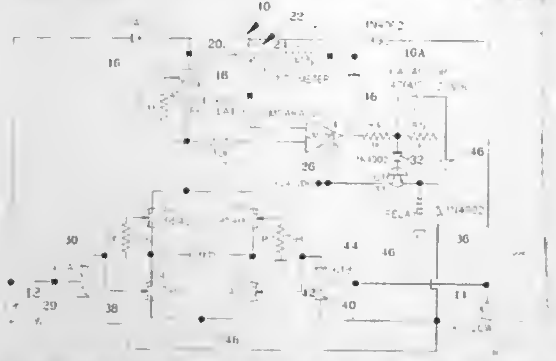
a power latch and decoder circuit having an output node and including regulator means responsive to a direct current (DC) power source for generating a regulated voltage at said output node, said regulator means including means for generating a reference signal, said circuit further including decoder means responsive to said switch multiplexed signal and said reference signal for generating a wiper function signal indicative of the selected wiper function, said circuit further including latch means for enabling said regulator means to generate said regulated voltage when in an energized state and for discontinuing generation of said regulated voltage when in a deenergized state;

control means responsive to said position signal for controlling the motor to move the wiper in accordance with said wiper function signal, said control means being coupled to said output node for obtaining operating power therefrom.

5,712,548
BI-DIRECTIONAL MOTOR ACTUATOR

Bill Tice, Vista, and Brian Matthew Haskell, San Marcos, both of Calif., assignors to ETI Systems, Inc., Carlsbad, Calif.

Filed Jan. 16, 1997, Ser. No. 784,765
Int. Cl.^{6} H02P *3/12;1/22*
U.S. Cl. 318—293 **10 Claims**



1. A bi-directional motor actuator for terminating operational voltage to a motor when established voltage levels change due to increased motor current levels and dynamic braking for instantaneously stopping motor rotation when motor voltage is terminated comprising:

a voltage source;

a voltage regulator means having an input voltage from said voltage source and an voltage output for supplying operational voltage to said motor;

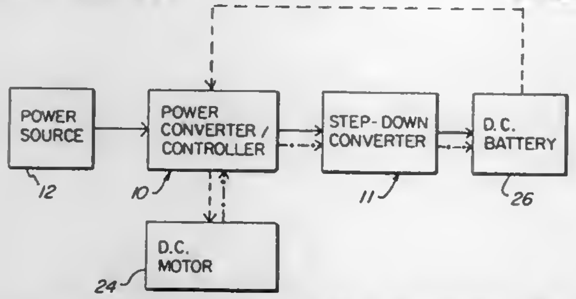
a comparator means having a first and second input and an output, said first input being connected to said voltage source and said second input being connected to the output of said voltage regulator means, said first input being adjusted to the voltage level of said second input while the motor is operating under normal operating loads by voltage adjustment means, said comparator having no output voltage when the voltages on said first and second inputs are equal and providing an output voltage when said first and second inputs are unequal; and

switching means connected to and controlled by the comparator output voltage for terminating voltage from said voltage regulator means to said motor when an output voltage from said comparator is detected by said switching means.

5,712,549
DC MOTOR DRIVE ASSEMBLY HAVING A CONTROLLER/CHARGE WITH REGENERATIVE BRAKING

Gabriel D. Engel, Ames, Iowa, assignor to Tenergy L.L.C., New Britain, Conn.

Continuation-in-part of Ser. No. 399,814, Mar. 19, 1995, abandoned. This application Mar. 4, 1996, Ser. No. 606,485
Int. Cl.^{6} H02P *03/18*
U.S. Cl. 318—376 **6 Claims**



1. A drive assembly comprising: (i) a DC electric motor; and (ii) an integrated charger/controller/regenerator for controlling said DC electric motor in a drive mode of operation, for charging a battery in a regenerative braking mode of operation, and for connection to an electric power source for charging the battery in a charge mode of operation including

(a) a power module having an output and an input for connection to the associated electric power source during a charge mode of operation, said input of said power module being connected to said DC motor during a regenerative braking mode of operation in which said power module provides a DC current to said output;

(b) a step-down module having an input connected to said power module and an output adapted to be connected to terminals of an associated battery;

(c) a control circuit including switch means having a multiplicity of switches, said control circuit having

(i) selected ones of said switches selectively effect the connection of the terminals of the associated battery to said input of said power module and selected ones of said switches selectively effect the connection of said output of said power module to said DC motor wherein said power module controls said DC motor;

(ii) a regenerative braking mode of operation during which selected ones of said switches selectively effect the connection of said DC motor to said input of said power module and selectively effect the connection of said output of said power module to said input of said step-down module, said output of said step-down module being connectable to the terminals of the associated battery to effect charging thereof; and

(iii) a charge mode of operation during which said input of said power module is connected to the associated electric power source, selected ones of said switches selectively effect the connection of said output of said power module to said input of said step-down module, said output of said step-down module being connectable to the terminals of the associated battery to effect charging thereof.

5,712,550
APPARATUS FOR CONTROLLING A POWER CONTROL ELEMENT OF A DRIVE UNIT OF A MOTOR VEHICLE

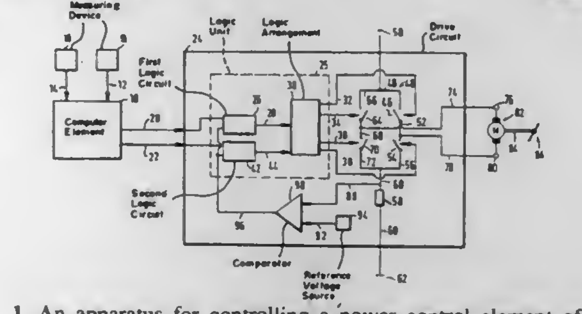
Leonhard Boll, Eberdingen; Thomas Zeller, Ditzingen, and Klaus Müller, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00858, § 371 Date Feb. 15, 1996, § 102(e) Date Feb. 15, 1996, PCT Pub. No. WO95/05704, PCT Pub. Date Feb. 23, 1995

PCT Filed Jul. 23, 1994, Ser. No. 596,345

Claims priority, application Germany, Aug. 16, 1993, 43 27 483.8

Int. Cl.^{6} H02K *17/32*
U.S. Cl. 318—434 **11 Claims**



1. An apparatus for controlling a power control element of a drive unit of a motor vehicle, the apparatus comprising:

an electric motor for controlling said power control element;

a source for supplying a current;

a full-bridge output circuit connected to said source and to said electric motor for supplying said current to said electric motor;

said full-bridge output circuit having four arms;

four switching units connected into said four arms, respectively;

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pulse generating means for generating at least one pulse-shaped drive signal for driving said switching units for allowing said current to flow through said full-bridge output circuit and to said electric motor;

limit means for providing a limit value for said current;

means for comparing said current to said limit value and for operating on said pulse generating means to inhibit said pulse-shaped drive signal when said current exceeds said limit value and for enabling said pulse generating means when said current drops below said limit value; and,

each one of said four switching units including short-circuit monitoring means for monitoring current through said one switching unit and for immediately switching off said full-bridge output circuit when the current through said one switching unit exceeds a predetermined limit value.

5,712,551
STARTING CIRCUIT PROTECTION APPARATUS AND METHOD FOR BRUSHLESS DC MOTOR COMPRESSOR

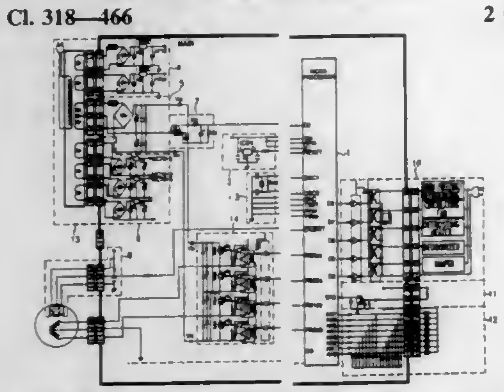
Kun-bin Lee, Uijeongbu, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 4, 1995, Ser. No. 567,108

Claims priority, application Rep. of Korea, Dec. 2, 1994, 94-32568

Int. Cl.^{6} G05B *5/00;* **F25B** *1/00*

U.S. Cl. 318—466 **2 Claims**



1. A starting method of a brushless DC motor compressor for use in a refrigerator, said compressor comprising a brushless DC motor, a hall sensor, a motor driver, motor rotation state detecting means and controller for said motor, hall sensor, motor driver and motor rotation state detecting means, said method comprising the steps of:

starting said compressor by turning on said brushless DC motor;

detecting whether the voltage of said brushless motor rotation state detecting means is greater than or equal to a predetermined value;

driving a brushless motor coil normally, if the voltage is less than the predetermined value; and

turning off and restarting said brushless DC motor, if the voltage is greater than or equal to the predetermined value,

wherein said means for detecting the rotation state of said brushless motor comprises a first resistor for obtaining a power voltage for said DC brushless motor driving, second and third resistors for dividing the voltage applied across said first resistor, and a capacitor for detecting stably the divided voltage applied across said third resistor and informing the detected voltage to said controller,

wherein said voltage detecting step comprises the steps of detecting said voltage applied across said third resistor by said controller, including the rotation state of said brushless DC motor as a normal state if the voltage across said third resistor is less than the predetermined value, and judging the rotation state of said motor as an abnormal starting state if the voltage is at least twice that in the normal state or has large ripple constituents.

5,712,552
NO-WIRING ROBOT

Junji Hirai; Yoshiji Hiraga; Yasuhiko Kaku, and Ichiro Ishibashi, all of Fukuoka, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Kitakyushu, Japan

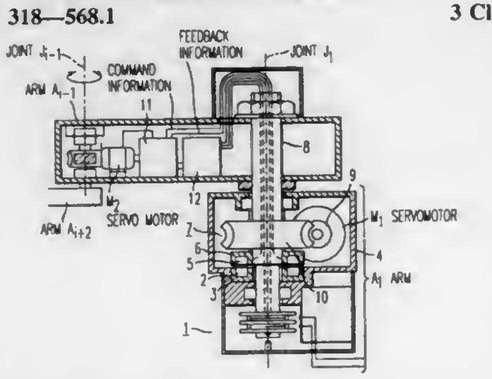
PCT No. PCT/JP94/01595, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/09717, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 28, 1994, Ser. No. 619,514

Claims priority, application Japan, Oct. 1, 1993, 5-269707

Int. Cl.^{6} B25J *19/00;* **B65B** *21/02*

U.S. Cl. 318—568.1 **3 Claims**



1. A no-wiring robot comprising:

at least one joint housing a motor for actuating its own joint or another joint either through a reduction gear or directly;

electric power transmitting means including a fixed core having a primary winding around a proximal portion of a rotatable shaft by which a joint and a base or joints are rotatably supported, and a rotatable core having a secondary winding around a distal portion of the rotatable shaft, the fixed core confronting the rotatable core without contact, for transmitting electric power from the proximal portion to the distal portion without contact by way of high-frequency electromagnetic induction;

signal transmitting means including light-emitting and -receiving elements disposed respectively around the proximal and distal portions of said rotatable shaft, the light-emitting and -receiving elements confronting each other without contact, for transmitting optical control and detected signals from the proximal portion to the distal portion and vice versa without contact; and

means for converting high-frequency electric power transmitted from said electric power transmitting means for energizing said motor, and means for energizing said motor based on the control or detected signal transmitted from the proximal or distal portion, said means being disposed in each shaft which houses said motor.

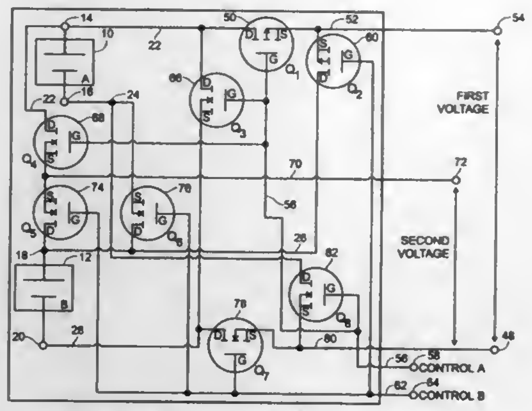
5,712,553
BATTERY TRANSPOSITION SYSTEM AND METHOD

Bryao Severt Hallberg, Vancouver, Wash., assignor to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp/Kabushiki Kaisha, Osaka, Japan

Filed Jan. 11, 1996, Ser. No. 586,245

Int. Cl.^{6} H02J *7/00;* **H01M** *10/44*

U.S. Cl. 320—15 **20 Claims**



1. A battery transposition power supply to constantly supply at least two voltages having a common ground, a first voltage and a second voltage less than the first voltage, the battery transposition power supply comprising:

a first group of at least two series connected battery subgroups for supplying the first voltage, said first group of batteries including battery subgroups A and B, each having first and second terminals, the battery transposition power supply providing the second voltage from a battery subgroup of said first group including at least one battery;

a plurality of selectable battery interconnections connecting said first and second terminals of said battery subgroups for supplying the first voltage, and for selectively supplying the second voltage and common ground from different battery subgroups of said first group as follows:

when battery sub group B is selected to provide the second voltage and common ground, said battery interconnections connecting said second terminal of battery subgroup A to said first terminal of battery Subgroup B to provide the first voltage between said first terminal of battery subgroup A and said second terminal of battery subgroup B, said battery interconnections also connecting to supply the second voltage between said first and second terror-sis of battery subgroup B, wherein said second terminal of battery subgroup B is the ground common to the first and second voltages; and

when battery subgroup A is selected to provide the second voltage and the common ground, said battery interconnections connecting said second terminal of battery subgroup B to said fixst terminal of battery subgroup A to provide the fixst voltage between said first terminal of battery subgroup B and said second terminal of battery subgroup A, said battery interconnections also connecting to supply the second voltage between said fixst and second terminals of battery subgroup A, wherein said second terminal of battery subgroup A is the ground common to the first and second voltages; and

a battery interconnection controller operatively connected to said battery interconnections for selectively varying the subgroup from which the second voltage and common ground are derived, whereby the one or more batteries supplying the second voltage are changed to minimize differences in the depletion of the batteries.

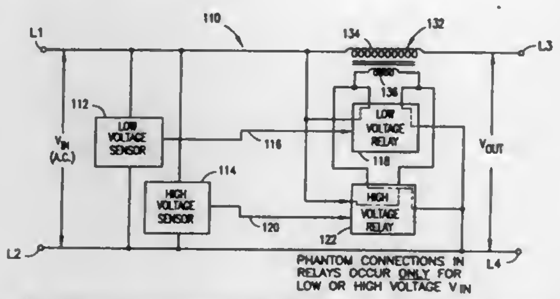
5,712,554
VOLTAGE COMPENSATION DEVICE

Melvin A. Lace, Prospect Heights, Ill., assignor to Thomas E. Dorn, Clarendon Hills, Ill., a part interest

Continuation-in-part of Ser. No. 568,249, Dec. 22, 1995, abandoned. This application Jun. 12, 1996, Ser. No. 662,126

Int. Cl.^{6} G05F *1/24*

U.S. Cl. 323—259 **12 Claims**



1. A voltage compensation device for an A.C. line subject to variations both above and below a predetermined normal line voltage range, the compensation device comprising:

first and second input terminals connectable to an A.C. line to derive an input voltage V_{IN} therefrom, which A.C. Line is subject to variations both above and below a predetermined normal line voltage range;

first and second output terminals connectable to a utilization device;

a transformer having first and second electromagnetically coupled windings;

sensor means, connected to the input terminals, for generating an actuating signal indicative of the voltage between the input terminals; and

switching means, connected to one winding of the transformer and to the sensor means, actuated by the actuating signal from the sensor means, for:

- (A1) connecting the one winding of the transformer in additive relation to the other winding when the input voltage V_{IN} is below a given low voltage threshold below the normal range;
- (A2) connecting the one winding of the transformer in bucking relation to the other winding when the input voltage V_{IN} is above a given high voltage threshold above the normal range; and
- (B) effectively disconnecting the one winding of the transformer when the input voltage is above the low voltage threshold and below the high voltage threshold;

in which the one winding of the transformer is in two sections, which sections are connected in series when the input voltage V_{IN} is below a first low voltage threshold below the nominal range, in parallel when the input voltage is below a second low voltage threshold below the first low voltage threshold, in series when the input voltage V_{IN} is above a first high voltage threshold above the nominal range, and in parallel when the voltage is above a second high voltage threshold above the first high voltage threshold.

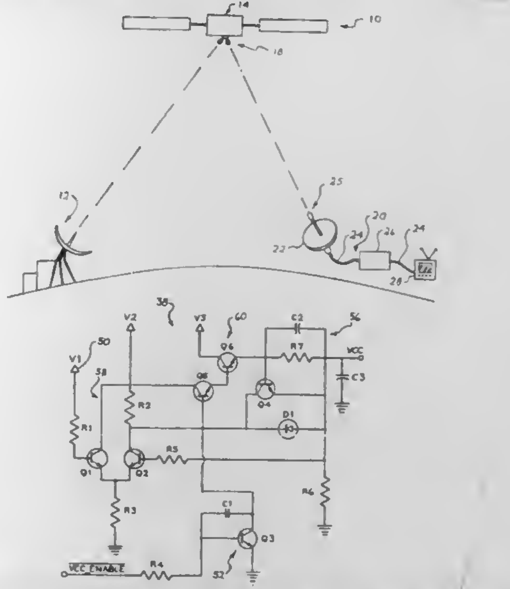
5,712,555
VOLTAGE REGULATION FOR ACCESS CARDS

Thomas Jackson, Frederick, and Stephen H. Jones, Gaithersburg, both of Md., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 13, 1996, Ser. No. 600,578

Int. Cl.^{6} G05F *1/40;1/44*

U.S. Cl. 323—273 **17 Claims**



1. A voltage regulation circuit for an access card requiring a regulated supply signal having a rise-time within a first predetermined range and a fall-time within a second predetermined range, the voltage regulation circuit comprising:

a voltage regulator having an output terminal for coupling a regulated output voltage signal to an access card, the voltage

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regulator including means for receiving an external reference voltage input signal from a source external to the voltage regulator; and

an enable circuit in communication with the voltage regulator for enabling the voltage regulator at a first time such that the output terminal of the voltage regulator substantially receives the regulated output voltage signal by a rise-time within the first predetermined range after the first time, and for disabling the voltage regulator at a second time such that the output terminal of the voltage regulator substantially ceases to receive the regulated output voltage signal and reaches a ground potential within a fall-time within the second predetermined range after the second time;

wherein the output voltage signal substantially tracks the external reference voltage input signal when the voltage regulator is enabled.

5,712,556

INTERMEDIATE POTENTIAL GENERATING CIRCUIT HAVING OUTPUT STABILIZING CIRCUIT

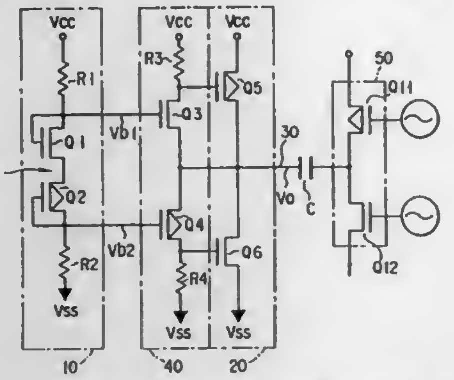
Jun-Ichi Okamura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 300,513, Sep. 6, 1994, Pat. No. 5,528,130, which is a continuation of Ser. No. 64,377, May 21, 1993, abandoned. This application Feb. 27, 1996, Ser. No. 607,776

Claims priority, application Japan, May 22, 1992, 4-130980

Int. Cl.^{6} G05F *3/24*

U.S. Cl. 323—314 **18 Claims**



1. An intermediate potential generating circuit having an output terminal, comprising:

means for generating a first control voltage and a second control voltage, wherein the potential of the first control voltage is higher than the potential of the second control voltage;

a first voltage generating circuit for generating a third control voltage;

a second voltage generating circuit for generating a fourth control voltage;

a first transistor having first and second terminals and a gate electrode, the gate electrode of the first transistor being supplied with the first control voltage;

a second transistor having first and second terminals and a gate electrode, the gate electrode of the second transistor being supplied with the second control voltage, the first terminal of the second transistor being connected to the first terminal of the first transistor;

a third transistor having first and second terminals and a gate electrode, the gate electrode of the third transistor being supplied with the third control voltage, the first terminal of the third transistor being connected to the second terminal of the first transistor, and the second terminal of the third transistor being connected to a power supply terminal;

a fourth transistor having first and second terminals and a gate electrode, the gate electrode of the fourth transistor being supplied with the fourth control voltage, the first terminal of the fourth transistor being connected to the second terminal of the second transistor, and the second terminal of the fourth transistor being connected to a ground terminal;

a fifth transistor having first and second terminals and a gate electrode, the gate electrode of the fifth transistor being connected to the second terminal of the first transistor, the first terminal of the fifth transistor being connected to the output terminal, and the second terminal of the fifth transistor being connected to the power supply terminal; and

a sixth transistor having first and second terminals and a gate electrode, the gate electrode of the sixth transistor being connected to the second terminal of the second transistor, the first terminal of the sixth transistor being connected to the output terminal and the first terminal of the first transistor, and the second terminal of the sixth transistor being connected to the ground terminal.

5,712,557

CONSTANT CURRENT SUPPLY CIRCUIT WITH STABILIZATION BASED ON VOLTAGE AND CURRENT RATIOS RELATIVE TO A REFERENCE VOLTAGE AND A RELATED CONTROL CURRENT

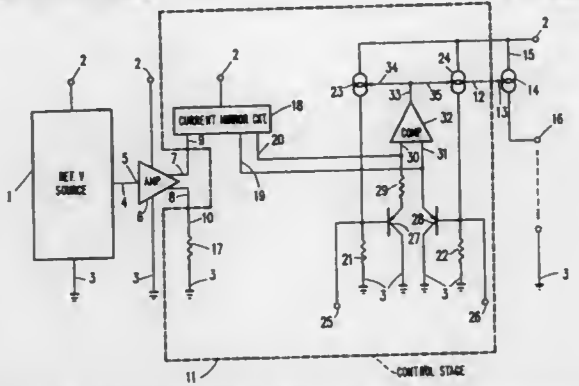
Holger Gehrt, Rosengarten; Wolfgang Schnitt, Norderstedt; Joachim Utzig, Buxtehude, and Gert Bierkarre, Escheburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 22, 1996, Ser. No. 701,283

Claims priority, application Germany, Aug. 22, 1995, 195 30 737.2

Int. Cl.^{6} G05F *3/16*

U.S. Cl. 323—316 **8 Claims**



1. A circuit arrangement for supplying a constant current which is stabilized against temperature variations, comprising:

a reference voltage source for supplying a constant voltage,

a constant current source which is controlled by the reference voltage source via an amplifier circuit,

a control stage comprising a first and a second resistor, at least one of said resistors being trimmable,

the control stage being adapted to supply to each of the first and the second resistors a first control current which is controllable so that the difference between the voltages produced thereby across the first and second resistors will be in a first predetermined ratio to the constant voltage of the reference voltage source, and

the current source being coupled to the control stage and controlled thereby so that the constant current supplied by the constant current source will be in a second predetermined ratio to said first control current.

5,712,558

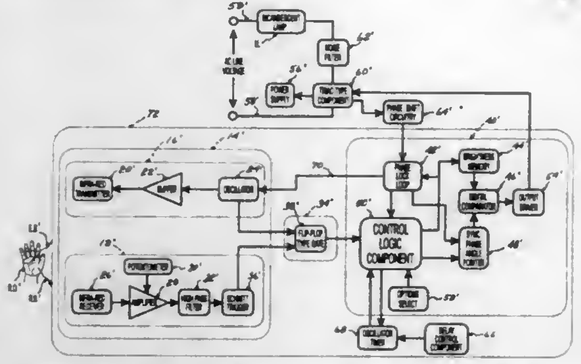
OPTICALLY ACTUATED AND CONTROLLED DIMMER TYPE LIGHT SWITCH

Pierre Saint-Cyr, 5524, St-Patrick, Suite 300, Montreal, Quebec, Canada, H4E 1A8; Louis Bacon, 100, Francois, apt.305, Iles des Soeurs, Québec, Canada, H3E 1G2; Marc Saint-Cyr, 755, Cr. Savard, Brossard, Quebec, Canada, J4X 1X9, and Normand Saint-Cyr, 100, Francois, apt.209, Iles des Soeurs, Quebec, Canada, H3E 1G2

Filed Jan. 13, 1995, Ser. No. 372,246

Int. Cl.^{6} H03K *17/945*

U.S. Cl. 323—322 **17 Claims**



1. A regulating device for regulating an electrical load comprising:

a transmitter module having means to generate a pulsed signal, an infrared transmitter to receive said pulsed signal and to generate a pulsed infrared light signal,

a receiver module having an infrared receiver to generate a pulsed signal in response to a reflected infrared light signal,

a signal comparator module connected to said transmitter module and to said receiver module to receive both said pulsed signal from said receiver module and said pulsed signal from said transmitter module, means to compare said pulsed signals and to generate an output signal when both said pulsed signals are synchronized,

processing means including phase shift circuit means operatively associated therewith, said processing means adapted to receive said output signal and process said output signal and thereby regulate power output to said electrical load.

5,712,559

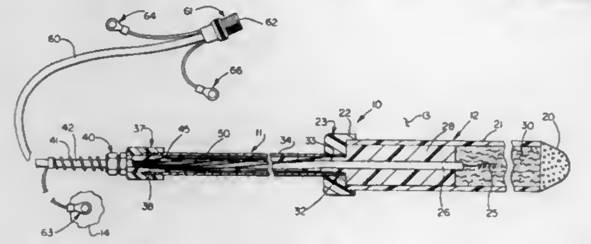
CATHODIC PROTECTION REFERENCE CELL AND CORROSION SENSOR

Clifford G. Moore, Arcadia, and Steven L. Stricklin, Anaheim, both of Calif., assignors to Rohrback Cosasco Systems, Inc., Santa Fe Springs, Calif.

Filed Aug. 8, 1995, Ser. No. 512,485

Int. Cl.^{6} G01R *27/20;* G01N *27/28;27/42*

U.S. Cl. 324—71.1 **30 Claims**



1. In combination a reference cell for measuring the electrical potential of a structure cathodically protected in an electrolyte, and a unitary corrosion sensor, said sensor comprising a metal tubular element of the same metal as the structure and exposed to the electrolyte at the same general location with respect to the structure as the cell, and means to measure the resistance through the tubular element and through a reference element sealed inside the tubular element to monitor corrosion and corrosion rate, and said cell and sensor each having common connections to a test station.

5,712,560

DRIVE SPEED DETECTOR FOR A MOTOR THAT DRIVES A DATA REPRODUCING DEVICE

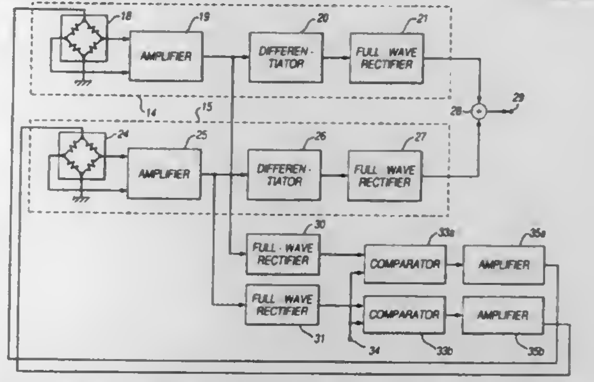
Satoru Maeda, and Hiroshi Nakane, both of Saitama-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1995, Ser. No. 522,107

Claims priority, application Japan, Sep. 1, 1994, 6-208721

Int. Cl.^{6} G01P *3/48*

U.S. Cl. 324—174 **5 Claims**



3. A drive speed detector of a data reading unit drive motor comprising:

a first Hall effect device adapted to output a first signal responsive to a rotation of the drive motor;

a second Hall effect device adapted to output a second signal responsive to the rotation of the drive motor;

a feedback control system receiving the outputs of the first and the second Hall effect devices and providing feedback signals to the first and the second Hall effect devices during operation of the drive motor, the feedback signals controlling a sensitivity of the first and the second Hall effect devices.

5,712,561

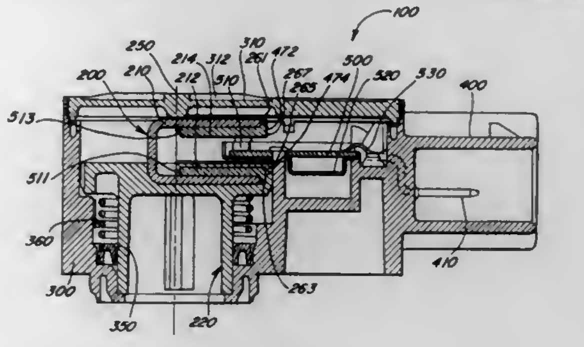
FIELD STRENGTH POSITION SENSOR WITH IMPROVED BEARING TOLERANCE IN A REDUCED SPACE

Jeffrey L. McCurley, Elkhart; James E. White, Warsaw, both of Ind., and Mike Guthrie, Lyon, Mich., assignors to CTS Corporation, Elkhart, Ind.

Continuation of Ser. No. 206,568, Mar. 4, 1994, abandoned. This application Jun. 7, 1996, Ser. No. 659,963

Int. Cl.^{6} G01B *7/30*

U.S. Cl. 324—207.2 **11 Claims**



1. A rotary position sensor comprising:

a) a housing;

b) an assembly for providing a closed magnetic circuit including:

  b1) a first magnet;

  b2) a second magnet;

  b3) a magnetically permeable pole piece interconnecting the first and second magnets; and

  b4) a varying dimension air gap defined between the first magnet and the second magnet;

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the first and second magnets being structured and dimensioned to provide the varying dimension air gap and to form a variable magnetic field coupled therebetween;

the assembly being rotatably mounted in the housing about an axis, the axis being generally parallel to the magnetic field coupled between the magnets;

c) a magnetic field sensing means positioned in the air gap for sensing the variable magnetic field coupled between the first and second magnets; and

d) a first permanent magnet lip portion on the first magnet and a second permanent magnet lip portion on the second magnet; the first lip portion and the second lip portion being structured and dimensioned to expand the variable magnetic field coupled between the magnets.

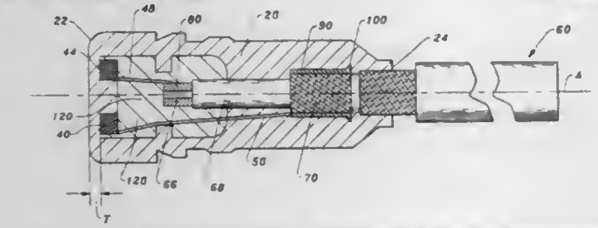
5,712,562
ENCAPSULATED TRANSDUCER WITH AN ALIGNMENT PLUG AND METHOD OF MANUFACTURE

Dave Van Den Berg, Minden, Nev., assignor to Bently Nevada Corporation, Minden, Nev.

Filed Oct. 13, 1995, Ser. No. 542,532

Int. Cl.^{6} G01B *7/14;* G01H *11/02;* G01R *3/00;* B29C *45/00*

U.S. Cl. 324—207.16 **34 Claims**



1. A transducer for monitoring the status of rotating equipment, comprising in combination:

a sensing element;

first and second leads extending from said sensing element;

a cable operatively coupled to said leads,

an integrally formed one piece alignment plug capturing said sensing element and ensconcing an entirety of said first lead, at least a portion of said second lead and a leading portion of said cable for axially aligning said leading portion of said cable with said sensing element and rigidly spacing said sensing element from said leading portion of said cable for precisely setting the electromagnetic relationship between said sensing element and said cable; and

a monolith of cured moldable material ensconcing said sensing element, an entirety of said alignment plug, and a portion of said cable defining a seamless mass circumscribing said sensing element and a portion of said cable and including a protective wall having an uninterrupted uniform thickness immediately forward of said sensing element.

5,712,563
STEERING TORQUE SENSOR UTILIZING A DISPLACEMENT DETECTOR HAVING A PULSE POWER SUPPLY

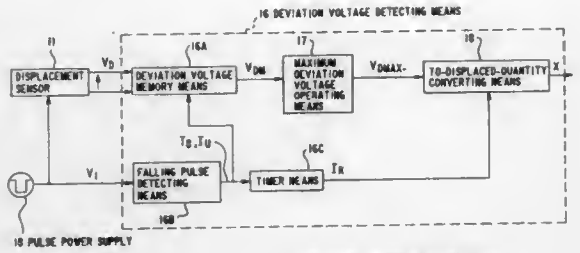
Hiroyuki Kawagoe; Akira Ozawa; Susumu Ohta, and Junichi Yoshida, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

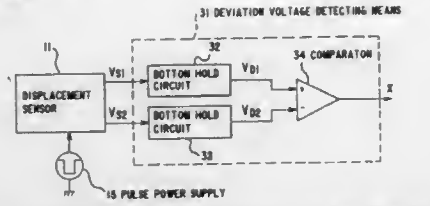
Filed Jun. 2, 1995, Ser. No. 458,280

Claims priority, application Japan, Jun. 13, 1994, 6-130363; Jun. 13, 1994, 6-130539

Int. Cl.^{6} G01B *7/14*

U.S. Cl. 324—207.19 **16 Claims**


16 DEVIATION VOLTAGE DETECTING MEANS
11
DISPLACEMENT SENSOR
VD
16A
DEVIATION VOLTAGE MEMORY MEANS
VDM
17
MAXIMUM DEVIATION VOLTAGE OPERATING MEANS
VDMAX
18
TO-DISPLACED-QUANTITY CONVERTING MEANS
X
TD,TU
16C
V1
FALLING PULSE DETECTING MEANS
TIMER MEANS
TR
16B
15 PULSE POWER SUPPLY



1. A displacement detector comprising:

a core displaceable in the longitudinal direction from a neutral position;

two detecting coils arranged symmetrically on opposite sides of said neutral position along an axis of the longitudinal displacement of said core, the inductances of said detecting coils varying differentially in response to a displacement of said core;

two reference resistors, each connected in series to one of said two detecting coils;

a bridge circuit composed of said two reference resistors and said two detecting coils;

a pulse power supply applied to said bridge circuit;

deviation voltage detecting means for detecting the deviation voltage between the respective transient response voltages across said two reference resistors in said bridge circuit,

wherein the quantity and the direction of said displacement of said core are detected on the basis of said deviation voltage,

wherein said deviation voltage detecting means detects the maximum value of detected voltages from said bridge circuit on the basis of said detected voltages and pulse information from said pulse power supply,

wherein one of the rising pulse period and the falling pulse period is set greater than the time constant of integral circuits in said bridge circuit, and

wherein said displacement detector further comprises:

deviation voltage memory means for storing said detected voltage at each sampling time and supplying said stored detected voltages;

maximum deviation voltage operating means for applying a comparative operation to each of said stored detected voltages to output a maximum deviation voltage; and

to-displaced-quantity-quantity converting means for converting said maximum deviation voltage into a displaced quantity.

5,712,564
MAGNETIC INK RECORDER CALIBRATION APPARATUS AND METHOD

Thomas D. Hayosh, Bloomfield Hills, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 29, 1995, Ser. No. 581,085

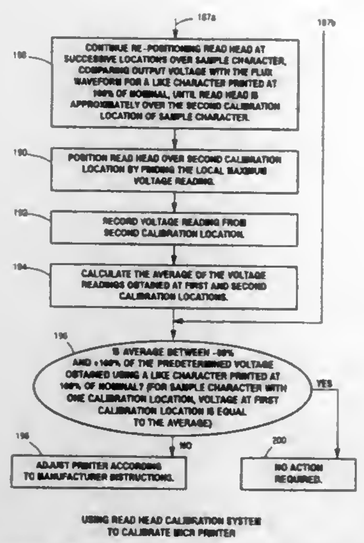
Int. Cl.^{6} G01R *33/12;35/00;* G01N *27/72*

U.S. Cl. 324—210 **26 Claims**

10. For use in monitoring the application of magnetic ink characters to a substrate, and for determining whether adjustments to the application are needed to bring the magnetism associated with the characters within an acceptable predetermined tolerance range, a magnetic ink character printer calibration system, comprising:

magnetic flux read head means for sensing and concentrating magnetic flux;

direct flux measurement means mounted in said magnetic flux read head means, and for directly measuring the magnetic flux of a sample magnetic ink character printed by the magnetic ink character printer to be calibrated and for providing an electrical signal representative of the level of said magnetic flux;


187a
187b
188
CONTINUE RE-POSITIONING READ HEAD AT SUCCESSIVE LOCATIONS OVER SAMPLE CHARACTER, COMPARING OUTPUT VOLTAGE WITH THE FLUX WAVEFORM FOR A LIKE CHARACTER PRINTED AT 100% OF NOMINAL, UNTIL READ HEAD IS APPROXIMATELY OVER THE SECOND CALIBRATION LOCATION OF SAMPLE CHARACTER.
190
POSITION READ HEAD OVER SECOND CALIBRATION LOCATION BY FINDING THE LOCAL MAXIMUM VOLTAGE READING.
192
RECORD VOLTAGE READING FROM SECOND CALIBRATION LOCATION.
194
CALCULATE THE AVERAGE OF THE VOLTAGE READINGS OBTAINED AT FIRST AND SECOND CALIBRATION LOCATIONS.
196
IS AVERAGE BETWEEN -80% AND +100% OF THE PREDETERMINED VOLTAGE OBTAINED USING A LIKE CHARACTER PRINTED AT 100% OF NOMINAL? (FOR SAMPLE CHARACTER WITH ONE CALIBRATION LOCATION, VOLTAGE AT FIRST CALIBRATION LOCATION IS EQUAL TO THE AVERAGE)
YES
NO
198
ADJUST PRINTER ACCORDING TO MANUFACTURER INSTRUCTIONS.
200
NO ACTION REQUIRED.
USING READ HEAD CALIBRATION SYSTEM TO CALIBRATE MICR PRINTER

metering means for measuring said electrical signal for said sample magnetic ink character for use in conjunction with comparison signal data for a master character for use in determining whether said electrical signal for said sample character is within an acceptable predetermined tolerance range of said comparison signal data.

5,712,565
MR SENSOR HAVING THICK ACTIVE REGION BETWEEN TWO THINNER INACTIVE MR REGIONS TOPPED WITH RESPECTIVE PERMANENT MAGNETS

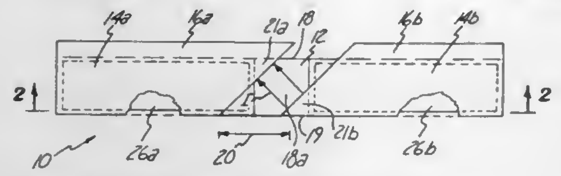
Allan E. Schultz, St. Paul; Peter K. George, Bloomington; Arthur Calderon, Minnetonka; Jumna P. Ramdular, Brooklyn Park; Juan J. Fernandez-De Castro, Lakeville; Leroy L. Longworth, Waconia, all of Minn., and Peter I. Bonyhard, Scotts Valley, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US94/07064, § 371 Date Sep. 13, 1994, § 102(e) Date Sep. 13, 1994, PCT Pub. No. WO95/35508, PCT Pub. Date Dec. 28, 1995

PCT Filed Jun. 22, 1994, Ser. No. 302,799

Int. Cl.^{6} G01R *33/02*

U.S. Cl. 324—252 **15 Claims**



1. A magnetoresistive sensor characterized by:

a magnetoresistive layer comprising:

an active region having a first thickness; and

a first inactive region adjacent the active region and having a second thickness that is less than the first thickness; and

at least a first permanent magnet on the first inactive region.

5,712,566
NUCLEAR MAGNETIC RESONANCE APPARATUS AND METHOD

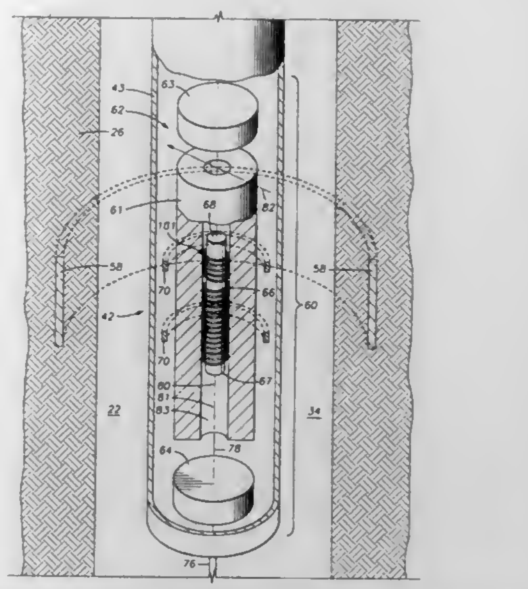
Gersh Zui Taicher, and Arcady Reiderman, both of Rehovot, Israel, assignors to Western Atlas International, Inc., Houston, Tex.

Filed Feb. 23, 1996, Ser. No. 606,089

Int. Cl.^{6} G01V *3/14*

U.S. Cl. 324—303 **35 Claims**

1. A nuclear magnetic resonance sensing apparatus comprising:



a magnet for inducing a static magnetic field in a region containing materials to be analyzed, said magnet having substantially uniform magnetization along a longitudinal axis, said magnet having a magnetization direction substantially perpendicular to said longitudinal axis;

means for generating a radio frequency magnetic field in said region for exciting nuclei of said materials to be analyzed, said means for generating comprising a first coil wound so that turns of said coil lie in planes substantially perpendicular to said longitudinal axis; and

means for receiving nuclear magnetic resonance signal from said excited nuclei, said means for receiving including means for providing an output indicative of nuclear magnetic resonance properties of said materials to be analyzed, said means for receiving comprising a second coil wound so that turns of said coil lie in planes substantially parallel to said longitudinal axis and parallel to a total dipole moment of said magnet.

5,712,567
METHOD FOR COMPENSATING A SENSITIVITY PROFILE OF AN ANTENNA ARRANGEMENT OF A NUCLEAR MAGNETIC RESONANCE APPARATUS

Jianmin Wang, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 26, 1996, Ser. No. 669,096

Claims priority, application Germany, Jul. 21, 1995, 195 26 778.8

Int. Cl.^{6} G01V *3/00*

U.S. Cl. 324—307 **7 Claims**

1. A method for compensating a sensitivity profile of an antenna arrangement in a nuclear magnetic resonance imaging apparatus, said sensitivity profile being visibly manifested in a nuclear magnetic resonance image produced using said antenna arrangement, and wherein said antenna arrangement includes a first antenna sub-arrangement and a second antenna sub-arrangement disposed opposite said first antenna sub-arrangement, said first and second antenna sub-arrangements defining an examination volume therebetween, said method comprising the steps of:

generating a first nuclear magnetic resonance source image of an examination subject in a position in the examination volume obtained exclusively from signals from said first antenna sub-arrangement, said first source image being composed of pixels having respective brightness values dependent on said examination subject;

generating a second nuclear magnetic resonance source image of the same examination subject in the same position in the examination volume obtained exclusively from signals from said second antenna sub-arrangement, said second source image being composed of pixels having respective brightness

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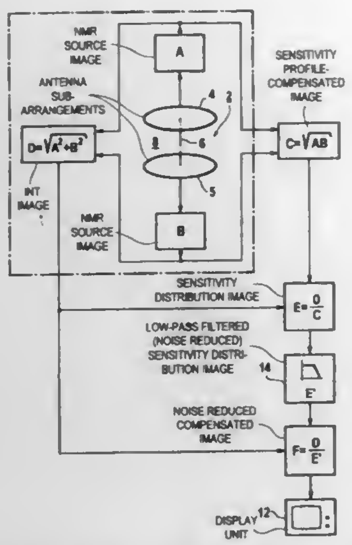

NMR SOURCE IMAGE
A
ANTENNA SUB-ARRANGEMENTS
SENSITIVITY PROFILE-COMPENSATED IMAGE
4
2
6
5
D=√A²+B²
C=√AB
INT IMAGE
NMR SOURCE IMAGE
B
SENSITIVITY DISTRIBUTION IMAGE
E=D/C
LOW-PASS FILTERED (NOISE REDUCED) SENSITIVITY DISTRIBUTION IMAGE
14
E'
NOISE REDUCED COMPENSATED IMAGE
F=D/E'
DISPLAY UNIT
12

values dependent on said examination subject, the pixels in said first source image being correlated in position with the pixels of said second source image;

forming a geometrical average of the respective brightness values of correlated pixels in said first and second source images; and

generating a single, compensated nuclear magnetic resonance image of said examination subject composed of a plurality of pixels correlated in position to the pixels of said first and second source images and said pixels in said single, compensated image respectively having brightness values dependent on said geometrical average of the brightness values of the corresponding pixels of said first and second source images.

5,712,568

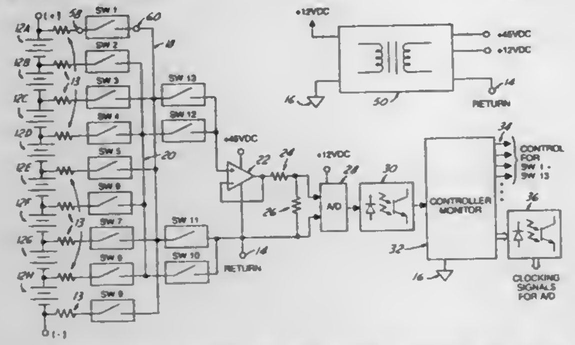
BATTERY VOLTAGE MEASUREMENT SYSTEM

Gary Robert Flohr, Northville, and Paul William Keberly, Sterling Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 5, 1995, Ser. No. 523,320

Int. Cl.^{6} G01N *27/416*

U.S. Cl. 324—434 **6 Claims**



1. In an electrical system having a high-voltage portion and a low-voltage portion, said high-voltage portion comprising a plurality of series-connected batteries, each with two terminals, said high-voltage portion further isolated by design from said low-voltage portion, a battery voltage measurement system comprising:

first and second electrical junctions;

switching means in electrical communication with each battery, said switching means comprising a first switch with a first side and a second side, said first side coupled in electrical communication with a terminal of said battery and said second side coupled in electrical communication with said first junction; and a second switch with a first side and a second side, said first side coupled in electrical communication with the other terminal of said battery and said second side coupled in electrical communication with said second junction;

an amplifier comprising an input terminal, an output terminal and another terminal;

a third switch coupling said amplifier input to said first junction;

a fourth switch coupling said amplifier input to said second junction;

a fifth switch coupling said another terminal to said first junction; and

a sixth switch coupling said another terminal to said second junction;

an analog-to-digital converter located in said high-voltage portion of said system and coupled to receive a signal from the output of said amplifier; and

voltage isolation means coupled between said analog-to-digital converter and said low-voltage portion of said electrical system.

5,712,569

TESTER FOR TESTING CORRECT ASSEMBLY OF TERMINALS IN CONNECTOR HOUSINGS

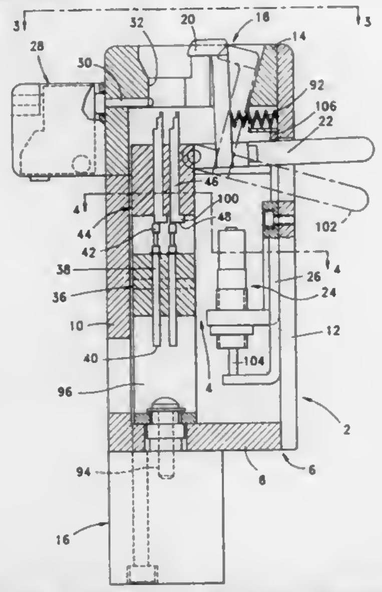
André Canu, Beauchamp, and François Dalle, Argenteuil, both of France, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 16, 1995, Ser. No. 543,685

Claims priority, application France, Nov. 2, 1994, 94 13069

Int. Cl.^{6} G01R *31/04*

U.S. Cl. 324—538 **7 Claims**



1. A terminal assembly tester for testing the full and correct insertion of terminals in corresponding cavities of a connector housing, the housing having resilient integral locking lances projecting into the cavities for locking of the terminals therein, the tester having a plurality of spring mounted electrical probes aligned with and baisable against the terminals of the connector assembly, wherein the contact probes are longitudinal plate-like members axially slidably mounted in cavities of an insulative housing, and each probe comprises a control surface for contacting a corresponding terminal, and an extension extending axially therefrom and insertable alongside a face of the locking lance if the terminal is fully assembled to the housing, thus allowing the contact surface to abut the terminal, whereby if the terminal is not fully assembled the contact probe extension abuts the housing locking lance thus preventing contact of the contact surface with the terminal.

5,712,570

METHOD FOR CHECKING A WIRE BOND OF A SEMICONDUCTOR PACKAGE

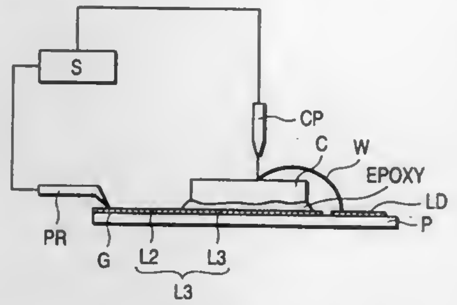
Young Wok Heo, Seoul, and Dong Sin Youm, Kyungki-Do, both of Rep. of Korea, assignors to ANAM Industrial Co., Ltd., Rep. of Korea, and Amkor Electronics, Inc., Pa.

Filed Sep. 19, 1995, Ser. No. 530,558

Claims priority, application Rep. of Korea, Sep. 27, 1994, 94-24280

Int. Cl.^{6} G01R *31/04*

U.S. Cl. 324—538 **8 Claims**



1. A method for checking a wire bond of a ball grid array semiconductor chip package comprising the steps of:

providing a printed circuit board including leads, a semiconductor chip, a probe, and a capillary of a wire bonding checking system;

forming an electroconductive metal layer on a chip bonding portion of the printed circuit board of the chip package as well as on a passage extending between the chip bonding portion and on a gate, said gate being provided on the printed circuit board for letting a molded housing of the chip package be readily separated from molds after molding a package housing using a compound resin;

bonding the chip to the chip bonding portion;

interconnecting the leads and wire bonding portions of the chip by wire bonds;

contacting the probe and the capillary of the wire bonding checking system to said gate and to a wire bonding portion of the semiconductor chip, respectively; and

sending an electric current to the semiconductor chip wire bonding portion from the checking system and checking whether the semiconductor package sends the electric current therethrough.

5,712,571

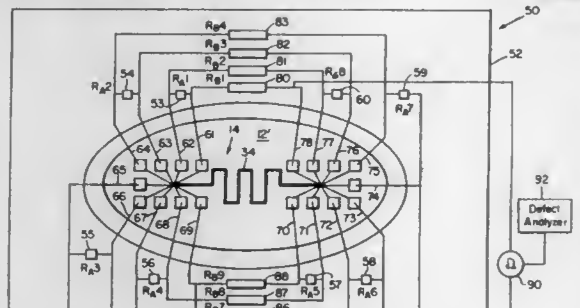
APPARATUS AND METHOD FOR DETECTING DEFECTS ARISING AS A RESULT OF INTEGRATED CIRCUIT PROCESSING

Geoff O'Donoghue, Andover, Mass., assignor to Analog Devices, Inc., Wilmington, Mass.

Filed Nov. 3, 1995, Ser. No. 552,373

Int. Cl.^{6} G01R *31/02*

U.S. Cl. 324—539 **19 Claims**



1. A probe card device for detecting defects occurring as a result of integrated circuit processing of a substrate having a plurality of spaced conductors with a contact at each end of each conductor, the probe card device comprising:

a probe card tester including a set of parallel resistors for connecting at least one resistor in parallel with each conductor and a set of series resistors for connecting together the ends of said conductors to form a series resistance and a number of probe elements, one corresponding to each end of each conductor, for enabling shunting of each parallel resistor with the corresponding conductor in the no-defect mode, shunting of each series resistor between shorted conductors in the shorting-defect mode and un-shunting of each parallel resistor whose corresponding conductor has an open circuit in the open-defect mode.

5,712,572

INSULATION STATE MEASUREMENT METHOD, INSULATION STATE JUDGEMENT APPARATUS, AND DISPERSION TYPE POWER GENERATING SYSTEM USING THE SAME

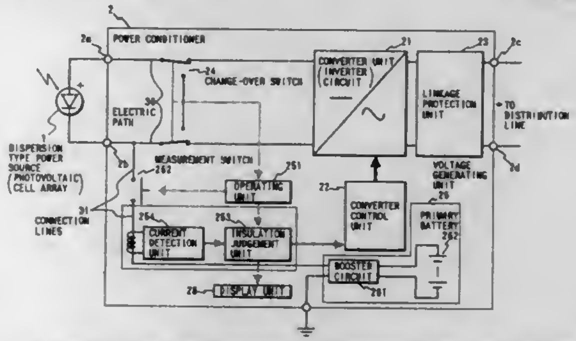
Masanari Tamechika, and Kimitoshi Fukae, both of Nara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 429,228

Claims priority, application Japan, Apr. 30, 1994, 6-114110; Apr. 14, 1995, 7-089286

Int. Cl.^{6} H01H *31/12*

U.S. Cl. 324—551 **21 Claims**



1. A method for determining an insulating state of a power source comprising the steps of:

providing a circuit comprising power conversion means for converting an input power into a different power and the power source, said power conversion means and said power source being connected through an electric path,

forming a short circuit by said power source and said electric path and forming an open circuit by said power conversion means and said electric path;

applying a voltage to said short circuit;

measuring a current produced by said applied voltage; and

determining an insulating state of said power source based on a current value measured in said current measuring step.

5,712,573

NETWORK ANALYZER WITH ADAPTABLE SWEEP TIME BETWEEN MEASUREMENT POINTS

Werner Held, Pocking, Germany, assignor to Rohde & Schwarz GmbH & Co. KG, Munich, Germany

Filed Apr. 26, 1996, Ser. No. 638,178

Claims priority, application Germany, Jun. 22, 1995, 195 22 613.5

Int. Cl.^{6} G01R *27/28*

U.S. Cl. 324—619 **8 Claims**

1. A network analyzer for measurement of frequency-dependent measurement parameters of an object under measurement, comprising:

a locked oscillator connected to the object under test and which is switchable in frequency steps between successive measurement points within an overall frequency band;

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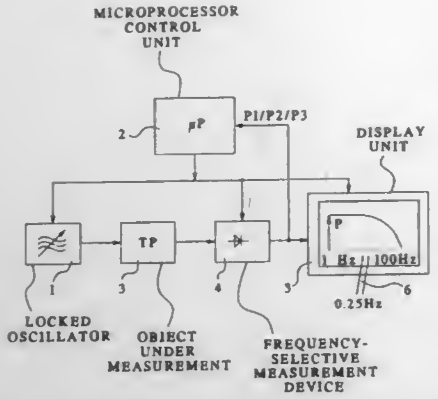


a frequency selective measurement device for measuring an output from the object under test; and

a control unit connected to said locked oscillator and said frequency selective measurement device for automatically changing without operator intervention a waiting period for said locked oscillator between successive frequency measurement points in dependence upon a comparison of at least two immediately successive measurement results output by said frequency selective measurement device at a same measurement point, and based on that comparison, deciding whether or not to switch the locked oscillator with a frequency step to the next successive measuring point.

5,712,574

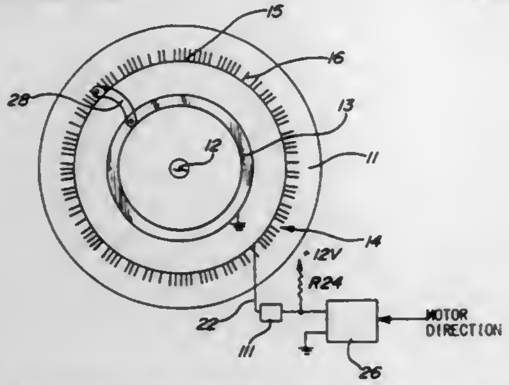
APPARATUS FOR POSITION DETECTION AND VERIFICATION THEREOF USING PULSE PATTERNS HAVING SEQUENTIALLY UNIQUE PROPERTIES

Thomas Street, Southgate, Mich., assignor to Rockwell Light Vehicle Systems, Inc.

Continuation of Ser. No. 924,122, Sep. 27, 1994, Pat. No. 5,350,955. This application Feb. 1, 1995, Ser. No. 532,287

Int. Cl.^{6} G01R *27/08*

U.S. Cl. 324—714 **16 Claims**



1. An apparatus for detecting the rotary position of a rotary member, said rotary member having an axis of rotation, said apparatus comprising:

a fixed radially extending member having a dielectric surface, said rotary member rotating with respect to said fixed member;

a first annular portion disposed on said dielectric surface defining a first conductive path formed essentially coaxial to said rotary member axis;

a second annular portion disposed on said dielectric surface defining a second conductive path essentially concentric to said first annular portion;

a third annular portion disposed on said dielectric surface including spaced radially extending conductive portions, said spaced radially extending conductive portions comprising a first subgroup having one radially extending portion sequentially followed by at least one other subgroup having more than one radially extending portions, said first and other subgroups repeating to form a complete pattern about said third portion;

said second and said third portions being electrically connected to one another; first means for connecting said first annular portion to ground potential;

second means for establishing an electrical voltage potential connection to said second annular portion;

third means for establishing a slidable conductive connection between said first annular portion and said third annular portion, said third means connected to said rotary member for rotation therewith, said provided voltage potential alternately providing a first voltage signal when said slidable conductive connection contacts both said first annular portion and one of said radially extending conductive portions and providing a second voltage signal when said slidable conductive connection contacts only said first annular portion without contacting one of said radially extending portions;

logic means for identifying the number of radially extending conductive portions contacted by said slidable conductive connection by monitoring said first and second voltage signals, said logic means further adapted for comparing said identified number to a predetermined number associated with each rotary portion of said rotary member, said logic means further adapted to establish a position correction signal when said predetermined number differs from the number of radially extending conductive portions identified in any of said subgroups.

5,712,575

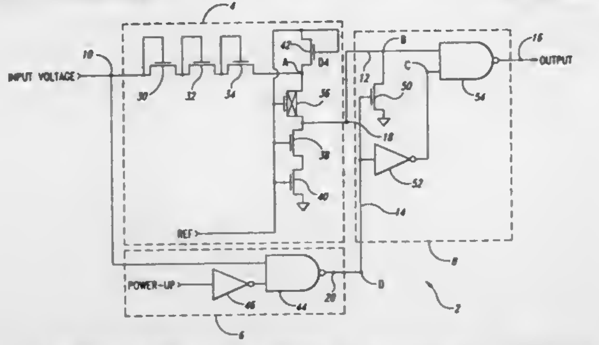
SUPER-VOLTAGE CIRCUIT WITH A FAST RESET

Manny K. F. Ma, and Joseph C. Sher, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 18, 1995, Ser. No. 574,405

Int. Cl.^{6} G01R *31/28*

U.S. Cl. 324—763 **19 Claims**



1. A super-voltage circuit formed in an integrated circuit for testing the integrated circuit, comprising:

a sensing circuit having an input for receiving an input voltage, the sensing circuit generating at its output a first signal value when the input voltage is higher than a first threshold voltage;

a reset circuit having an input for receiving the input voltage, the reset circuit generating at its output a first reset signal value when the input voltage is higher than a second threshold voltage and a second reset signal value when the input voltage is below the second threshold voltage, the second threshold voltage being lower than the first threshold voltage; and

an output circuit having a first input connected to the output of the sensing circuit and a second input connected to the output of the reset circuit, the output circuit generating at its output a predetermined first logic state when the first input receives the first signal value and the second input receives the first reset signal value.

5,712,576

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING INPUT CIRCUIT WITHOUT INFLUENCE ON RELIABILITY OF DIAGNOSIS

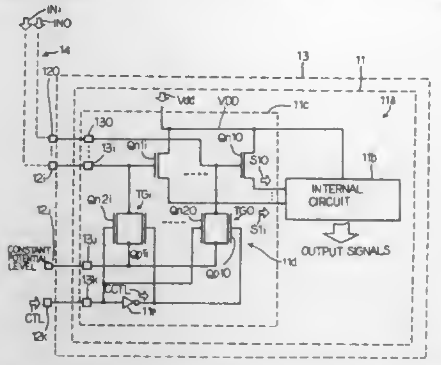
Yuichiro Nagataki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,991

Claims priority, application Japan, Feb. 2, 1995, 7-035898

Int. Cl.^{6} G01R *31/02*

U.S. Cl. 324—763 **9 Claims**



1. A semiconductor integrated circuit device comprising

a plurality of external leads including at least one first lead coupled to an external signal source for receiving an input signal, a second lead for receiving a control signal and a third lead applied with a constant potential level;

an internal circuit for processing an internal signal; and

an input circuit coupled between said plurality of external leads and said internal circuit, and including

at least one input transistor having a first control node coupled to said at least one first lead and a first conductive path coupled to said internal circuit and responsive to said input signal for supplying said internal signal to said internal circuit, and

a variable resistor element having a second control node coupled to said second lead and a second conductive path coupled between said third lead and said first control node and responsive to said control signal for changing said second conductive path between high impedance state and low impedance state, said second conductive path in said high impedance state being not smaller in resistance than said input impedance of said at least one input transistor, said second conductive path in said low impedance state providing a terminal resistance to said external signal source.

5,712,577

ANTI-FUSE PROGRAMMING CIRCUIT FOR USER PROGRAMMABLE INTEGRATED

Hanjin Cho, Yuchon-Dong, Rep. of Korea, assignor to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Apr. 18, 1996, Ser. No. 634,702

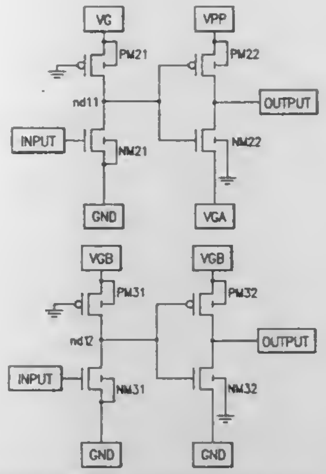
Int. Cl.^{6} H03K *19/177*

U.S. Cl. 326—38 **4 Claims**

1. An anti-fuse programming circuit for a user programmable integrated circuit, comprising:

horizontal track voltage supply means for selectively supplying half a program voltage and a ground voltage to a horizontal track to program an anti-fuse at which said vertical track and a horizontal track cross each other; and

vertical track voltage supply means for selectively supplying the program voltage and the half program voltage to said vertical track to program said anti-fuse;



whereby transistors used to program said anti-fuse are prevented from breaking down.

5,712,578

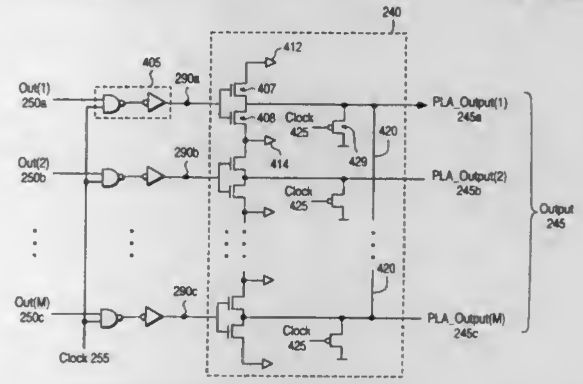
PLA ARCHITECTURE HAVING IMPROVED CLOCK SIGNAL TO OUTPUT TIMING USING A TYPE-I DOMINO AND PLANE

Bryon G. Conley, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1995, Ser. No. 579,095

Int. Cl.^{6} H03K *19/177*

U.S. Cl. 326—39 **20 Claims**



1. A programmable logic array comprising:

a logical AND plane including a first plurality of semiconductor devices interconnected such that one terminal of each of the first plurality of semiconductor devices is coupled to one of a first plurality of pre-charge transistors and one terminal of each of the first plurality of semiconductor devices is coupled to one of a plurality of virtual grounds;

a logical OR plane including a second plurality of semiconductor devices interconnected such that one terminal of each of the second plurality of semiconductor devices is coupled to one of a second plurality of pre-charge transistors and one terminal of each of the second plurality of semiconductor devices is coupled to ground;

a plurality of inputs to the logical AND plane;

a plurality of outputs from the logical OR plane;

a plurality of intermediary outputs coupling together the logical AND plane and the logical OR plane, wherein the first plurality of pre-charge transistors is operative to pre-charge the plurality of intermediary outputs;

wherein the first plurality of semiconductor devices and the plurality of virtual grounds are operative to discharge a subset of the plurality of intermediary outputs responsive to a first phase of a first clock signal;

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wherein the second plurality of pre-charge transistors is operative to pre-charge the plurality of outputs;

wherein the second plurality of semiconductor devices is operative to discharge a subset of the plurality of outputs based on both the plurality of intermediary outputs and a first phase of a second clock signal, wherein the first phase of the second clock signal lags behind the first phase of the first clock signal; and

wherein the second plurality of semiconductor devices are coupled to receive the plurality of intermediary outputs based on the first phase of the second clock signal.

5,712,579

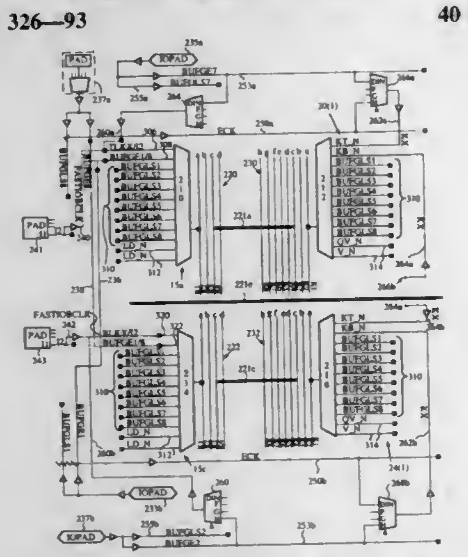
DESKEWED CLOCK DISTRIBUTION NETWORK WITH EDGE CLOCK

Khue Duong; Stephen M. Trimberger, both of San Jose; Robert O. Conn, Jr., Los Gatos, and John E. Mahoney, San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Oct. 16, 1995, Ser. No. 543,693

Int. Cl.^{6} H03K *19/177;19/00*

U.S. Cl. 326—93 **40 Claims**



1. In a programmable integrated circuit, a signal distribution arrangement comprising:

a first plurality of column circuits each having a top column distribution line disposed vertically within a top half of said integrated circuit and extending lengthwise substantially one half the length of said integrated circuit, each of said first plurality of column circuits comprising a plurality of configurable logic circuits;

a second plurality of column circuits each having a bottom column distribution line disposed vertically within a bottom half of said integrated circuit and extending lengthwise substantially one half the length of said integrated circuit, each of said second plurality of column circuits comprising a plurality of configurable logic circuits; and

a signal distribution network distributing a deskewed signal from a signal supplied at the center of said integrated circuit, said signal distribution network comprising:

a first multiplexer circuit coupled to a top column distribution line for supplying said deskewed signal to at least one column circuit of said first plurality of column circuits; and

a second multiplexer circuit coupled to a bottom column distribution line for supplying said deskewed signal to at least one column circuit of said second plurality of column circuits.

5,712,580

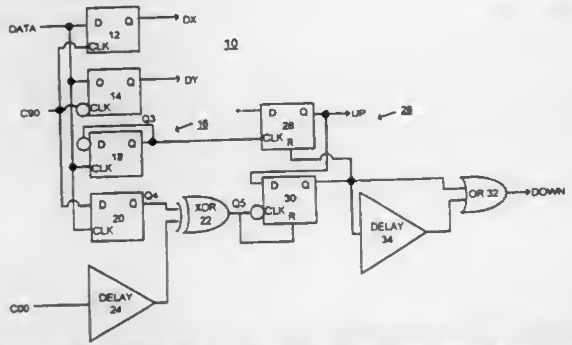
LINEAR PHASE DETECTOR FOR HALF-SPEED QUADRATURE CLOCKING ARCHITECTURE

Steven John Baumgartner, and Matthew James Paschal, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1996, Ser. No. 599,997

Int. Cl.^{6} H03D *13/00*

U.S. Cl. 327—12 **16 Claims**



1. A linear phase detector used with half-speed quadrature clock architecture comprising:

a first circuit for receiving a data signal, a first half-speed quadrature clock signal, and a second half-speed quadrature clock signal; said first circuit comprising:

means, responsive to said data signal, for generating an adjusted data signal;

means, responsive to said data signal and said second half-speed quadrature clock signal, for generating a polarity representing signal of said second half-speed quadrature clock signal; and

means, responsive to said polarity representing signal, for selecting an appropriate polarity of said first half-speed quadrature clock signal; and

a phase detector coupled to said first circuit for generating a linear phase correction.

5,712,581

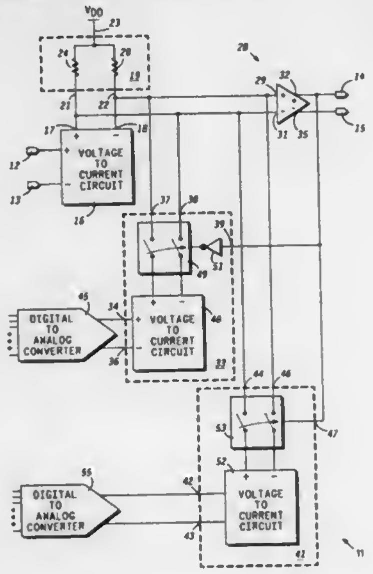
FULL DIFFERENTIAL DATA QUALIFICATION CIRCUIT FOR SENSING A LOGIC STATE

Scott Alan Kaylor, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 100,228, Aug. 2, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 576,270

Int. Cl.^{6} H03K *5/153;5/24*

U.S. Cl. 327—74 **20 Claims**


VDD
VOLTAGE TO CURRENT CIRCUIT
DIGITAL TO ANALOG CONVERTER
VOLTAGE TO CURRENT CIRCUIT
DIGITAL TO ANALOG CONVERTER
VOLTAGE TO CURRENT CIRCUIT

1. A data qualification circuit for translating an applied differential input voltage to an output signal having first or second predetermined level logic states, comprising:

a comparator having first and second inputs and at least one output at which the output signal is provided;

a first threshold circuit responsive to the output signal being at the second logic level state for providing a first threshold level signal across said first and second inputs of said comparator, said first threshold circuit being programmable to adjust a magnitude of said first threshold level signal;

a second threshold circuit responsive to the output signal being at the first logic level state for providing a second threshold level signal across said first and second inputs of said comparator, said second threshold circuit being programmable to adjust a magnitude of said second threshold level signal; and

an input circuit responsive to the differential input voltage for providing an output signal across said first and second inputs of said comparator, said first and second threshold level signals being summed with said output signal of said input circuit as said first and second threshold circuits are rendered operative in response to said output signal from said comparator.

5,712,582

TEST SIGNAL GENERATOR HAVING TIMING CALIBRATION CIRCUIT

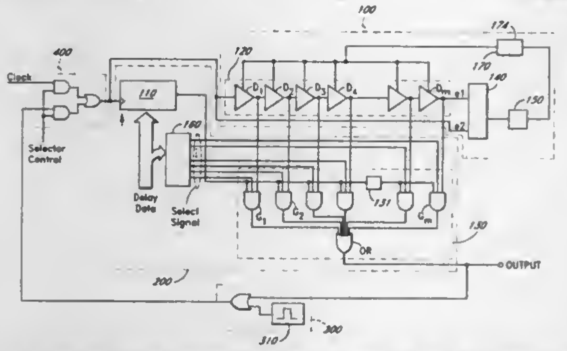
Shinichi Yokota, Gyoda, and Toshiyuki Okayasu, Kurihashimachi, both of Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 667,399

Claims priority, application Japan, Jun. 22, 1995, 7-179462

Int. Cl.^{6} H03L *7/08*

U.S. Cl. 327—156 **7 Claims**



1. A timing signal generator to be used in an IC tester for generating timing signals having timing resolution higher than a clock signal cycle, comprising:

a phase lock loop having a variable delay circuit which is formed of a plurality of delay elements connected in series wherein a delay time in said variable delay circuit is phase locked with a clock signal cycle;

a track hold circuit provided in said phase lock loop to transfer a phase lock control voltage to the phase lock loop in a phase lock mode and to temporarily hold said control voltage in a loop oscillation mode;

a selector circuit to select a timing signal from a plurality of signals corresponding to said plurality of delay elements in said variable delay circuit to produce said timing signal at a timing output;

an input selector for selectively providing a clock signal to said phase lock loop during said phase lock mode and a returning pulse from said timing output during said loop oscillation mode to form a closed loop which includes said variable delay circuit; and

a pulse injection circuit for starting an oscillation in said closed loop by injecting a pulse signal in said closed loop.

5,712,583

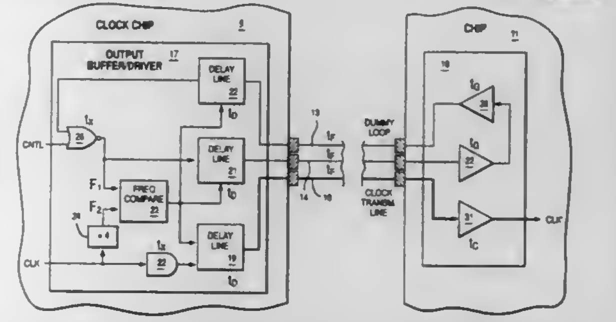
CLOCK PHASE ALIGNMENT USING FREQUENCY COMPARISON

Richard Francis Frankeny, Elgin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1995, Ser. No. 556,251

Int. Cl.^{6} H03L *7/06;* **H03K** *5/13*

U.S. Cl. 327—158 **15 Claims**



1. A method of phase aligning a clock signal, comprising the steps of:

oscillating a transmission line loop, composed of multiple transmission lines, and a first programmable delay line, the loop extending along a clock signal transmission line between the source of the clock signal and a destination for the clock signal;

delaying the clock signal over the clock signal transmission line using a second programmable delay line; and

controlling the first and second programmable delay lines in a proportion which provides a one clock period time delay of the clock signal over the clock signal transmission line, the control being responsive to a frequency comparison between the clock signal and the oscillation on the transmission line loop.

5,712,584

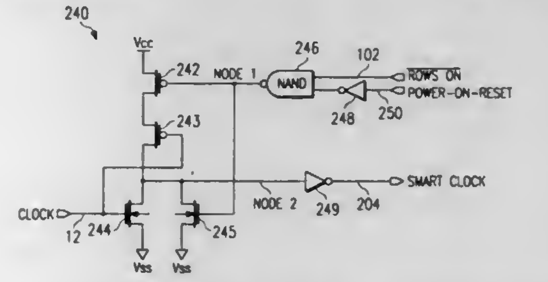
SYNCHRONOUS STRESS TEST CONTROL

David Charles McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 19, 1996, Ser. No. 589,015

Int. Cl.^{6} H03K *5/13*

U.S. Cl. 327—198 **45 Claims**



1. A method of initializing the data path of an integrated circuit device, comprising the steps of:

controlling a first clock signal to cause conduction of a master element of the integrated circuit device during a test mode of the integrated circuit device; and

controlling a second clock signal to cause conduction of a slave element of the integrated circuit device during the test mode of the integrated circuit device;

wherein the master element and the slave element conduct simultaneously to initialize the data path of the integrated circuit device.

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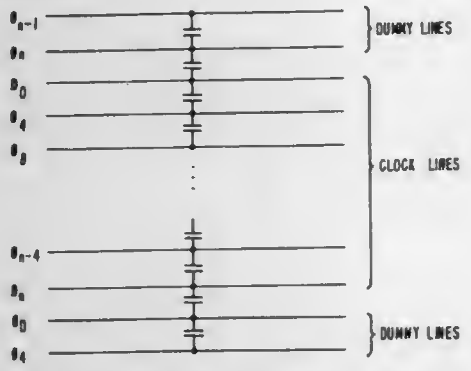
5,712,585
SYSEM FOR DISTRIBUTING CLOCK SIGNALS

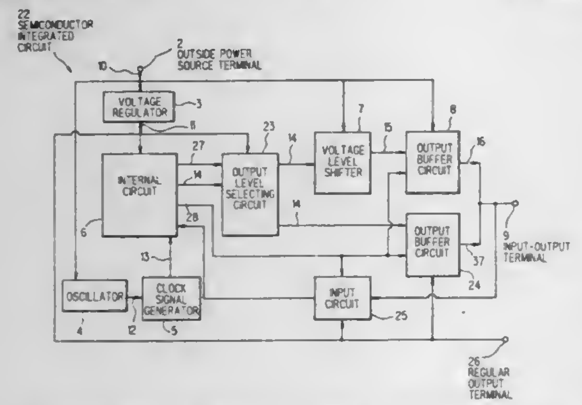
Deog-Kyoon Jeong, Seoul, Rep. of Korea, assignor to Deog-Kyoon Jeong, Seoul, Rep. of Korea, and Sun Microsystems, Mountain View, Calif.
Division of Ser. No. 254,326, Jun. 6, 1994. This application Dec. 29, 1995, Ser. No. 580,914
Int. Cl.^{6} H03K *1/04*
U.S. Cl. 327—293 **9 Claims**



1. A system for distributing clock signals comprising:
a series of conductors disposed adjacent one another to thereby establish a set of interior conductors having neighboring conductors on each side and at least one exterior conductor having a neighbor on only one side, each conductor for carrying a separate clock signal;
at least one additional conductor disposed adjacent the exterior conductor to thereby provide it with conductors on each side, the additional conductor carrying a clock signal, whereby the exterior conductor is provided with essentially the same capacitative loading as the interior conductors; and
wherein each separate clock signal is one of a plurality of separate clock signals, each having a different clock phase from every other separate clock signal.

5,712,586
SEMICONDUCTOR INTEGRATED SYSTEM COMPRISING AN OUTPUT VOLTAGE LEVEL-SELECTING CIRCUIT

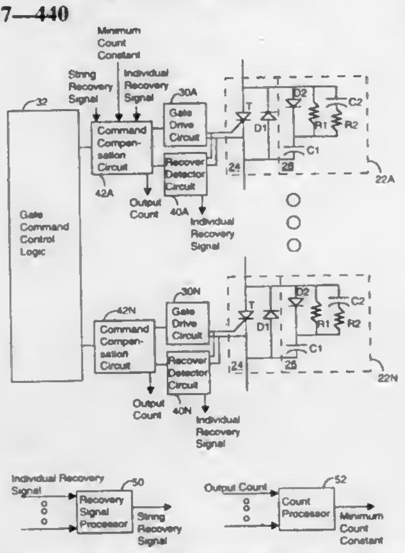
Ichiro Kitao, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 24, 1996, Ser. No. 669,181
Claims priority, application Japan, Jun. 23, 1995, 7-157378
Int. Cl.^{6} H03K *5/00*
U.S. Cl. 327—333 **6 Claims**



1. A semiconductor integrated system comprising:
an internal circuit for operating in an internal voltage having a low voltage level and for producing an output control signal and an output signal having said low voltage level;
a voltage level-selecting circuit connected to said internal circuit, said voltage level-selecting circuit having high and low level output terminals for selecting one of said high and low level output terminals in response to said output control signal to supply said output signal to said one of said high and low level output terminals; and
a voltage level shifter connected to said high level output terminal for shifting said output signal to produce a shifted output signal having a nigh voltage level which is higher than said low voltage level.

5,712,587
APPARATUS AND METHOD FOR SIMULTANEOUSLY DEACTIVATING SERIES-CONNECTED SWITCHING DEVICES

Colin D. Schauder, Murrysville; Mark G. Gernhardt, Greensburg, and Eric J. Stacey, Pittsburgh, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Apr. 8, 1996, Ser. No. 628,909
Int. Cl.^{6} H03K *17/72*
U.S. Cl. 327—440 **18 Claims**

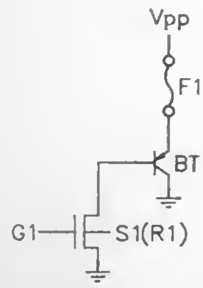


1. An apparatus to simultaneously deactivate a set of series-connected switching devices, comprising:
a set of series-connected switching devices;
a set of recovery detector circuits, connected to said set of series-connected switching devices, to measure a set of recovery signals indicative of the turn-off times of said set of series-connected switching devices during a first switch activation cycle; and
control circuitry to process said set of recovery signals and apply a predetermined delay to individual gate command signals in a set of gate command signals applied to said set of series-connected switching devices during a second switch activation cycle, such that said set of series-connected switching devices is simultaneously deactivated.

5,712,588
FUSE ELEMENT FOR A SEMICONDUCTOR MEMORY DEVICE

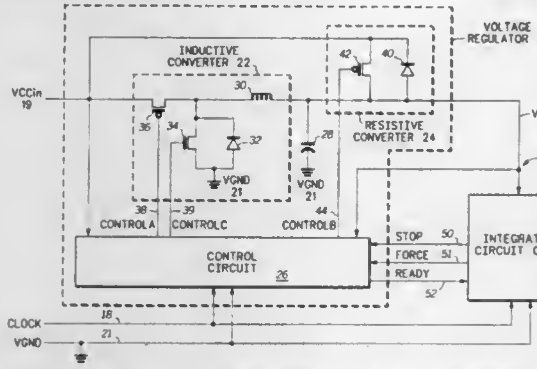
Jeong Hyuk Choi, Seoul, and Yong Bae Choi, Kyungki-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 5, 1995, Ser. No. 435,323
Claims priority, application Rep. of Korea, May 7, 1994, 9987/1994
Int. Cl.^{6} H03K *17/12*
U.S. Cl. 327—525 **12 Claims**

1. An electrically programmable fuse element, comprising:
a data output node selectively to a first voltage:
a fuse having a first end coupled to said data output node and a second end;
a bipolar transistor connected between said second end of said fuse and a reference potential;
a MOS transistor having a first electrode connected to the base of said bipolar transistor, a second electrode connected to said reference potential, and a gate electrode;
wherein, in a first mode of operation, said data output node is coupled to said first voltage, said MOS transistor is turned on in response to a first control signal having a first voltage level sufficient to cause a base current to flow through said MOS transistor and a first current to flow through said fuse, said first current being equal to said base current multiplied by an amplification ratio of said bipolar transistor and being sufficient to open said fuse; and,
wherein, in a second mode of operation, said data output node is coupled to said first voltage, said MOS transistor is turned on in response to a second control signal having a second voltage level less than said first voltage level and insufficient to cause said base current to flow, whereby a second current is caused to flow through said fuse, said second current being less than said first current and insufficient to open said fuse.



5,712,589
APPARATUS AND METHOD FOR PERFORMING ADAPTIVE POWER REGULATION FOR AN INTEGRATED CIRCUIT

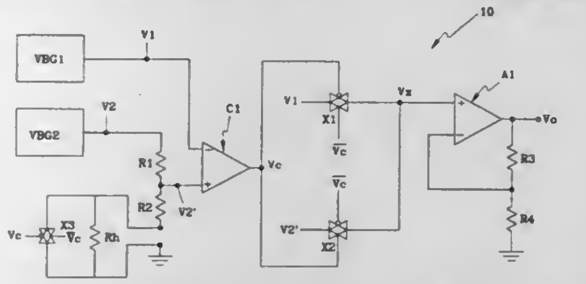
Yachin Afek, Cfar Saba; Yuval Itkin, Zoran, and Israel Kashat, Netanya, all of Israel, assignors to Motorola Inc., Schaumburg, Ill.
Filed May 30, 1995, Ser. No. 453,111
Int. Cl.^{6} G05F *1/10*
U.S. Cl. 327—538 **21 Claims**



1. A circuit for performing adaptive power regulation for an integrated circuit, comprising:
an inductive converter, having an input coupled to a non-regulated first power supply voltage, and having an output coupled to a node;
a resistive converter, having an input coupled to the non-regulated first power supply voltage, and having an output coupled to the node;
a control circuit, having a first input coupled to the non-regulated first power supply voltage, having a second input coupled to the node for receiving a regulated first power supply voltage, having a first output for providing a first control signal to said inductive converter, and having a second output for providing a second control signal to said resistive converter;
digital circuitry, coupled to the node for receiving the regulated first power supply voltage; and
a clock signal conductor, coupled to said control circuit and to said digital circuitry for providing a clock signal.

5,712,590
TEMPERATURE STABILIZED BANDGAP VOLTAGE REFERENCE CIRCUIT

Michael F. Dries, 6830 Utica Ter., Chanhassen, Minn. 55317, and Benjamin L. Gingerich, 9715 29th Ave. North, Plymouth, Minn. 55441
Filed Dec. 21, 1995, Ser. No. 576,798
Int. Cl.^{6} G05F *1/10*
U.S. Cl. 327—539 **15 Claims**



1. A temperature-stabilized voltage reference circuit comprising:
at least a first and a second voltage reference circuit, said first voltage reference circuit having a first operating temperature range extending from a first temperature to a second temperature and providing a first voltage, with said first voltage varying with temperature and passing through a maximum value or a minimum value within said first operating temperature range;
said second voltage reference circuit having a second operating temperature range extending from a third temperature to a fourth temperature, with said third temperature lying between said first temperature and said second temperature, and providing a second voltage, with said second voltage varying with temperature and passing through a maximum value or a minimum value within said second operating temperature range; and
means for selectively coupling one of said first voltage or said second voltage to an output of said temperature-stabilized voltage reference circuit based on a value of temperature and whether said value is increasing or decreasing.

5,712,591
PARALLEL PREAMPLIFIER AND EQUALIZER

Clifford Maag, Provo, and Lance Parker, Orem, both of Utah, assignors to Night Technologies International, Provo, Utah
Filed Apr. 2, 1996, Ser. No. 630,412
Int. Cl.^{6} H03F *3/68*
U.S. Cl. 330—84 **21 Claims**

1. A preamplifier means for processing a received audio signal, said preamplifier means being comprised of a plurality of operational amplifier means for receiving the audio signal in parallel, then amplifying and equalizing the audio signal, each operational amplifier means of said plurality having:
a first input for receiving the audio signal;
a second input for receiving feedback from an output of the operational amplifier means, and through a feedback impedance means;
a selectable source impedance means coupled between ground and the second input for providing a selectable high bandpass filter, wherein said selectable source impedance means is an air band equalizer;
a variable resistance means coupled to the output of the operational amplifier means for attenuating an output signal; and

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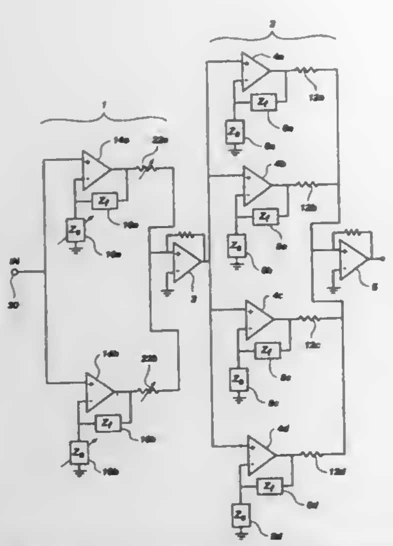


a summing means for summing the output signal from each of the plurality of operational amplifier means.

5,712,592

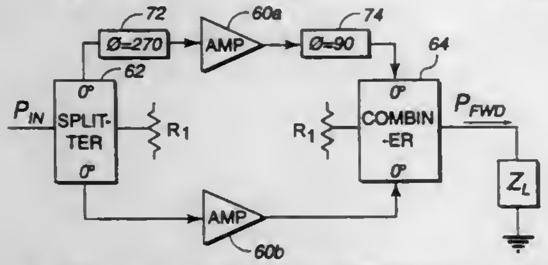
RF PLASMA POWER SUPPLY COMBINING TECHNIQUE FOR INCREASED STABILITY

Bradley O. Stimson, Mountain View, Calif., and Paul W. Rummel, Lynn, Mass., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 6, 1995, Ser. No. 398,426

Int. Cl.^{6} H03F *3/68*

U.S. Cl. 330—124 R **39 Claims**



1. An RF power supply for delivering RF power to a plasma, said supply comprising:
- an RF signal generator generating an RF signal having a frequency of r_{RF};
- a splitter having an input line receiving said RF signal, a first output line carrying a first output signal derived from said RF signal, and a second output line carrying a second output signal derived from said RF signal;
- a first branch circuit receiving said first output signal and generating a first derived signal therefrom, said first branch circuit comprising a first power amplifier and a phase shifting element, said first power amplifier having an output line;
- a second branch circuit receiving said second output signal and generating a second derived signal therefrom, said second branch circuit comprising a second power amplifier having an output line;
- a combiner having a first input and a second input, said first input receiving said first derived signal and said second input receiving said second derived signal, said combiner combining said first and second derived signals to produce a power output signal therefrom,
- wherein said phase shifting element is connected between the output line of the first power amplifier and the first input of the combiner and produces a first phase shift in a signal passing from the first power amplifier to the combiner relative to a signal passing from the second power amplifier to the combiner, and wherein said first and second branch circuits also produce at the frequency r_{RF} a total phase shift in the first derived signal relative to the second derived signal that is equal to one of the following two values: s(360°)+360° and s(360°)+180°, wherein s is an integer which may take on any positive value or zero.

5,712,593

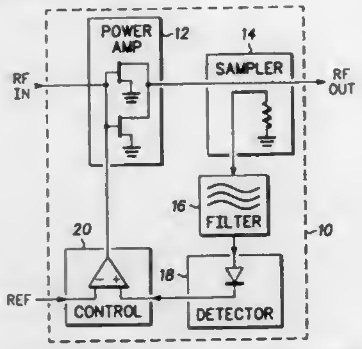
LINEAR POWER AMPLIFIER WITH DISTORTION DETECTION

Kenneth Vern Buer; David Warren Corman, both of Gilbert, and Bill Tabano Agar, Jr., Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1996, Ser. No. 596,533

Int. Cl.^{6} H03G *3/20*

U.S. Cl. 330—129 **19 Claims**



1. A power amplifier for linearly amplifying RF signals in a predetermined frequency range comprising:
- an amplifier portion for amplifying an RF input signal and producing an RF output signal, said amplifier portion having a bias controller for controlling a bias of said amplifier; and
- a distortion detector portion adapted to sample said RF output signal and provide a feedback control signal to said bias controller based on an amount of distortion present in said RF output signal,
- wherein said feedback control signal causes said amplifier portion to increase said bias when said amount of distortion is above a distortion level, and decrease said bias when said amount of distortion is less than said distortion level.

5,712,594

OPERATIONAL TRANSCONDUCTANCE AMPLIFIER OPERABLE AT LOW SUPPLY VOLTAGE

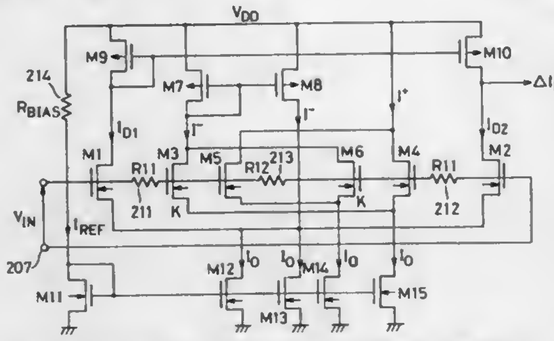
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 632,126

Claims priority, application Japan, May 31, 1995, 7-158408

Int. Cl.^{6} H03F *3/45*

U.S. Cl. 330—253 **5 Claims**



1. An operational transconductance amplifier comprising:
- (a) a first differential pair of first and second transistors whose emitters or sources are coupled together;
  - said coupled emitters of said first and second transistors being connected to a first constant current source supllying a first constant current;

  - bases or gates of said first and second transistors being applied with a differential input voltage;
  - an output current of said operational transconductance amplifier being derived from one of collectors or drains of said first and second transistors;
- (b) a squarer producing differentially first and second output currents in response to said differential input voltage, said first output current increasing with said increasing input voltage, and said second output current decreasing with said increasing input voltage;
  - said squarer being connected to a second constant current source supplying a second constant current, and being driven by said second constant current;
  - said squarer having input ends across which said differential input voltage being applied and output ends through which said first and second output currents being derived; and
  - said second output current being supplied to said first current source;
- (c) wherein said differential pair being driven by a constant current that is equal to the difference of said first current from said second output current of said squarer.

5,712,595

APPARATUS AND METHOD OF SETTING VARIABLE DIVIDING RATIO AND APPARATUS USING THE SAME

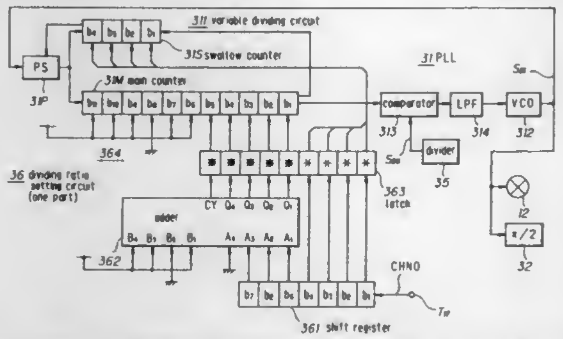
Hiroshi Yokoyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 611,900

Claims priority, application Japan, Mar. 7, 1995, 7-074391

Int. Cl.^{6} H03K *23/66;* **H03L** *7/18*

U.S. Cl. 331—2 **18 Claims**



6. A method of setting a dividing ratio based on a sum of a fixed value and a variable value in a counter, comprising the steps of:
- setting upper digits of a series of digits representing said dividing ratio to upper fixed digits, said upper digits representing upper digits of a series of digits representing said fixed value;
- setting a sum of fixed digits representing middle digits of said series of digits representing said fixed value and variable digits representing upper digits of a series of digits representing said variable value to middle digits of said series of digits representing said dividing ratio; and
- setting lower digits of said series of digits representing said dividing ratio to lower variable digits representing lower digits of said series of digits representing said variable value.

5,712,596

TUNABLE CRYSTAL OSCILLATOR WITH HARMONIC OUTPUT

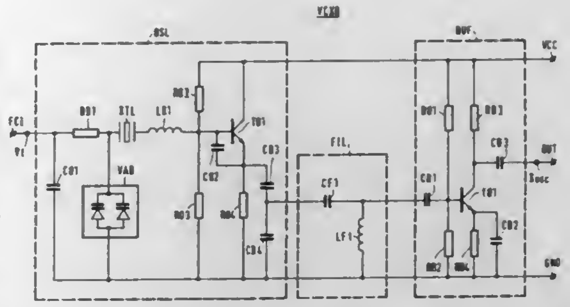
Alfonsus M. Van Amesfoort, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 20, 1996, Ser. No. 671,122

Claims priority, application European Pat. Off., Jun. 30, 1995, 95201793

Int. Cl.^{6} H03B *5/36;1/04*

U.S. Cl. 331—76 **9 Claims**



1. An oscillator arrangement comprising a crystal which is part of an oscillation loop for an oscillation at, approximately, a fundamental frequency of said crystal, and a filter for passing a harmonic of said oscillation to an output, characterized in that said oscillation loop further includes tuning means for varying the frequency of said oscillation, and in that said oscillator arrangement includes a stage for preventing feedback of said harmonic extracted by said filter into said oscillation loop.

5,712,597

RUBIDIUM ATOM OSCILLATOR WITH TEMPERATURE STABILIZED FREQUENCY OUTPUT

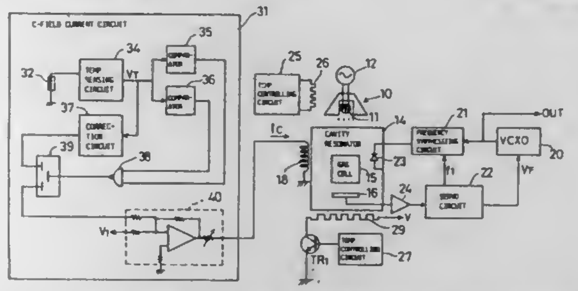
Ken Atsumi, Sendai; Yoshifumi Nakajima, and Yoshito Koyama, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 19, 1996, Ser. No. 618,490

Claims priority, application Japan, Aug. 11, 1995, 7-206257

Int. Cl.^{6} H03L *1/02;7/26*

U.S. Cl. 331—94.1 **10 Claims**



1. A rubidium atom oscillator oscillating a microwave having a predetermined stable frequency by using an optical pumping effect of rubidium gas, said rubidium atom oscillator comprising:
- a rubidium lamp radiating a resonance light;
- a cavity resonator accommodating a gas cell containing rubidium gas and a photodetector detecting an amount of the resonance light passing through said gas cell;
- temperature determining means for determining whether or not an ambient temperature of said cavity resonator is within a predetermined temperature range between a lower-limit temperature and an upper-limit temperature;
- temperature correction signal generating means for generating a temperature correction signal based on a determination of said temperature determining means; and
- current supplying means for supplying a current determined by the temperature correction signal to a coil surrounding said cavity resonator, said coil generating a magnetic field in said cavity resonator,
- wherein said temperature determining means includes a temperature sensing circuit and comparing means, said temperature sensing circuit generating a temperature signal having a voltage responsive to the ambient temperature sensed by a temperature sensor, said comparing means comparing the temperature signal with predetermined voltage values corresponding to said upper-limit temperature and said lower-limit temperature to determine whether the ambient temperature is within said predetermined temperature range.

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5,712,598
DRIVING APPARATUS FOR ELECTROSTATIC CONVERTING MEANS

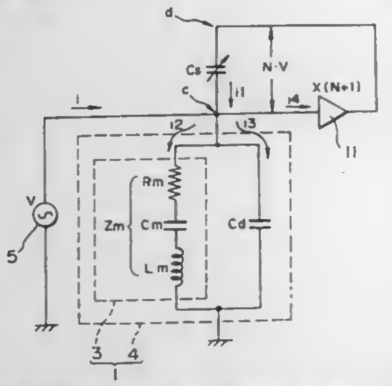
Yoshiro Tomikawa, 1-7 Yukigaya, Otsuka-Cho, Ota-ku, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 578,352

Claims priority, application Japan, Dec. 28, 1994, 6-340133; Mar. 9, 1995, 7-079569

Int. Cl.^{6} H03B *5/32*

U.S. Cl. 331—105 **6 Claims**



1. A driving apparatus for an electrostatic converter, comprising:

an oscillating means which is produced by supplying a voltage to one terminal of the electrostatic converter,

an amplifier having an input terminal connected to said one terminal of said electrostatic converter, the amplifier having an output terminal, and

an electrostatic capacitance coupled between the output terminal of said amplifier and said one terminal of said electrostatic converter;

wherein said electrostatic capacitance is approximately 1/N times a capacitance component of said electrostatic converter, and

wherein a gain of said amplifier is approximately (N+1).

5,712,599
OSCILLATOR HAVING TWO CASCADED GAIN STAGES WITH FEEDBACK OPERATING NEAR THEIR UNITY GAIN FREQUENCY

Leonard L. Kleinberg, 7060 Hanover Pkwy., B-1, Greenbelt, Md. 20770

Filed Jun. 19, 1996, Ser. No. 665,954

Int. Cl.^{6} H03B *5/12;5/24*

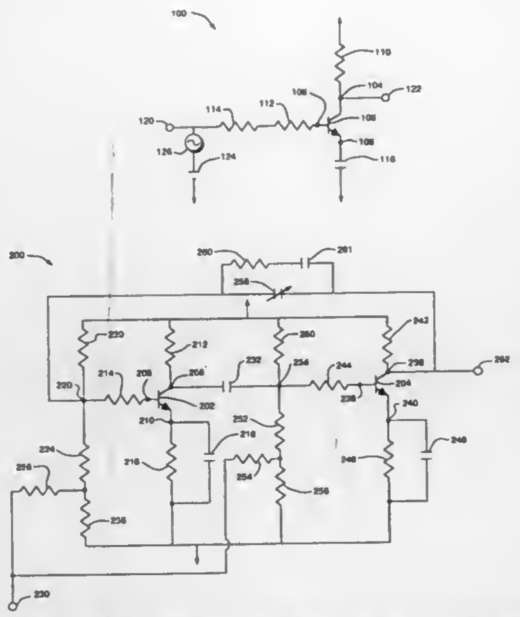
U.S. Cl. 331—108 B **29 Claims**

25. An oscillating signal generator that generates an oscillating signal having an oscillation frequency that varies with at least one of a control signal and a resistive value, the oscillating signal generator comprising, in combination:

means for generating a first gain with a first phase, wherein said oscillation frequency is directly proportional to a first unity gain frequency responsive to said control signal, and indirectly proportional to a first resistive value, such that said first phase is substantially 180°;

means for generating a second gain with a second phase, wherein said oscillation frequency is directly proportional to a second unity gain frequency responsive to said control signal, and indirectly proportional to a second resistive value, such that said second phase is substantially 180°, and wherein, said means for generating said first gain is cascaded to said means for generating said second gain; and

means for feeding-back from an output of said means for generating said second gain to an input of said means for generating said first gain, with a feedback gain wherein, a product of said feedback gain, said first gain, and said second gain is substantially equal to one.



5,712,600
ASTABLE MULTIVIBRATOR

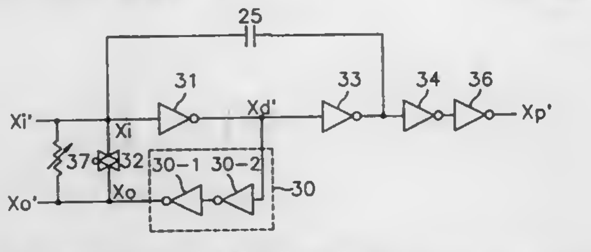
Won-Kyum Kim, Suwon, and Jang-Sik Won, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 29, 1995, Ser. No. 536,922

Claims priority, application Rep. of Korea, Sep. 29, 1994, 24755/1994; Oct. 13, 1994, 26194/1994; Dec. 16, 1994, 34590/1994

Int. Cl.^{6} H03K *3/03*

U.S. Cl. 331—113 R **17 Claims**



1. An astable multivibrator comprising:

capacitor means connected between a first signal and a third signal;

amplification means connected between said first signal and said third signal;

delay means for delaying a second signal, said second signal being an inversion of said first signal, said delay means comprising an even number of inverters connected serially; and

variable resistor means connected between said first signal and said delayed second signal.

5,712,601
OSCILLATION CIRCUIT

Yoshikazu Shimada, and Isoshi Takeda, both of Kyoto, Japan, assignors to Rohm Co. Ltd., Kyoto, Japan

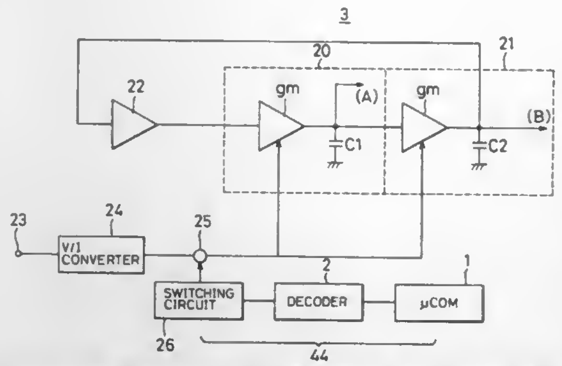
Filed Feb. 22, 1996, Ser. No. 603,869

Claims priority, application Japan, Feb. 28, 1995, 7-038907

Int. Cl.^{6} H03B *5/24*

U.S. Cl. 331—177 R **4 Claims**

1. An oscillation circuit comprising a filter having a time constant and means for feeding back an output of the filter to an input side of the filter so that an oscillation condition is fulfilled,



wherein said filter includes a gm amplifier and a capacitor, said gm amplifier being formed of a differential amplifier, and

wherein a constant current source of the differential amplifier is connected to a free running oscillation frequency adjusting circuit, said adjusting circuit including a microcomputer, a decoder which decodes output data of the microcomputer, and a switching circuit driven by an output of the decoder, said switching circuit varying a current value according to the output of the decoder, and

wherein a current in accordance with a current value depending on a setting of the switching circuit flows through the constant current source.

5,712,602
PHASE-LOCKED OSCILLATOR FOR MICROWAVE/MILLIMETER-WAVE RANGES

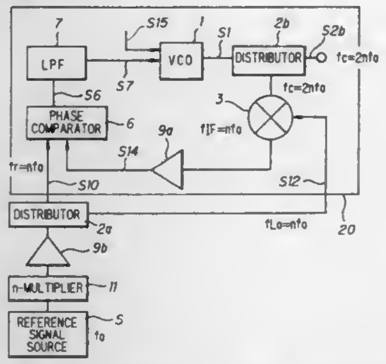
Eiji Suematsu, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 9, 1996, Ser. No. 679,679

Claims priority, application Japan, Jul. 31, 1995, 7-194785

Int. Cl.^{6} H03C *3/09;* **H03L** *7/16*

U.S. Cl. 332—127 **6 Claims**



1. A phase-locked oscillator for microwave/millimeter-wave ranges comprising:

an oscillating means for producing a high-frequency signal based on a modulating signal and a phase-locking control signal;

a first distributing means for distributing the high-frequency signal into two parts and outputting one part of it as an oscillator output signal;

an n-multiplying means for multiplying the frequency of a reference signal by 'n';

a second distributing means for distributing the output from said n-multiplying means into two parts and outputting one part of it as a comparative signal and the other as a locally oscillated signal;

a frequency mixing means for producing an intermediate frequency signal using the other output from said first distributing means and the locally oscillated signal;

a phase comparing means for comparing the intermediate frequency signal and the comparative signal to output an error signal; and

a low-pass filtering means for removing unwanted signals from the error signal to produce the phase-locking controlling signal.

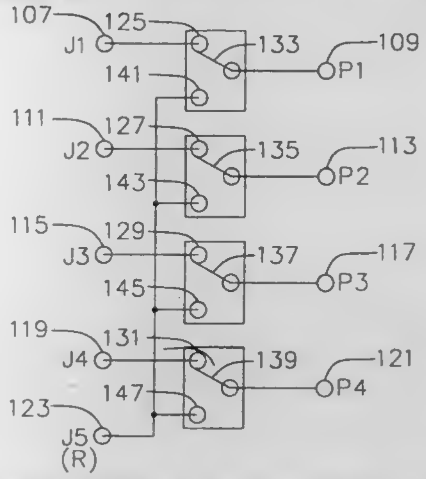
5,712,603
MULTIPOLE MULTIPOSITION MICROWAVE SWITCH WITH A COMMON REDUNDANCY

Duk Yong Kim, Hwansung-Kun, Rep. of Korea, and David H. Kim, Santa Fe Springs, Calif., assignors to KMW USA, Inc., Santa Fe Springs, Calif.

Filed Aug. 9, 1996, Ser. No. 694,600

Int. Cl.^{6} H01P *1/10;5/12*

U.S. Cl. 333—101 **15 Claims**



1. A multipole multiposition microwave switch system with a common redundancy comprising

a) a housing;

b) a first RF input connector, a second RF input connector, and a third RF input connector attached to the housing;

c) a first RF output connector, a second RF output connector, and a third RF output connector attached to the housing;

d) a first RF switch connected between the first RF input connector and the first RF output connector;

e) a second RF switch is connected between the second RF input connector and the second RF output connector;

f) a third RF switch is connected between the third RF input connector and the third RF output connector;

g) a redundant RF input device attached to the housing;

h) a first control switch is connected directly between the redundant RF input device and the first RF output connector;

i) a second control switch is connected directly between the redundant RF input device and the second RF output connector; and

j) a third control switch is connected directly between the redundant RF input device and the third RF output connector.

5,712,604
DIELECTRIC FILTER INCLUDING AT LEAST ONE BAND ELIMINATION FILTER

Hitoshi Tada; Hideyuki Kato; Haruo Matsumoto, and Tatsuya Tsujiguchi, all of Ishikawa-ken, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 6, 1995, Ser. No. 469,443

Claims priority, application Japan, Sep. 27, 1994, 6-231829; Sep. 27, 1994, 6-231830

Int. Cl.^{6} H01P *1/20*

U.S. Cl. 333—202 **18 Claims**

1. A dielectric band elimination filter comprising:

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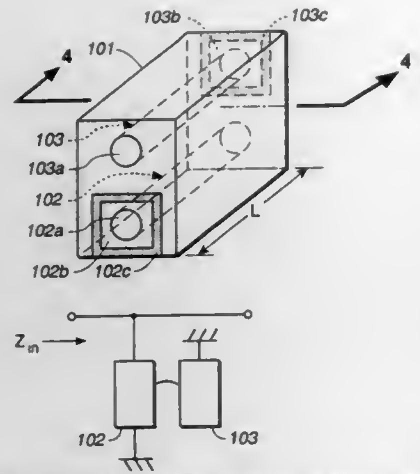


a dielectric block having outer surfaces including two mutually opposite end surfaces;

an outer conductor covering portions of said outer surfaces; and

two mutually coupled resonant lines extending in said dielectric block between said end surfaces, each of said resonant lines having a respective open end which is not in contact with said outer conductor and a respective shorted end which is in contact with said outer conductor, said open and shorted ends of said two resonant lines being oppositely oriented, the open end of one of said resonant lines being connected to a communication line connected between an input terminal and an output terminal, the shorted end of the other of said resonant lines being grounded.

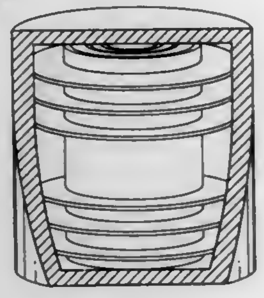
5,712,605
MICROWAVE RESONATOR

Curt A. Flory, Los Altos, and Robert C. Taber, Palo Alto, both of Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation-in-part of Ser. No. 238,675, May 5, 1994, abandoned. This application Sep. 29, 1994, Ser. No. 315,281

Int. Cl.^{6} H01P *7/10*

U.S. Cl. 333—219.1 **17 Claims**



15. An apparatus comprising:

a plurality of resonant microwave cavities; and

a low loss dielectric body enclosing each of the microwave resonant cavities;

wherein:

the low loss dielectric body has a plurality of inner surfaces;

the plurality of resonant microwave cavities support a resonant mode of microwaves having modal electric field nulls;

and

the inner surfaces of the low loss dielectric body are disposed proximate to locations of the modal electric field nulls.

5,712,606
DIELECTRIC RESONATOR HAVING ADJUSTMENT BODIES, FOR MAKING FAST AND FINE ADJUSTMENTS TO RESONANCE FREQUENCY

Veli-Matti Särkkä , Oulunsalo, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

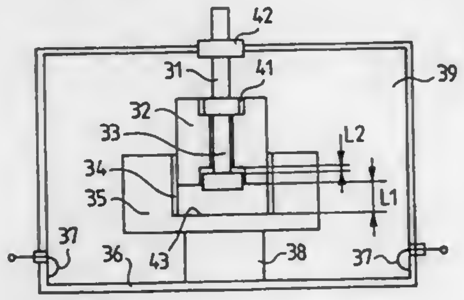
PCT No. PCT/FI95/00548, § 371 Date Jun. 4, 1996, § 102(e) Date Jun. 4, 1996, PCT Pub. No. WO96/11512, PCT Pub. Date Apr. 18, 1996

PCT Filed Oct. 4, 1995, Ser. No. 646,326

Claims priority, application Finland, Oct. 5, 1994, 944664

Int. Cl.^{6} H01P *7/10*

U.S. Cl. 333—219.1 **6 Claims**



1. A dielectric resonator comprising:

a cylindrical dielectric resonator body having a coaxial cylindrical recess;

a frequency controller comprising an adjustment mechanism and a cylindrical dielectric adjustment body, which is movable by means of the adjustment mechanism axially of said resonator body within said recess in said resonator body, for adjusting the resonance frequency provided by said dielectric resonator;

an electrically conductive casing, for said resonator body and said cylindrical dielectric adjustment body;

a dielectric fine adjustment body connected to said adjustment mechanism and arranged inside said cylindrical dielectric adjustment body, so that extent of projection of the dielectric fine adjustment body at an end of said cylindrical dielectric adjustment body within said recess in said resonator body can be adjusted within a predetermined range by movement of said adjustment mechanism; and

said cylindrical dielectric adjustment body being arranged to remain stationary inside said resonator body during adjustment of said extent of projection of said dielectric fine adjustment body, so that during a common movement of said cylindrical dielectric adjustment body and said dielectric fine adjustment body, frequency adjustment has a first slope of adjustment, and upon said dielectric fine adjustment body being moved alone by said adjustment mechanism, frequency adjustment has a second slope of adjustment which is remarkably lower than said first slope of adjustment.

5,712,607
AIR-DIELECTRIC STRIPLINE

Timothy W. Dittmer, R. 1 Box 126; George Cabrera, 61 Lincoln Hill N.E., both of Quincy, Ill. 62301, and Dale J. Doyle, 43395 Corte Durazo, Temecula, Calif. 92592

Filed Apr. 12, 1996, Ser. No. 631,580

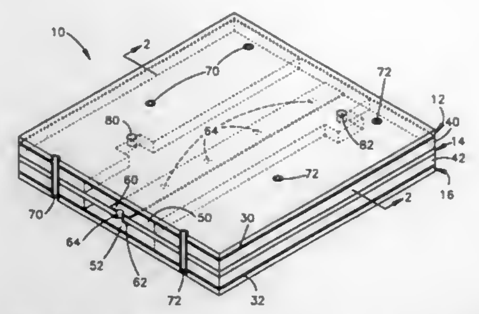
Int. Cl.^{6} H01P *3/08*

U.S. Cl. 333—238 **13 Claims**

1. An air-dielectric stripline multiple solid layer laminated structure comprising:

top, intermediate, and bottom planar dielectric layers spaced from each other in parallel planes with said intermediate layer being located intermediate said top and bottom layers and each layer having upper and lower oppositely directed faces;

first and second electrically conductive planar ground planes respectively attached to the lower surface of said top layer and the upper surface of said bottom layer;



first and second planar dielectric spacer layers respectively located between said top and intermediate layers and said intermediate and bottom layers for maintaining said spacing between said top, intermediate, and bottom layers;

each said spacer layer having an airtight channel formed therein with longitudinally extending solid sidewalls in said spacer defining upper and lower air chambers on opposing faces of said intermediate layer, said channel allowing for forced-air cooling by air following through said channel during operation; and

a conductive inner trace attached to a least one face of said intermediate layer within a said chamber and spaced from an associated ground plane by the thickness of a said spacer dielectric layer.

5,712,608
MATRIX RELAY

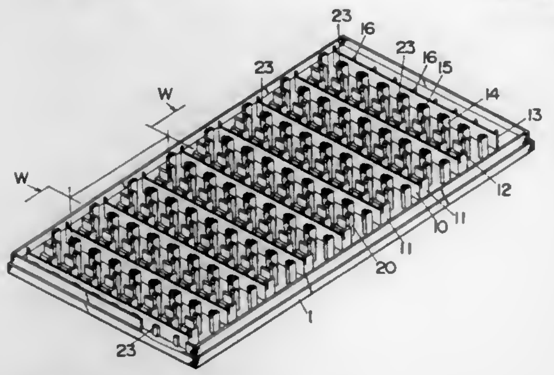
Tsutomu Shimomura; Fumihiro Kasano, both of Osaka; Shiro Maeda, Mie; Masayuki Shiomi, Mie; Takao Morimoto, Mie; Tatsuya Suzuki, Mie, and Hiroshi Hosaka, Tokyo, all of Japan, assignors to Masushita Electric Works, Ltd., Osaka, and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Filed Mar. 11, 1996, Ser. No. 613,457

Claims priority, application Japan, Mar. 13, 1995, 7-052919

Int. Cl.^{6} H01H *7/00*

U.S. Cl. 335—60 **14 Claims**



1. A matrix relay comprising:

a base of an electrically insulative material;

a plurality of latching relays which are arranged in a matrix and mounted on said base;

each of said latching relays comprising:

an excitation coil having first and second ends;

a permanent magnet for providing a latching force;

a pair of first and second fixed contacts; and

an armature carrying a pair of first and second movable springs each providing movable contacts, said armature being magnetically coupled to said excitation coil, said armature being movable in response to energization of said coil by current of selective polarity between closed and open positions of said fixed and movable contacts;

wherein a plurality of said armatures of said latching relays arranged in a row of said matrix are assembled into a single armature block to be mounted on said base as a single unit, and wherein said armature block comprises:

a single pair of first and second rigid supporting members made of an electrically conductive material, all said first movable springs and all said second movable springs of the armatures of said armature block being connected respectively to said first and second rigid supporting members mechanically and electrically, thereby providing two row paths for electrical signals common to the latching relays arranged in the row of said matrix.

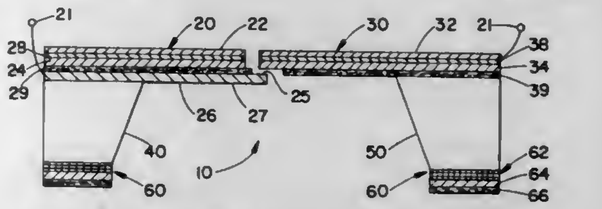
5,712,609
MICROMECHANICAL MEMORY SENSOR

Mehran Mehregany, Pepper Pike; Kenneth G. Goldman, Middleburg Heights, both of Ohio, and Vijayakumar R. Dhuler, Cary, N.C., assignors to Case Western Reserve University, Cleveland, Ohio

Filed Jun. 10, 1994, Ser. No. 258,427

Int. Cl.^{6} H01H *37/10;37/74*

U.S. Cl. 337—70 **4 Claims**



1. A micromechanical memory sensor comprising:

a first beam supported at a first end thereof by a substrate and having a second end; and,

a second beam supported at a first end thereof by a substrate and having a second end having flexibility greater than the first beam, the first and second beam being disposed in a first arrangement so that the second end of the second beam engages a first surface of the first beam at the second end of the first beam,

an increase in ambient temperature facilitating a first deflection in the first beam and a second deflection, greater than the first deflection, in the second beam in accordance with the difference in the flexibility of the first and second beams,

a decrease in the ambient temperature facilitating movement of the first and second beams to a second arrangement, the second beam engaging a second surface of the first beam in the second arrangement so that the second beam is latched on the first beam, and,

the first beam comprising a heating resistor which, when having an electric current supplied thereto, facilitates a third deflection in the first beam, the third deflection being greater than the first deflection, to disengage the second surface from the second beam to cause the electric current to terminate and cause the first and second beams to return to the first arrangement.

5,712,610
PROTECTIVE DEVICE

Motohide Takeichi; Norikazu Iwasaki, and Yuji Furuuchi, all of Kanuma, Japan, assignors to Sony Chemicals Corp., Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 562,685

Claims priority, application Japan, Nov. 30, 1994, 6-323559

Int. Cl.^{6} H01H *85/04*

U.S. Cl. 337—290 **15 Claims**

1. A protective device comprising a substrate, a heating element provided on the substrate, an insulating layer that covers the surface of the heating element, and a low-melting metal piece provided on the insulating layer,

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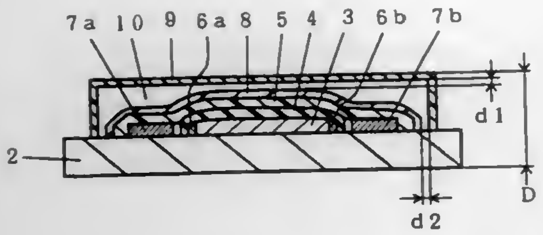


1b

wherein said low-melting metal piece is sealed by an inner sealing portion having a lower melting point or lower softening point than the low-melting metal piece, and the inner sealing portion is covered with an outside casing that is provided leaving a gap between the outside casing and the inner sealing portion.

5,712,611

ELECTRICAL SWITCH HAVING A STATIONARY CONTACT OF A BIMETALLIC MATERIAL

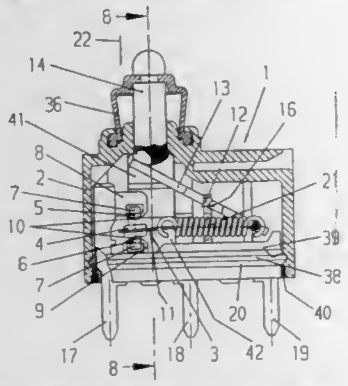
Anton Mattes, Balgheim, and Roland Neitzel, Muehlheim, both of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim, Germany

Filed Apr. 18, 1995, Ser. No. 423,350

Claims priority, application Germany, Apr. 19, 1994, 44 13 376.6

Int. Cl.^{6} H01H *37/52; 1/04*

U.S. Cl. 337—334 **17 Claims**



1. A contact system of an electrical switch, the contact system including a movable switching contact having a contact face, and being electrically connectable to a power source, and further comprising:

at least one contact support having a portion defined by a broad side approximately perpendicular to the contact face of the switching contact, and a narrow end face facing the contact face of the switching contact, said contact support having a recess formed in the broad side and extending from a recess opening located in said end face; the recess being defined by a perimeter composed of a side limb extending essentially perpendicularly to said end face, and a base limb located opposite to the recess opening and being connected to the side limb to form an L-shape, and

a prefabricated stationary contact arranged on said contact support, and comprised of a bimetallic material, said stationary contact having:

a body composed of a first material, and being received in the recess; said body being electrically connected with at least one of the side limb and the base limb; and

a contact surface forming a facing of said body, and being composed of a second material, said contact surface projecting through the recess opening on the end face and interacting with the switching contact to form an electrical connection; said contact surface being located in a plane defined by said end face.

5,712,612

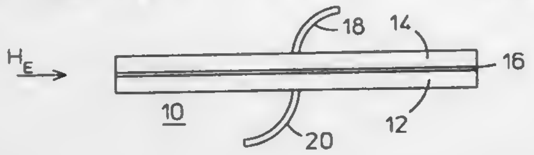
TUNNELING FERRIMAGNETIC MAGNETORESISTIVE SENSOR

Gregory S. Lee, Mountain View, and Erji Mao, Stanford, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 2, 1996, Ser. No. 581,815

Int. Cl.^{6} H01L *43/00*

U.S. Cl. 338—32 R **24 Claims**



1. A tunneling ferrimagnetic magnetoresistive sensor, comprising a stack of thin-film layers, the thin-film layers including:

a layer of a ferrimagnetic material, the ferrimagnetic material being conductive and having a coercivity;

a layer of a magnetic material, the magnetic material being conductive and having a coercivity substantially different from the coercivity of the ferrimagnetic material; and

a layer of an insulator interposed between the layer of the ferrimagnetic material and the layer of the magnetic material, the layer of the insulator being of a thickness sufficiently small to permit tunneling of current carriers between the layer of the ferrimagnetic material and the layer of the magnetic material.

5,712,613

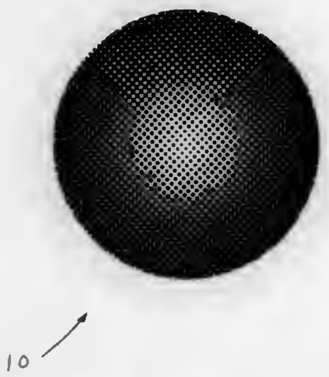
COMPUTER-AIDED METHOD FOR PRODUCING RESISTIVE TAPERS AND RESISTIVE TAPER PRODUCED THEREBY

Stephen C. Buckner, St. Ann., Mo.; Thaddeus J. Podgajny, Edwardsville, and Matthew M. Thomas, Madison, both of Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 5, 1995, Ser. No. 435,710

Int. Cl.^{6} A01C *1/012*

U.S. Cl. 338—217 **11 Claims**



1. A method for producing a desired resistive taper under computer control for controlling surface resistivity comprising the steps of:

correlating along a function defining said desired resistive taper the magnitudes of surface resistivity to magnitudes representing optical gray levels to be outputted by said computer;

creating a computer-controlled optically graded pattern of said optical group levels on an phototool corresponding to said desired resistive taper; and

photochemically etching said computer-controlled optically graded pattern onto an insulating substrate having a conductive coating using said phototool.

9. A resistive taper produced by the method of claim 1 wherein said function defining said desired taper is selected from the group consisting of linear, exponential, hyperbolic cosine, cosine squared, Weber function, or rectified sine wave, and said conductive coating has a pattern corresponding to said optical gray levels of said graded pattern thereby creating said desired taper.

5,712,614

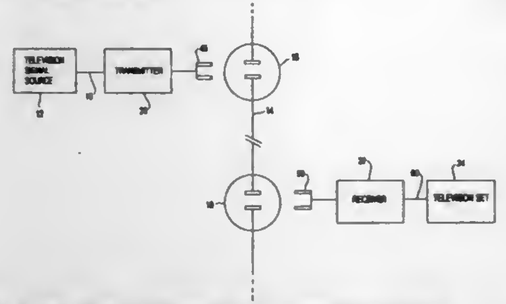
POWER LINE COMMUNICATIONS SYSTEM

Chandrakant Bhailalbhai Patel, Hopewell; Jack Rudy Harford, Flemington, both of N.J.; Stephen Pudles, Longwood, Fla., and Joseph Robert Ader, Yardley, Pa., assignors to Elcom Technologies Corporation, Malvern, Pa.

Filed May 9, 1995, Ser. No. 437,844

Int. Cl.^{6} H04M *11/04*

U.S. Cl. 340—310.03 **2 Claims**



1. A power line communications system comprising:

first signal conducting means for supplying television signals over a first band of frequencies from a television signal source;

a power line;

a plurality of outlets individually connected to said power line, including a first outlet at which said television signals are transmitted and a second outlet at which said television signals are received;

a transmitter unit connected to said first outlet and including:
- (a) first amplifier and shaper means for amplifying and shaping said television signals supplied by said first signal conducting means from the television signal source,
- (b) first oscillator means for supplying a first carrier signal,
- (c) control means for controlling said first oscillator means to set said first carrier signal at a first predetermined frequency dependent upon a frequency band of a notch in a frequency response characteristic between said first and said second outlets, said control means including:
  - (1) a first switch for controlling said first oscillator means to selectively set said first carrier signal at said first predetermined frequency dependent upon channel **3** or channel **4**, operation of a television set to which said television signals are supplied, and
  - (2) a second switch for controlling said first oscillator means to selectively set said first carrier signal at said first predetermined frequency if said frequency response characteristic between said first outlet and said second outlet has a notch,
- (d) first multiplier means for frequency multiplying said first carrier signal and said television signals to frequency shift said television signals to a second band of frequencies,
- (e) second amplifier and shaper means for amplifying and shaping said television signals after frequency shifting of said television signals by said multiplier means,
- (f) second signal conducting means for conducting said television signals after frequency shifting by said first multiplier means and amplifying and shaping of said television signals by said second amplifier and shaper means to said first outlet for transmission of said television signals along said power line to said second outlet, and
- (g) first coupler means for coupling said television signals to said second signal conducting means after amplifying and shaping of said television signals by said second amplifier and shaper means; and

a receiver unit connected to said second outlet and including:
- (a) third signal conducting means for conducting said television signals from said second outlet,
- (b) second oscillator means for supplying a second carrier signal having a second predetermined frequency,
- (c) second multiplier means for frequency multiplying said second carrier signal and said television signals conducted by said third signal conducting means to frequency shift said television signals conducted by said third signal conducting means to a band of frequencies at least approximately the same as said first band of frequencies,
- (d) second coupler means for coupling said television signals conducted by said third signal conducting means to said second multiplier means,
- (e) third amplifier and shaper means for amplifying and shaping said television signals after frequency shifting of said television signals by said second multiplier means, and
- (f) fourth signal conducting means for conducting said television signals after frequency shifting of said television signals by said second multiplier means and amplifying and shaping of said television signals by said third amplifier and shaper means to a television set.

5,712,615

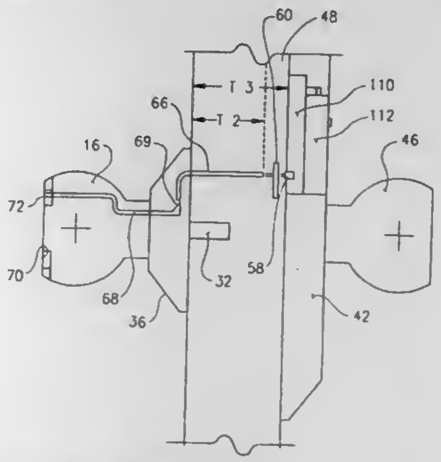
REMOTELY ACTUATED LIGHT

George E. Maffey, Dana Point, Calif.; David A. Saar, Lawrencevile, and Raymond W. Simpson, Hamilton Sq., both of N.J., assignors to Emhart Inc., Newark, Del.

Filed Aug. 11, 1995, Ser. No. 514,282

Int. Cl.^{6} G08B *5/00*

U.S. Cl. 340—332 **4 Claims**



1. A lighting system comprising

a selectively operable light source,

RF receiver means for reproducing a received pulsed RF signal and

means for determining whether said reproduced RF signal is within an acceptable range of asymmetric patterns of "on" pulse times followed by "off" times selected to include a plurality of different asymmetric patterns and

means for operating said light source for a selected period of time when said determining means determines that said reproduced RF signal is any asymmetric pattern within said acceptable range whereby said light source could be operated by any of a plurality of transmitters all transmitting different signals having any asymmetric patterns within said range of asymmetric patterns.

5,712,616

SYSTEM FOR MONITORING THE CONDITION OF TIRES

Johannes Schmitt, Markgroeningen, and Ulrich Hessmert, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 9, 1996, Ser. No. 677,070

Claims priority, application Germany, Jul. 26, 1995, 195 27 294.3

Int. Cl.^{6} B60C *23/00*

U.S. Cl. 340—442 **14 Claims**

1. Apparatus for monitoring the condition of tires on the wheels of a motor vehicle, said apparatus comprising

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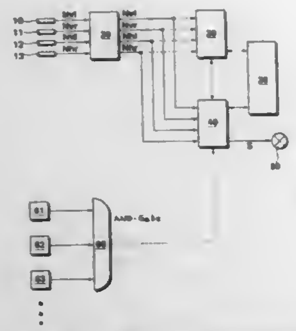
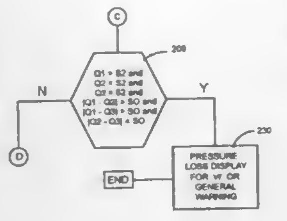


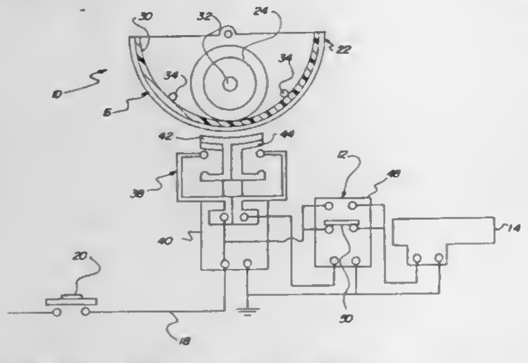


means for detecting rotational movements of the wheels and generating values (N_{vl}, N_{vr}, N_{hl}, N_{hr}) as a function of respective rotational movements,

evaluation means for forming quotients Q_1, Q_2, Q_3 which represent three of said values divided by a common fourth one of said values, and for comparing said quotients with each other, and for generating a signal which represents the condition of the tires based on said comparison without any direct measurement of pneumatic pressure in any of said tires, and

display means for displaying the condition of said tires in response to said signal.

5,712,617
INERTIA BRAKELIGHT FLASHER
Hon Wai Quan, 4545 Victoria Dr., Vancouver, BC, Canada, V5N 4N7
Filed Mar. 13, 1995, Ser. No. 402,874
Int. Cl.^{6} B60Q *1/50*
U.S. Cl. 340—467 **7 Claims**



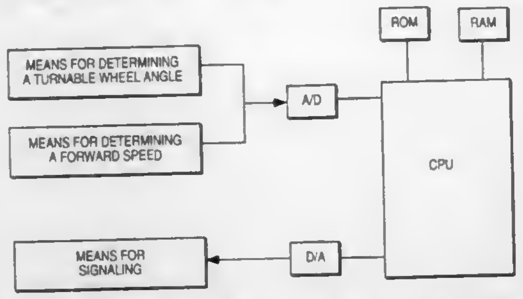
1. An inertia brakelight flasher comprising:

a flashing relay means electrically couplable to a third brakelight of a vehicle for effecting intermittent operation of the third brakelight;

a deceleration sensor means electrically coupled to the flashing relay means and electrically couplable to a power supply line of a brake system of the vehicle for effecting energization of the flashing relay means in response to actuation of a brakelight switch of the vehicle, wherein the deceleration sensor means operates to detect deceleration of the vehicle during braking to energize the flashing relay means, whereby the third brakelight is flashed to warn other drivers of deceleration of the vehicle; and

the deceleration sensor means comprises an outer pendulum; an inner pendulum movably mounted within the outer pendulum such that a movement of the inner pendulum relative to the outer pendulum effects actuation of the deceleration sensor means to energize the flashing relay means, and locking solenoid means for securing a position of the outer pendulum relative to the vehicle upon deceleration of the vehicle.

5,712,618
METHOD AND APPARATUS FOR AN AUTOMATIC SIGNALING DEVICE
Michael R. McKenna, 1122 W. Morse Ave., Chicago, Ill. 60626
Filed Aug. 29, 1995, Ser. No. 520,537
Int. Cl.^{6} B60Q *1/34*
U.S. Cl. 340—475 **15 Claims**


ROM
RAM
MEANS FOR DETERMINING A TURNABLE WHEEL ANGLE
A/D
MEANS FOR DETERMINING A FORWARD SPEED
CPU
MEANS FOR SIGNALING
D/A

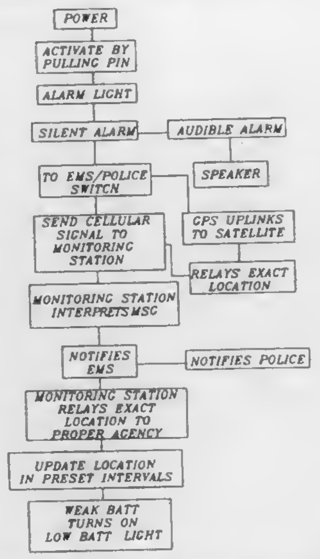
1. An automatic signaling device, for use in a vehicle having means for signaling, means for determining a turnable wheel angle β, defined by an angle between a longitudinal centerline of the vehicle to which a turnable wheel is attached and the turnable wheel, and means for ascertaining the forward speed V of the vehicle, comprising a means for determining movement of a lateral distance of the vehicle operably connected to the means for signaling, wherein the means for determining movement of a lateral distance comprises:

a. a means for evaluating movement of a lateral distance D of the vehicle over a period of time T operably connected to the means for determining a turnable wheel angle β and the means for ascertaining the forward speed V of the vehicle, whereby the movement of a lateral distance D of the vehicle is approximated by a trigonometric equation

$$D=VT \sin \beta; \text{ and}$$

b. a means for activating the means of signaling, which is operably connected to the means for evaluating movement of a lateral distance D of the vehicle, when the movement of a lateral distance D exceeds a minimum threshold, indicating that the vehicle is moving laterally warranting a signal.

5,712,619
GLOBAL POSITIONING SYSTEM PERSONAL ALARM
Alan C. Simkin, 3705 Valley Rd., Ellicott City, Md. 21042
Filed Apr. 18, 1996, Ser. No. 634,590
Int. Cl.^{6} G08B *1/08*
U.S. Cl. 340—539 **2 Claims**


POWER
ACTIVATE BY PULLING PIN
ALARM LIGHT
SILENT ALARM
AUDIBLE ALARM
TO EMS/POLICE SWITCH
SPEAKER
SEND CELLULAR SIGNAL TO MONITORING STATION
GPS UPLINKS TO SATELLITE
RELAYS EXACT LOCATION
MONITORING STATION INTERPRETS MSG
NOTIFIES EMS
NOTIFIES POLICE
MONITORING STATION RELAYS EXACT LOCATION TO PROPER AGENCY
UPDATE LOCATION IN PRESET INTERVALS
WEAK BATT TURNS ON LOW BATT LIGHT

1. A global positioning system personal alarm comprising:

a housing structure substantially rectangular shaped;

a power source positioned within a lower rear portion of the housing structure;

an alarm means for sounding an alarm;

an alarm activating means for activating said alarm means and being secured to the housing structure and being electronically connected to the power source; the alarm means being electronically connected to the alarm activating means, the alarm activating means including a plunger member mounted on said housing;

a global positioning system electronically connected to the power source for generating longitudinal and latitudinal position information based upon signals transmitted from a plurality of global positioning satellites and received by the global positioning system;

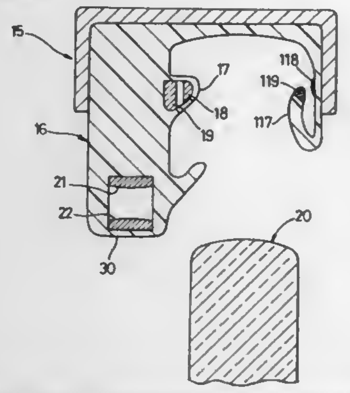
a cellular phone system for transmitting a signal containing said latitudinal and longitudinal position information when said alarm activating means is triggered, said cellular phone system being electronically connected to the global positioning system and the power source;

a monitoring station for receiving the signal containing said latitudinal and longitudinal position information from the cellular phone system, wherein the monitoring station converts the longitudinal and latitudinal information into street address information and relays the street address information to the proper authorities; and

wherein the housing structure includes:

- a plunger aperture positioned in the top surface of the housing structure and having said plunger mounted therein, said plunger triggering said alarm means through said alarm activating means when said plunger moves into said housing through said plunger aperture;
- a belt clip secured centrally to the rear surface of the housing structure;
- a battery door removably engaging the lower rear surface of the housing structure;
- an alarm light electronically connected to the alarm activating means and secured to the top surface of the housing structure;
- a low battery light electronically connected to the power source; and
- an alarm speaker electronically connected to the alarm activating means and secured to a side of the housing structure.

5,712,620
GLASS FRACTURE SECURITY SYSTEM AND A RESILIENT SEALING MEANS FOR USE THEREIN
Jeremy John Greenwood, Sutton Coldfield, England, assignor to Rover Group Limited, Warwick, England
Filed Aug. 22, 1995, Ser. No. 517,976
Claims priority, application United Kingdom, Sep. 13, 1994, 9418402
Int. Cl.^{6} G08B *13/00*
U.S. Cl. 340—541 **29 Claims**



1. A security system for detecting the fracture of a pane of glass, the system comprising:

a resilient sealing member used to form a seal between the pane of glass and a surrounding frame;

at least one glass fracture detector means having an electrical state which is changed when the pane of glass is fractured;

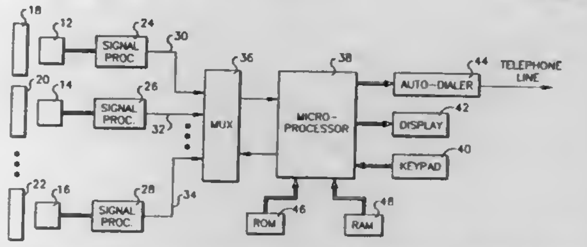
a control means connected to the at least one fracture detector means to sense said changed electrical state;

a warning means connected to said control means to provide warning of the fracture of said pane of glass in response to a signal received from said control means wherein the fracture detector means comprises at least one sensor formed as an integral part of said resilient sealing member by one of moulding, co-moulding, and co-extrusion;

the at least one sensor is a switch held in a closed conductive state by contact between the pane of glass and the resilient sealing member and changes to an open non-conductive state when the pane of glass is fractured in the vicinity of a switch; and

the switch includes two electrical conductors at least one of which is made from one of a conductive rubber and an elastomer.

5,712,621
SECURITY SYSTEM WITH VARIABLE INDUCTANCE SENSOR
James D. Andersen, 123 I Ave., Coronado, Calif. 92118
Filed Jun. 6, 1996, Ser. No. 659,663
Int. Cl.^{6} G08B *13/08*
U.S. Cl. 340—547 **35 Claims**



1. A security system for monitoring a premises having at least one portal, comprising:

a proximity sensor mounted on a first portion of said portal;

an target mounted on a second portion of said portal and inductively coupled to said proximity sensor, said target elongated between first and second ends and having an inductively detectable feature varying along outer portions of said target between said first and second ends, said proximity sensor and said target movable relative to one another with said proximity sensor adjacent to and moving along said outer portions of said target between said first and second ends in response to relative motion of said first and second portions of said portal, the relative positions of said proximity sensor and each portion of said target between said first and second ends defining an inductance;

an alarm unit; and

a controller connected to said proximity sensor and said alarm unit for detecting a change in said inductance and activating said alarm unit in response thereto.

5,712,622
INTRUSION DETECTOR
Israel Grossinger; Shmuel Blit, both of Rehovot; Yaacov Kotlicki, Ramat Gan, and Tatiana Kosoburd, Jerusalem, all of Israel, assignors to Holo or Ltd., Rehovot, Israel
Filed Jan. 18, 1996, Ser. No. 588,380
Claims priority, application Israel, Jan. 19, 1995, 112396
Int. Cl.^{6} G08B *13/18*
U.S. Cl. 340—555 **22 Claims**

1. An infrared detector comprising:

a sensor which provides an output signal responsive to infrared radiation incident on a face thereof; and

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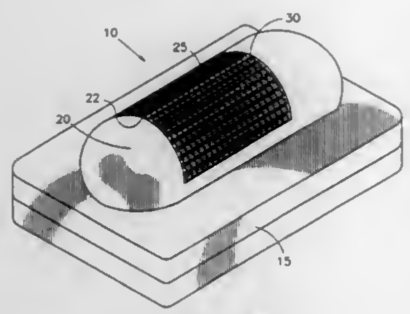
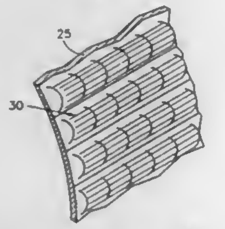




a diffractive optical element which diffractively directs a substantial portion of incident visible radiation away from the sensor and which has substantially no diffractive effect on incident infrared radiation.

5,712,623
SMALL-SIZED ALARM DEVICE

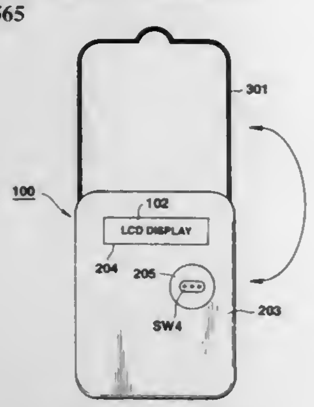
Hisao Kumai, Tokorozawa; Masazumi Niimi, and Takashi Sano, both of Fussa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,362

Claims priority, application Japan, Nov. 4, 1994, 6-270820; Nov. 4, 1994, 6-270822; Nov. 18, 1994, 6-285224

Int. Cl.^{6} G08B *13/00*

U.S. Cl. 340—565 **28 Claims**



1. A small-sized alarm device comprising:

a case;

a substantially U-shaped hanging member, two ends of the U-shaped hanging member being rotatably mounted to said case, the hanging member having an opening which is to be hanged on a doorknob; and

an alarm, installed in said case, for emitting an alarm sound upon detecting, via said hanging member, that a human body contacts or approaches said doorknob,

said case comprising a fitting section into which said hanging member is fit, the fitting section provided in a given surface of said case,

said hanging member being fitted into said fitting section so that the hanging member aligns with the given surface when the alarm device is carried and being rotated by about 180° around the two ends so that the opening is erected from said case in order to hang on said doorknob, the length of said hanging member being not longer than the length of said case.

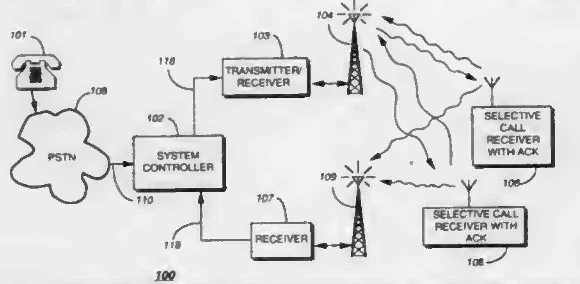
5,712,624
METHOD AND APPARATUS FOR OPTIMIZING RECEIVER SYNCHRONIZATION IN A RADIO COMMUNICATION SYSTEM

Douglas I. Ayerst, Delray Beach, and Leo G. Dehner, Jr., Coconut Creek, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1995, Ser. No. 398,274

Int. Cl.^{6} H04Q *7/18*

U.S. Cl. 340—825.21 **11 Claims**



1. A method used in a radio communication system optimizes a fixed system receiver synchronization, wherein the radio communication system has a fixed system receiver which operates in a synchronization mode which is one of a synchronous mode and an asynchronous mode, and wherein a response message data unit having a synchronous header data packet is transmitted by a selective call radio and received by the fixed system receiver, and

wherein in a system controller the method comprises the step of
  transmitting a response command which includes a preamble indicator corresponding to the synchronization mode of the fixed system receiver, and

wherein in a selective call radio the method comprises the steps of
  receiving and decoding the response command including the preamble indicator;
  generating the response message data unit, wherein the synchronous header data packet is preceded by a synchronizing packet when the preamble indicator indicates the asynchronous mode and is not preceded by the synchronizing packet when the preamble indicator indicates the synchronous mode; and
  transmitting the response message data unit, and

wherein in the fixed system receiver the method comprises the steps of
  acquiring symbol recovery timing and synchronizing the fixed system receiver to data packet boundaries of the response message data unit, using the synchronizing packet, when the fixed system receiver is in the asynchronous mode and the synchronizing packet and synchronous header are received; and
  receiving the response message data unit.

5,712,625
VEHICLE OPERATOR VERIFICATION SYSTEM THAT PREVENTS VEHICLE ADAPTING SYSTEMS FROM ADAPTING

Morgan Daniel Murphy, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed May 15, 1995, Ser. No. 441,107

Int. Cl.^{6} B60R *1/00;* B60N *2/00*

U.S. Cl. 340—825.31 **16 Claims**

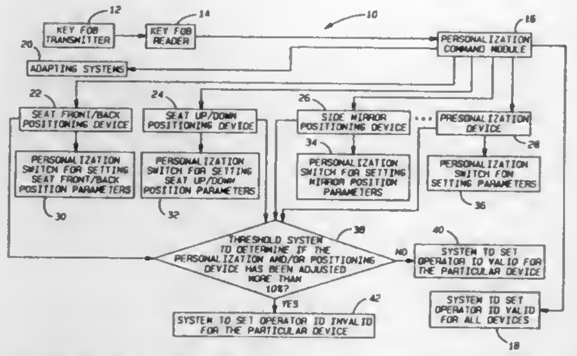
1. A vehicle operator identification verification system comprising:

a personalization command device being responsive to a vehicle operator identification (ID) code, said personalization command device providing a signal indicative of the operator ID code;

at least one personalization device, said at least one personalization device being responsive to the vehicle operator ID code signal from the personalization command device, said at least one personalization device providing an operational setting that is personalized to the vehicle operator ID code;

at least one adaptive system, said at least one adaptive system controlling at least one vehicle system, said adaptive system adapting the at least one vehicle system to a vehicle operator's preference of the at least one vehicle system based on vehicle operator adjustments to the at least one vehicle system; and

an analyzing device responsive to the operational setting of the at least one personalization device, said analyzing device preventing the at least one adaptive system from adapting to adjustments made by the vehicle operator to the at least one vehicle system if the operator adjusts the operational setting of the at least one personalization device to be different than a predetermined set operational setting of the at least one personalization device.


12
KEY FOB TRANSMITTER
14
KEY FOB READER
10
16
PERSONALIZATION COMMAND MODULE
20
ADAPTING SYSTEMS
22
SEAT FRONT/BACK POSITIONING DEVICE
24
SEAT UP/DOWN POSITIONING DEVICE
26
SIDE MIRROR POSITIONING DEVICE
PRESONALIZATION DEVICE
28
PERSONALIZATION SWITCH FOR SETTING SEAT FRONT/BACK POSITION PARAMETERS
PERSONALIZATION SWITCH FOR SETTING SEAT UP/DOWN POSITION PARAMETERS
34
PERSONALIZATION SWITCH FOR SETTING MIRROR POSITION PARAMETERS
PERSONALIZATION SWITCH FON SETTING PARAMETERS
30
32
36
38
THRESHOLD SYSTEM TO DETERMINE IF THE PERSONALIZATION AND/OR POSITIONING DEVICE HAS BEEN ADJUSTED MORE THAN 10%?
NO
40
SYSTEM TO SET OPERATOR ID VALID FOR THE PARTICULAR DEVICE
YES
42
SYSTEM TO SET OPERATOR ID INVALID FOR THE PARTICULAR DEVICE
SYSTEM TO SET OPERATOR ID VALID FOR ALL DEVICES
18

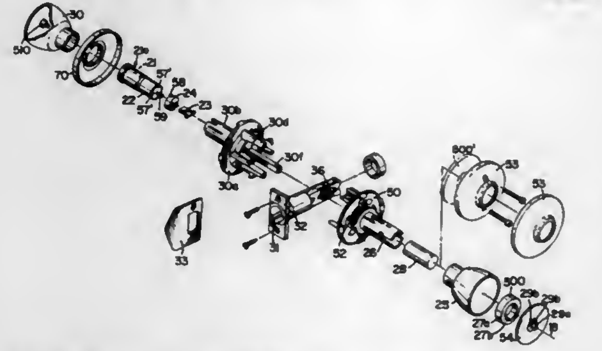
5,712,626
REMOTELY-OPERATED SELF-CONTAINED ELECTRONIC LOCK SECURITY SYSTEM ASSEMBLY

Demos Andreou, Alpharetta, and Ari Glezer, Atlanta, both of Ga., assignors to Master Lock Company, Milwaukee, Wis.

Continuation of Ser. No. 158,018, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 762,919, Sep. 6, 1991, abandoned. This application May 30, 1996, Ser. No. 650,600

Int. Cl.^{6} H04Q *1/00*

U.S. Cl. 340—825.31 **33 Claims**



25. An electronic lock apparatus, comprising:

(a) a strike plate;

(b) a latch cooperatively engageable with said strike plate and movable between engaged and disengaged positions;

(c) mechanical locking means, operatively connected with said latch, for selectively preventing movement of said latch between said engaged and disengaged positions, said locking means requiring a primary motive force;

(d) electromechanical means, operatively connected to said mechanical locking means, for providing the primary motive force to said locking means; and

(e) tunable electronic control means, responsive to an encoded received signal and selectively tunable among a plurality of frequencies, for selectively energizing said electromechanical means, wherein said encoded received signal comprises a plurality of packets of access and retuning information, each of said packets being transmitted at one of the plurality of frequencies, wherein said tunable electronic control means is selectively tuned responsive to packets of retuning information, and wherein said packets of access information must be determined to be valid by said electronic control means prior to energizing said electromechanical means.

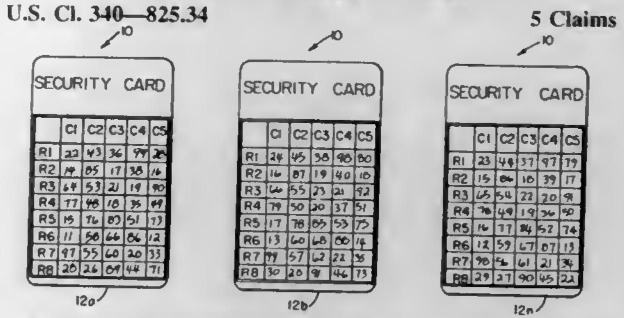
5,712,627
SECURITY SYSTEM

J. Rodney Watts, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 19, 1995, Ser. No. 423,479

Int. Cl.^{6} G07D *7/00;* G06F *7/04;* G06K *5/00*

U.S. Cl. 340—825.34 **5 Claims**



1. A method for determining whether a person seeking access is authorized to obtain the requested access comprising the steps of

(A) distributing each of a plurality of identification cards to a corresponding person of a plurality of persons, each one of the cards having a plurality of addressable positions, each one of the addressable positions having an indicium, each one of the plurality of identification cards being assigned to a corresponding one of the plurality of persons, the indicium at one of the addressable positions on one of the assigned cards being different from the indicium at the same one of the addressable positions on another of the assigned cards,

(B) making a first request that a person seeking access identify themselves by providing the indicium at a first addressable position on the card assigned to that person,

(C) allowing a first access to the person if the indicium at the first addressable position on the card assigned to that person matches that assigned to the person,

(D) making a second request that the person identify themselves by providing the indicium at a second addressable position on the card assigned to that person, and

(E) allowing a second access to the person if the indicium at the second addressable position on the card assigned to that person matches that assigned to the person.

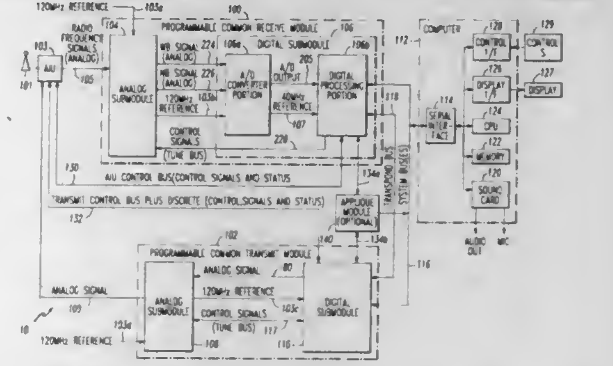
5,712,628
DIGITALLY PROGRAMMABLE RADIO MODULES FOR TRANSPONDER SYSTEMS

William C. Phillips, Ellicott City; Michael V. Pascale, Millersville; Ronald W. Minarik, Lutherville, and Kenneth M. Schmidt, Ellicott Ciry, all of Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 31, 1995, Ser. No. 522,059

Int. Cl.^{6} G01S *13/87;13/80;* H01Q *9/00*

U.S. Cl. 340—825.54 **22 Claims**



12. A programmable radio comprising:

a receive module for processing a received interrogation signal into a transponder signal,

said receive module including at least one receive field programmable gate array, reconfigurable in accordance with first con-

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figuration data, for processing the received interrogation signal in one of a plurality of interrogation modes specified by the first configuration data to provide the transponder signal; and

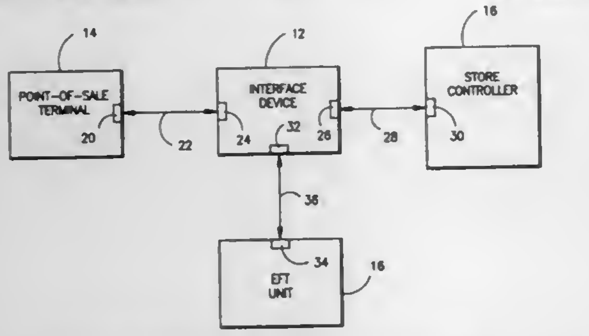
a transmit module, coupled to said receive module, for processing the transponder signal to generate and transmit a response signal.

5,712,629
DEVICE FOR INTERFACING POINT OF SALE SYSTEMS WITH EXTERNAL PERIPHERAL UNITS

Charles D. Curtiss, Jr., Scottsdale, and Donald L. Jackson, Gilbert, both of Ariz., assignors to DCNS, Inc., Scottsdale, Ariz.

Filed Jun. 5, 1995, Ser. No. 464,323
Int. Cl.^{6} G07G *1/14*

U.S. Cl. 340—825.5 **16 Claims**



1. A device for interfacing an external peripheral unit to a point of sale (POS) system having a terminal and a controller, said device comprising:

first, second and third connectors, said first connector for coupling to said terminal, said second connector for coupling to said controller, and said third connector for coupling to the external peripheral unit;

a microprocessor unit (MPU);

relay means coupled between the first and second connectors, said relay means in a first state connecting said first and second connectors and in a second state interrupting the flow of data therebetween and enabling transfer of data between said MPU and each of said first and second connectors; and

logic circuitry, coupled to and controlled by said MPU, for providing a plurality of data paths between said MPU and the first, second, third connectors to allow the POS system to attach to and communicate with the external peripheral unit,

said MPU being responsive to receipt of predetermined signals received by said logic circuitry to operate said relay means to switch from said first state to said second state such that a first data path is established between said first connector and said MPU, a second data path is established between said second connector and said MPU and a third path is established between said third connector and said MPU.

5,712,630
HIGH POWER MOVING OBJECT IDENTIFICATION SYSTEM

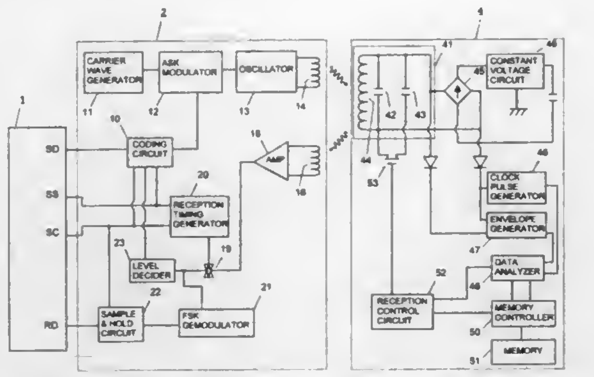
Masato Nanboku, Hirakata; Toshiaki Yoshiyasu, Katano; Koji Oono, Neyagawa; Takashi Saeki, Kirakata; Takayuki Nii, Toyonaka; Atsushi Misawa, Kadoma; Masahiro Nagata, Higashiosaka, and Yasunori Kasho, Katano, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 24, 1995, Ser. No. 506,196
Claims priority, application Japan, Jul. 26, 1994, 6-174113; Feb. 23, 1995, 7-035104; Apr. 11, 1995, 7-085787
Int. Cl.^{6} H04B *7/00*

U.S. Cl. 340—825.54 **12 Claims**

1. A system for identifying a moving object comprising:

an interrogator transmitting an RF transmission signal indicative of transmission data;



a transponder adapted to be mounted on said moving object for transmitting an RF answer signal indicative of answer data available at said transponder to said interrogator upon receiving said transmission signal, said transponder including energy storing means which stores energy from said RF transmission signal for powering said transponder;

said interrogator comprising:

coding means for providing, from said transmission data, a coded signal in which one logical level of said transmission data is represented by a first series of binary digits and another logical level of said transmission data is represented by a second series of binary digits;

a carrier wave generator for generating a carrier wave; and

a modulator for modulating said carrier wave by said coded signal in an amplitude shift keying (ASK) technique to give an ASK modulated signal in which a binary digit "1" of said coded signal is represented by a maximum amplitude of said carrier wave and a binary digit "0" is represented by the absence of said carrier wave, said ASK modulated signal defining said transmission signal;

said transponder comprising:

a demodulator for demodulating said ASK modulated signal into a demodulated signal having a sequence of pulses of varying width; and

decoding means for decoding said demodulated signal into said transmission data;

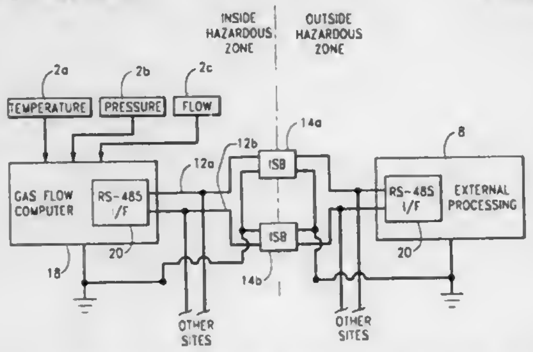
wherein, said coding means of the interrogator is configured to provide each said first and second series of binary digits such that a number of binary digit "1" in each series of binary digits is greater than a number of the binary digit "0" in each series of binary digits.

5,712,631
INTRINSICALLY SAFE DATA NETWORK

Roger M. Lewis; Steven L. Cook, and Kevin D. Fink, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 22, 1996, Ser. No. 620,769
Int. Cl.^{6} G01V *1/00*

U.S. Cl. 340—853.1 **8 Claims**



1. A system for acquiring and transferring data from inside a hazardous zone at an oil or gas well to outside the hazardous zone, comprising:

a communication connection network including a fixed number of at least one data signal conductor and a fixed number of at least one intrinsic safety barrier, each said intrinsic safety barrier connected within at least a respective data signal conductor so that one end of the respective conductor is disposed within a hazardous zone at an oil or gas well and the other end of the respective conductor is disposed outside the hazardous zone, wherein said communication connection network includes two data signal conductors;

a plurality of transducers disposed in the hazardous zone; and

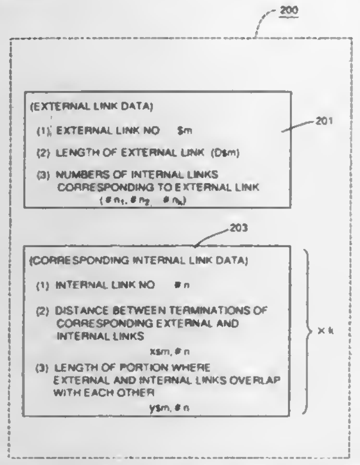
means for receiving signals from said transducers, processing received signals into data signals, and communicating said data signals over said fixed number of at least one data signal conductor so that only said fixed number of at least one data signal conductor and said fixed number of at least one intrinsic safety barrier are needed for communicating data signals out of the hazardous zone regardless of the number of said plurality of transducers used at an actual oil or gas well, wherein said means for receiving, processing and communicating includes a plurality of RS-485 interface means connected in electrical parallel to said two data signal conductors for effecting communications over said two data signal conductors in RS-485 format.

5,712,632
NAVIGATION APPARATUS FOR LAND VEHICLE INPUTTING ROAD TRAFFIC INFORMATION

Shigeki Nishimura; Hiroyuki Nakano, and Masahiro Nakajima, all of Osaka, Japan, assignors to Sumitomo Electric Industries,Ltd., Osaka, Japan

Filed Sep. 14, 1995, Ser. No. 528,432
Claims priority, application Japan, Sep. 16, 1994, 6-221604
Int. Cl.^{6} G08G *1/123*

U.S. Cl. 340—995 **19 Claims**


200
(EXTERNAL LINK DATA)
(1) EXTERNAL LINK NO $m
(2) LENGTH OF EXTERNAL LINK (D$m)
(3) NUMBERS OF INTERNAL LINKS CORRESPONDING TO EXTERNAL LINK
(#n1, #n2, #nk)
201
203
(CORRESPONDING INTERNAL LINK DATA)
(1) INTERNAL LINK NO #n
(2) DISTANCE BETWEEN TERMINATIONS OF CORRESPONDING EXTERNAL AND INTERNAL LINKS
x$m, #n
(3) LENGTH OF PORTION WHERE EXTERNAL AND INTERNAL LINKS OVERLAP WITH EACH OTHER
y$m, #n
× k

1. A navigation apparatus for a land vehicle, comprising:

first storage means storing road data being formed by a network of a plurality of road links;

second storage means storing traveling cost data corresponding to respective ones of said road links;

receiving means receiving traffic information corresponding to a specific link being set for communication of traffic information;

identification means identifying one said road link corresponding to said received traffic information from said stored plurality of road links;

update means updating said stored traveling cost data corresponding to said identified road link on the basis of said received traffic information;

search means searching for a route between an origin and a destination in accordance with said stored road data and said traveling cost data including said updated traveling cost data; and

table storage means storing a conversion table indicating a correspondence between said specific link and said road links; wherein

said identification means identifies said one road link in accordance with said conversion table,

said update means updates said traveling cost data in accordance with said conversion table,

said conversion table includes data relating to said specific link, and data relating to one said road link corresponding to said specific link,

said data relating to said specific link includes information concerning a number of said specific link, information concerning a length of said specific link, and information concerning a number of said one road link corresponding to said specific link,

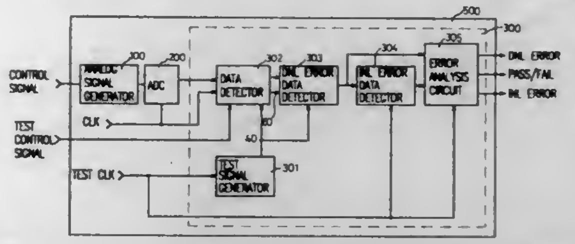
said data relating to said one road link corresponding to said specific link includes information concerning a number of said one road link corresponding to said specific link, information concerning a distance between an ending point of said specific link and an ending point of said one road link corresponding to said specific link, and information concerning a length of a portion where said specific link overlaps with said one road link corresponding to said specific link.

5,712,633
CONVERSION CHARACTERISTIC TEST CIRCUIT FOR ANALOG/DIGITAL CONVERTER AND METHOD THEREOF

Jeong Hwan Bae, Kyungki-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheong-ju, Rep. of Korea

Filed Jan. 3, 1996, Ser. No. 582,265
Claims priority, application Rep. of Korea, Oct. 13, 1995, 35384
Int. Cl.^{6} H03M *1/12*

U.S. Cl. 341—120 **21 Claims**



19. A conversion characteristic test circuit for an analog/digital (A/D) converter, comprising:

a first error data detecting unit that receives data output from an A/D converter based on a sequential test signal and for subtracting the data from predetermined ideal A/D converter data to compute first error data;

a second error data detecting unit that accumulatively adds said first error data based on a test clock signal to compute second error data; and

an operation judging unit that receives said first error data and said second error data to determine a first error and a second error, respectively, wherein the operation judging unit judges an operation state of said A/D converter based on said first error and said second error.

5,712,634
DIGITAL DRIVING OF MATRIX DISPLAY DRIVER BY CONVERSION AND CAPACITIVE CHARGING

Peter Johannes Michiel Janssen, Scarborough, N.Y., assignor to Philips Electronics North American Corp., N.Y., N.Y.

Filed Nov. 22, 1995, Ser. No. 561,961
Int. Cl.^{6} H03M *1/66*

U.S. Cl. 341—144 **13 Claims**

1. A digital display driver for producing analog signal levels for application to a data line of a matrix display apparatus, the signal levels being produced in response to successively presented, respective digital data codes representative of said signal levels, said driver comprising:

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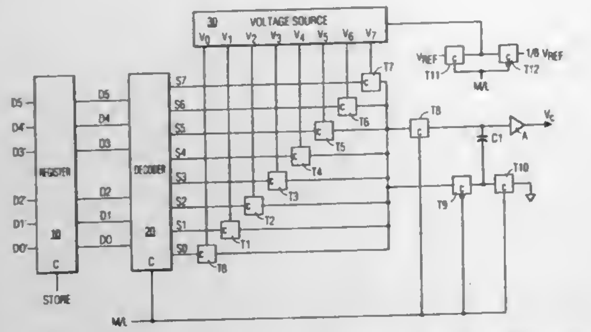
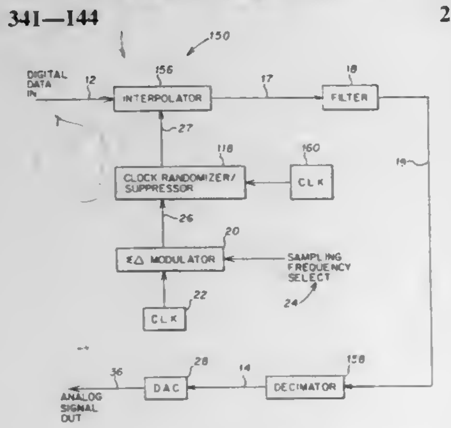


- a. storage means for successively storing the digital data codes, each of said codes having at least one more-significant bit and at least one lesser-significant bit;
- b. conversion means coupled to the storage means for, during a first time interval, producing a first analog signal level having a magnitude represented by the at least one more-significant bit of a stored code and for, during a second time interval, producing a second analog signal level having a magnitude represented by the at least one lesser-significant bit of said stored code;
- c. capacitive means having a first electrode coupled to an output of the driver; and
- d. coupling means for coupling the conversion means to the capacitive means and for:
  - (1) during the first time interval, effecting charging of the capacitive means to a voltage determined by the first analog signal level; and
  - (2) during the second time interval, effecting shifting of the first electrode voltage by a magnitude determined by the second analog signal level.

5,712,635
DIGITAL TO ANALOG CONVERSION USING NONUNIFORM SAMPLE RATES
James Wilson, 295 S. Walpole St., Sharon, Mass. 02067; Ronald A. Cellini, 24 Wildwood Ave., Newton, Mass. 02160, and James M. Sobol, 17 Ware Dr., Norfolk, Mass. 02056
PCT No. PCT/US94/10269, § 371 Date Aug. 29, 1996, § 102(e) Date Aug. 29, 1996, PCT Pub. No. WO95/08221, PCT Pub. Date Mar. 23, 1995
Continuation-in-part of Ser. No. 120,957, Sep. 13, 1993. This PCT application Sep. 13, 1994, Ser. No. 612,944
Int. Cl.^{6} H03M *1/66*
U.S. Cl. 341—144 **22 Claims**



1. A digital to analog converter system, comprising:

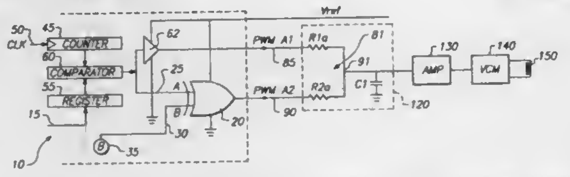
interpolation means for receiving a digital signal having a first data rate and for supplying a digital signal having an increased data rate;

decimation means, coupled to the interpolation means, for decimating the digital signal having the increased data rate to provide a digital signal having a second data rate;

modulator means, coupled to and controlling the interpolation means, for providing a modulated output signal representative of the first data rate and for controlling the interpolation means to provide the digital signal having the increased data rate;

digital to analog conversion means, coupled to and receiving the digital signal having the second data rate from the decimation means, for converting the digital signal having the second data rate to an analog signal.

5,712,636
PULSE-WIDTH-MODULATED DIGITAL-TO-ANALOG CONVERTER WITH HIGH GAIN AND LOW GAIN MODES
Bruce D. Buch, Westboro, Mass., assignor to Quantum Corp., Milpitas, Calif.
Filed Jul. 9, 1996, Ser. No. 677,147
Int. Cl.^{6} H03M *1/82*
U.S. Cl. 341—152 **15 Claims**



1. A pulse-width-modulated digital-to-analog converter responsive to a digital control value having a switching means between a high gain mode and a low gain mode in response to a gain mode control signal, comprising:

a roll-over counter responsive to a clocking signal for repetitively counting relative to a predetermined value and resetting;

a comparator connected to compare the digital control value and the counter value and for generating a two-level digital output signal responsive thereto;

a voltage output driver receiving the two-level digital output signal,

the switching means controlled by the gain mode control signal and receiving the two-level digital output signal for switching between the high gain mode and the low gain mode, and

first and second resistive elements connected to a common output node, the first resistive element connected to an output of the voltage driver, the second resistive element connected to an output of the switching means, the output node providing an output for the pulse width modulated digital-to-analog converter.

5,712,637
SLOPE, DRIFT AND OFFSET COMPENSATION IN ZERO-IF RECEIVERS
Björn Lindquist, Bjärred, and Paul W. Dent, Stehag, both of Sweden, assignors to Ericsson Inc., Research Triangle Park, N.C.
Division of Ser. No. 401,127, Mar. 9, 1995, Pat. No. 5,568,520. This application Jul. 25, 1996, Ser. No. 686,399
Int. Cl.^{6} H03M *1/12*
U.S. Cl. 341—155 **4 Claims**

1. An analog-to-digital conversion technique, comprising the steps of:

comparing an input signal voltage with a feedback voltage and generating a high/low indication at a regular repetition rate determined by a clock pulse train;

integrating a controlled current to generate said feedback voltage;

producing said controlled current controlled in magnitude by a stepsize controller and in direction or sign in accordance with said high/low indication;

controlling said current magnitude in dependence on historical values of said high/low indications and producing a digital stepsize value indicative of the current magnitude generated for a positive-direction of current flow and a negative direction of current flow respectively; and

adding or subtracting said digital stepsize value to produce a series of accumulated digital values representative of said input signal voltage waveform.

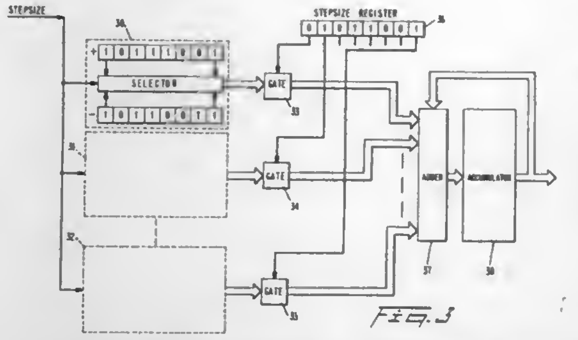
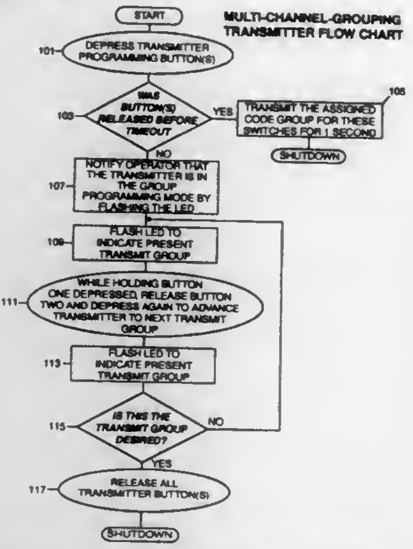


FIG. 3

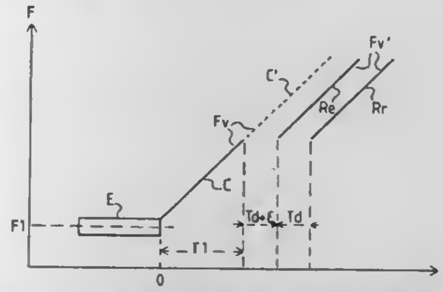
5,712,638
MULTIPLE TRANSMISSION CHANNEL GROUP TRANSMITTER
Darrell Issa, Vista, Calif., assignor to Directed Electronics, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 945,667, Sep. 16, 1992, Pat. No. 5,534,845, Ser. No. 112,940, Aug. 30, 1993, Pat. No. 5,532,670, Ser. No. 433,819, May 4, 1995, Ser. No. 396,020, Feb. 28, 1995, Ser. No. 396,115, Feb. 28, 1995, and Ser. No. 425,597, Apr. 20, 1995. This application May 26, 1995, Ser. No. 451,855
Int. Cl.^{6} G08C *19/12*
U.S. Cl. 341—176 **29 Claims**


START
MULTI-CHANNEL-GROUPING TRANSMITTER FLOW CHART
101 DEPRESS TRANSMITTER PROGRAMMING BUTTON(S)
103 WAS BUTTON(S) RELEASED BEFORE TIMEOUT
YES
105 TRANSMIT THE ASSIGNED CODE GROUP FOR THESE SWITCHES FOR 1 SECOND
SHUTDOWN
NO
107 NOTIFY OPERATOR THAT THE TRANSMITTER IS IN THE GROUP PROGRAMMING MODE BY FLASHING THE LED
109 FLASH LED TO INDICATE PRESENT TRANSMIT GROUP
111 WHILE HOLDING BUTTON ONE DEPRESSED, RELEASE BUTTON TWO AND DEPRESS AGAIN TO ADVANCE TRANSMITTER TO NEXT TRANSMIT GROUP
113 FLASH LED TO INDICATE PRESENT TRANSMIT GROUP
115 IS THIS THE TRANSMIT GROUP DESIRED?
NO
YES
117 RELEASE ALL TRANSMITTER BUTTON(S)
SHUTDOWN

1. A miniature, remote control transmitter for control of an antitheft auto security device, comprising:

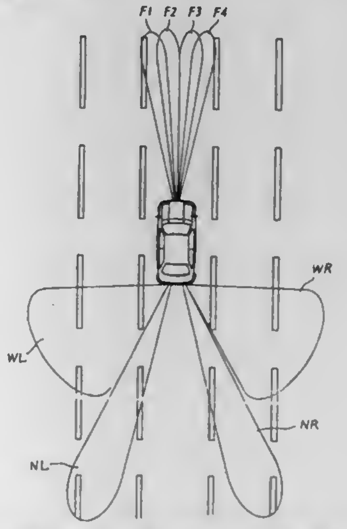
- a) a miniature remote control transmitter having at least one switch and at least one transmission channel for transmission of commands to an antitheft auto security device;
- b) a plurality of transmission channel group, programmed in said transmitter, each said channel group having at least one said transmission channel therein;
- c) said switch having at least two functions: p2 (i) first said function comprising transmission of said transmission channel to said antitheft device, only upon transition of said switch from a standby mode to an operational mode and back to said standby mode, and p2 (ii) second said function comprising selection of one of said plurality of transmission channel groups programmed in said transmitter, only upon transition of said switch from said standby mode to said operational mode for a predetermined amount of time.

5,712,639
METHOD FOR THE LOCALIZING OF A TRANSCEIVER OF DATA PACKETS
Serge Hethuin, Courbevoie, France, assignor to Thomson-CSF, Paris, France
Filed Aug. 27, 1996, Ser. No. 703,540
Claims priority, application France, Sep. 19, 1995, 95 10950
Int. Cl.^{6} G01S *13/74*
U.S. Cl. 342—47 **5 Claims**



1. A method for the localizing of a transceiver, this method being designed to measure the distances between the transceiver stations of a network in which the data elements are transmitted in packets, each packet comprising a header at a first carrier frequency followed by an information field at a second carrier frequency that varies according to a linear ramp, this method consisting successively, at a first of the stations, in sending an interrogation packet comprising the designation of a second of the stations, in the second of the stations, when the interrogation packet is received, in sending a response signal at a third carrier frequency that varies according to the linear ramp, in continuity with the second carrier frequency of the interrogation packet received and, in the first of the stations, when the response signal is received, in measuring the beat frequency between the second carrier frequency and third carrier frequency to deduce therefrom a value of the distance between the first of the stations and second of the stations.

5,712,640
RADAR MODULE FOR RADAR SYSTEM ON MOTOR VEHICLE
Hiroyuki Andou, and Shigeki Katou, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 27, 1995, Ser. No. 563,058
Claims priority, application Japan, Nov. 28, 1994, 6-317546
Int. Cl.^{6} G01S *13/93*
U.S. Cl. 342—70 **10 Claims**



1. A radar module for a radar alarm system on a motor vehicle for detecting a motor vehicle in an adjacent lane behind the motor vehicle, comprising:

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a near-region monitoring antenna for radiating a relatively wide electromagnetic-wave beam in a near region positioned behind the motor vehicle and extending over an adjacent lane; and

a far-region monitoring antenna for radiating a relatively narrow electromagnetic-wave beam in a far region positioned behind the motor vehicle and extending over the adjacent lane.

5,712,641

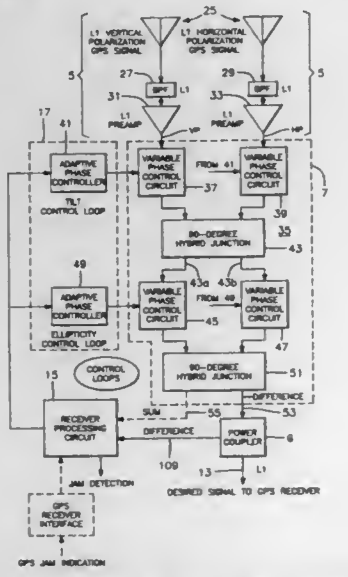
INTERFERENCE CANCELLATION SYSTEM FOR GLOBAL POSITIONING SATELLITE RECEIVERS

Mario M. Casabona, Cedar Grove; Murray W. Rosen, Parsippany, both of N.J., and George A. Silverman, Bensalem, Pa., assignors to Electro-Radiation Incorporated, Fairfield, N.J.

Filed Feb. 28, 1996, Ser. No. 608,493

Int. Cl.^{6} H01Q *21/06;21/24;* **H04B** *7/10*

U.S. Cl. 342—362 **15 Claims**



1. A system for suppressing interference and jamming signals for a global positioning satellite system (GPS) receiver for receiving GPS transmissions in at least one of two L-band frequencies L1 and L2, the system comprising,

antenna means for receiving at least one of the GPS L1 and L2 signals and any inband interference or jamming signals and dividing the received signals into two orthogonally polarized antenna output signal components for each of the L1 and L2 frequencies;

polarimeter circuitry connected to said antenna means for receiving the orthogonally polarized antenna output signal components and for shifting the phase of the two orthogonally polarized antenna output signal components to obtain a polarimeter output signal wherein said polarimeter circuitry comprises,

a first variable phase shifting stage for receiving the two orthogonally polarized antenna output signal components and for shifting the phase of said orthogonally polarized antenna output signal components in accordance with first phase shift control signals from an adaptive phase control means,

a first hybrid junction for receiving the phase-shifted components from said first variable phase shifting stage and for combining the phase-shifted components to produce a pair of first hybrid junction output signals,

a second variable phase shifting stage for receiving said pair of first hybrid junction output signals and for shifting the phase of said pair of first hybrid junction output signals in accordance with second phase shift control signals from said adaptive phase control means, and

a second hybrid junction for receiving the phase-shifted components from said second variable phase shifting stage and for combining the phase-shifted components to obtain said polarimeter output signal;

adaptive phase control means connected with said first and second variable phase shifting stages for providing first and second phase shift control signals for repetitively adjusting the phase shifting in accordance with the polarimeter output signal until the polarimeter output signal is at a minimum representing at least one of the received L1 and L2 signals with any interference or jamming signals suppressed.

5,712,642

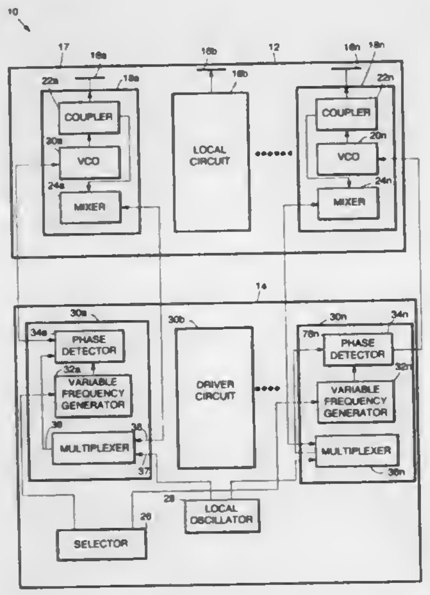
SPATIAL POWER COMBINER USING SUBHARMONIC BEAM POSITION CONTROL

Garry N. Hulderman, Riverside, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Continuation of Ser. No. 313,479, Sep. 27, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 595,423

Int. Cl.^{6} H01Q *3/22*

U.S. Cl. 342—372 **26 Claims**



1. An array antenna for forming and steering a radiation beam pattern comprising:

a.) an antenna structure having a plurality of individual antenna elements therein for generating the radiation beam pattern, each antenna element being coupled to an individual local circuit including:

a voltage controlled oscillator (VCO) generating a carrier output signal for driving said antenna element;

a coupler having an input connected to said VCO and a first output connected to said antenna element, for coupling said VCO to said antenna element;

a mixer connected to a second output of said coupler for generating an intermediate frequency (IF)signal; and

b.) remote circuit means, physically located away from said antenna structure, including driver circuits respectively coupled to each said local circuit, for applying to said VCO an error signal, generated as a function of said IF signal from said mixer, causing said VCO to generate said carrier output signal, and said remote circuit means selectively controlling the frequency of the carrier output signals for each antenna element to thereby steer the radiation beam pattern.

5,712,643

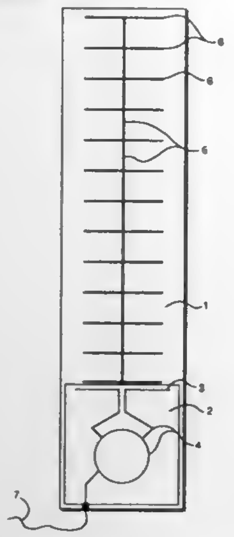
PLANAR MICROSTRIP YAGI ANTENNA ARRAY

James M. Skladany, Somersworth, N.H., assignor to CushCraft Corporation, Manchester, N.H.

Filed Dec. 5, 1995, Ser. No. 568,735

Int. Cl.^{6} H01Q *1/38;21/12*

U.S. Cl. 343—700 MS **12 Claims**



1. A multi-element directional antenna comprising:

a first dielectric substrate;

a metallic foil forming an array of a parasitic elements affixed to a surface of said first dielectric substrate;

a second dielectric substrate smaller in plan than said first dielectric substrate and having a ground plane reflector on one side thereof, and a driven element and phasing means comprising a hybrid junction on the other side thereof, affixed to said surface of said first dielectric substrate with said ground plane reflector side facing said surface of said first dielectric substrate, and,

said second dielectric substrate being disposed such that said driven element is substantially parallel to said parasitic elements.

5,712,644

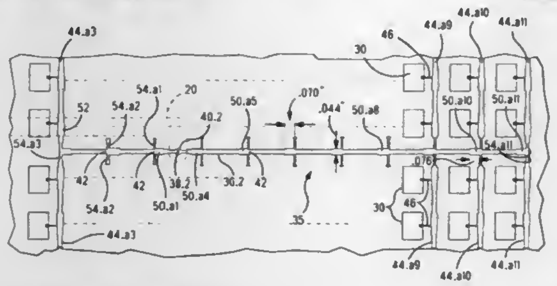
MICROSTRIP ANTENNA

Frank Stan Kolak, 176 Salem Rd., Billerica, Mass. 01821

Continuation of Ser. No. 267,586, Jun. 29, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 623,749

Int. Cl.^{6} H01Q *1/38*

U.S. Cl. 343—700 MS **4 Claims**



1. An antenna comprising:

a dielectric substrate on a metal plate, a microstrip structure on the substrate connected to an antenna feed point, the microstrip structure comprising; at least one corresponding main line, branch lines extending transverse to each corresponding main line, patch elements connected to respective branch lines, coupling strips extending between respective branch lines and a corresponding main line, an enlarged impedance transformer within each corresponding main line being connected to one of the coupling strips at a junction of said one of the coupling strips and a corresponding main line, said enlarged impedance transformer not being spaced upstream from said junction, and the coupling strips being of different sizes to distribute different amounts of rf power with respective branch lines.

5,712,645

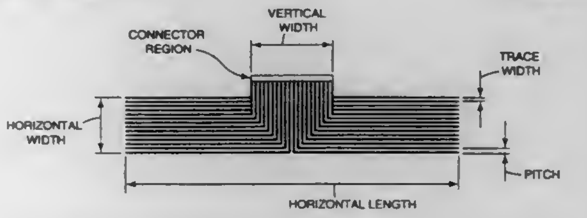
ANTENNA ADAPTED FOR PLACEMENT IN THE WINDOW OF A VEHICLE

Gregory M. Jellum, Stillwater; Bradley L. Givot, St. Paul, both of Minn.; Roger A. Brekken, Farmington Hills, Mich., and Susan N. Bohlke, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 6, 1995, Ser. No. 540,299

Int. Cl.^{6} H01Q *1/32*

U.S. Cl. 343—713 **17 Claims**



1. An antenna adapted for placement in the window of a vehicle, said antenna comprising a flexible substrate having a pair of opposing surfaces, at least one of which is provided with a series of electrically conductive metal traces in the form of a pattern configured to receive and transmit one or more electromagnetic signals,

said metal traces having a structure characterized by a pitch, trace width, and thickness dimensioned to provide said antenna with an area-averaged resistivity of no greater than about 1 ohm/square for a pre-determined area-averaged transmission value in the visible region.

5,712,646

Patent Not Issued For This Number

5,712,647

SPIRAL MICROSTRIP ANTENNA WITH RESISTANCE

David G. Shively, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 269,268, Jun. 28, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 633,713

Int. Cl.^{6} H01Q *1/36*

U.S. Cl. 343—895 **7 Claims**

1. A spiral microstrip antenna comprising:

a ground plane;

a dielectric slab attached to said ground plane; and

a single layer comprising a plurality of spiral constant width arms, attached to said dielectric slab, each arm comprising a plurality of electrically resistive and conductive elements having resistance connected to each other, the resistance of each

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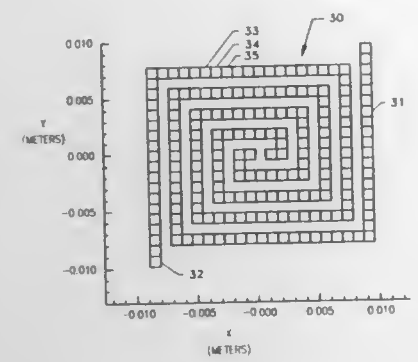
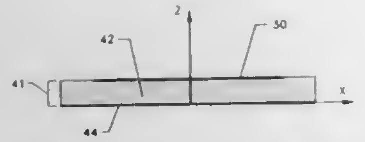




resistive element being matched to the resistance of the preceding elements along the arm, back toward the center of the spiral, to create a tapered gradually increasing resistance.

5,712,648

DIELECTRIC FILTER AND ANTENNA DUPLEXER

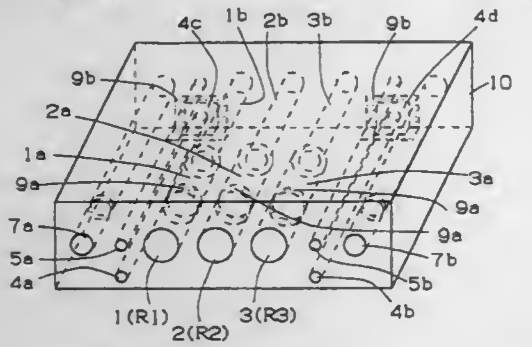
Tatsuya Tsujiguchi, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 30, 1996, Ser. No. 655,412

Claims priority, application Japan, May 31, 1995, 7-134058

Int. Cl.^{6} H01Q *15/02*

U.S. Cl. 343—909 **4 Claims**



1. A dielectric filter, comprising:

a dielectric block; an input terminal and an output terminal thereon; an external conductor formed on an outer surface of the dielectric block except for areas surrounding the input and output terminals;

a plurality of resonator holes of the same axial length;

input and output external coupling bores, said resonator holes and said input and output external coupling bores being formed substantially in parallel with each other between a pair of opposing end faces of said dielectric block;

said resonator holes having internal conductors on inner surfaces thereof except for dielectric bases in the vicinity of openings thereof, and said internal conductors being connected to said external conductor at said pair of end faces so that resonators having specific resonator lengths are constituted by the positions of open ends of said resonators formed by said dielectric bases; and

said input and output external coupling bores having internal conductors, said internal conductors being connected to said external conductor at one end face of said dielectric block and being connected to said input and output terminals at the other end face of said dielectric block.

5,712,649

HEAD-MOUNTED IMAGE DISPLAY

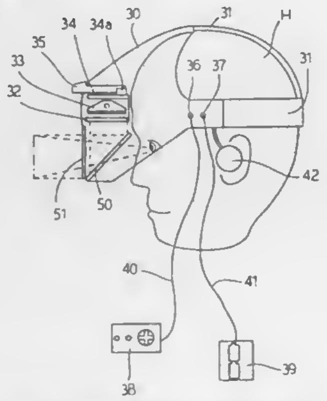
Kenji Tosaki, Tokyo, Japan, assignor to Sega Enterprises, Tokyo, Japan

Continuation of Ser. No. 333,859, Nov. 3, 1994, abandoned, which is a division of Ser. No. 968,855, Oct. 30, 1992, Pat. No. 5,392,158. This application Nov. 5, 1996, Ser. No. 743,917

Claims priority, application Japan, Nov. 1, 1991, 3-315490; Nov. 30, 1991, 3-341866; Dec. 25, 1991, 3-357091

Int. Cl.^{6} G04G *5/00*

U.S. Cl. 345—8 **6 Claims**



1. A head-mounted image display comprising:

a housing for covering both of the eyes of the user;

means for mounting the housing on the head of a user;

means provided at a predetermined position within the housing for emitting image light;

computer means mounted on the housing for controlling the image light emitting means;

a connector mounting on the housing for connection with a software cartridge inserted within the housing to enable the computer means to generate images;

a half mirror provided at a position before and extending across both of the eyes in the housing;

optical means for guiding the image appearing on the image light emitting means to both of the eyes of the user by causing the image to be reflected by and transmitted through the half mirror to occupy the field of view of the respective eyes and to appear at a predetermined distance in space offset from a front of the housing, including a reflector that blocks ambient light and reflects the image for transmission through the half mirror; and

a controller connected to the housing by a cord to enable the user to manually input control signals to control the image light emitting means.

5,712,650

LARGE INCANDESCENT LIVE IMAGE DISPLAY SYSTEM

James E. Barlow, Las Vegas, Nev., assignor to Mikohn Gaming Corporation, Las Vegas, Nev.

Filed Aug. 18, 1995, Ser. No. 516,882

Int. Cl.^{6} G09G *3/20*

U.S. Cl. 345—55 **15 Claims**

1. A high-speed control for delivering phase-delayed power to an incandescent bulb at one of a predetermined number of levels, said high speed control comprising:

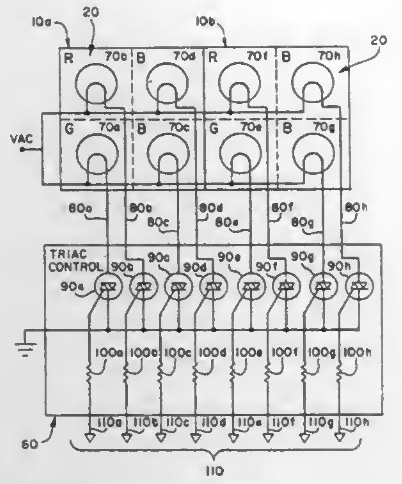
an AC power source for providing AC power,

an AC phase switch connected to said incandescent bulb and to said AC power source,

a counter connected to said AC phase switch,

a register connected to said counter,

means for inputting into said register a delayed phase power level, said delayed phase power level corresponding to said one predetermined level,



a phase signal in synchronism with the zero-crossings of said AC power for gating said delayed phase power level from said register into said counter each half cycle of said AC power, and

clock pulses in synchronism with said phase signal for incrementally changing the delayed phase power level during each said half cycle in said counter until a pre-selected value is reached wherein said clock pulses in said half cycle equal said predetermined number, said counter upon reaching said preselected value issuing a signal to activate said AC phase switch so as to provide said phase-delayed power at said one predetermined level to said incandescent bulb during each said half cycle.

5,712,651

APPARATUS FOR PERFORMING A FULL-COLOR EMULATION ON THE TFT DISPLAY DEVICE

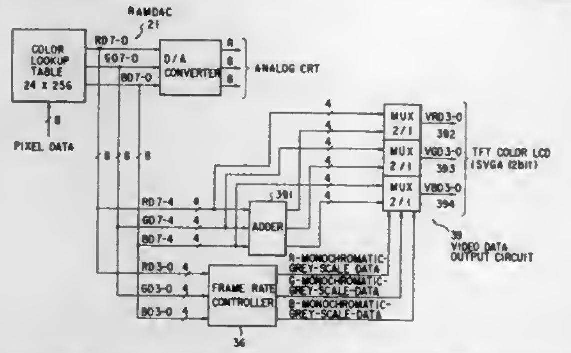
Yuichi Tomiyasu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jul. 10, 1995, Ser. No. 500,083

Claims priority, applicatioo Japan, Jul. 22, 1994, 6-170909

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—88 **14 Claims**


RAMDAC
21
COLOR LOOKUP TABLE 24 X 256
RD7-0
GD7-0
BD7-0
D/A CONVERTER
R
G
B
ANALOG CRT
8
PIXEL DATA
MUX 2/1
VRD3-0
392
VGD3-0
393
VBD3-0
394
TFT COLOR LCD (SVGA 12bit)
391
ADDER
RD7-4
GD7-4
BD7-4
RD3-0
GD3-0
BD3-0
FRAME RATE CONTROLLER
R-MONOCHROMATIC-GREY-SCALE DATA
G-MONOCHROMATIC-GREY-SCALE-DATA
B-MONOCHROMATIC-GREY-SCALE-DATA
36
39
VIDEO DATA OUTPUT CIRCUIT

1. A display control apparatus for performing a full-color emulation on a flat panel display, comprising:

frame rate control means (**36**) for outputting monochromatic-gray-scale data for turning on/off a dot to be displayed on said flat panel display for performing a monochromatic-gray-scale display in accordance with a gray scale value of input video data such that the number of ON flames of dots to be displayed in a predetermined frame period is changed depending on a gray scale value to be expressed;

video data conversion means (**21**) for converting display data stored in a video memory (**25**) into n-bit (n: natural number not less than 1) R, G, and B video data for performing a full-color display in units of pixels to output the R, G, and B video data;

adder means (**391**) for receiving upper m-bit data (m: natural number not less than 1) in the R, G, and B video data output from said video data conversion means and adding a predetermined value (+1) to the upper bit data to output next value data having a gray scale value as a next value of the upper bit data; and

video data selection means (**392** to **394**), operated and controlled on the basis of monochromatic-gray-scale data obtained by inputting lower bit data (n−m) in the R, G, and B video data to said frame rate control means as the input video data, for selecting one of the next value data and the upper bit data in accordance with a value of the monochromatic-gray-scale data to supply the selected data as video data to said flat panel display on which a full-color display is to be performed.

5,712,652

LIQUID CRYSTAL DISPLAY DEVICE

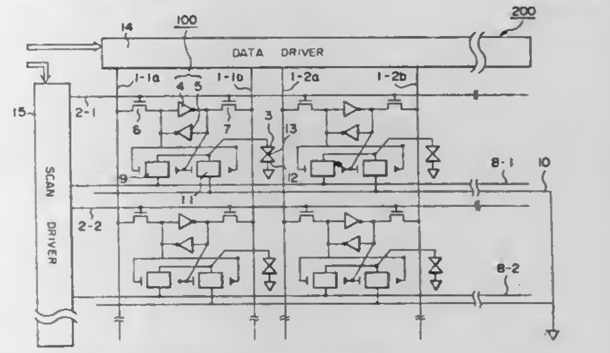
Hajime Sato, Yokohama; Shuichiro Ishizawa, Kamakura; Nozomu Harada, Yokohama; Kiyofumi Ochii, Koganei; Shigeyuki Hayakawa, Chigasaki, and Yoshiro Aoki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 16, 1996, Ser. No. 602,599

Claims priority, application Japan, Feb. 16, 1995, 7-027800; Feb. 16, 1995, 7-027801; Feb. 2, 1996, 8-040703

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—90 **18 Claims**



1. A liquid crystal display device, comprising:

a switch element array substrate having a plurality of data lines and a plurality of scanning lines both arranged being intersected to each other in a matrix form so as to form matrix intersection points of scanning lines and data lines; a plurality of pixel electrodes each arranged for each matrix intersection point; and a plurality of first switching elements each arranged for each matrix intersection point and each turned on or off by the scanning line, for applying write voltage supplied from the data line to the pixel electrode, respectively when turned on;

a counter substrate having a plurality of counter electrodes each arranged being opposed to each pixel electrode with a gap between the two;

a liquid crystal layer sandwiched between the switching element array substrate and the counter substrate;

a plurality of memory elements each interposed between the corresponding first switching element and the corresponding pixel electrode, for holding the write voltage supplied through the data line as data, when the first switching element is turned on;

a plurality of display control lines each arranged in correspondence to each scanning line; and

a plurality of second switching elements each arranged for each matrix intersection point, for controlling connection between the pixel electrode and the display control line on the basis of output of the memory element.

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5,712,653

IMAGE DISPLAY SCANNING CIRCUIT WITH OUTPUTS FROM SEQUENTIALLY SWITCHED PULSE SIGNALS

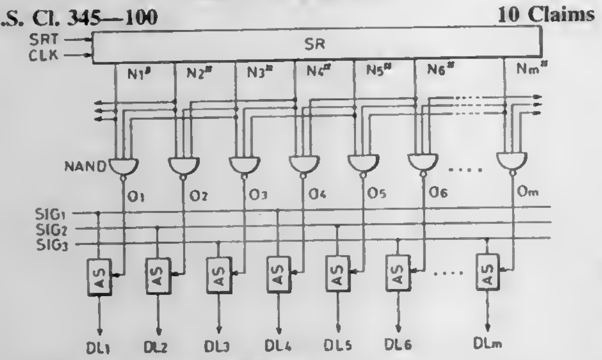
Kenichi Katoh, Tenri; Yasushi Kubota, Sakurai; Hiroshi Yoneda, Ikoma, and Tamotsu Sakai, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 363,217

Claims priority, application Japan, Dec. 27, 1993, 5-331624; Dec. 27, 1993, 5-331625; Dec. 16, 1994, 6-313815

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—100 **10 Claims**



1. A scanning circuit comprising:

m lines of pulse signal lines for use in inputting signals;

l lines of output signal lines for use in outputting signals; and

switching means for sequentially switching signals to be output to said output signal lines between ON and OFF according to signals input to said pulse signal lines,

wherein said switching means switches signals to be output to said output signal lines between ON and OFF by a logic operation based on n signals input to n input lines of said switching means, said n signals being taken from selected combinations of the m lines of said pulse signal lines, each combination of the n lines used in a logic operation produces an output signal on a different one of said output signals lines, n satisfying a condition of $mCn \geq l$ where n, m and l are positive integers, and wherein a plurality of output signal lines are not turned ON simultaneously.

5,712,654

DATA EDITING METHOD AND APPARATUS THEREFOR

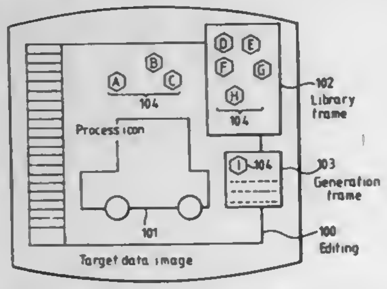
Yasumasa Kawashima; Shiro Nonaka; Shinji Tokumasu; Takayuki Ishikawa, all of Hitachi, and Motomi Odamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 195,052, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 724,114, Jul. 1, 1991, abandoned. This application Apr. 21, 1995, Ser. No. 426,276

Claims priority, application Japan, Jul. 6, 1990, 2-177418

Int. Cl.^{6} G09G *5/00*

U.S. Cl. 345—115 **34 Claims**



1. A method of editing data, comprising the steps of:

defining a plurality of automatic processes for automatically investigating a plurality of relationships between said data and respective corresponding visual indicators thereof;

displaying at least one of said visual indicators on a display;

displaying at least some of said data as an image on said display;

selecting on said display, by a user-controlled selection instruction, at least one of said visual indicators representing one of said plurality of automatic processes so as to activate at least one of said automatic processes;

editing on said display said data by a user controlled editing instruction;

automatically investigating the relationships between said data corresponding to said at least one selected automatic process in parallel with said data editing step; and

generating on said selected visual indicator of the status of said automatic investigation by said at least one selected automatic process, said visual indicator being located relative to the image on said display at a point which links the part of said display which said selected automatic process investigates and the image of said part of said data.

5,712,655

MOVING MESSAGE DISPLAY METHOD AND APPARATUS

Paul Noble, New York, N.Y., and Richard Geyer, Keyport, N.J., assignors to Imtech International, Inc., Denville, N.J.

Continuation of Ser. No. 18,337, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 436,421, Nov. 14, 1989, abandoned. This application Oct. 25, 1993, Ser. No. 142,581

Int. Cl.^{6} G09G *5/34*

U.S. Cl. 345—123 **13 Claims**

1. A system for providing a display of linearly moving images comprising:

means for providing a video signal representing a two-dimensional display of said images in which the images scroll line-wise along one dimension and are line-wrapped along the other dimension;

a plurality of display devices in a substantially linear arrangement;

means for processing said video signal to produce a modified video signal corresponding to a video image which has been expanded so that one line wise scrolling line will substantially fill a display device along said other-dimension; and

means for providing said modified video signal to each of the linearly arranged display devices with each display device being provided the modified video signal with a predetermined shift along said one dimension relative to an immediately adjacent display device.

5,712,656

GRAPHIC DRAWING APPARATUS

Kazunori Ikeda, Yawata, and Michiaki Kuno, Soraku-gun, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1995, Ser. No. 500,327

Claims priority, application Japan, Aug. 8, 1994, 6-186147

Int. Cl.^{6} G09G *5/36*

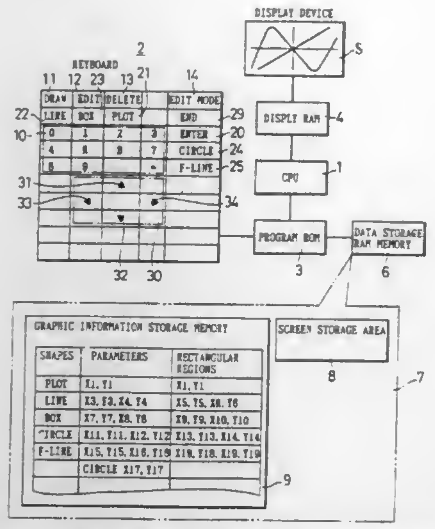
U.S. Cl. 345—133 **6 Claims**

1. A graphic drawing apparatus which allows drawing of a graphic on a graphic drawing plane and allows displaying of a part of the drawing plane on a screen, the apparatus comprising:

a screen storage memory for storing a region to be displayed on the screen and contents to be displayed;

a graphic information memory for storing information related to a graphic to be drawn on the screen, the stored information for the graphic to be drawn including a graphic shape type and two coordinates of a graphic frame rectangle, the graphic frame rectangle having the graphic totally circumscribed therein, the two coordinates being coordinates of both end-points of a diagonal of the graphic frame rectangle; and

a graphic selection processor which performs a comparison of the two coordinates of the graphic frame rectangle and the region to be displayed on the screen, and which, in accordance with the comparision, includes the graphic to be drawn on the screen by adding the graphic to be drawn to the contents to be displayed.



5,712,657

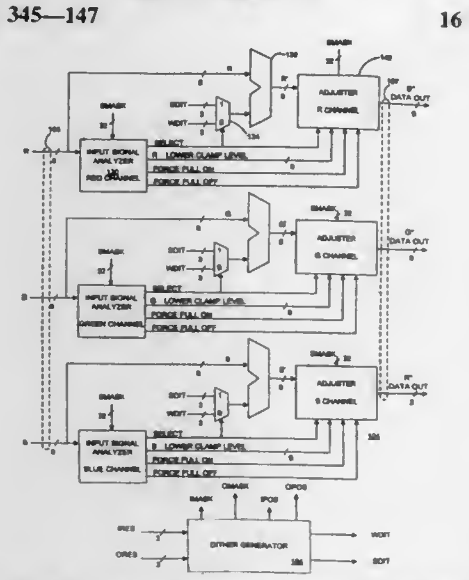
METHOD AND APPARATUS FOR ADAPTIVE DITHERING

Alexander Julian Eglit, San Carlos, and Robin Sungsop Han, Saratoga, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Mar. 28, 1995, Ser. No. 412,158

Int. Cl.^{6} G09G *5/10*

U.S. Cl. 345—147 **16 Claims**



1. A dithering circuit for providing to a display device a dithered output signal based on an input video signal, said display device comprising a plurality of pixels, each pixel capable of being displayed in one of a set of available shades, the input video signal representing a desired shade, the dithering circuit comprising:

an input signal analyzer to receive the input video signal and to produce a select signal as a function of the desired shade and the available primary shades;

a dither generator to generate a plurality of dithering signals;

a combiner circuit to select one of the dithering signals based on the select signal and to combine the input video signal with the selected dithering signal to generate a dithered input video signal; and

an adjustor to receive the dithered input video signal and to generate the dithered output signal by adjusting the dithered input video signal to one of the available primary shades.

5,712,658

INFORMATION PRESENTATION APPARATUS AND INFORMATION DISPLAY APPARATUS

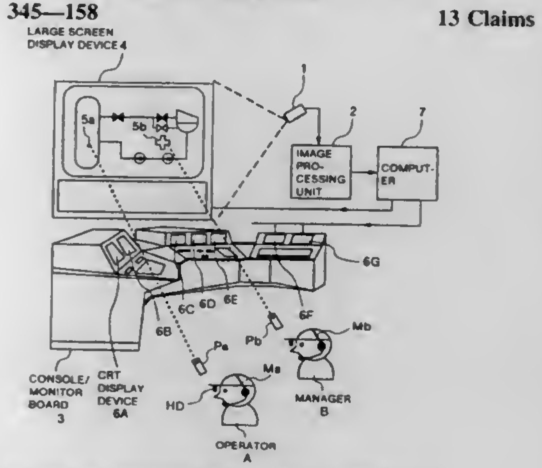
Setsuo Arita, Hitachiota; Yukiharu Ohga, Katsuta; Hiroyuki Yuchi; Hiroshi Seki, both of Hitachi; Yukio Nagaoka, Ibaraki-ken; Koichi Kawaguchi, and Akira Kaji, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 301,141

Claims priority, application Japan, Dec. 28, 1993, 5-334907; Dec. 28, 1993, 5-349391; Mar. 18, 1994, 6-048234

Int. Cl.^{6} G09G *5/08*

U.S. Cl. 345—158 **13 Claims**



1. An information presentation apparatus comprising:

a display device having a display screen;

means for picking up an image of a light signal which arrives onto said display screen of said display device;

means for detecting a shape of said image of said light signal formed on the display screen of said display device based on an image signal output from said means for picking up, said light signal being a pointing signal;

means for identifying a pointer which output the light signal based on the shape detected by said means for detecting;

object specifying means for specifying an object to be displayed pointed to by the light signal and being displayed on said display screen; and

output means for outputting the identification information for the pointer and the information derived based on the specified object to be displayed.

5,712,659

APPARATUS AND METHOD FOR ADJUSTING CONTRAST OF R,G,B SIGNALS

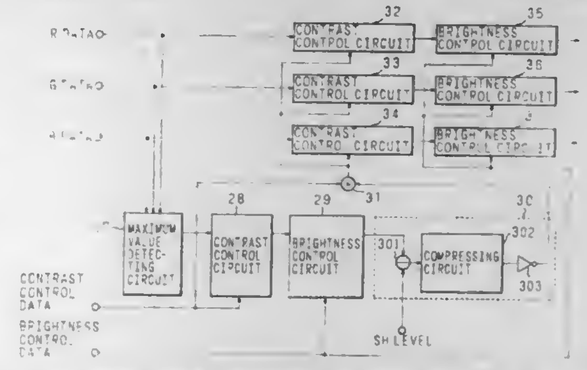
Toshiya Adachi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 383,009

Claims priority, application Japan, Jun. 9, 1994, 6-127850

Int. Cl.^{6} H04N *5/202*

U.S. Cl. 345—150 **17 Claims**



1. An image display apparatus for displaying R, G and B primary color signals on a display screen, comprising:

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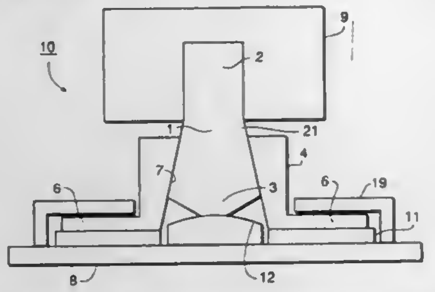
- means for detecting a primary color signal having a maximum level among digital video signal data of the three primary color signals;
- means for adjusting an amplitude level of the maximum primary color signal in accordance with a first control data;
- means for adjusting a DC level of the amplitude-adjusted, maximum primary color signal in accordance with a second control data;
- means for calculating a level difference between a predetermined threshold level and the level of the video signal data whose amplitude level and DC level have been adjusted;
- means for compressing the calculated level differential data at a predetermined ratio to generate ones complement of the compressed level differential data;
- means for multiplying the ones complement of the compressed level differential data by the first control data to generate a third control data; and
- means for adjusting amplitude levels of the video signal data for each of the three primary color signals at a ratio in accordance with the generated third control data.

5,712,660
CURSOR CONTROL STICK

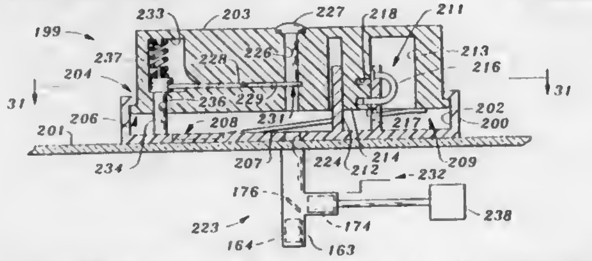
Michael M. Martin, Seal Beach, Calif., assignor to Canon Business Machines, Inc., Costa Mesa, Calif.
Filed Oct. 19, 1995, Ser. No. 545,160
Int. Cl.^{6} G09G *5/08*
U.S. Cl. 345—161 **11 Claims**



1. A cursor control stick adapted to be manipulated by a user to move a cursor on a computer screen by applying lateral force to the cursor control stick in a direction of desired cursor movement, and which enables the user to select items on the computer screen at a position of the cursor by depressing a plunger on the cursor control stick, said cursor control stick comprising:
- a rigid tube having an outwardly-tapering conical throughbore and horizontal protrusions at a base of said rigid tube;
- a plunger having an outwardly-tapering conical body shaped in correspondence with the throughbore of said rigid tube, said plunger being slidably fit inside said rigid tube and including a neck which extends beyond said rigid tube and which is adapted to be manipulated by the user;
- electrically-conductive biasing means disposed beneath and in contact with said plunger;
- pressure-sensitive resistive material disposed beneath and in contact with the horizontal protrusions at the base of said rigid tube; and
- a base containing electrical circuitry which is disposed beneath both said electrically-conductive biasing means and said pressure-sensitive resistive material;
- wherein said plunger is manipulable by the user between a depressed position and an undepressed position such that in the undepressed position the conical body of said plunger engages the conical throughbore of said rigid tube, and in the depressed position the conical body of said plunger disengages the conical throughbore of said rigid tube as said plunger moves downwardly inside said rigid tube;
- wherein in response to a lateral force applied to said plunger in the undepressed position, the horizontal protrusions at the base of said rigid tube deform said pressure-sensitive resistive material to complete an electric circuit on said base which signals movement of the cursor on the computer screen; and
- wherein in the depressed position said electrically-conductive biasing means is deformed so that said electrically-conductive biasing means contacts said base containing electrical circuitry and completes an electric circuit which signals selection of an item on the computer screen.

5,712,661
OPERATOR/CIRCUIT INTERFACE WITH INTEGRATED DISPLAY SCREEN

Denny Jaeger, Oakland, Calif., assignor to Intertactile Technologies Corporation, Oakland, Calif.
Division of Ser. No. 420,438, Apr. 10, 1995, Pat. No. 5,572,239, which is a continuation of Ser. No. 225,782, Apr. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 147,545, Nov. 5, 1993, abandoned. This application Aug. 26, 1996, Ser. No. 703,417
Int. Cl.^{6} G09G *5/00*
U.S. Cl. 345—170 **4 Claims**

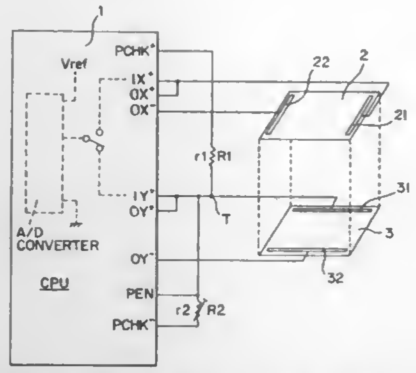


1. Operator and electrical circuit interfacing apparatus having a push button switch with a switch cap which is depressed to operate the switch and having a flat panel display screen and control means for generating an image at an image display area of the screen which image conveys information pertaining to the switch, wherein the improvement comprises:
- a switch housing secured to said screen at least partially within said image area thereof, said switch cap being engaged with said housing and being supported thereby,
- a resilient element in said housing which resists depression of said switch cap
- a radiant energy generating device disposed behind said screen in position to direct radiant energy along a path which extends through said screen and into housing and said switch cap,
- a translatable member disposed in said switch cap and having a radiant energy reflective surface, said translatable member being movable between a first position at which said reflective surface is withdrawn from said radiant energy path and a second position at which said reflective surface is situated in said radiant energy path,
- means for shifting said translatable member from said second position to said first position in response to depression of said switch cap and for returning said translatable member to said second position in response to release of said switch cap, and
- a radiant energy detector disposed behind said screen in position to detect radiant energy which is reflected by said reflective surface.

5,712,662
PRESSURE SENSITIVE RESISTOR CELL AND METHOD FOR DETECTING THRESHOLD VALUE OF STYLUS USED THEREWITH

Minekazu Miyazaki, and Noriyuki Nakanishi, both of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan
Filed Feb. 6, 1996, Ser. No. 595,913
Claims priority, application Japan, Feb. 28, 1995, 7-063527
Int. Cl.^{6} G09G *5/00*
U.S. Cl. 345—173 **6 Claims**

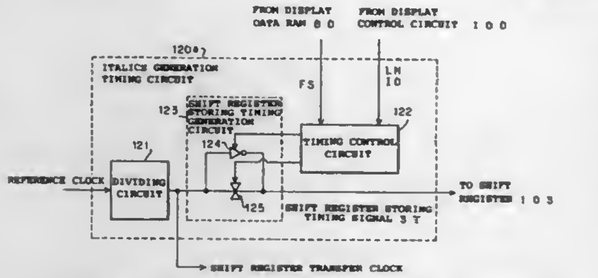
1. A pressure sensitive resistor cell, comprising:



- a pair of opposed X- and Y-coordinate resistor plates with an insulating gap and a contact resistance defined therebetween, each of said resistor plates having two electrodes;
- an A/D converter having an input terminal connected to an electrode of one of said resistor plates; and
- a CPU that has a waiting state mode, which effects control so as to apply a detecting voltage to one of said X- and Y-coordinate resistor plates and so as to ground the other, and which has a determination mode in which the CPU determines that said one resistor plate is being pressed by a stylus when the potential at said input terminal of said A/D converter exceeds a stylus pressure detecting threshold value due to a voltage variation caused by stylus pressure applied to said one resistor plate;
- wherein said stylus pressure detecting threshold value is set at a potential obtained at said input terminal of said A/D converter in response to an application of stylus pressure to said one resistor plate after said contact resistance between said resistor plates drops to such an extent that its variation is negligibly small.

5,712,663
APPARATUS FOR GENERATING A SPECIAL FONT CHARACTER BY USING NORMAL FONT CHARACTER DATA

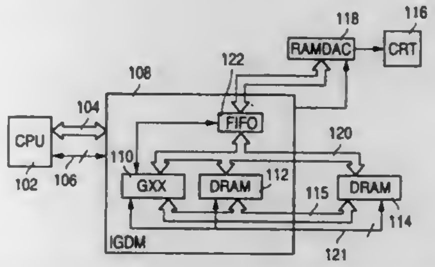
Seiji Matsumoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 15, 1995, Ser. No. 440,609
Claims priority, application Japan, Dec. 26, 1994, 6-323094
Int. Cl.^{6} G09G *5/24*
U.S. Cl. 345—195 **6 Claims**


FROM DISPLAY DATA RAM 8 0
FROM DISPLAY CONTROL CIRCUIT 1 0 0
120a
ITALICS GENERATION TIMING CIRCUIT
FS
LN 10
123
SHIFT REGISTER STORING TIMING GENERATION CIRCUIT
122
121
124
TIMING CONTROL CIRCUIT
REFERENCE CLOCK
DIVIDING CIRCUIT
TO SHIFT REGISTER 1 0 3
125
SHIFT REGISTER STORING TIMING SIGNAL 3 T
SHIFT REGISTER TRANSFER CLOCK

1. An apparatus for generating a character font, comprising:
- means for storing font data of a character in a form of a plurality of horizontal lines each of which consists of a predetermined number of dots;
- a single shift register, including a data storing portion with an area of the same number of bits as the predetermined number, which stores data in parallel in response to a storing timing signal and which outputs the stored data in serial in synchronization with a transfer clock signal;
- means for generating a plurality of storing timing signals to be supplied to the single shift register such that each one of the plurality of storing timing signals is generated for a corresponding horizontal line of the font data stored in the font data storing means on a different timing from the other storing timing signals with respect to a time when a scan of a line is started with a precision corresponding to half a cycle of the transfer clock signal by using timing of leading edges and trailing edges of the transfer clock signal; and
- means for controlling a data transfer from the font data storing means to the single shift register such that dot data of each horizontal line of a font data stored in the font data storing means is transferred to the data storing portion of the single shift register for storing the dot data into the storing portion in parallel based on the corresponding storing timing signal generated by the storing timing signals generating means.

5,712,664
SHARED MEMORY GRAPHICS ACCELERATOR SYSTEM

Chitranjan N. Reddy, Milpitas, Calif., assignor to Alliance Semiconductor Corporation, San Jose, Calif.
Filed Oct. 14, 1993, Ser. No. 136,553
Int. Cl.^{6} G09G *5/00*
U.S. Cl. 345—200 **3 Claims**



1. An integrated graphics display memory element utilizable in a graphics accelerator system that provides graphics display data to a display element for display thereby, wherein the graphics accelerator system includes a central processing unit that generates graphics display data and graphics commands for processing graphics display data and an off-chip frame buffer memory element having a first refresh frequency requirement, the integrated graphics display memory element comprising:
- a graphics accelerator that can be connected to receive graphics display data and graphics commands from the central processing unit via a CPU data bus and a control signal bus, respectively;
- a data distribution bus connected to the graphics accelerator;
- an on-chip frame buffer memory element connected to the data distribution bus for receiving graphics display data from the graphics accelerator;
- an output data storage element connected to the data distribution bus for receiving graphics display data from the graphics accelerator and the on-chip frame buffer memory element as output display data,
- the off-chip frame buffer memory element being connectable to the data distribution bus for providing graphics display data to the output data storage element as output display data, and
- wherein the on-chip frame buffer memory element has a second refresh frequency requirement lower than the first refresh frequency of the off-chip frame buffer element.

5,712,665
DYNAMIC RANDOM ACCESS MEMORY FOR MPEG DECODING

Refael Retter, Haifa; Moshe Bublil, Netanya; Gad Shavit, Givat Ella, and Aharon Gill, Haifa, all of Israel, assignors to Zoran Microelectronics Ltd., Haifa, Israel
Continuation of Ser. No. 245,465, May 18, 1994, abandoned. This application Jun. 10, 1996, Ser. No. 661,135
Int. Cl.^{6} G09G *5/00*
U.S. Cl. 345—203 **3 Claims**

1. A dynamic random access memory (DRAM) organized as at least one bitstream buffer for storing a plurality of bytes and at

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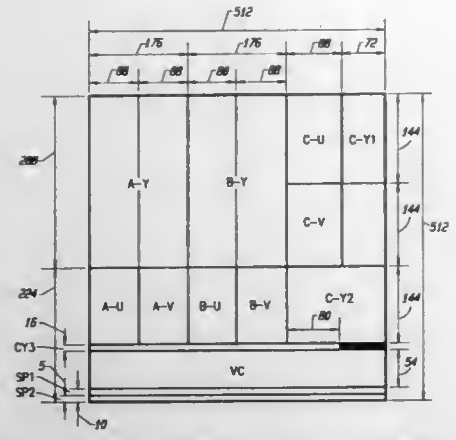


least one picture buffer for MPEG decoding, said DRAM comprising d memory devices, each device having r rows and c columns with b bits per cell and p picture samples, where
- b*d is divisible by 8, and
- r*c is larger than a sum of the size of the at least one bitstream buffer in bytes and one of 2 and 3 times 1.5*1*p divided by (b*d/8).

5,712,666
RECORDING APPARATUS

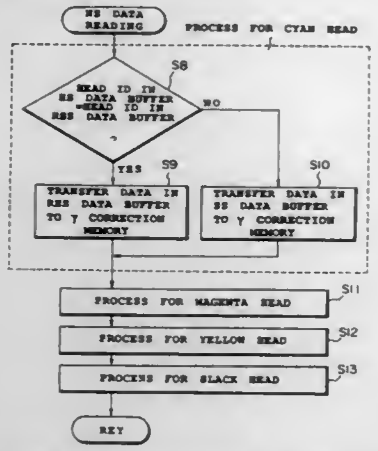
Miyuki Matsubara, Tokyo; Yoshiaki Takayanagi, Yokohama; Akio Suzuki, Yokohama; Kiyohisa Sugishima, Yokohama; Hiroshi Tajika, Yokohama; Noribumi Koitabashi, Yokohama, and Takayuki Matsuo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,623

Claims priority, application Japan, Aug. 9, 1991, 3-200272; Aug. 9, 1991, 3-200274; Aug. 9, 1991, 3-200276

Int. Cl.^{6} B41J *29/393*

U.S. Cl. 347—19 **10 Claims**


RS DATA READING
PROCESS FOR CYAN HEAD
S8
HEAD ID IN RS DATA BUFFER =HEAD ID IN RSS DATA BUFFER
?
NO
YES
S9
S10
TRANSFER DATA IN RSS DATA BUFFER TO γ CORRECTION MEMORY
TRANSFER DATA IN RS DATA BUFFER TO γ CORRECTION MEMORY
PROCESS FOR MAGENTA HEAD
S11
PROCESS FOR YELLOW HEAD
S12
PROCESS FOR BLACK HEAD
S13
RET

1. A recording apparatus recording by using a recording head having a plurality of recording elements, said recording head having a storing means for storing an identification information for said recording head and a first shading correction data which is specific to said recording head, said first density shading correction data being referred to in recording, said apparatus comprising:
- a first memory means for reading said identification information and said shading correction data and storing both in correspondence;
- a shading correction data making means for making a second shading correction data by using said first shading correction data read from said first memory means;
- a second memory means for storing said second shading correction data which has been made by said shading correction data making means and said identification information corresponding to said first shading correction data, said second shading correction data and said identification information being stored in a coupled form;
- a storing means for reading said identification information and said first shading correction data from an installed recording head at a designated timing and storing both in said first memory means; and
- a recording head driving means for driving said recording head by comparing said identification information read out from said second memory means with a recording head identification information stored in said first memory means, said recording head driving means including means for driving said recording head by using said second shading correction data read out from said second memory means when said both identification informations are equal to each other, and using said first shading correction data read out from said first memory means when both said identification information are not equal to each other.

5,712,667
MEANS FOR AND METHOD OF DETECTING THE STATE OF INK REMAIN IN A CARTRIDGE HAVING CONTAINING PORTIONS DIFFERING IN INK CONTAINING STATE

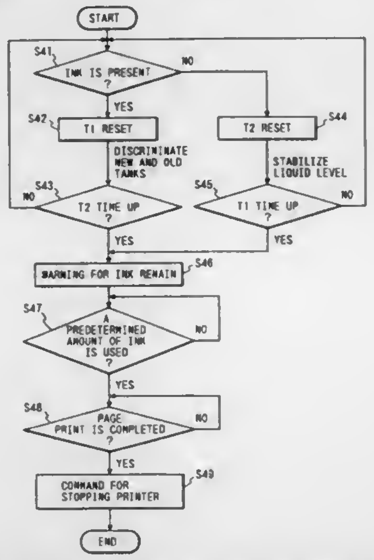
Osamu Sato, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 292,014

Claims priority, application Japan, Aug. 25, 1993, 5-210552

Int. Cl.^{6} B41J *2/19;2/175*

U.S. Cl. 347—7 **32 Claims**



1. An ink jet recording apparatus provided with an ink containing member having a plurality of ink containing portions differing in ink containing state from each other and communicated with each other by a gap portion, and an ink jet head for discharging ink supplied by being communicated with one end of said plurality of ink containing portion, said apparatus comprising:
- first detecting means for detecting an ink remain in one of said plurality of ink containing portions other than the ink containing portion for supplying the ink to said ink jet head and for detecting any reduction in the ink remain in said one ink containing portion;
- second detecting means for detecting an ink remain in said ink containing member and for detecting the reduced state of the ink remain in the ink containing portion communicating with said ink jet head; and
- control means for starting the detection by said second detecting means when said first detecting means detects that the remain of the ink has become smaller than a predetermined amount.

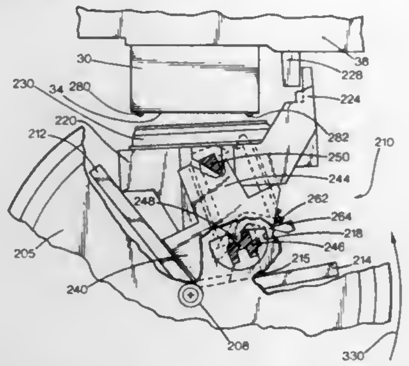
5,712,668
ROTARY MULTI-RIDGE CAPPING SYSTEM FOR INKJET PRINTHEADS

William S. Osborne, and Bret K. Taylor, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 218,391, Mar. 25, 1994, Pat. No. 5,617,124. This application Jan. 31, 1995, Ser. No. 382,473

Int. Cl.^{6} B41J *2/165*

U.S. Cl. 347—32 **29 Claims**



1. A method of sealing inkjet printhead nozzles of an inkjet printing mechanism, comprising the steps of:
- providing a printhead cap configured to surround and seal the printhead nozzles when in a capping position;
- cradling the cap within a tumbler by biasing the cap away from the tumbler; and
- traversing the cap along a non-linear path into the capping position by rotating the tumbler.

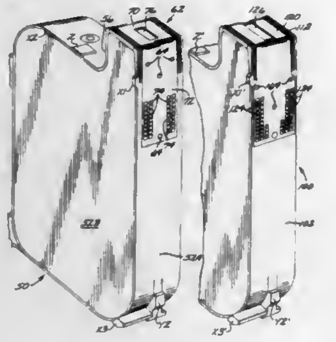
5,712,669
COMMON INK-JET CARTRIDGE PLATFORM FOR DIFFERENT PRINTHEADS

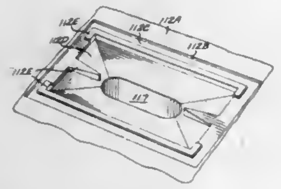
David W. Swanson, Escondido; George T. Kaplinsky, and Timothy J. Carlin, both of San Diego, all of Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 55,623, Apr. 30, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,320

Int. Cl.^{6} B41J *2/175*

U.S. Cl. 347—49 **15 Claims**





1. A family of ink-jet printer cartridges which employ common structural features to minimize retooling costs and the like, the family comprising:
- a first ink cartridge, comprising a first housing structure defining a first set of registration datum structures for registering the position of said first ink cartridge in a printer carriage in relation to X, Y and Z reference axes, a first printhead structure comprising a first headland structure and a first nozzle assembly comprising a first array of nozzles from which ink droplets are emitted during printing operations, a first ink reservoir system for delivering ink to said printhead structure, and a first supply of liquid ink in the ink reservoir system, wherein each of said nozzles of said first array are fed with ink from said first ink reservoir system; and
- a second ink cartridge, comprising a second housing structure defining a second set of registration datum structures for registering the position of said second ink cartridge in a printer carriage in relation to X, Y and Z reference axes, a second printhead structure comprising a second headland structure and a second nozzle assembly comprising a second array of nozzles from which ink droplets are emitted during printing operations, a second ink reservoir system for delivering ink to said second printhead structure, and a second supply of liquid ink within said second ink reservoir system, wherein each of said nozzles of said second array are fed with ink from said second ink reservoir system, wherein said first and second housing structures are substantially identical to each other, said first and second registration datum structures are substantially identical to each other, said first and second ink reservoir systems are substantially identical to each other, and said second printhead structure is physically different in a shape or configuration from a corresponding shape or configuration of said first printhead structure so as to provide an improved printing resolution characteristic of said second ink cartridge in relation to a printing resolution characteristic of said first ink cartridge, and wherein the second nozzle assembly is longer than said first nozzle assembly to provide a different printing swath width for the second cartridge than a corresponding printing swath width for the first cartridge.

5,712,670
APERTURE CONTROL MEMBER HAVING A PLURALITY OF APERTURES PASSING TONER UNDER CONTROL OF A PLURALITY OF CONTROL ELECTRODES

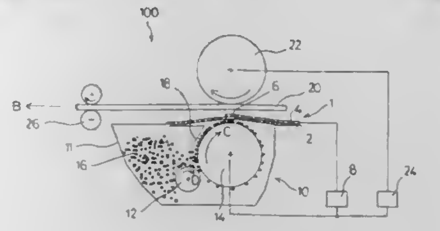
Shigeru Kagayama, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

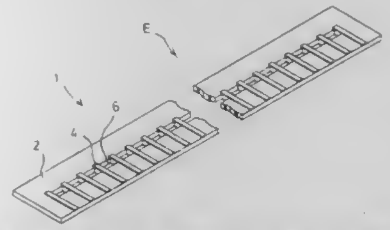
Filed May 2, 1995, Ser. No. 433,932

Claims priority, application Japan, Jul. 22, 1994, 6-171111

Int. Cl.^{6} B41J *2/385*

U.S. Cl. 347—55 **20 Claims**





13. An aperture electrode member for use in an image forming apparatus, the image forming apparatus having a rotating toner carrying roller, a first power source for providing a voltage to the aperture control electrode, a back electrode and a second power source for providing a voltage to the back electrode, the aperture electrode member comprising:
- an insulating sheet having a plurality of apertures aligned along a longitudinal axis of said insulating sheet;

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a plurality of control electrodes on a surface of the insulating sheet, at least one control electrode provided for each aperture of said plurality of apertures, each control electrode extending transverse to said longitudinal axis from a side of said apertures opposite to a direction of rotation of the toner carrying roller adjacent an aperture of said plurality of apertures and terminating substantially at an edge of the adjacent aperture on the side toward the direction of rotation of the toner carrying roller.

5,712,671

THERMAL RECORDING METHOD AND APPARATUS VARYING THE NUMBER OF AUXILIARY HEATING PULSES BASED ON THE LENGTH OF TIME BETWEEN RECORDING OPERATIONS

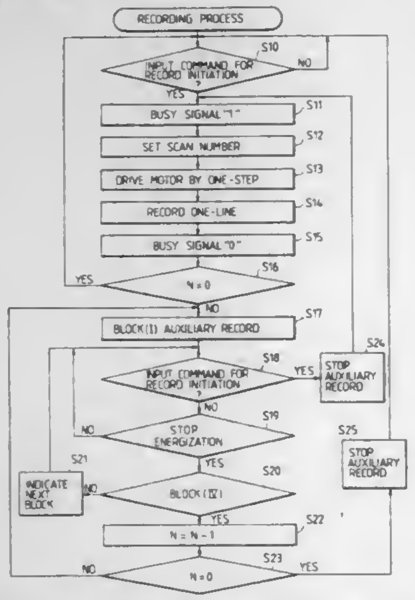
Takeshi Ono, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 747,433, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 374,000, Jun. 30, 1989, abandoned. This application Sep. 14, 1993, Ser. No. 120,228

Claims priority, application Japan, Jul. 1, 1988, 63-162604; Jun. 28, 1989, 1-163851

Int. Cl.^{6} B41J *2/38;2/35*

U.S. Cl. 347—186 **4 Claims**



1. An image communication apparatus, comprising:

reading means for reading data corresponding to an original image;

receiving means for receiving data transmitted from other image communication apparatus;

recording means for recording an image on a recording medium by driving plural heat generation-activated recording elements in accordance with the data received by said receiving means or the data read by said reading means in accordance with an input of a recording command;

determining means for determining a maximum number of auxiliary heat generation operations to be performed between a recording operation by said recording means and a next recording operation by said recording means, said determining means determining the maximum number of auxiliary heat generation operations so that the maximum number at a facsimile mode for recording the image corresponding to data transmitted through a predetermined communication mode is larger than that at a copy mode for recording data read by said reading means at a predetermined magnification;

counting means for counting an execution number of auxiliary heat generation operations executed between a recording operation and a next recording operation; and

control means for controlling said recording means to execute the auxiliary heat generation operations between a termination of said recording operation and a commencement of said next recording operation,

wherein said control means ceases execution of additional auxiliary heat generation operations by inputting the recording command for the next recording operation until said counting means counts the maximum number, and ceases the execution of additional auxiliary heat generation operations without an input of the recording command for the next recording operation after said counting means counts the maximum number.

5,712,672

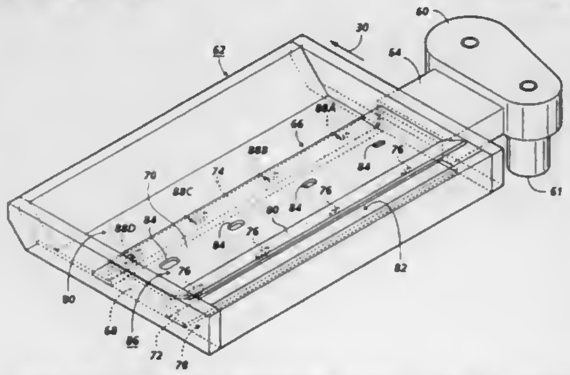
RECORDING SHEET TRANSPORT AND EFFLUENTS REMOVAL SYSTEM

Arthur M. Gooray, and Kenneth C. Peter, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1995, Ser. No. 415,284

Int. Cl.^{6} B41J *2/01*

U.S. Cl. 347—102 **16 Claims**



1. An ink jet printer for depositing liquid ink on a recording medium, comprising:

a microwave dryer, including a portion having a plurality of apertures of a size to impede microwave leakage therefrom, for evaporating liquid from the liquid ink deposited on the recording medium;

a transport belt, associated with said microwave dryer, for moving the recording sheet through said microwave dryer; and

an evacuation device, including a vacuum generator for developing a negative pressure, operatively coupled to said portion of said microwave dryer, for removing the evaporated liquid from said dryer through said plurality of apertures.

5,712,673

THERMAL TRANSFER RECORDING MEDIUM AND THERMAL TRANSFER RECORDING METHOD

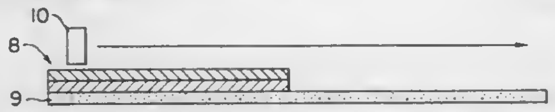
Masafumi Hayashi, and Shunichi Ebihara, both of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Nov. 30, 1994, Ser. No. 351,078

Claims priority, application Japan, Dec. 1, 1993, 5-325749; Apr. 21, 1994, 6-104975

Int. Cl.^{6} B41J *2/32*

U.S. Cl. 347—217 **17 Claims**



14. A recording method, comprising the steps of: providing a basic dye A and an acidic developer B for forming on a receiving sheet a color-development structure represented by an A—B bond through a chemical reaction.; and externally adding a component C compatible with either one of said A and B but incompatible with the other whereby said color-development structure is cleaved such that the A—B bond is hindered to render one of said color-development structure colorless and allow a second color to be reproduced without color mixing.

5,712,674

EXPOSURE DEVICE UTILIZING DIFFERENTLY COLORED LIGHT EMITTING ELEMENTS

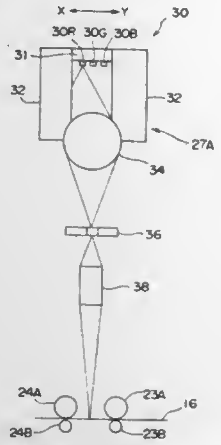
Atsuhiro Doi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 27, 1995, Ser. No. 429,554

Claims priority, application Japan, May 2, 1994, 6-093421; May 10, 1994, 6-096628

Int. Cl.^{6} G03B *27/32;27/50*

U.S. Cl. 347—238 **23 Claims**



1. An exposure device comprising:

a light source system having an array of at least three light-emitting elements for respectively emitting light of different colors and adapted to form the light emitted from said light-emitting elements into a slit beam;

moving members for moving at least one of the slit beam and a photosensitive material in a direction substantially perpendicular to a cross-sectionally longitudinal direction of the slit beam;

an optical shutter array which is disposed between said light source system and the photosensitive material, said optical shutter array having a plurality of optical shutter elements for allowing the slit beam incident thereupon from said light source system to be transmitted therethrough or shut off as said optical shutter elements are opened or closed, said plurality of optical shutter elements being provided in a number corresponding to a number of pixels constituting a row of pixels in a scanning line of the photosensitive material along a direction corresponding to the cross-sectionally longitudinal direction of the slit beam; and

a control member for controlling at least one of the array of said light-emitting elements and said optical shutter array such that an amount of exposure of the slit beam transmitted through said optical shutter array and applied to a predetermined pixel on the photosensitive material becomes substantially equal to an amount of exposure of a corresponding pixel of color image data.

5,712,675

METHOD AND APPARATUS FOR ENHANCING LASER PRINTER RESOLUTION

Yong-bae Dhong, Kyungki-do; Soo-won Kim, and Min-su Jeong, both of Seoul, all of Rep. of Korea, assignors to Chung-duck Kim, Seongnam, Rep. of Korea

Filed Jun. 27, 1995, Ser. No. 495,806

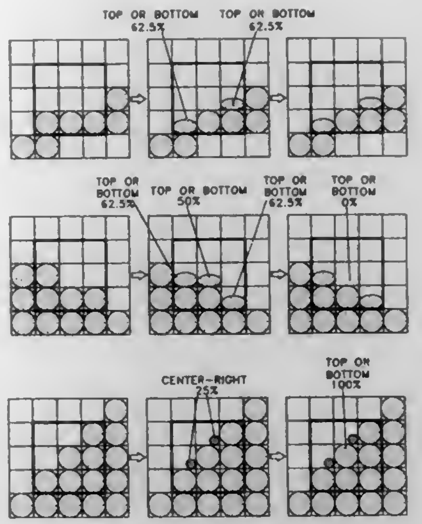
Claims priority, application Rep. of Korea, May 15, 1995, 95-11977

Int. Cl.^{6} B41J *2/47*

U.S. Cl. 347—254 **34 Claims**

1. A resolution enhancement apparatus of a laser printer which reads stored image data and modulates the read image data, said apparatus comprising:

memory means for storing sequentially input image data in a sequential scanning method, rearranging a scanning line order and generating an M×M sample window, M being an integer;



first processing means for classifying and outputting a pattern of the image data according to bitmap information in a pixel using $(M-2)^2$ 3×3 masks produced from the M×M sample window supplied from said memory means;

second processing means for using pixel density to classify the data output from said first processing means into a plurality of groups and outputting data of the classified groups; and

signal modulation means for modulating the data output from said second processing means into a predetermined pattern and outputting the modulated pattern.

5,712,676

IMAGE SCANNING AND PRINTING SYSTEM HAVING A COMMON PAPER FEEDING PASSAGE

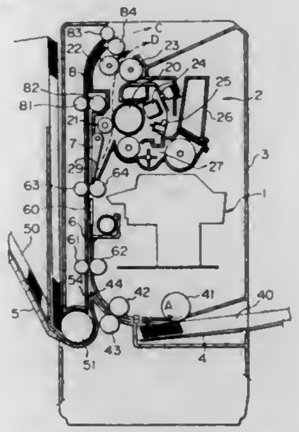
Kosuke Takaki, and Takao Araki, both of Dazaifu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 8, 1994, Ser. No. 224,878

Claims priority, application Japan, Apr. 14, 1993, 5-087034

Int. Cl.^{6} B41J *2/435;* **G01D** *15/24;* **H01S** *1/131;* **G11B** *7/00*

U.S. Cl. 347—262 **4 Claims**



1. An image reading and printing system for reading image information on an image information surface of manuscript paper and for printing information onto a surface of printing paper, said system comprising:

(a) a casing including:

- a manuscript paper feeding passage for passing said manuscript paper therethrough with said manuscript paper being oriented such that said image information surface is directed upward;
- a printing paper feeding passage for passing said printing paper therethrough;
- a common paper feeding passage including a single feeding passage commonly used for feeding therethrough the

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manuscript paper after passing from said manuscript paper feeding passage and the printing paper after passing from said printing paper feeding passage;

a first discharge passage, disposed to receive the manuscript paper from said common paper feeding passage, for discharging the manuscript paper out of said casing; and

a second discharge passage, disposed to receive the printing paper from said common paper feeding passage, for discharging the printing paper out of said casing;

(b) image information reading means for reading the image information on the manuscript paper while the manuscript paper is in said single feeding passage, said image information reading means facing said image information surface of said manuscript paper;

(c) printing means for printing information onto the printing paper while said printing paper is in said second discharge passage; and

(d) means for controlling switch-over of paper feeding from said common paper feeding passage between (i) said first discharge passage and (ii) said second discharge passage.

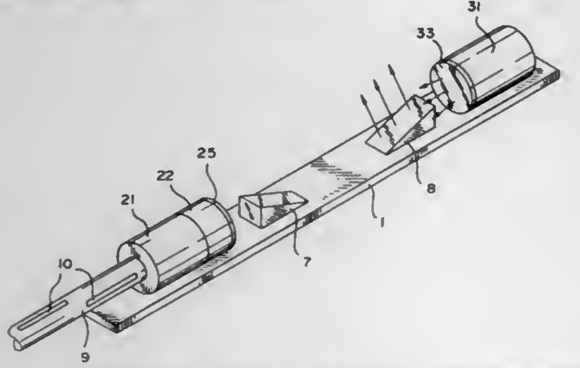
5,712,677
APPARATUS FOR VIDEO INSPECTION OF THE INTERIOR SURFACE OF TUBULAR GOODS

Camille M. Fraering, Jr.; Phillip G. Fraering, and George C. Fraering, all of 415 Mecca Dr., Lafayette, La. 70508

Filed Apr. 14, 1995, Ser. No. 422,592

Int. Cl.^{6} H04N *7/18;9/47*

U.S. Cl. 348—84 **6 Claims**



1. An apparatus for inspection of the interior surface of tubular goods, comprising:

a) an elongated mounting plate having an upper surface and a longitudinal axis which is substantially contiguous with said upper surface;

b) a video camera disposed on said elongated mounting plate, said video camera having a lens, said lens baving an axis substantially parallel to the longitudinal axis of said elongated mounting plate and substantially contiguous with a plane substantially coincident with the longitudinal axis of the elongated mounting plate and disposed substantially perpendicularity to the surface of said elongated mounting plate;

c) a light source disposed on said elongated mounting plate at a position spaced apart from said video camera, said light source having a longitudinal axis disposed substantially contiguous with the axis of the lens of the video camera, having a light diffusing window disposed substantially perpendicularly to said axis of said lens of said vide camera and substantially facing the lens of said video camera, forming an illuminated viewing area between said window of said light source and said lens of said video camera;

d) a first and a second prism disposed between the lens of said video camera and the window of said light source, wherein said first prism is disposed between the lens of said camera and said second prism and is comprised of first, second and third planar surfaces, said first planar surface facing the lens of the video camera and disposed perpendicular to the axis of the lens of said video camera, said second planar surface having an axis disposed along a line substantially parallel to the axis of the lens of said video camera and said third planar surface intersecting a plane parallel to the upper surface of the elongated mounting plate at an oblique angle, said first prism reflecting light from a portion of the interior surface of tubular good being inspected into the lens of the video camera; and,

e) said second prism is disposed between said first prism and the window of said light source and is comprised of first, second and third planar surfaces, said first planar surface facing the window of the light source and disposed perpendicular to the longitudinal axis of the light source, said second planar surface having an axis disposed along a line substantially parallel to the longitudinal axis of the light source and said third planar surface intersecting a plane parallel to the upper surface of the elongated mounting plate at an oblique angle, said second prism directing at least a portion of light from the light source to said portion of the interior surface of tubular good from which light is being reflected into the lens of the video camera.

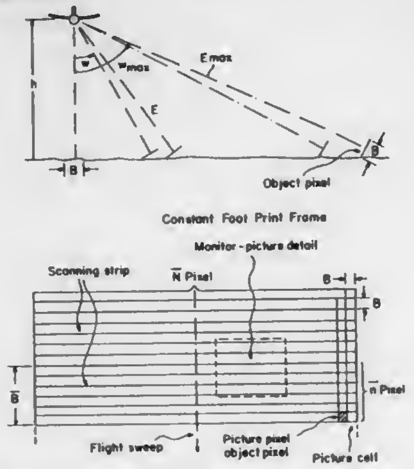
5,712,678
METHOD AND APPARATUS FOR SCANNING A TERRAIN SURFACE

Otto Hofmann, Kirchstockach, Germany, assignor to Messerschmitt Bolkow Blohm GmbH, Munich, Germany

Continuation of Ser. No. 72,803, Jun. 7, 1993, which is a continuation-in-part of Ser. No. 750,755, Aug. 22, 1991, abandoned, which is a continuation of Ser. No. 281,851, Dec. 8, 1988. This application Sep. 6, 1995, Ser. No. 524,319

Int. Cl.^{6} H04N *7/18;9/47*

U.S. Cl. 348—117 **3 Claims**



1. A method for scanning a surface of an object transversely to a direction of motion, comprising the steps of:

providing a scanner flying over the object at a flight altitude and with a flight velocity and having a system focal length, wherein a scanning element rotates with a rotation speed thereby scanning the surface over a scanning angle and a detector row which is arranged at right angles to the direction of said scanning;

providing said detector row with a plurality of individual detectors of equal size and which are capable of generating fundamental object pixels of a size dependent upon a distance from the object up to a maximum scanning distance;

deriving a standard object pixel of a size corresponding to a fundamental object pixel at said maximum scanning distance;

forming, for each scanning sweep, by means of a sampling process from said fundamental object pixels, a uniform grid composed of standard object pixels of said size corresponding to a fundamental object pixel at said maximum scanning distance in several lines without one of gaps and overlaps; wherein uniform grids of consecutive sweeps have no gaps and overlaps between each other;

performing said sampling process for forming a uniform grid independent of an actual flight altitude and an actual same flight velocity in a same manner for each scanning sweep; and

controlling the system focal length and the rotational speed of the scanner at flight altitudes and velocities which are other than pre-determined as functions of an actual flight altitude and said actual flight velocity so that said uniform grids of consecutive scanning sweeps have no gaps and overlaps between each other.

5,712,679
SECURITY SYSTEM WITH METHOD FOR LOCATABLE PORTABLE ELECTRONIC CAMERA IMAGE TRANSMISSION TO A REMOTE RECEIVER

Christopher Francis Coles, 23 Clifton Road, Salisbury, Wiltshire, England, SP2 7BP

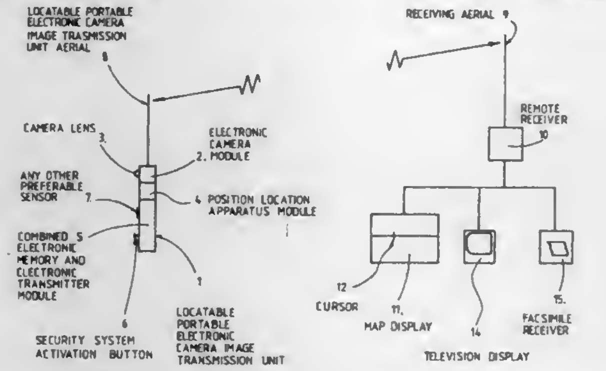
PCT No. PCT/GB90/00062, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO90/08371, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 16, 1990, Ser. No. 720,865

Claims priority, application United Kingdom, Jan. 16, 1989, 8900837; Jun. 2, 1989, 8912788

Int. Cl.^{6} H04N *7/20;7/18*

U.S. Cl. 348—158 **12 Claims**


LOCATABLE PORTABLE ELECTRONIC CAMERA IMAGE TRASMISSION UNIT AERIAL
8
CAMERA LENS
3.
ELECTRONIC CAMERA
2. MODULE
ANY OTHER PREFERABLE SENSOR
7.
4 POSITION LOCATION APPARATUS MODULE
COMBINED 5 ELECTRONIC MEMORY AND ELECTRONIC TRANSMITTER MODULE
1
6
SECURITY SYSTEM ACTIVATION BUTTON
LOCATABLE PORTABLE ELECTRONIC CAMERA IMAGE TRANSMISSION UNIT
RECEIVING AERIAL 9
REMOTE RECEIVER
10
12
CURSOR
11.
MAP DISPLAY
14
15.
FACSIMILE RECEIVER
TELEVISION DISPLAY

1. A security system comprising in combination:

a portable transmitter module adapted for selective transmission of a signal capable of being encoded with and conveying data;

memory means within said portable transmitter module for storing data to be encoded in signals transmitted by said portable transmitter module;

a receiver disposed in a location remote from said portable transmitter module, said receiver being adapted to receive signals transmitted by said portable transmitter module;

means coupled to said receiver for interpreting data encoded in signals received by said receiver and presenting the data in a usable form;

a camera module physically and electronically coupled to said transmitter module, said camera module having a lens for focusing an image and including means for converting the image into data representative of the image, the data being capable of being encoded into signals transmitted by said portable transmitter module;

a global positioning module physically and electronically coupled to said transmitter module, said global positioning module being adapted to receive positioning signals from remote positioning transmitters, to calculate its current location based upon the received positioning signals, and to convert the calculated location into data capable of being encoded into signals transmitted by said portable transmitter module;

audio receiver means coupled to said portable transmitter module, said audio receiver means being adapted to detect ambient sound and to convert the detected sound to data representative of the sound, the data being capable of being embedded within signals transmitted by said transmitter module;

means in said portable transmitter module for receiving data from said camera module, said global positioning module, and said audio receiver means and for storing the received data in said memory means;

means in said portable transmitter module for accessing data stored in said memory means and encoding the data in signals to be transmitted by said transmitter module and received by said receiver; and

selective activation means for selectively activating said security system to cause image, position, and audio data to be captured, stored in said memory means, and transmitted in the form of a signal to be received by said receiver.

5,712,680
IMAGE PICKUP DEVICE FOR OBTAINING BOTH MOVING AND STILL IMAGES

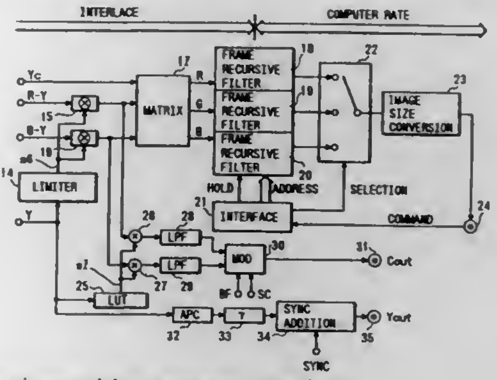
Teruo Hieda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,815, Dec. 20, 1994, abandoned. This application Sep. 16, 1996, Ser. No. 714,501

Claims priority, application Japan, Dec. 24, 1993, 5-327079

Int. Cl.^{6} H04N *5/325*

U.S. Cl. 348—220 **36 Claims**



1. An image pickup apparatus comprising:

image pickup means;

processing means for processing an image signal output from said image pickup means;

output means for outputting an output of said processing means to an external peripheral apparatus;

detecting means for detecting characteristics of the peripheral apparatus when the peripheral apparatus is connected to said image pickup apparatus through said output means, said detecting means detecting image size characteristics according to the output of said detecting means; and

control means for controlling characteristics of said processing means in accordance with an output of said detecting means.

5,712,681
APPARATUS FOR INPUTTING AND OUTPUTTING AN OPTICAL IMAGE WITH MEANS FOR COMPRESSING OR EXPANDING THE ELECTRICAL VIDEO SIGNALS OF THE OPTICAL IMAGE

Inh-Seok Suh, Suwon, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed May 26, 1995, Ser. No. 453,063

Claims priority, application Rep. of Korea, May 31, 1994, 94-12092

Int. Cl.^{6} H04N *5/76*

U.S. Cl. 348—231 **16 Claims**

1. A picture imaging device for imaging an object, comprising:

means for providing a digital data representation corresponding to an image of an object;

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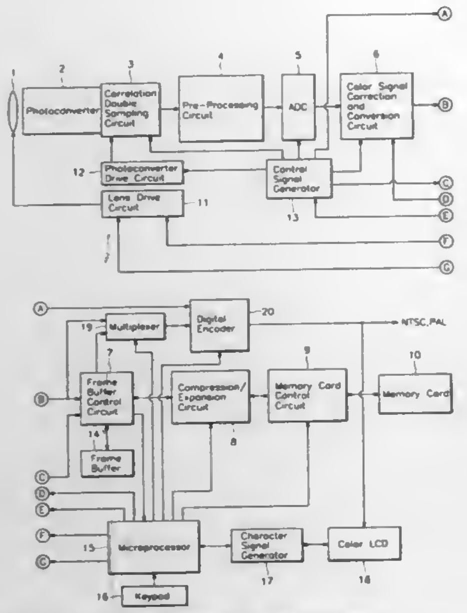

1
2
Photoconverter
3
Correlation Double Sampling Circuit
4
Pre-Processing Circuit
5
ADC
6
Color Signal Correction and Conversion Circuit
12
Photoconverter Drive Circuit
Lens Drive Circuit
11
Control Signal Generator
13
A
B
C
D
E
F
G
19
Multiplexer
Digital Encoder
20
NTSC,PAL
7
Frame Buffer Control Circuit
Compression/ Expansion Circuit
8
9
Memory Card Control Circuit
10
Memory Card
14
Frame Buffer
15
Microprocessor
Character Signal Generator
17
Color LCD
18
16
Keypad

means for receiving user-entered input requests;

an expansion/compression circuit, coupled to the means for providing and means for receiving, for compressing the digital data representation with one of a predetermined default value or a variable compression value in accordance with the user-entered input requests;

memory means, coupled to the expansion/compression circuit, for storing a compressed digital data representation;

selector means for selectively coupling one of the providing means and the expansion/compression circuit to provide a picture signal; and

display means, coupled to the selector means, for displaying an image representing the picture signal.

5,712,682

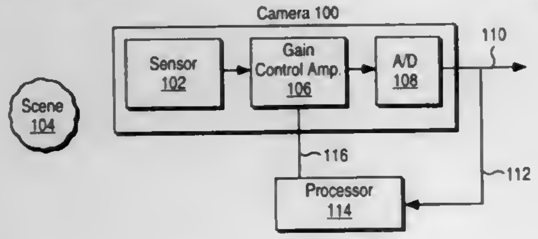
CAMERA HAVING AN ADAPTIVE GAIN CONTROL

Eric C. Hannah, Pebble Beach, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 638,528, Apr. 26, 1996, Pat. No. 5,614,948. This application Dec. 2, 1996, Ser. No. 770,386

Int. Cl.^{6} H04N *5/20*

U.S. Cl. 348—255 **22 Claims**



1. A camera comprising:

a sensor configured to capture an image and generate a sensor output signal representing the captured image;

an amplifier coupled to receive the sensor output signal, wherein the amplifier is configured to apply multiple gain levels to the sensor output signal; and

a processor coupled to the amplifier, wherein the processor is configured to provide a control signal to the amplifier to adjust the gain levels applied by the amplifier.

5,712,683

LEVEL ADJUSTING CIRCUIT OF COLOR IMAGE SIGNAL

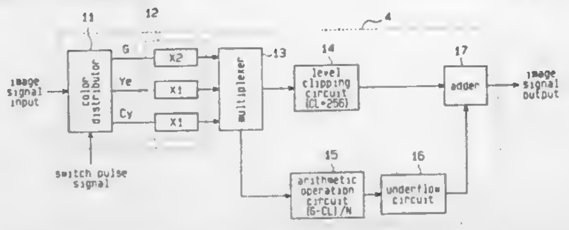
Tomomichi Nakai, Ogaki, and Toshio Nakakuki, Gifu-ken, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 6, 1996, Ser. No. 619,896

Claims priority, application Japan, Mar. 16, 1995, 7-057393

Int. Cl.^{6} H04N *9/64;9/68;5/52*

U.S. Cl. 348—256 **9 Claims**



1. A level adjusting circuit for continuously receiving a plurality of image signals corresponding to a plurality of color components and for adjusting levels of said plurality of image signals color component by color component, comprising:

a color distributor for distributing said received plurality of image signals in accordance with the color components;

a multiplier for multiplying said distributed image signals by specific gains to average the levels of said distributed image signals;

a level clipping circuit for clipping said gain-multiplied image signals in such a way that levels of said gain-multiplied image signals become less than or equal to a predetermined level, each of said gain-multiplied image signals to be subjected to the level clipping having a saturation level greater than or equal to said predetermined level;

an arithmetic operation circuit for performing an arithmetic operation to subtract said predetermined level from one of said gain-multiplied image signals corresponding to one of the plurality of color components and to multiply a resultant value by a predetermined coefficient, said arithmetic operation circuit receives from said multiplier said gain-multiplied image signal having a saturation level higher than said predetermined level from among said gain-multiplied image signals; and

an adder for adding an operation result from said arithmetic operation circuit to said level clipped image signals from said level clipping circuit.

5,712,684

VIEWING APPARATUS WITH VISUAL AXIS DETECTOR

Shunsuke Inoue, Yokohama, and Hidekazu Takahashi, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 226,339, Apr. 12, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 624,201

Claims priority, application Japan, Apr. 16, 1993, 5-089866

Int. Cl.^{6} H04N *5/232*

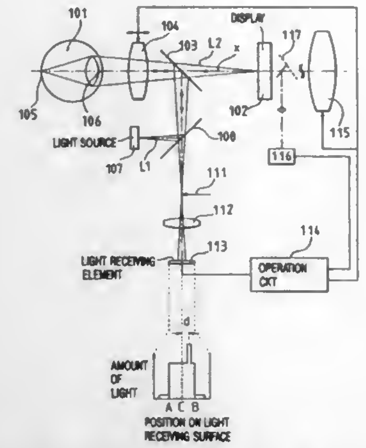
U.S. Cl. 348—341 **14 Claims**

1. An observing apparatus having a projecting optical system for projecting an object image onto an eye of an observer, comprising:

image detecting means for receiving a first reflection light from a fundus of the eye;

controlling means for detecting the refracting power of the eye based on an output of said image detecting means, said controlling means including adjusting means for adjusting said observing apparatus so that the object image is substantially focused on the fundus of the eye based on a result of detection of the refracting power of the eye,

wherein said image detecting means is disposed at a position in optical conjugation with a pupil of the eye such that a first image is formed in front of said image detecting means by the first reflection light from the eye fundus and a second image is formed on said image detecting means by a second reflection light from the pupil of the eye and from the neighborhood of the pupil;



wherein said observing apparatus changes the distribution of the intensity of light on said image detecting means due to the first and second reflection light according to the refracting power of the eye and the direction of the visual axis of the eye; and

wherein said controlling means detects both the refracting power of the eye and the direction of the visual axis of the eye based on the distribution of the intensity of light represented by the output of said image detecting means.

5,712,685

DEVICE TO ENHANCE IMAGING RESOLUTION

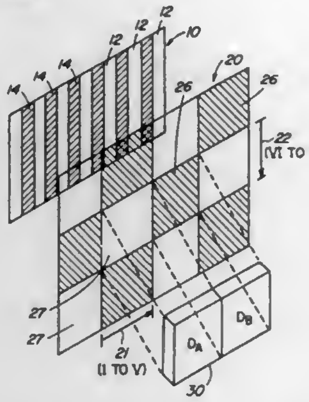
Jean Dumas, du Parcours, Canada, assignor to Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Aug. 14, 1995, Ser. No. 515,069

Claims priority, application Canada, Nov. 14, 1994, 2135676

Int. Cl.^{6} H04N *5/225*

U.S. Cl. 348—360 **18 Claims**



1. An imaging device comprising a Focal Plane Array (FPA) image sensor having a grid formed of individual detector elements, arranged in an array of columns and rows, and a mask with a checkerboard pattern of opaque and transparent areas, the mask being located in front of and adjacent to the FPA onto which an image of a scene can be focused by an optical system wherein means are provided for displacing the mask and FPA with respect to each other in a number of micro-steps that extend in the same direction as that in which a column of the grid extends and means are provided for displacing the mask and the FPA with respect to each other in a number of micro-steps that extend in the same direction as that in which a row of the grid extends, the micro-steps in any one direction being of equal lengths that are smaller than the length of a detector element whereby opaque areas of the mask progressively cover equal areas of detector elements in discrete steps for each micro-step movement in one direction at the same time as transparent areas of the mask progressively uncover equal areas of other detector elements for each discrete step, outputs from the detector elements providing signals for sample slices of the scene for each micro-step with the device having means for reconstructing an image of the scene from said signals.

5,712,686

INVERSE QUANTIZER FOR USE IN MPEG-2 DECODER

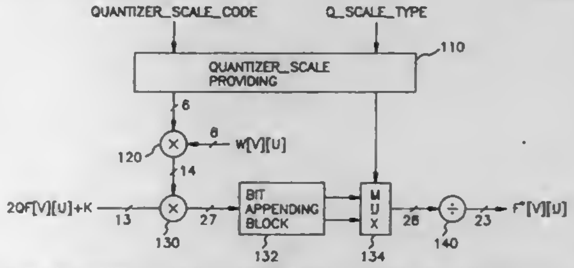
Young-Chul Cho, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 774,831

Claims priority, application Rep. nf Korea, Dec. 30, 1995, 95-69157

Int. Cl.^{6} H04N *7/40*

U.S. Cl. 348—405 **20 Claims**



1. An apparatus, for use in an MPEG-2 video signal decoder, for providing an N1-bit inverse quantized transform coefficient F in response to an N2-bit input value MQF, N1 and N2 being positive integers, respectively, according to

$$F=[MQF\times(W\times\text{quantizer\_scale})]/32$$

wherein the quantizer_scale is an integer ranging from 2^{0} to 2^{M}-1, M being a positive integer, and W is an (N1+5-N2-M)-bit predefined value, the apparatus comprising:

means for generating an (M-L)-bit modified quantizer_scale and a selection signal based on the quantizer_scale, L being an integer ranging from 1 to (M-1);

first multiplication means for multiplying the modified quantizer_scale with said W, to provide an (N1-N2+5-L)-bit quantization step size;

second multiplication means for multiplying the N2-bit input value with the quantization step size, to provide an (N1+5-L)-bit first value;

means for appending L zero bits to the first value, to provide (L+1) (N1+5)-bit second values;

means for selecting one of the (L+1) (N1+5)-bit second values in response to the selection signal provided from the generating means; and

means for dividing the selected second value provided from the selection means by 2^5, to thereby provide the N1-bit inverse quantizer transform coefficient.

5,712,687

CHROMINANCE RESAMPLING FOR COLOR IMAGES

T. Naveen, and Ali Tabatabai, both of Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Apr. 25, 1996, Ser. No. 637,517

Int. Cl.^{6} H04N *11/02*

U.S. Cl. 348—453 **12 Claims**

1. A chrominance resampler of the type that interpolates a subsampled chrominance component of a color image to produce an upsampled chrominance component comprises:

a plurality of lowpass filters coupled in parallel to receive the interpolated subsampled chrominance component as an input and to provide the upsampled chrominance component at an output from one of the lowpass filters in response to a selector signal, each lowpass filter having a different characteristic; and

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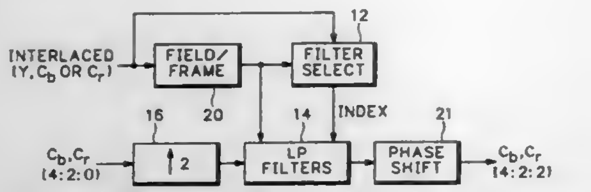


means for generating the selector signal from a luminance component of the color image, the generating means detecting the position of edges in the color image from the luminance component and providing the selector signal as a function of the position of the edges.

5,712,688

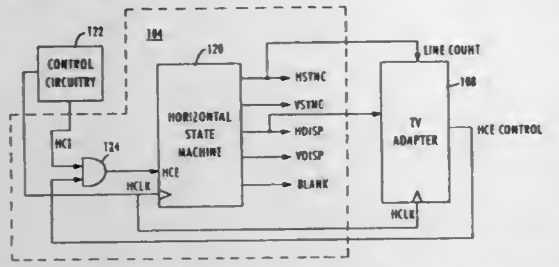
VIDEO CONTROLLER FOR DISPLAYING COMPUTER GENERATED IMAGES ON A TELEVISION SET

Alexander J. Eglit, San Carlos, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 414,996, Mar. 31, 1995. This application Dec. 3, 1996, Ser. No. 764,875

Int. Cl.^{6} H04N *9/475*

U.S. Cl. 348—510 **7 Claims**



1. A video controller for enabling computer generated images to be displayed on a video monitor having a circuit for processing broadcast television signals, comprising:

a state machine responsive to control circuitry of a computer for generating timing signals to define components of a video signal supplied to said video monitor to display said computer generated images,

a delay circuit responsive to an output signal of said state machine for generating a control signal delayed by a variable delay time with respect to said output signal, said delay time being variable with horizontal lines, and

a feedback circuit responsive to said control signal for controlling said state machine to generate a control component in said video signal to disable said circuit for processing broadcast television signals.

5,712,689

DIGITAL TELEVISION SET

Seijiro Yasuki; Shigeru Tashiro, and Hiroyuki Chimoto, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1995, Ser. No. 531,286

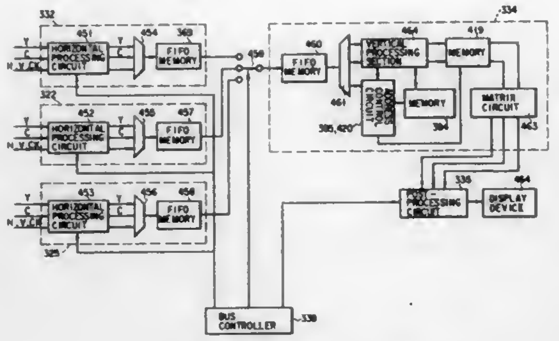
Claims priority, application Japan, Sep. 20, 1994, 6-225336

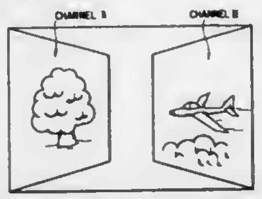
Int. Cl.^{6} H04N *5/445*

U.S. Cl. 348—561 **10 Claims**

1. A digital television, comprising:

a plurality of horizontal processing means for horizontally compressing or expanding image data input thereto, and then outputting the image data, respectively, each of the horizontal processing means including header adding means for dividing an associated one of the horizontally compressed or expanded image data into blocks each having a predetermined number of bytes, and adding header information including an identifier to a first one of image data pieces included in each of the blocks;





transferring means for successively transferring blocks of image data that have been processed by the plurality of horizontal processing means;

vertical processing means for successively vertically compressing or expanding the blocks transferred by the transferring means, and outputting the blocks, the vertical processing means including:

- (i) header analyzing means for analyzing the header information added to the first image data piece of each block transferred by the transferring means; and
- (ii) address controlling means for grouping the blocks into the image data in accordance with contents of the header information analyzed by the header analyzing means, and controlling storing of the blocks such that the image data is stored in respective regions of a memory; and

displaying means for displaying an image based on the image data output from the vertical processing means.

5,712,690

APPARATUS AND METHOD FOR DIAGNOSING RECEIVED BROADCAST SIGNALS USING SYNC SIGNALS AND SIGNAL LEVEL

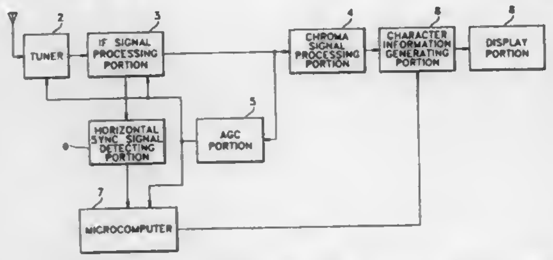
Yoon-kil Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 470,120

Claims priority, application Rep. of Korea, Jun. 23, 1994, 94-14392

Int. Cl.^{6} H04N *5/445*

U.S. Cl. 348—570 **6 Claims**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TUNER
IF SIGNAL PROCESSING PORTION
CHROMA SIGNAL PROCESSING PORTION
CHARACTER INFORMATION GENERATING PORTION
DISPLAY PORTION
HORIZONTAL SYNC SIGNAL DETECTING PORTION
AGC PORTION
MICROCOMPUTER

1. A broadcast state self-diagnostic apparatus for use in an apparatus for receiving a broadcast signal comprising:

tuning means for outputting an intermediate frequency signal by tuning a broadcast signal of an externally input radio frequency to a signal of a desired broadcast channel:

first detecting means for detecting the level of a video signal from the intermediate frequency signal supplied from the tuning means;

second detecting means for detecting a horizontal sync signal from the intermediate frequency signal supplied by the tuning means;

control means for comparing the level of the detected video signal and the detected horizontal sync signal with reference values, said control means outputting a control signal based upon the compared result; and

character information generating means for generating character information according to the control signal, said character information generating means indicating tuned broadcast signal is abnormal when said radio level signal and said sync signal are below a respective reference value, and allowing for display of the generated character information; and

automatic gain control signal means for generating an automatic gain control signal according to the level of said video signal for maintaining the level of said detected video signal at a uniform level and supplying said automatic gain control signal to said control means and wherein said control means compares the automatic gain control signal to a reference signal to determine whether the tuned signal is abnormal.

5,712,691

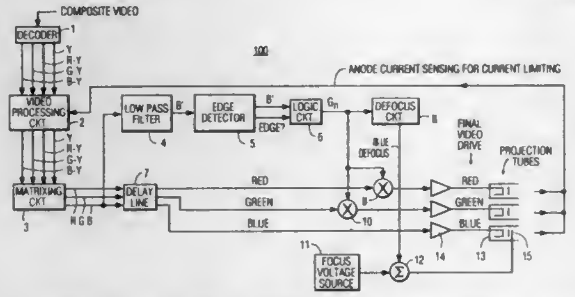
METHOD AND APPARATUS FOR AREA DEPENDENT DYNAMIC BLUE DE-FOCUSING

Matthew Scott Brennesholtz, Westchester County, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,254

Int. Cl.^{6} H04N *5/64;9/31;5/74*

U.S. Cl. 348—744 **28 Claims**



1. A projection television system for projecting images having a plurality of color components, comprising:

means for filtering a first color component signal from a composite signal to provide a filtered first color component signal;

means for defocusing said first color component signal based on said filtered first color component signal; and

means for adjusting a gain of at least one other of a plurality of color component signals of said composite signal,

wherein an amount of defocusing performed by said means for defocusing and an adjustment of said gain by said means for adjusting are dependent on a content of said composite signal.

5,712,692

DRIVING POWER UNIT FOR DRIVING LIQUID CRYSTAL DISPLAY ELEMENT AND LIQUID CRYSTAL LIGHT-MODULATING DEVICE

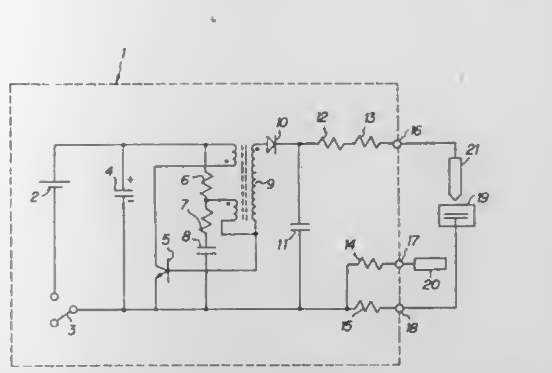
Yutaka Abe Kanagawa; Takao Yamaguchi; Masahiko Ikeda; Morio Sato, and Hiroshi Tazaki, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Pilot, Tokyto-to, Japan

Filed Jun. 29, 1995, Ser. No. 496,389

Claims priority, application Japan, Nov. 30, 1994, 6-321271; Jan. 26, 1995, 7-029961

Int. Cl.^{6} G02F *1/33*

U.S. Cl. 348—790 **18 Claims**



1. A driving power unit for driving a liquid crystal display element which charges an electrostatic charge on a surface of the liquid crystal display element having at least a conductive layer and a liquid crystal-dispersed polymer layer in which a liquid crystal is finely dispersed into a polymer matrix, said driving power unit comprising:

a low-voltage DC power source;

a power switch;

a blocking oscillator circuit for boosting a low voltage generated by said low-voltage DC power source, said blocking oscillator circuit including a transistor having a base, collector, and emitter and a transformer having a secondary winding and a first primary winding, wherein the base of the transistor is electrically connected to the secondary winding and the first primary winding;

a rectifier diode for rectifying the voltage boosted by the blocking oscillator circuit;

a smoothing capacitor for being charged by application of the rectified voltage and smoothing an output voltage; and

a resistive element interconnected between said smoothing capacitor and an output terminal to control an output current value to 5 mA or less.

5,712,693

LIGHT VALVE AND DISPLAY SYSTEM WITH A SUBSTRATE HAVING PARTICULAR RELATIONSHIP BETWEEN ITS CENTRAL THICKNESS, DISPLAY AREA DIAMETER, AND REFRACTIVE INDEX

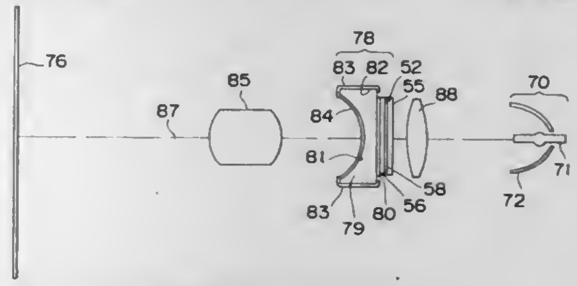
Yoshito Miyatake; Hiroshi Takahara, both of Neyagawa, and Hideki Ohmae, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 70,999, Jun. 4, 1993, abandoned. This application Feb. 14, 1996, Ser. No. 601,534

Claims priority, application Japan, Jun. 5, 1992, 4-145277

Int. Cl.^{6} G02F *1/1335;1/13;1/1333*

U.S. Cl. 349—5 **50 Claims**



14. A projection display system comprising:

a light source;

a light valve which receives light emitted from said light source, said light valve including a light valve layer, capable of undergoing changes in state by which an ability of the light valve layer to scatter light changes, for forming an optical image based on said state and two substrates between which said light valve layer is sandwiched and at least one of which is transparent;

said light valve satisfying the following condition:

$$t \geqq \frac{d}{4} \sqrt{n^2-1}$$

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wherein t denotes a central thickness of said at least one of said substrates, n denotes a refractive index of said at least one of said substrates and d denotes a maximum diameter of an effective display area of said light valve layer; and

a projection lens disposed downstream from the light valve with respect to the optical path of the display system so as to project the optical image.

20. A projection display system comprising:

a light source;

a light valve which receives light emitted from said light source, said light valve including a light valve layer, capable of undergoing changes in state by which an ability of the layer to scatter incident light changes, for forming an optical image based on said state, two substrates between which said light valve layer is sandwiched and at least one of which is transparent, a transparent plate which has a uniform refractive index and confronts said at least one of said substrates, and a transparent body optically coupling said at least one of said substrates and said transparent plate;

wherein said light valve is light-transmissive between a face of the other of said substrates remote from said light valve layer and a face of said transparent plate remote from said transparent body; and

a projection lens disposed downstream from the light valve with respect to the optical path of the display system so as to project the optical image.

5,712,694
LCD COMPRISING A LIGHT SEPARATING ELEMENT INCLUDING A CHOLESTERIC LIQUID CRYSTAL SHEET

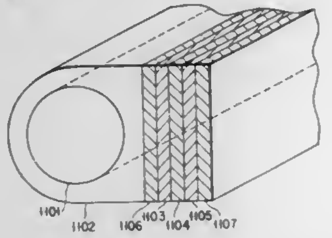
Kazuki Taira, Kawasaki, and Yoshinori Higuchi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

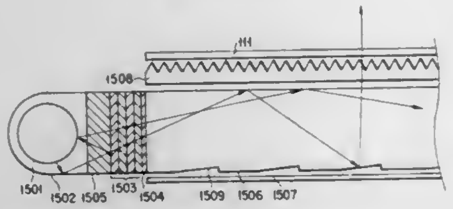
Filed Sep. 14, 1995, Ser. No. 528,114

Claims priority, application Japan, Sep. 16, 1994, 6-222192

Int. Cl.^{6} G02F *1/1335;1/1333;1/13*

U.S. Cl. 349—9 **9 Claims**





1. A display device comprising:

an emitter,

a direct-view display screen,

a light separating element including a cholesteric liquid crystal sheet for selectively separating illumination light emitted from said emitter into a first and second polarized light components and transmitting the first polarized light component and reflecting the second light component, and

a reflecting member for converting the reflected second light component to a first light component and returning it to said light separating element.

5. A display device comprising:

an emitter,

a direct-view display screen,

a light-guiding member for guiding an illumination light emitted from said emitter to said direct-view display screen, wherein said light-guiding member has a surface having projections and depressions inclined to the incident side, formed on the opposite side to said direct-view display screen of said light-guiding member, with a light incident angle approximately equal to Brewster's angle which is represented by the following formula:

$$\theta_B = \tan^{-1}(n_2/n_1)$$

wherein n_1 is a refractive index of the incident side medium and n_2 is a refractive index of the emitting side medium;

a light separating element for separating the illumination light selectively into a first and second polarized light components and transmitting the first light component and reflecting the second light component,

a conversion/reflection member for converting the reflected second light component to a first light component and returning it to said light separating element, and

a light converting means for converting a vibration direction of said first light component transmitted through said light separating element into another vibration direction, thereby obtaining the illumination light.

5,712,695
LIQUID CRYSTAL DISPLAY DEVICE AND FABRICATION PROCESS THEREOF

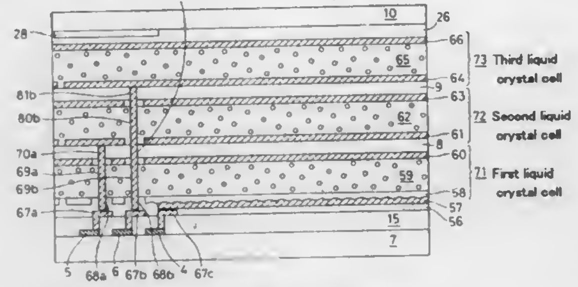
Atsushi Tanaka; Seiichi Mitsui, both of Kashiwa, and Shigeru Aomori, Abiko, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 17, 1996, Ser. No. 664,817

Claims priority, application Japan, Jul. 13, 1995, 7-177675

Int. Cl.^{6} G02F *1/133;1/1343*

U.S. Cl. 349—79 **12 Claims**


50
70b
10
26
28
66
65
73 Third liquid crystal cell
64
9
81b
63
80b
62
72 Second liquid crystal cell
61
8
70a
60
69a
59
71 First liquid crystal cell
69b
58
67a
57
15
56
7
5
68a
6
67b
68b
4
67c

1. A liquid crystal display device comprising:

a first substrate formed with a plurality of liquid crystal driving active elements;

first, second and third liquid crystal cells stacked in this order on an inter-layer film formed on the first substrate; and

a second substrate disposed on the third liquid crystal cell with intervention of a planarizing film;

wherein the first, second and third liquid crystal cells each has a counter electrode, a liquid crystal layer and a driving electrode connected to a corresponding one of the liquid crystal driving active elements formed on the first substrate, and are each electrically isolated by an insulating layer from the counter electrode and driving electrode of an adjacent liquid crystal cell.

5,712,696
MANUFACTURE OF LCD DEVICE BY TRANSFERRING THE ORIENTATION STATE FROM A PARENT SUBSTRATE TO A CHILD SUBSTRATE

Yasuo Toko, and Takashi Sugiyama, both of Yokohama, Japan, assignors to Stanley Electric, Co., Ltd., Tokyo, Japan

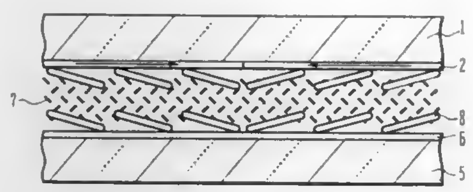
Filed Feb. 13, 1995, Ser. No. 387,170

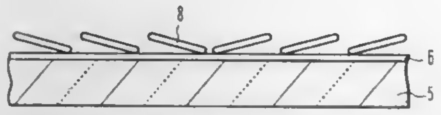
Claims priority, application Japan, Feb. 17, 1994, 6-20620

Int. Cl.^{6} G02F *1/1337;1/13*

U.S. Cl. 349—123 **22 Claims**

1. In a method of manufacturing a liquid crystal display device comprising two substrates and a liquid crystal material disposed therebetween, the steps comprising:





preparing a parent substrate having an orientation structure on a surface thereof subjected to orientation treatment;

interposing primary liquid crystal material comprising liquid crystal molecules, between a child substrate not subjected to orientation treatment and said parent substrate;

transferring an orientation state corresponding to the orientation structure of said parent substrate to the liquid crystal molecules on a surface of said child substrate by gradually orienting the liquid crystal molecules of said primary liquid crystal material from the parent substrate side to the child substrate side;

separating said parent substrate and said child substrate; and

injecting secondary liquid crystal material into a space between a pair of substrates facing each other and forming a liquid crystal device, at least one of said pair of substrates being said child substrate transferred with said orientation state.

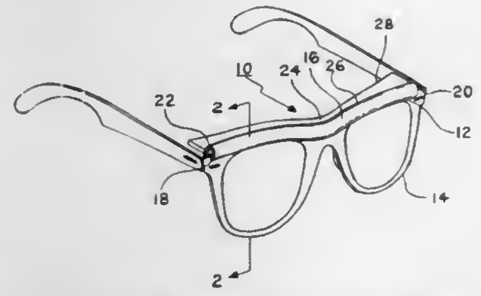
5,712,697
PLIABLE SUN SHIELD ACCESSORY FOR EYEGLASSES

Derek A. Walton, 2860 Torrey Pines Rd., La Jolla, Calif. 92037

Filed Mar. 21, 1996, Ser. No. 620,017

Int. Cl.^{6} G02C *9/00;7/10;1/00*

U.S. Cl. 351—47 **6 Claims**



1. A device, selectively mountable on a pair of eyeglasses having a pair of optical lenses with a frame between them, which comprises:

a pliable elongated member made of foam rubber, said elongated member being substantially tubular and having a first end, a second end, and an outer surface, said elongated member being formed with a longitudinal slit extending from said first end to said second end wherein said elongated member is spreadable at said elongated slit for positioning of said elongated member over said frame of said eyeglasses; and

an elongated sealing shield, said elongated sealing shield being longitudinally mounted on said outer surface of said elongated member and extending away therefrom to establish a seal against a person's forehead.

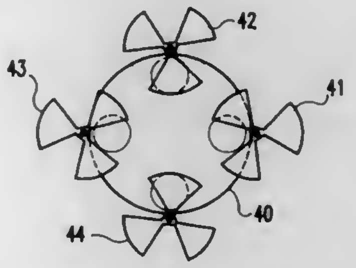
5,712,698
INDEPENDENTLY CONTROLLABLE SHUTTERS AND VARIABLE AREA APERTURES FOR OFF AXIS ILLUMINATION

Bernhard Poschenrieder, Poughkeepsie; Takashi Sato, Fishkill, and Tsukasa Azuma, Poughkeepsie, all of N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany, and Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 4, 1996, Ser. No. 610,770

Int. Cl.^{6} G03B *27/72*

U.S. Cl. 355—71 **10 Claims**



2. An off axis illumination system for photolithographic exposure of a photosensitive film on a device substrate in the manufacture of semiconductor devices comprising:

an exposure source for exposing the photosensitive film;

a photomask which contains an image of pattern etched into a metallic layer, said photomask being interposed between the exposure source and the photosensitive film to be exposed;

a lens system between the photomask and the resist for focusing an illuminated image for patterning into the photosensitive film on the device substrate; and

an aperture plate positioned between the exposure source and the photomask, said aperture plate having independently controllable shutters to provide variable area apertures, each exposure being separately optimized by adjusting the apertures for a particular lithographic step, wherein said aperture plate has a plurality of apertures equally spaced radially about a center of the aperture plate and the independently controllable shutters comprise a butterfly-shaped shutter pivotally mounted at the center of the aperture plate and movable to occlude or partially occlude diametrically opposed apertures.

5,712,699
GUIDE DEVICE FOR PHOTOSENSITIVE MATERIAL

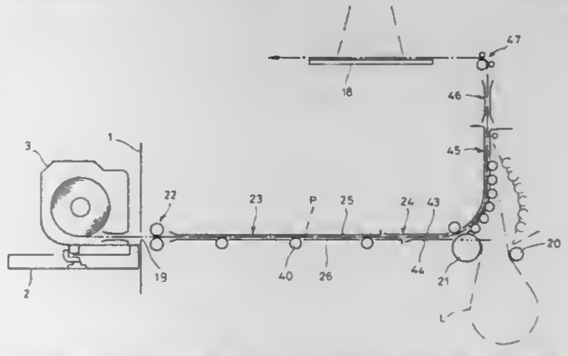
Masayuki Tamai, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 13, 1995, Ser. No. 527,426

Claims priority, application Japan, Sep. 13, 1994, 6-218887

Int. Cl.^{6} G03B *27/58*

U.S. Cl. 355—72 **5 Claims**



1. A guide device for use in a photoprinting machine including a paper magazine for housing a roll of photosenitive material, an exposure unit, and a feed path along which the photosensitive material is fed from the paper magazine to the exposure unit, said

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guide device including a paper guide to be provided along the feed path for guiding the photosensitive material, said paper guide comprising:

a pair of guide plates having confronting surfaces spaced from each other to enable passage therebetween of the photosensitive material, each said confronting surface having distributed uniformly over the entire area thereof a plurality of round protrusions;

a first said guide plate being fixed, and a second said guide plate being supported for movement relative to said first guide plate between an open position and a closed position; and

said first and second guide plates having locking devices to lock said second guide plate in said closed position.

5,712,700
IMAGING APPARATUS INCLUDING A PIXEL SHIFTING MEANS

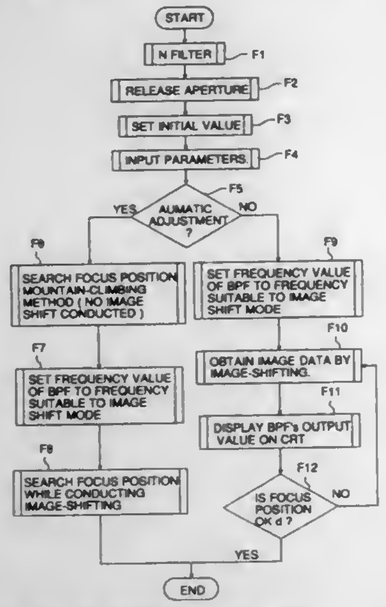
Katsuya Nagaishi; Yukinori Koizumi; Takashi Minaki; Hiroshi Hasegawa, and Keiichi Kawazu, all of Hachioji, Japan, assignors to Konica Corporatioin, Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,896

Claims priority, application Japan, Dec. 26, 1994, 6-321106; Dec. 27, 1994, 6-324895; Dec. 27, 1994, 6-324897

Int. Cl.^{6} H04N *5/335;1/00;* **G03B** *27/32;27/72*

U.S. Cl. 355—35 **15 Claims**


START
N FILTER
F1
RELEASE APERTURE
F2
SET INITIAL VALUE
F3
INPUT PARAMETERS
F4
F5
AUMATIC ADJUSTMENT ?
YES
NO
F6
SEARCH FOCUS POSITION MOUNTAIN-CLIMBING METHOD (NO IMAGE SHIFT CONDUCTED)
F9
SET FREQUENCY VALUE OF BPF TO FREQUENCY SUITABLE TO IMAGE SHIFT MODE
F7
SET FREQUENCY VALUE OF BPF TO FREQUENCY SUITABLE TO IMAGE SHIFT MODE
F10
OBTAIN IMAGE DATA BY IMAGE-SHIFTING
F11
DISPLAY BPF's OUTPUT VALUE ON CRT
F8
SEARCH FOCUS POSITION WHILE CONDUCTING IMAGE-SHIFTING
F12
IS FOCUS POSITION OK d ?
NO
YES
END

1. An image pick-up apparatus comprising:

(a) imaging means comprising a plurality of pixels disposed with a predetermined distance therebetween for picking up an image on a photographic original with respect to a plurality of colors;

(b) image forming means having an optical axis, for forming the image of the photographic original onto the imaging means;

(c) pixel shifting means for shifting a focal point of the image on the imaging means by a distance shorter than a distance between the pixels of the imaging means;

(d) a plurality of color filters having a plurality of colors different from each other; and

(e) filter selecting means for selecting a color filter from the plurality of color filters and for disposing the selected color filter between the photographic original and the imaging means; and

(f) controlling means for controlling the imaging means to pick up the image of the photographic original in a first condition that makes the pixel shift means operative, and to pick up the image of the photographic original in a second condition that makes the pixel shift means inoperative, at each time when the controlling means controls the filter selecting means to change a color filter to another color filter of the plurality of color filters.

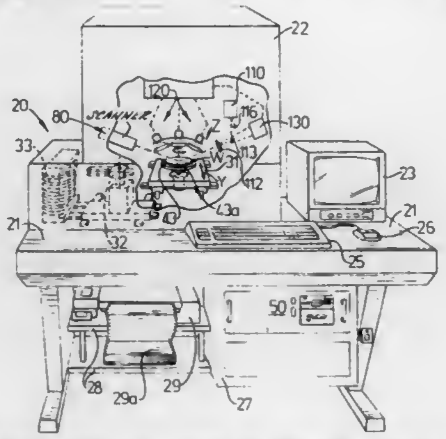
5,712,701
SURFACE INSPECTION SYSTEM AND METHOD OF INSPECTING SURFACE OF WORKPIECE

Lee D. Clementi, Lake Wylie, S.C., and Michael E. Fossey, Charlotte, N.C., assignors to ADE Optical Systems Corporation, Charlotte, N.C.

Filed Mar. 6, 1995, Ser. No. 399,962

Int. Cl.^{6} G01N *21/88*

U.S. Cl. 356—237 **42 Claims**



1. A surface inspection system for detecting particles or defects on a surface of a workpiece, the surface inspection system comprising:

means for translationally transporting a workpiece along a material path;

means associated with said transporting means for rotating a workpiece during translational travel along the material path;

a scanner positioned and arranged to scan a surface of a workpiece during rotational and translational travel along the material path, said scanner including a light source arranged to generate a light beam therefrom and means positioned to receive the light beam and arranged for scanning the light beam along a predetermined scan path across a surface of the workpiece as the workpiece rotationally and translationally travels along the material path; and

a collector arranged for collecting light reflected and scattered from the surface of the workpiece during rotational and translational travel along the material path, said collector comprising:

a light channel detector arranged for detecting light specularly reflected from the surface of a workpiece; and

a dark channel detector positioned adjacent said light channel detector for detecting light scattered from the surface of a workpiece, said dark channel detector including a plurality of collectors positioned closely adjacent each other and arranged for collecting components of the scattered light at different respective predetermined angles from the surface of the workpiece.

5,712,702
METHOD AND APPARATUS FOR DETERMINING CHAMBER CLEANING END POINT

Vincent James McGahay, Poughkeepsie, N.Y.; James Gardner Ryan, Newtown, Conn.; Michael Jay Shapiro, Austin, Tex., and Christopher Joseph Waskiewicz, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1996, Ser. No. 761,169

Int. Cl.^{6} G01J *3/443*

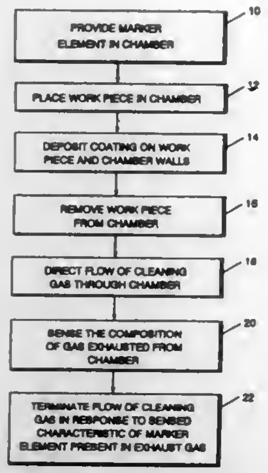
U.S. Cl. 356—311 **19 Claims**

1. A method for determining an end point for a chamber cleaning process, comprising:

depositing a marker element in said chamber;

placing a workpiece in said chamber;

depositing a coating of a preselected material on said workpiece and on the interior walls of said chamber;


PROVIDE MARKER ELEMENT IN CHAMBER
10
PLACE WORK PIECE IN CHAMBER
12
DEPOSIT COATING ON WORK PIECE AND CHAMBER WALLS
14
REMOVE WORK PIECE FROM CHAMBER
16
DIRECT FLOW OF CLEANING GAS THROUGH CHAMBER
18
SENSE THE COMPOSITION OF GAS EXHAUSTED FROM CHAMBER
20
TERMINATE FLOW OF CLEANING GAS IN RESPONSE TO SENSED CHARACTERISTIC OF MARKER ELEMENT PRESENT IN EXHAUST GAS
22

removing said workpiece from said chamber;

directing a flow of a cleaning gas through said chamber, said gas having a composition sufficient to remove said coating from the interior walls of said chamber;

sensing the composition of gases exhausted from said chamber;

terminating said flow of cleaning gas through said chamber in response to sensing a predefined characteristic of the marker element in said gases exhausted from the chamber.

5,712,703
MEASURING SENSOR, DIFFUSE REFLECTANCE SPECTRUM MEASURING METHOD USING THE MEASURING SENSOR, AND EMULSION PRODUCTION APPARATUS

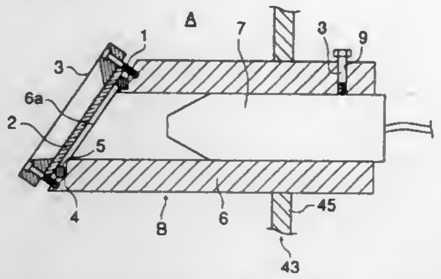
Hiroaki Ando; Haruhiko Masutomi, and Kazuyoshi Ichikawa, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 12, 1996, Ser. No. 711,872

Claims priority, application Japan, Sep. 22, 1995, 7-244005

Int. Cl.^{6} G01J *3/42*

U.S. Cl. 356—319 **16 Claims**



1. An apparatus for measuring spectrum of light reflected from a solution, comprising:

a sensor case on which a window is provided;

a light transmitting member provided on the window in such a construction that, when the window is immersed in the solution, the solution is prevented from entering in the case by the light transmitting member;

a light emitting member provided in the case so that light emitted from the light emitting member passes through the light transmitting member on the window and proceeds in the solution;

a light receiving member provided in the case so that first reflected light reflected from the solution returns into the case through the light transmitting member and is received by the light receiving member; and

the light transmitting member, the light emitting member and the light receiving member arranged in such a positional relation that second reflected light which is emitted from the light emitting member and directly reflected by the light emitting member without proceeding in the solution, is not received by the light receiving member.

5,712,704
APPLIANCE FOR MEASURING POLARIZATION MODE DISPERSION AND CORRESPONDING MEASURING PROCESS

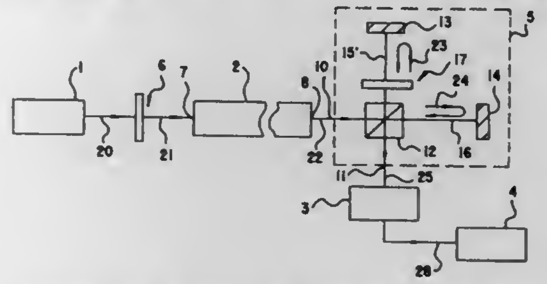
Philippe Martin, Pontchartrain; Gilles Le Boudec, Mareil Marley; Edouard Taufflieb, and Herve Lefevre, both of Paris, all of France, assignors to Photonetics, Marly Le Roi, France

Filed Sep. 13, 1996, Ser. No. 713,399

Claims priority, application France, Sep. 13, 1995, 95 10727

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—351 **10 Claims**



1. Appliance for measuring the polarization mode dispersion (PMD) of a waveguide (**2**) comprising:

a source (**1**, **6**) of wide-band polarized light capable of sending a measuring light beam (**21**) into a first extremity (**7**) of waveguide (**2**),

an interferometer (**5**, **51**, **52**, **53**, **54**) including an input (**10**) able to receive the measuring light beam (**22**) from the second extremity (**8**) of the waveguide (**2**), an output (**11**) capable of transmitting said light beam (**25**), and two arms (**15**, **16**) diverging from the input (**10**) and converging at the output (**11**), said interferometer (**5**, **51**, **52**, **53**, **54**) dividing the measuring light beam (**22**) into two interference light beams (**23**, **24**) crossing respectively the two arms (**15**, **16**) and combining at the output (**11**) of interferometer (**5**, **51**, **52**, **53**, **54**) by producing interferences,

a detector (**3**) capable of detecting the measuring light beam (**25**) from the interferometer (**5**, **51**, **52**, **53**, **54**),

an electronic processing unit (**4**) linked to detector (**3**), capable of extracting a value (τ) representative of the polarization mode dispersion of the waveguide (**2**) from the detected measuring light beam (**25**),

characterized in that it comprises at least one birefringent element (**17**, **18**, **19**, **46**, **47**, **59**), having two independent modes of polarization, placed on at least one of the arms (**15**, **16**) of the interferometer (**5**, **51**, **52**, **53**, **54**), the independent modes of the birefringent elements (**17**, **18**, **19**, **46**, **47**, **59**) being identical, the algebraic sum of the elementary phase shifts produced by the birefringent elements respectively in each of the arms (**15**, **16**) being equal to a relative phase shift and the algebraic difference of the two relative phase shifts having a value of π.

5,712,705
ARRANGEMENT FOR ANALYSIS OF SUBSTANCES AT THE SURFACE OF AN OPTICAL SENSOR

Christof Fattinger, Blauen, Switzerland; Burkhard Danielzik, Ingelheim, Germany; Dieter Graefe, Jena, Germany; Martin Heming, Saulheim, Germany, and Frank-Thomas Lentes, Bingen, Germany, assignors to Carl Zeiss Jena GmbH, Jena, Germany; F. Hoffman-La Roche, Basel, Switzerland, and Schott Glaswerke, Mainz, Germany

PCT No. PCT/EP94/03769, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO95/14225, PCT Pub. Date May 26, 1995

PCT Filed Nov. 14, 1994, Ser. No. 481,376

Claims priority, application Germany, Nov. 15, 1993, 43 38 894.9; Sep. 22, 1994, 44 33 753.1

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—354 **56 Claims**

1. An arrangement for analysis of substances at or near the surface of an optical sensor, comprising:

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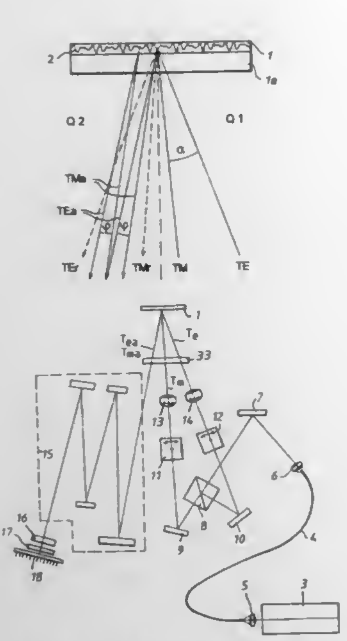


at least one wave-guiding film and at least one multidiffraction grating coupler for in-coupling and out-coupling of light beams;

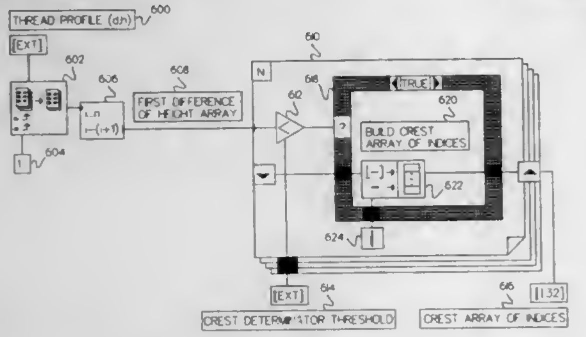
wherein at least two separate light beams enclosing an angle α relative to one another are coupled in and by which at least two light beams enclosing an angle ϕ relative to one another are coupled out;

a detection system for detecting the out-coupled light beams; and

wherein in-coupling and out-coupling are effected on one and the same side of the sensor and all the in-couple beams lie in a first quadrant of the plane of incident light and all the out-couple beams lie in a second quadrant of the plane of incident light, said first quadrant being different from said second quadrant, and the angle α between the in-couple beams is greater than the angle ϕ between the out-couple beams.

5,712,706
LASER SCANNING METHOD AND APPARATUS FOR RAPID PRECISION MEASUREMENT OF THREAD FORM

Glen M. Castore, Roseville; Frederick A. Treiber, St. Paul, and Barry L. Drake, Shoreview, all of Minn., assignors to M&M Precision Systems Corporation, West Carrollton, Ohio
Division of Ser. No. 263,254, Jun. 21, 1994, Pat. No. 5,521,707, which is a continuation of Ser. No. 127,445, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 748,247, Aug. 21, 1991, abandoned. This application Feb. 5, 1996, Ser. No. 597,039
Int. Cl.^{6} G01B *11/24*
U.S. Cl. 356—394 **4 Claims**

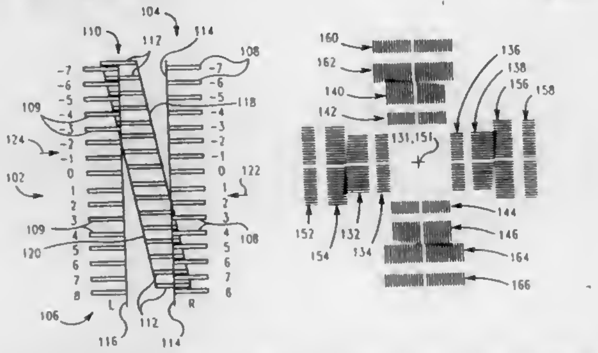


1. A method for determining crest height of a thread form for use in a computer controlled precision thread form analysis machine, the crest height determining method comprising the steps of:

(a) generating a thread profile array wherein the thread profile array includes a plurality of data points including a first data point and including array height data;
(b) initializing the first data point from the thread profile array;
(c) analyzing a first difference of the array height data for all elements of the thread profile array;
(d) comparing the first difference of array height data with a predetermined crest threshold and outputing a compared value;
(e) building a crest array of indices from the coupled to the compared output, where the compared value indicates that the predetermined crest threshold is less than the first difference of array height;
(f) reporting error if the predetermined crest threshold is exceeded; and
(g) storing the crest array of indices.

5,712,707
EDGE OVERLAY MEASUREMENT TARGET FOR SUB-0.5 MICRON GROUND RULES

Christopher P. Ausschnitt, Brookfield, Conn., and William A. Muth, Lagrangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 20, 1995, Ser. No. 560,720
Int. Cl.^{6} G01B *11/00*
U.S. Cl. 356—401 **33 Claims**



1. A target for determining bias or overlay error in a substrate formed by a lithographic process comprising:

a pair of first arrays of elements on a substrate, each first array comprising a plurality of spaced, substantially parallel elements having a length and a width, ends of each element in each first array being aligned along straight lines parallel to each other at a first angle to the length of each element and forming an array edge, said first arrays being spaced from each other and having substantially parallel array edges; and

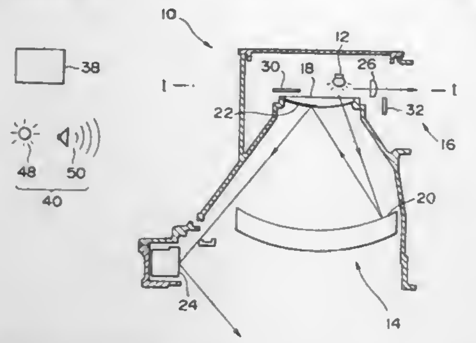
at least one second array of elements on a substrate, said second array comprising a plurality of spaced, substantially parallel elements having a length and a width, ends of said elements being aligned along straight lines parallel to each other at a second angle to the length of each element and forming at least two array edges;

said first and second arrays overlying each other such that: i) said elements of said first and second arrays are substantially parallel; ii) one of the edges of said second array intersects with one of the edges of one said first arrays; and iii) the other of the edges of said second array intersects with one of the edges of the other of said first arrays;

whereby said bias or overlay error is determinable by locating the points of intersection of the edges of said second array with the edges of said first arrays and measuring the degree of separation of the intersection points.

5,712,708
ALIGNER FOR TIMING THE ALIGNMENT OF A WAFER AND MASK WITH A SHUTTER TO PROTECT THE WAFER DURING ALIGNMENT

Takashi Kasashima, and Hitoshi Shimizu, both of Kagoshima, Japan, assignors to Sony Corporation, Japan
Filed Jul. 23, 1996, Ser. No. 681,521
Claims priority, application Japan, Jul. 28, 1995, 7-212600
Int. Cl.^{6} G01B *11/00*
U.S. Cl. 356—401 **14 Claims**



1. An aligner comprising:

a first optical system for irradiating a light beam emitted from a light source to a wafer by way of a mask so as to expose a photoresist film on said wafer;

a means for auto-alignment of said wafer with respect to said mask;

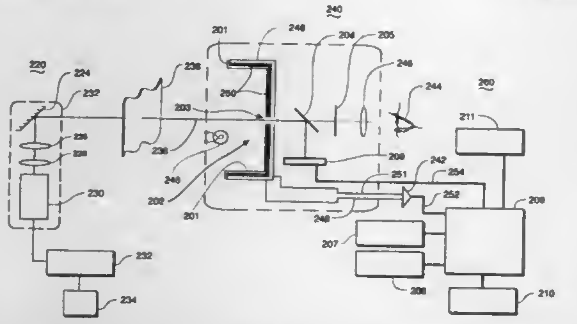
a timer for measuring an elapsed time since a start of said auto-alignment and outputting a signal after an elapse of a predetermined time;

a first shutter for shielding a light path of said first optical system; and

a first drive unit for driving said first shutter to close said first shutter on the basis of said signal supplied from said timer.

5,712,709
HAZE AND TRANSMISSIVITY MEASUREMENTS

Harry Lee Task, and Peter Marasco, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 8, 1996, Ser. No. 630,712
Int. Cl.^{6} G01N *21/17;21/88*
U.S. Cl. 356—432 **20 Claims**



1. The method of measuring haze in a transparency comprising the steps of:

positioning an optical energy source and optical energy receiver in physically aligned optical signal communicating positions on opposing sides of a to-be-measured thickness portion of said transparency;

communicating collimated optical energy from a semiconductor laser electrical-to-optical transducer located within said optical energy source through said to be-measured thickness of said transparency to a scattered-received-signal-energized first electrical signal generating distributed first optical-to-electrical transducer element located in said optical energy receiver;

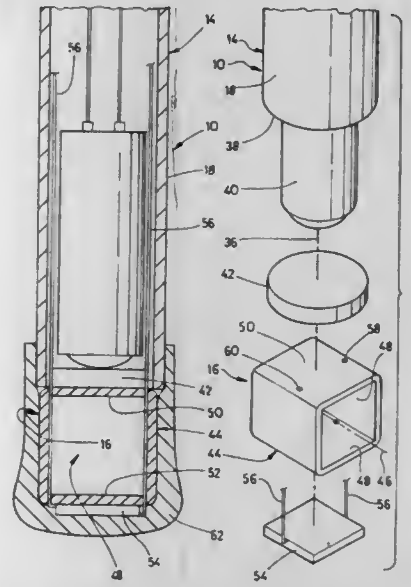
directing collimated optical energy from said semiconductor laser electrical-to-optical transducer located within said optical energy source through said to-be-measured thickness of said transparency to a collimated optical energy-energized second electrical signal generating second optical-to-electrical transducer element located in said optical energy receiver;

processing said first and second electrical signals to generate a third electrical signal representing a mathematical summation of said first and second electrical signal magnitudes and total optical energy passing through said to-be-measured thickness portion of said transparency; and

forming from said first electrical signal and said third electrical signal a tested transparency haze-related fourth quotient signal representing said first electrical signal magnitude mathematically divided by said third electrical signal magnitude.

5,712,710
SPECTROPHOTOMETRIC PROBE FOR INSITU MEASUREMENT

Cetin Karakus, 20 Carlton St., No. 1626, Toronto, Ontario, Canada, M5B 2H5, and Leena Das, Kearny, N.J., assignors to Cetin Karakus, Ontario, Canada
Filed Oct. 15, 1996, Ser. No. 729,845
Int. Cl.^{6} G01N *21/59*
U.S. Cl. 356—436 **15 Claims**



1. A portable, hand-held spectrophotometric probe for detecting the concentration of a spectrophotometrically active material dissolved in a liquid in a liquid bath, comprising:

an elongate handle comprising hollow interior, a lengthwise axis through the interior, and an open end transverse to the lengthwise axis;

a source of light having a spectrum which includes an absorption band of the material, the light source being mounted within the handle and transmitting its light along a predetermined transmission path toward the open end of the handle;

a photodetector supported from the handle and positioned at an end of the transmission path, the photodetector producing an electrical signal indicative of the intensity of light impinging on the photodetector; and,

a cell fixed to the handle, the cell comprising a generally cylindrical transparent side wall centered about an axis transverse to the lengthwise axis of the handle and sealed over the open end of the handle and cell defining a compartment with a pair of openings such that the compartment fills with the liquid upon insertion of the cell into the bath, the side wall [illegible] positioned in the transmission path and relative to the source and the detector such that the transmitted light travels

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a predetermined distance within the compartment before impinging on the photodetector.

5,712,711

HALFTONE IMAGE PROCESSING SYSTEM FOR SETTING DENSITY THRESHOLD VALUES

Yuzuru Suzuki, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1996, Ser. No. 696,276

Claims priority, application Japan, Aug. 23, 1995, 7-215050; Aug. 12, 1996, 8-212765

Int. Cl.^{6} H04N *1/40;1/29;* **G01D** *15/14*

U.S. Cl. 358—298 **14 Claims**

1. An image processing system for converting an input pixel into n subpixels P1, P2, . . . , Pn, said system comprising:

means for comparing density threshold values D1, D2, . . . , Dn (where D1<D2<. . . <Dn) corresponding to the subpixels P1, P2, . . . , Pn with a density of the input pixel, Din: and

density setting means for setting subpixels P1, P2, . . . , Pk corresponding to density threshold values D1, D2, . . . , Dk of the density threshold values D1, D2, . . . , Dn (where k <n) less than the density Din to a high density, setting subpixels Pk+2, . . . , Pn to a low density, and setting subpixel Pk+1 to an intermediate density.

5,712,712

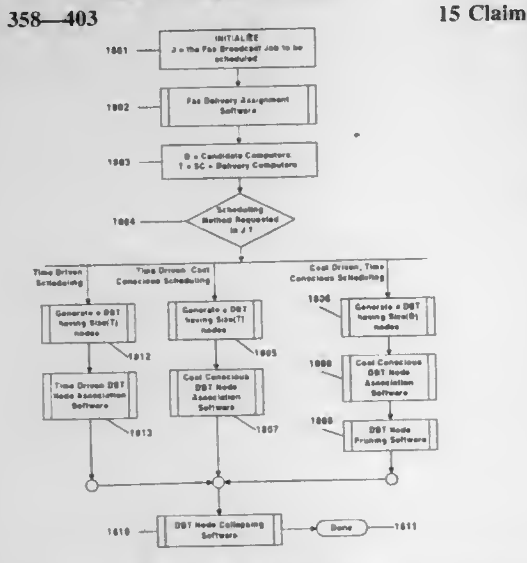
RAPID DELIVERY OF FACSIMILE OR OTHER DATA SETS TO A MASSIVE NUMBER OF RECIPIENTS

Frederick G. Sayward, Branford, Conn., assignor to Rapidata Systems, Inc., Durham, Conn.

Filed Jun. 1, 1995, Ser. No. 456,544

Int. Cl.^{6} H04N *1/00;1/32*

U.S. Cl. 358—403 **15 Claims**


1801
INITIALIZE J = the Fax Broadcast Job to be scheduled
1802
Fax Delivery Assignment Software
1803
D = Candidate Computers T = SC + Delivery Computers
1804
Scheduling Method Requested in J ?
Time Driven Scheduling
Time Driven Cost Conscious Scheduling
Cost Driven, Time Conscious Scheduling
Generate a DBT having Size(T) nodes
Generate a DBT having Size(T) nodes
1806
Generate a DBT having Size(D) nodes
1812
1805
1808
Time Driven DBT Node Association Software
Cost Conscious DBT Node Association Software
Cost Conscious DBT Node Association Software
1813
1807
1809
DBT Node Pruning Software
1810
DBT Node Collapsing Software
Done
1811

Master Fax Job Scheduling Software

1. A method of delivering a fax to a group of final recipients, each final recipient having delivery instructions including salutation information and delivery information, from a scheduling computer via a plurality of general purpose (GP) computers, the method comprising:

a. providing a data base of cost and speed for communication between the computers and the fax recipients;
b. partitioning the group of fax recipients into a plurality of final sets for delivery by said GP computers
c. assigning each delivery set to a GP computer for delivery of the fax to the final recipients and assigning paths from the scheduling computer to the delivery GP computer via a plurality of GP computers, utilizing the data base of cost and speed to determine the partitioning and paths;
d. determining the number of recipients and assigning a number of recipients per GP delivery computer;
e. for each recipient minimizing the cost based on the data base of cost information and assigning that particular recipient to a delivery GP computer for eventual delivery to said particular recipient;
f. counting the number of deliveries assigned to each GP computer;
g. determining if the number of deliveries assigned to each GP computer is level, and if the number is level increasing the level by an increment of one, and if the number is not level, selecting the GP computer and the recipient to level the number of deliveries assigned to each GP computer; and
h. continuing the above steps (d) through (g) until all fax recipients are assigned;
i. communicating from the scheduling computer to one of the GP computers a broadcasting job comprising the fax to be delivered, the distribution instructions for said one GP computer and the other GP computers in its assigned paths, and said delivery instructions for said final recipients including said salutation information and said delivery information;
i. communicating from said one GP computer to a second GP computer a portion of said broadcasting job received from the scheduling computer, said portion of said broadcasting job comprising the fax to be delivered, the distribution instructions for said second GP computer and any other GP computers in its assigned paths, and said delivery instructions including said salutation information and said delivery information for each delivery GP computer assigned to deliver faxes to the final recipients; and
k. delivering the fax from the GP computers assigned to deliver faxes, said delivery GP computers utilizing said salutation information and the delivery information received from the scheduling computer via the path of GP computers.

5,712,713

IMAGE FORMING APPARATUS HAVING AUTOMATIC EDIT TIMING

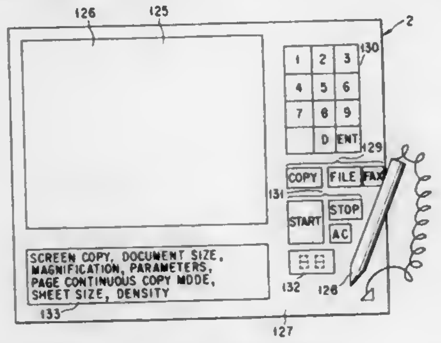
Miki Hamanaka; Toshiharu Takahashi, and Masako Shibaki, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1995, Ser. No. 406,382

Claims priority, application Japan, Mar. 24, 1994, 6-053848

Int. Cl.^{6} G06F *15/66*

U.S. Cl. 358—451 **11 Claims**


126
125
2
130
1
2
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6
7
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0
ENT
129
COPY
FILE
FAX
131
START
STOP
AC
SCREEN COPY, DOCUMENT SIZE, MAGNIFICATION, PARAMETERS, PAGE CONTINUOUS COPY MODE, SHEET SIZE, DENSITY
133
132
128
127

1. An image forming apparatus comprising:

means for scanning an image on an original document;

means for storing image data of the image scanned by said scanning means in a storage medium;

means for reading out the image data from said storage medium;

means for forming an image on an image formation medium in accordance with one of the image data of the image scanned by said scanning means and the image data read out by said reading out means;

means for designating the content of an edit process for editing the image data so that an image different from the image on the original document is formed on the image formation medium by the forming means;

means for instructing a time at which the edit process designated by said designating means is executed, at least one of a time before storing the image data and a time after reading out the image data, said instructing means including means for determining the time at which the edit process is executed, in accordance with the possibility of a variable magnification process at a time of output based on the designated edit process and a variable magnification ratio designated by said designating means; and

means for executing the edit process of the image data in accordance with the instruction by said instructing means, at one of a time before storing the image data in the storage medium and a time after reading out the image data.

5,712,714

IMAGE PROCESSING APPARATUS

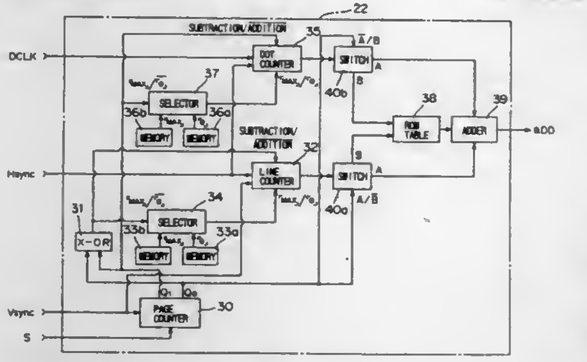
Tatsuo Sasahara, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1995, Ser. No. 500,360

Claims priority, application Japan, Jul. 18, 1994, 6-165533; Jul. 18, 1994, 6-165534

Int. Cl.^{6} H04N *1/04*

U.S. Cl. 358—474 **10 Claims**



1. An image processing apparatus comprising:

an optical reading means for optically scanning a document original and outputting dot data constituting one-page image data of the document original, said one-page image data being represented by a plurality of lines each having a plurality of dots;

a storage means for storing one-page image data constituted of the dot data output from said optical reading means, said storage means having a plurality of storage areas for respectively storing therein the dot data constituting the one-page image data, said storage areas respectively having addresses which are preliminarily assigned thereto along a dot array from a first dot in a first line to a last dot in a last line;

a clock outputting means for outputting a clock indicative of completion of image reading every time said optical reading means completes reading a one-page image of the document original;

an address specifying means for specifying an address of a storage area of said storage means, said address specifying means being operable in a first operational state in which addresses are successively specified along the dot array in said storage means and a second operational state in which addresses are successively specified along a line array in said storage means, said first and second operational states being alternately switched every time said clock outputting means outputs the clock; and

a read-out/write-in controlling means for reading out dot data stored in the storage area of said storage means having the address specified by said address specifying means and for writing dot data output from said optical reading means into the storage area of said storage means having the address specified by said address specifying means at substantially the same time.

5,712,715

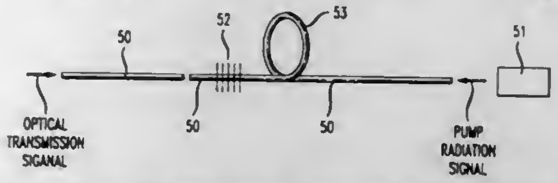
OPTICAL TRANSMISSION SYSTEM WITH SPATIALLY-VARYING BRAGG REFLECTOR

Turan Erdogan, Berkeley Heights, and Victor Mizrahi, Bedminster, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 198,915, Feb. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 995,492, Dec. 23, 1992, Pat. No. 5,363,239. This application Oct. 3, 1995, Ser. No. 538,518

Int. Cl.^{6} H01S *3/00;* **G02B** *5/18*

U.S. Cl. 359—8 **2 Claims**



1. In an optical transmission system comprising a length of optical transmission waveguide for transmitting an optical signal, an optical amplifier requiring pump radiation for amplifying said optical signal, a pump radiation source for supplying pump radiation for said amplifier, said amplifier being at least one kilometer from said pump radiation source, and a Bragg grating in the transmission waveguide for reflecting pump radiation to said amplifier, the improvement wherein:

said grating has a bandwidth in reflection having a full width at half-maximum greater than 12 nm, a total intrinsic optical loss less than 0.2 dB and a total peak extinction, measured in transmission, greater than 20 dB.

5,712,716

TELECOMMUNICATION SYSTEM AND METHOD FOR WAVELENGTH-DIVISION MULTIPLEXING TRANSMISSIONS WITH A CONTROLLED SEPARATION OF THE OUTGOING CHANNELS AND CAPABLE OF DETERMINING THE OPTICAL SIGNAL/NOISE RATIO

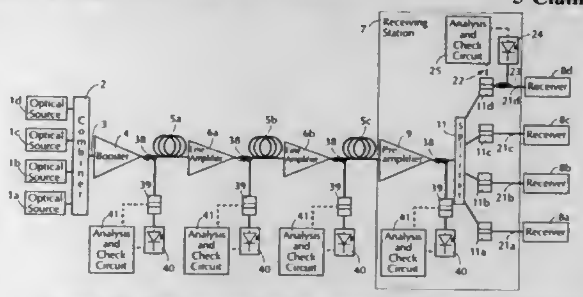
Stefano Vanoli, Verdellino, and Mario Tamburello, Vimercate, both of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Filed Nov. 20, 1995, Ser. No. 561,085

Claims priority, application Italy, Nov. 25, 1994, MI94A2392

Int. Cl.^{6} H04J *14/02*

U.S. Cl. 359—125 **5 Claims**



1. An optical telecommunication method comprising the steps of:

generating at least one optical transmission signal, at a predetermined wavelength included in a predetermined wavelength band;

transmitting said optical transmission signal through an optical fiber to a receiving station, comprising at least a receiving unit;

feeding an optical signal comprising said optical transmission signal to a respective one of the receiving units in said receiving station, through a passband filter unit;

receiving in said receiving unit the optical transmission signal passing through said filter unit;

wherein said filter unit comprises a fixed filter and a tunable filter, said fixed filter having a predetermined passband including said predetermined wavelengths and said tunable filter being tunable to several wavelengths in said predetermined passband, by command means operable under several operating conditions, and in that said feeding step comprises:

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filtering said signal with said fixed filter;
scanning said predetermined passband by varying said operating conditions of said tunable filter;
recognizing said optical transmission signal in said passband and identifying the relevant operating conditions; and
maintaining the operating conditions at said optical transmission signal.

5,712,717
HIGH ISOLATION, OPTICAL ADD-DROP MULTIPLEXER

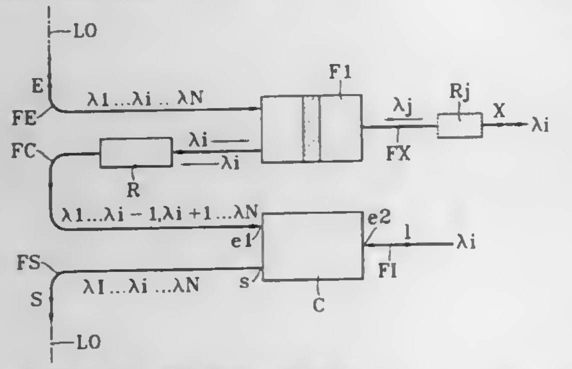
André Hamel, Lannion; Daniel Laville, Perrus Guire, and Eric Delevaque, Ploumillian, all of France, assignors to France Telecom, Paris, France

Filed Mar. 1, 1996, Ser. No. 609,519

Claims priority, application France, Mar. 3, 1995, 95 02487

Int. Cl.⁶ H04J *14/02*

U.S. Cl. 359—130 **7 Claims**



1. Optical add-drop multiplexer having:
a first band-pass, multidielectric filter (F1) for receiving a first group of optical signals and able to transmit at least one of these signals and reflect the signals of the group which are not transmitted and
an optical adding means (F2, C) for receiving the thus reflected signals and at least one optical signal to be added among them and which is able to supply a second group of optical signals including the reflecting signals and the signal to be added,
said multiplexer being characterized in that it also comprises a photo-induced Bragg grating filter (R), which is optically coupled on one side, to the first multidielectric filter (F1) for receiving the signals reflected by said first filter and, on the other side, to the adding means (F2, C) and able to transmit said reflecting signals to said adding means and reflect to the first filter one or more optical signals, which have the same wavelength or wavelengths as the signal or signals transmitted by said first filter and which are liable to exist among the signals reflected by said first filter.

5,712,718
BOOK-EDGE FLAT-BED SCANNER

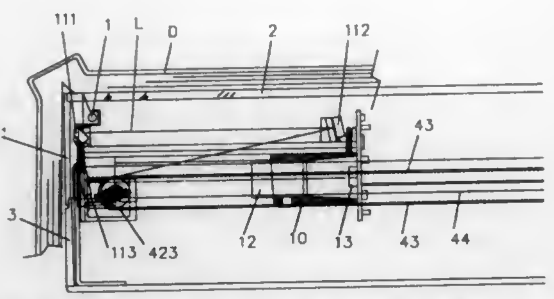
Philip L. Chen, E. Rolling Hills, Calif., assignor to Avision, Inc., Hsinchu, Taiwan

Continuation of Ser. No. 526,356, Sep. 11, 1995, abandoned. This application Mar. 26, 1997, Ser. No. 824,129

Int. Cl.⁶ G02B *26/08*

U.S. Cl. 359—201 **6 Claims**

1. A flat-bed image scanning system capable of scanning a document to the binding edge of a page for reducing distortion, comprising:
a frame;
a scanning window lying on top of said frame and forming an obtuse angle with said frame for aligning with the binding edge of said document placed on top of said window, wherein said obtuse angle is formed in a flange attached at one end of said frame and at the other end of said flange to said window;
an integral image reading head;
a driving mechanism for sliding said image reading head underneath said scanning window along a rail;



said integral image reading head having all parts moving together comprising:
a scanning light source, which is in parallel with said binding edge and scans in a direction perpendicular to said binding edge, for illuminating said page to obtain optical signals;
a series of reflecting mirrors for reflecting said optical signals of the area scanned by said light source to said image reading head, placed underneath said window, and
a light sensor for sensing said optical signals.

5,712,719
OPTICAL SCANNING DEVICE

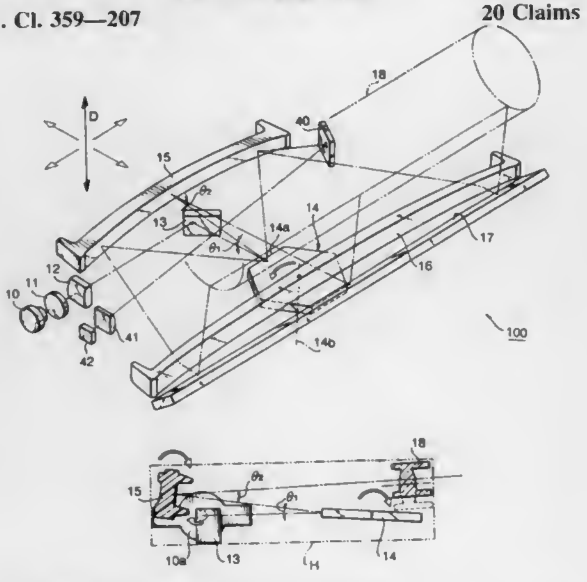
Yoshihiro Hama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,466

Claims priority, application Japan, Oct. 27, 1994, 6-287385

Int. Cl.⁶ G02B *26/08*

U.S. Cl. 359—207 **20 Claims**



1. An optical scanning device comprising:
a housing having a flat mounting surface for mounting the optical scanning device, said flat mounting surface defining a mounting plane;
a laser source, supported by said housing, for supplying a laser flux;
a polygonal mirror for scanning said laser flux supplied by said laser source, said polygonal mirror being rotatably supported in said housing about a rotary axis inclined with respect to said flat mounting surface by a predetermined angle, said predetermined angle defining an incident optical path substantially parallel to said mounting surface along which said laser flux is supplied by said laser source and a scanning optical path for separating said scanning laser flux by a first separation angle θ_1 in a sub-scanning direction away from said mounting plane;
a first flat mirror for directing said laser flux from said laser source to said polygonal mirror;
a curved surface mirror for reflecting said laser flux scanned by said polygonal mirror, and for converging said laser flux scanned by said polygonal mirror in a main scanning direction, said reflected scanning laser flux being separated from said scanning laser flux by a second separation angle θ_2 in said sub-scanning direction; and
an anamorphic lens for converging said reflected scanning laser flux in said sub-scanning direction,
at least a portion of said laser source being positioned in a same plane in said main scanning direction as said curved surface mirror while not interfering with said curved surface mirror, and
at least a portion of said first flat mirror being positioned adjacent said curved mirror.

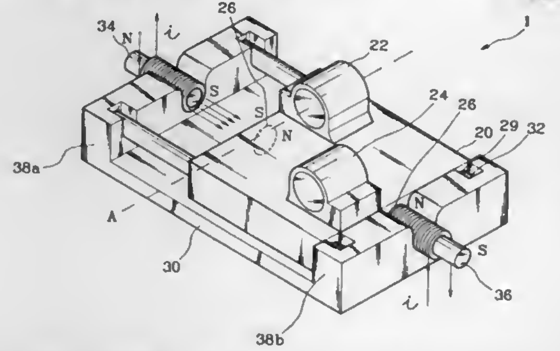
5,712,720
LENS SWITCHING APPARATUS FOR DUAL-LENS OPTICAL SCANNER

Henry Peng, and Kevin Yang, both of Hsinchu, Taiwan, assignors to Umax Data Systems Inc., Hsinchu, Taiwan

Filed Dec. 16, 1996, Ser. No. 773,724

Int. Cl.⁶ G02B *26/08*

U.S. Cl. 359—210 **5 Claims**



1. A lens switching apparatus for a dual-lens optical scanner equipped with
a CCD for image processing, comprising:
a base equipped with two side walls and a concave section formed between the side walls;
a slide block located on the concave section and moveable between the side walls of the base;
a first optical lenses and a second optical lenses arranged on the slide block with different magnification;
a guide means for guiding the slide block between the side walls of the base;
a plurality of magnetic elements arranged on side walls of the slide block; and
a plurality of electromagnetic elements arranged on the side walls of the base, corresponding to the magnetic elements of the slide block respectively, to move the slide block along the guide means by magnetically actuating the electromagnetic elements.

5,712,721
SWITCHABLE LENS

Timothy Andrew Large, Cambridge, United Kingdom, assignor to Technology Partnership, PLC, Royston, United Kingdom

PCT No. PCT/GB94/00742, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO94/23334, PCT Pub. Date Oct. 13, 1994

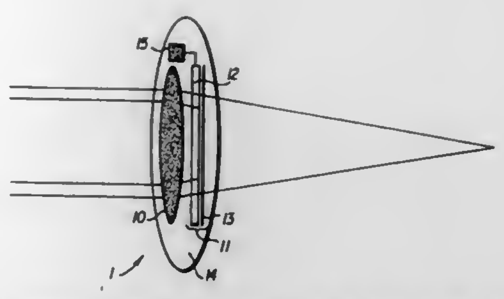
PCT Filed Apr. 7, 1994, Ser. No. 530,224

Claims priority, application United Kingdom, Apr. 7, 1993, 9307241; Jul. 6, 1993, 9313952

Int. Cl.⁶ G02F *1/03;* **G02C** *1/00*

U.S. Cl. 359—245 **24 Claims**

1. A lens assembly comprising:
a lens including a layer of cholesteric liquid crystal having a property which may be switched by application of an electric



or magnetic field, said property being at least one of focal length, absorption, color and effective aperture, without employing a polarizer;
switching means coupled to the lens to provide a drive impulse to switch the property of the lens; and
a power source coupled to the switching means to provide power for the switching means.

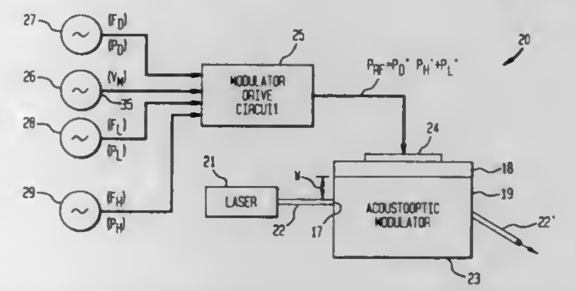
5,712,722
DRIVER CIRCUIT FOR STABILIZING OPTICAL OUTPUTS OF ACOUSTOOPTIC DEVICES

John Kump, Hillsborough, and Richard A. Coppock, San Jose, both of Calif., assignors to Crystal Technology, Inc., Palo Alto, Calif.

Filed Sep. 9, 1996, Ser. No. 711,025

Int. Cl.⁶ G02F *1/11*

U.S. Cl. 359—285 **15 Claims**



1. A system for electronically powering an acoustooptic device comprising:
an acoustooptic device having a drive electrode, an acoustic transducer, and a transparent optical medium with an aperture;
a radio-frequency (RF) drive power generator supplying RF drive power at a drive carrier frequency;
a source of a modulating signal;
an RF modulator connected to said RF drive power generator and said modulating signal source, said RF modulator supplying modulated RF drive power modulated with said modulating signal;
compensating RF power means for supplying RF compensating power at frequencies different from said drive carrier frequency, said RF compensating power complementing said modulated RF drive power;
combining means for combining said modulated RF drive power and said RF compensating power; and
drive means connected to said combining means and said drive electrode for powering said acoustooptic device with the combination of said modulated RF drive power and said RF compensating power such that the spatial thermal energy distribution inside said acoustooptic device remains substantially constant.

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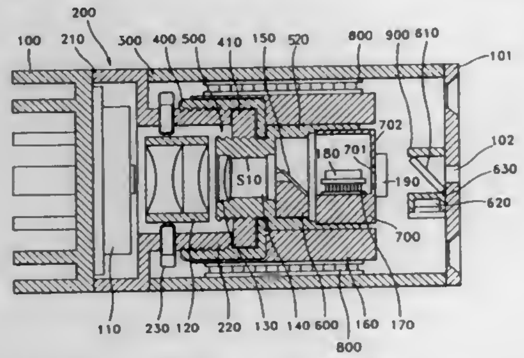
5,712,723
SECOND HARMONIC GENERATOR

Jin-ho Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Jan. 26, 1996, Ser. No. 592,450
Claims priority, application Rep. of Korea, Jan. 27, 1995, 95-1565
Int. Cl.^{6} G02F *1/37;* **H01S** *3/109*
U.S. Cl. 359—328 **25 Claims**



1. A second harmonic generator comprising:

a laser diode mount;

a laser diode disposed on said laser diode mount for generating pumping light;

a resonator for generating second harmonic light from the pumping laser light output by said laser diode, said resonator including spaced apart input mirrors and a gain medium, a polarization element, and a birefringent element serially arranged between said input and output mirrors, and a first thermoelectric cooling element contacting said birefringent element;

locking means connecting said resonator to said laser diode mount;

thermal control means including a thermoelectric cooling device for controlling the temperature of said resonator;

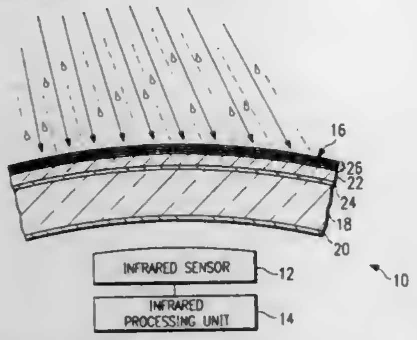
a housing bousing said resonator and coupled to said laser diode mount, said thermoelectric cooling device being interposed between and thermally connecting said housing to said resonator;

a beam splitter for reflecting part of the second harmonic light emitted from said resonator; and

a photodetector for detecting the light reflected from said beam splitter.

5,712,724
OPTICAL WINDOW WITH GAP PROTECTIVE COATING

Paul Klocek, Garland, Tex., and Peter Taborek, Irvine, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 546,070, Jun. 27, 1990, abandoned. This application Oct. 15, 1991, Ser. No. 776,716
Int. Cl.^{6} F21V *9/04*
U.S. Cl. 359—350 **12 Claims**



1. An infrared transmissive protective window, comprising:

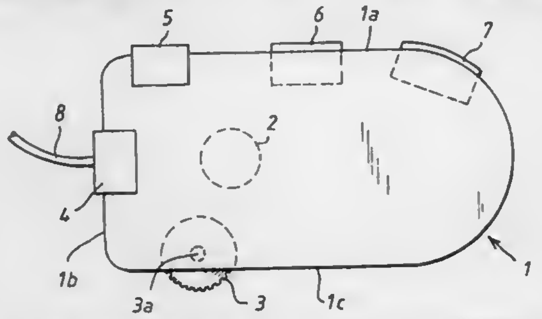
(a) a substrate layer comprising an infrared transmissive material; and

(b) a protective layer comprising gallium phosphide disposed outwardly from said substrate layer;

(c) wherein said protective layer comprises epitaxially formed polycrystalline gallium phosphide.

5,712,725
ONE-HAND CONTROL UNIT FOR CONTROLLING MOVEMENTS

Bernd Faltermeier, Aalen, and Franz Ferninand von Falkenhausen, Jena, both of Germany, assignors to Carl-Zeiss-Stiftung, Brenz, Germany
Filed Jan. 11, 1996, Ser. No. 587,847
Claims priority, application Germany, Jan. 11, 1995, 195 00 530.9
Int. Cl.^{6} G02B *7/08;21/00;21/06;* **G08G** *9/047*
U.S. Cl. 359—392 **26 Claims**



1. A one-hand control unit which is placed on and moved over a support surface to control movements in instruments, the one-hand control unit comprising:

a body which can be manually grasped by an operator;

said body having a lower side for placing said control unit, on the support surface and for guiding said control unit thereover;

said body having two lateral sides lying opposite each other;

a rotational transducer mounted in one of said lateral sides for detecting one or two dimensional movement;

at least two momentary-contact switches mounted on said other one of said lateral sides;

said rotational transducer being located on said one lateral side so as to correspond to the position of the thumb of said operator;

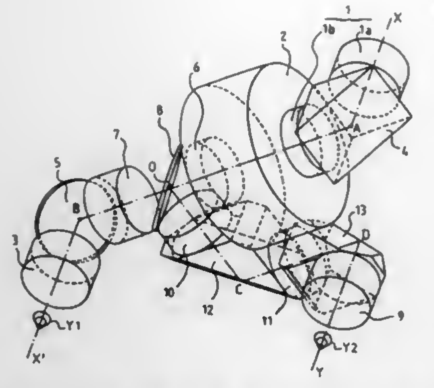
said two momentary-contact switches being located on said other lateral side so as to correspond to the respective positions of the middle finger and the ring finger; and,

a third momentary-contact switch mounted on said other one of said lateral sides and located thereon to correspond to the position of the little finger.

5,712,726
COMPACT BINOCULARS FOR NIGHTTIME VISION

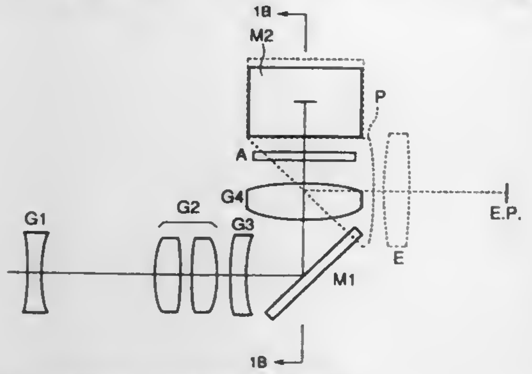
Jean-Luc Espie, Paris, and Bruno Coumert, Etienne, both of France, assignors to Angenieux SA, Saint-Heand, France
PCT No. PCT/FR95/00799, § 371 Date Dec. 30, 1996, § 102(e) Date Dec. 30, 1996, PCT Pub. No. WO96/00924, PCT Pub. Date Jan. 11, 1996
PCT Filed Jun. 16, 1995, Ser. No. 750,853
Claims priority, application France, Jun. 28, 1994, 94 07951
Int. Cl.^{6} G02B *23/00;27/02*
U.S. Cl. 359—419 **8 Claims**

1. Binoculars for nighttime vision including an entrance objective conjugate with a light-intensifier tube for forming an image of a scene from light flux originating from the scene along a viewing axis, an intensified image next being transmitted by an image transport and by an optical splitter which partially transmits the flux by transmission and reflection respectively on a first pathway to a first eyepiece and on a second pathway, which is bent twice, to a second eyepiece, the eyepieces having axes parallel to the viewing axis, characterized in that the tube and the image transport are aligned so as to constitute a principal optical pathway along a principal optical axis lying in a plane perpendicular to the viewing axis and inclined with respect to the plane of the axes of the eyepieces, in that the second eyepiece pathway, which is bent twice and which has an axis lying in the plane perpendicular to the viewing axis and passing through the axis of the principal pathway.



5,712,727
REAL-IMAGE ZOOM FINDER

Motohisa Mouri, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Mar. 5, 1996, Ser. No. 610,863
Claims priority, application Japan, Mar. 8, 1995, 7-077327
Int. Cl.^{6} G02B *23/00;15/14*
U.S. Cl. 359—431 **18 Claims**



1. A real-image zoom finder comprising:

an objective lens having a positive refractive power, said objective lens including, in order from the object side, a first lens unit having a negative refractive power, a second lens unit having a positive refractive power, a third lens unit having a negative refractive power, and a fourth lens unit having a positive refractive power, and said objective lens attaining zooming by moving at least said second lens unit along an optical axis; and

an eyepiece lens which is used for observing a real image of an object formed by said objective lens and has a positive refractive power,

wherein said objective lens satisfies the following condition:

$$0.3<|f3|/fT<0.7$$

where

f3: the focal length of said third lens unit; and

fT: the longest focal length of said objective lens,

wherein said objective lens further satisfies the following condition:

$$-0.6<(R2+R1)/(R2-R1)<0$$

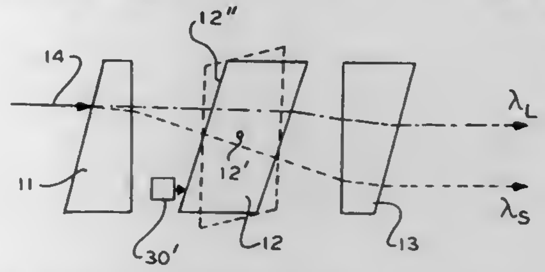
where

R1: the radius of curvature of an object-side surface of a negative lens component closest to the object side in said third lens unit; and

R2: the radius of curvature of an image-side surface of the negative lens component.

5,712,728
METHODS AND DEVICES INCORPORATING WIDEBAND FARADAY ROTATION

Peter Chen, 2250 Harborview Dr., San Leandro, Calif. 94577
Continuation of Ser. No. 319,436, Oct. 6, 1994. This application Nov. 6, 1995, Ser. No. 554,034
Int. Cl.^{6} G02B *5/30*
U.S. Cl. 359—484 **24 Claims**



15. A device for wideband magneto-optical rotation of a polarization state of incident light comprising:

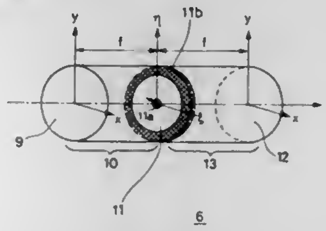
(a) means for dispersing light according to wavelength in a waveband;

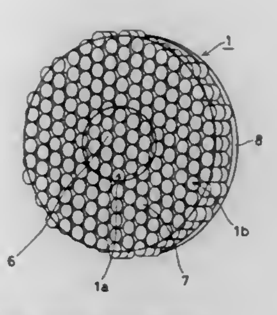
(b) magneto-optical means for said rotation comprising an optical element having a surface for receiving incident light, said element being in light intercepting relation to the light emitting from the dispersing means such that the emitting light is incident on said surface; and

(c) means for adjustably positioning the magneto-optical means element surface at an angle to the pathways of dispersed light, said angle corresponding to the wavelength of the light on said surface such that the shorter wavelength pathways through the magneto-optical means are longer than pathways for longer wavelengths sufficiently that the angle of rotation in the magneto-optical means is substantially equal for all wavelengths within the given waveband according to the adjusted angle of said surface to the corresponding wavelength.

5,712,729
ARTIFICIAL RETINA CELL, ARTIFICIAL RETINA AND ARTIFICIAL VISUAL APPARATUS

Takeshi Hashimoto, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 46,742, Apr. 16, 1993, abandoned. This application May 15, 1995, Ser. No. 440,875
Claims priority, application Japan, Apr. 17, 1992, 4-097756; Apr. 17, 1992, 4-097757
Int. Cl.^{6} G02B *27/46*
U.S. Cl. 359—562 **12 Claims**





1. A visual artificial retina comprising:

a plurality of artificial retina cells; and

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an element for detecting output light from said plurality of artificial retina cells,

wherein each retina cell includes a Fourier transform lens that forms a Fourier transform image of an input object image in a predetermined plane, a filter disposed in said plane to cut off substantially a zero-order light component of said Fourier transform image while permitting substantially all other orders of light to pass therethrough to form a filtered Fourier transform image, and an inverse Fourier transform lens constructed and arranged to convert the filtered Fourier transform image into real domain information by inverse Fourier transformation.

5,712,730
DIFFRACTIVE OPTICAL DEVICE FOR THE OPTICAL IMAGING OF A SPATIAL POINT ONTO OTHER SPATIAL POINTS

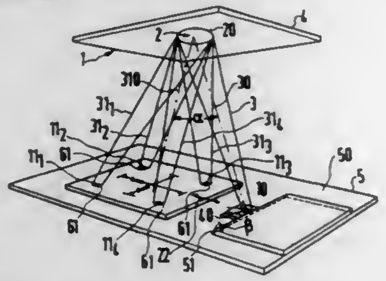
Helmut Zarschitzky, Munich, and Holger Karstensen, Hohenbrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 228,282, Apr. 15, 1994, abandoned. This application Dec. 6, 1996, Ser. No. 761,809

Claims priority, application Germany, Apr. 16, 1993, 43 12 382.1

Int. Cl.⁶ G02B *5/18*

U.S. Cl. 359—569 **24 Claims**



1. A diffractive optical structure for the optical imaging of a defined spatial point onto at least two other spatial points, comprising:

- a planarly expansive, defined, light-diffracting structure for illumination by a light ray proceeding from the defined spatial point,
- the light diffracting structure including a plurality of structural sub-regions, each of said structural sub-regions directing at least a portion of an illuminating light ray falling onto said structural sub-region onto a corresponding one of the other spatial points so that portions of the light ray falling on said light-diffracting structure are directed onto each one of the other spatial points,
- a group of at least two of said structural sub-regions directing light onto only one of said at least two other spatial points, so that each of said structural sub-region of said group directs light impinging it onto a same one of said other spatial points as other subregions of said group.

5,712,731
SECURITY DEVICE FOR SECURITY DOCUMENTS SUCH AS BANK NOTES AND CREDIT CARDS

Kenneth J. Drinkwater, Surrey, and Philip M. G. Hudson, Wiltshire, both of United Kingdom, assignors to Thomas De La Rue Limited, London, United Kingdom

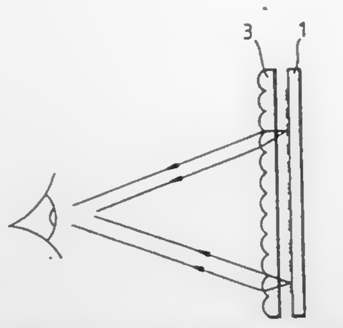
PCT No. PCT/GB94/01006, § 371 Date Jan. 2, 1996, § 102(e) Date Jan. 2, 1996, PCT Pub. No. WO94/27254, PCT Pub. Date Nov. 24, 1994

PCT Filed May 10, 1994, Ser. No. 549,681

Claims priority, application United Kingdom, May 11, 1993, 9309673

Int. Cl.⁶ G02B *27/10*

U.S. Cl. 359—619 **46 Claims**



1. A security device comprising a regular two dimensional array of substantially identical printed microimages, each of the microimages having a dimension of up to about 250 μm and which, when viewed through a two dimensional array of substantially spherical microlenses having substantially a same pitch as the array of microimages, each microlens having a diameter in the range of substantially 50–250 μm, generate at least one magnified version of one of the microimages when the array of microimages and the array of microlenses are at least partially registered.

5,712,732
AUTOSTEREOSCOPIC IMAGE DISPLAY ADJUSTABLE FOR OBSERVER LOCATION AND DISTANCE

Graham Stewart Brandon Street, Impstone House, Pamber Road, Silchester, Reading, Berkshire RG7 2NU, United Kingdom

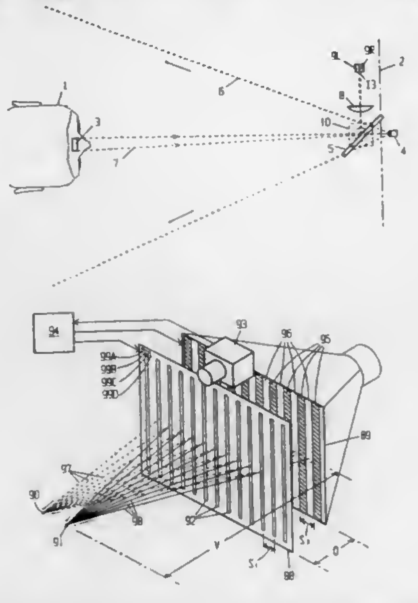
PCT No. PCT/GB94/00405, § 371 Date Aug. 29, 1995, § 102(e) Date Aug. 29, 1995, PCT Pub. No. WO92/20875, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 2, 1994, Ser. No. 513,787

Claims priority, application United Kingdom, Mar. 3, 1993, 9304279; Apr. 14, 1993, 9307638; Jul. 13, 1993, 9314419; Nov. 2, 1993, 9322579; Nov. 24, 1993, 9324141; Jan. 5, 1994, 9400097

Int. Cl.⁶ G02B *27/14*

U.S. Cl. 359—630 **69 Claims**



65. An apparatus for directing an image toward first and second viewing positions, comprising:

- a periodic structure arranged between the image and the first and second viewing positions, said periodic structure including a plurality of apertures separated by light-blocking portions, each aperture extending in a first direction, the first andsecond viewing positions being located relative to one another in a second direction orthogonal to the first direction; and
- a controller for displacing the apertures in the second direction.

5,712,733
ZOOM LENS OF REAR FOCUS TYPE

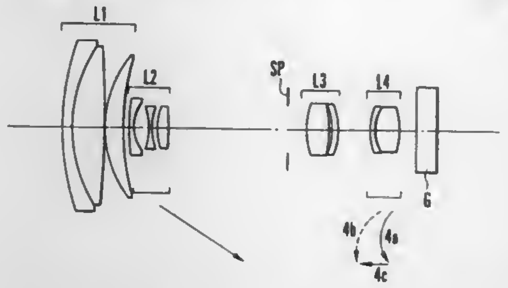
Hitoshi Mukaiya, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1996, Ser. No. 583,750

Claims priority, application Japan, Jan. 31, 1995, 7-034213

Int. Cl.⁶ G02B *15/14*

U.S. Cl. 359—687 **12 Claims**



1. A zoom lens of rear focus type, comprising, in order from an object side to an image side, a first lens unit of positive refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power and a fourth lens unit of positive refractive power, said second lens unit and said fourth lens unit being moved to effect zooming and said fourth lens unit being moved to effect focusing, wherein said third lens unit consists of a positive first lens and a negative second lens of meniscus form convex toward the image side, at least one lens surface being aspherical, and wherein said fourth lens unit consists of a negative first lens of meniscus form convex toward the object side and a positive second lens, and wherein no lens is present between said third and fourth lens units.

5,712,734
ZOOM LENS BARREL FOR MOVING LENSES IN THE OPTICAL AXIS DIRECTION WITHOUT INCREASING THE LENGTH OF THE ZOOM LENS BARREL

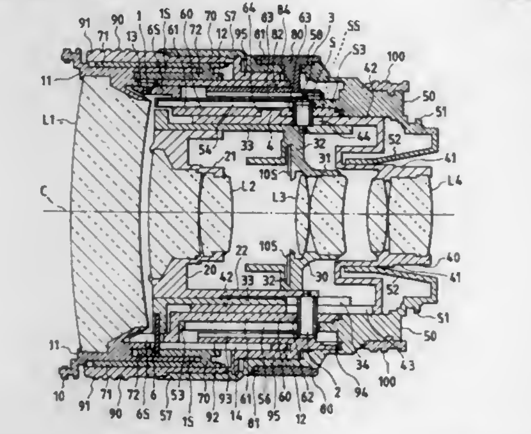
Hideo Kanno, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 19, 1995, Ser. No. 545,095

Claims priority, application Japan, Nov. 4, 1994, 6-271426; Nov. 4, 1994, 6-271427; Nov. 4, 1994, 6-271428; Nov. 4, 1994, 6-271429; Nov. 4, 1994, 6-271430

Int. Cl.⁶ G02B *15/14*

U.S. Cl. 359—701 **12 Claims**



1. A zoom lens barrel which is attached to a camera main body, and attains zooming by moving a plurality of lenses in an optical axis direction of the lenses, comprising:

- a cylindrical lens frame to hold the lenses on an inner circumferential surface side thereof, is formed with a lens cam slot having a spiral shape about an optical axis, is formed with a straight slot extending in a direction parallel to the optical axis, and is movable in the optical axis direction;
- a cylindrical cam barrel which is rotatable about the optical axis and is movable in the optical axis direction;
- a cylindrical stationary barrel formed with a cam barrel cam slot having a spiral shape about the optical axis;
- a lens cam pin, one end portion of which is fixed to said cam barrel, and the other end portion of which is fitted in said lens cam slot of said lens frame;
- a cam barrel cam pin, one end portion of which is fixed to said cam barrel, and the other end portion of which is fitted in said cam barrel cam slot of said stationary barrel;
- a lens frame rotation regulation member which is not rotatable about the optical axis direction, and is inserted in said straight slot of said lens frame; and
- a zoom operation ring which is attached to said stationary barrel to be rotatable about the optical axis, and rotates said cam barrel cam pin without regulating movement, in the optical axis direction, of said cam barrel cam pin.

5,712,735
CATADIOPTRIC REDUCTION PROJECTION OPTICAL SYSTEM

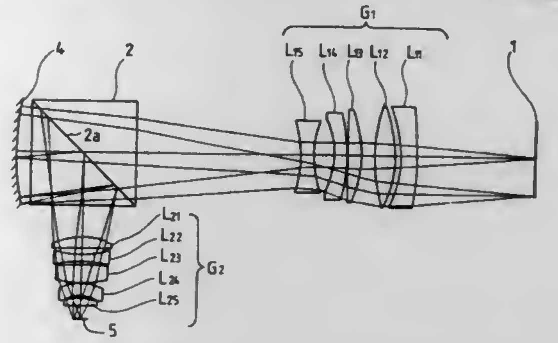
Sumio Hashimoto, Setagaya-ku; Yutaka Suenaga, and Yutaka Ichihara, both of Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 482,505, Jun. 7, 1995, which is a continuation of Ser. No. 62,725, May 18, 1993, which is a continuation of Ser. No. 948,248, Sep. 21, 1992. This application Jun. 26, 1996, Ser. No. 670,660

Claims priority, application Japan, Sep. 28, 1991, 3-276592

Int. Cl.⁶ G02B *17/00*

U.S. Cl. 359—727 **19 Claims**



1. A catadioptric reduction projection optical system for projecting a reduced image of a pattern of a first surface onto an exposure area of a second surface, including:

- a first lens unit;
- a prism type beam splitter;
- a concave reflecting mirror; and
- a second lens unit having a positive refractive power;
- wherein said catadioptric reduction optical system is so constructed that light from said first surface passes through said first lens unit and subsequently through said prism type beam splitter, and is reflected by said concave reflecting mirror and thereafter passes through said second lens unit;
- said catadioptric reduction optical system has a diameter of said exposure area including 20 mm; and
- said concave reflecting mirror has magnification which is 0.6 times to 1.1 times.

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5,712,736
UNDER VIEW MIRROR APPARATUS FOR A VEHICLE

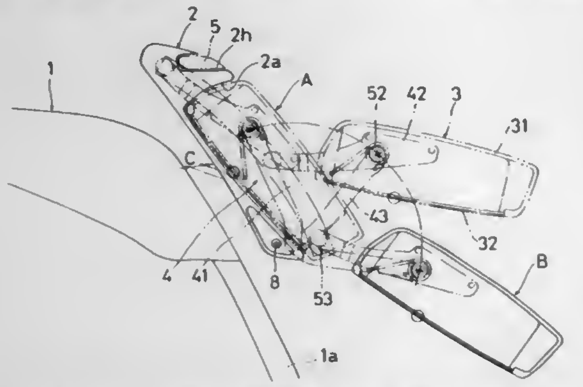
Hidekazu Kogita, Kariya; Masumi Nishikawa, Toyoake, and Shoji Okada, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 380,432, Jan. 30, 1995, abandoned, which is a continuation of Ser. No. 92,521, Jul. 16, 1993, abandoned. This application Aug. 5, 1996, Ser. No. 692,397

Claims priority, application Japan, Jul. 23, 1992, 4-196975; Aug. 28, 1992, 4-230284

Int. Cl.^{6} G02B *5/08;7/182;* **B60R** *1/06*

U.S. Cl. 359—841 **10 Claims**



1. An under view mirror apparatus for a vehicle comprising:
- a mirror structure for being mounted on a rear portion of a vehicle and for being selectively positioned in either one of a first condition in which the mirror structure is stored in a rear portion of the vehicle and a second condition in which the mirror structure projects out from the rear portion of the vehicle;
- a first operating mechanism for being disposed between one side of the mirror structure and the rear portion of the vehicle;
- a second operating mechanism for being disposed between an opposite side of the mirror structure and the rear portion of the vehicle;
- a driving mechanism positionable in the rear portion of the vehicle and connected to the first operating mechanism, said driving mechanism including a driving motor located on the one side of the mirror structure;
- a driven mechanism positionable in the rear portion of the vehicle and connected to the second operating mechanism; and
- a connecting member positionable in the rear portion of the vehicle, the connecting member extending between the one side of the mirror structure and the opposite side of the mirror structure and connecting the driving motor to the driven mechanism so that the first and second operating mechanisms are directly driven by the driving motor.

5,712,737
METHOD AND APPARATUS FOR AUTOMATICALLY EDITING AUDIO SIGNALS

Masami Tsubaki, Tokyo; Shuhei Kanaoka, Kanagawa; Koji Kosaka, Kanagawa; Yoshiyuki Yahagi, Kanagawa; Toshiyuki Yamazaki, Kanagawa; Hiromi Inoue, Kanagawa; Kaoru Sekigawa, Kanagawa, and Takeshi Ishihara, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

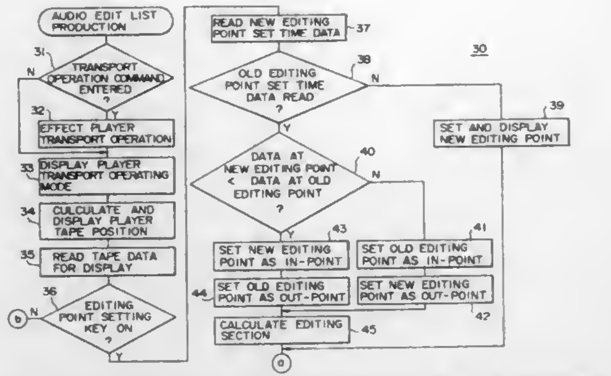
Continuation of Ser. No. 370,557, Jan. 9, 1995, abandoned, which is a continuation of Ser. No. 96,373, Jul. 26, 1993, abandoned. This application Aug. 22, 1996, Ser. No. 701,541

Claims priority, application Japan, Jul. 28, 1992, 4-201560

Int. Cl.^{6} G11B *27/02*

U.S. Cl. 360—13 **4 Claims**

1. A composing method for determining an editing section on a recording medium having signals including time code data recorded thereon, comprising the steps of:


AUDIO EDIT LIST PRODUCTION
31
N
TRANSPORT OPERATION COMMAND ENTERED ?
Y
32
EFFECT PLAYER TRANSPORT OPERATION
33
DISPLAY PLAYER TRANSPORT OPERATING MODE
34
CULCULATE AND DISPLAY PLAYER TAPE POSITION
35
READ TAPE DATA FOR DISPLAY
36
b
N
EDITING POINT SETTING KEY ON ?
Y
READ NEW EDITING POINT SET TIME DATA
37
30
38
OLD EDITING POINT SET TIME DATA READ ?
N
Y
39
SET AND DISPLAY NEW EDITING POINT
40
DATA AT NEW EDITING POINT < DATA AT OLD EDITING POINT ?
N
Y
43
SET NEW EDITING POINT AS IN-POINT
41
SET OLD EDITING POINT AS IN-POINT
44
SET OLD EDITING POINT AS OUT-POINT
SET NEW EDITING POINT AS OUT-POINT
42
CALCULATE EDITING SECTION
45
a

- operating an editing point setting device to fix a first editing point on said recording medium and determining a first time code thereof;
- identically operating the same editing point setting device to fix a second editing point on said recording medium spaced apart from said first editing point and determining a second time code thereof;
- comparing said first time code with said second time code to determine which of said first and second time codes is the smaller and which is the larger; and then
- storing as an in-point the one of said first and second editing points having the smaller time code and
- storing as an out-point the one of said first and second editing points having the larger time code.

5,712,738
METHOD OF CONTROLLING SIGNAL LINES AMONG AUDIO AND/OR VIDEO APPARATUS

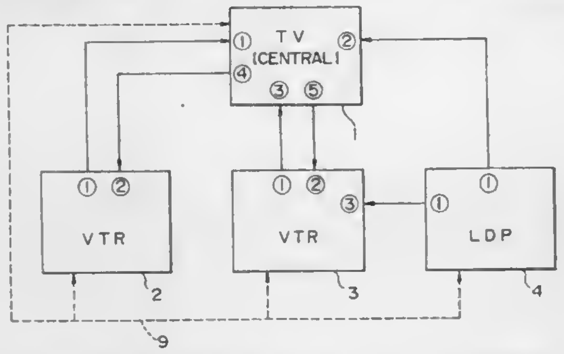
Noriko Kotabe, Chiba; Yoshio Osakabe, Kanagawa; Yasuo Kusagaya; Shigeo Tanaka, both of Tokyo; Akira Katsuyama, Kanagawa; Hiroshi Yamazaki, Kanagawa; Kouichi Sugiyama, Kanagawa, and Makoto Sato, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 177,401, Jan. 5, 1994, abandoned. This application Sep. 13, 1995, Ser. No. 527,748

Claims priority, application Japan, Jan. 20, 1993, 5-024688

Int. Cl.^{6} G11B *5/86*

U.S. Cl. 360—15 **24 Claims**



1. A method of controlling signal lines among a plurality of audio and video units including at least one video tape recorder and a laser disk player connected in a system, wherein a central unit for control and the audio and video units are mutually connected via a single control bus and via audio and video signal lines, the central unit having a selector for selectively switching a video signal or an audio signal accessed by one of the audio and video units, the method comprising the steps of:
- managing in the central unit identification numbers of the plurality of audio and video units connected to the control bus and connection requirement data among the audio and video units;
- classifying the plurality of audio and video units in accordance with their respective operational categories, wherein the one video tape recorder and any other video tape recorder connected in the system are of one operational category and the laser disk player is of another operational category;
- designating by a source audio or video unit an operational category of a destination audio and video unit to be connected without specifying a particular audio or video unit within the designated operational category;
- selecting by the central unit in accordance with said connection requirement data one of the audio and video units in the designated operational category; and
- switching the selector of the central unit to thereby connect a signal line between the source audio or video unit and the selected one of the audio or video units.

5,712,739
MAGNETIC DISK DRIVE SYSTEM WITH A COMPOSITE HEAD UNIT INCLUDING A MAGNETORESISTIVE READ ONLY HEAD AND AN INDUCTIVE WRITE ONLY HEAD

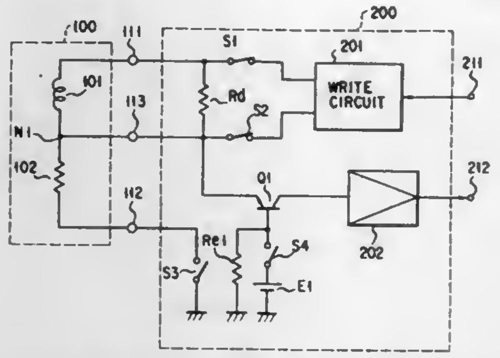
Norio Nakamura, Yokohama; Yusuke Ohinata, Tokyo; Junichi Akiyama, Kawasaki, and Nobuyasu Goto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 8, 1994, Ser. No. 337,437

Claims priority, application Japan, Nov. 8, 1993, 5-278445

Int. Cl.^{6} G11B *5/09;5/127*

U.S. Cl. 360—46 **17 Claims**



1. A magnetic disk drive system for writing data into a disk-shaped magnetic medium and reading data stored therein, comprising:
- a first terminal, a second terminal, and a third terminal; and
- a composite head unit including an inductive write only head having a write coil and at least one magnetoresistive read only head having at least one MR element, the write coil and the at least one MR element being connected in series between the first and second terminals, and a common connection node between the write coil and the MR element, the common connection node being connected to the third terminal.

5,712,740
METHOD FOR REDUCING WASTED STORAGE SPACE WHEN STORING MULTIPLE DATA BLOCKS ON A STORAGE MEDIUM

Akihiro Kikuchi, and Tsuyoshi Nishio, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

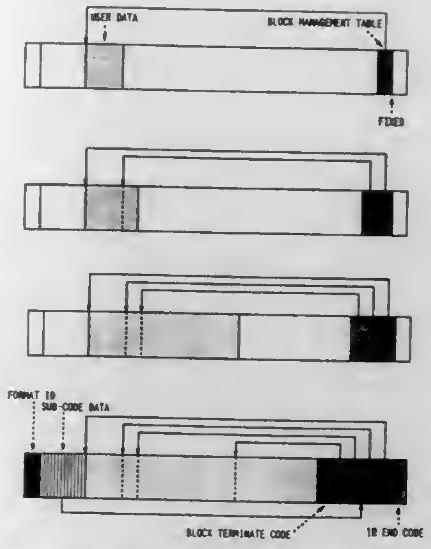
Filed Feb. 26, 1996, Ser. No. 607,009

Claims priority, application Japan, Feb. 28, 1995, 7-064702

Int. Cl.^{6} G11B *5/09*

U.S. Cl. 360—48 **5 Claims**

1. A method for recording user data and management data relevant to each block of the user data on a recording medium for use with a data recorder, said method comprising the steps of:
- (a) storing a block of the user data in a user data storage area of a memory, said memory being made up of a plurality of memory units arranged in a memory sequence, and said user area including a portion of said memory units that starts at the beginning of said memory sequence and ends at a user area endpoint;



- (b) storing a block of the management data corresponding to said block of user data in a management data storage area of said memory, said management data storage area including a portion of said memory units that starts at a management area begin point and ends at the end of said memory sequence, said user area endpoint occurring earlier in said memory sequence than said management area begin point;
- (c) repeating said step (a) and said step (b) for each block of the user data; and
- (d) recording the user data and the management data stored in said memory on the medium,
- wherein as said step (a) is repeated for each block of the user data, said user blocks are stored in a forward sequence within said user data storage area, said forward sequence starting at the beginning of said memory sequence and ending at a user data storage markpoint, said user data storage markpoint occurring earlier in said memory sequence than said user area endpoint, and
- wherein as said step (b) is repeated for each block of the management data, said management blocks are stored in a reverse sequence within said management data storage area, said reverse sequence starting at the end of said memory sequence and ending at a management data storage markpoint, said management data storage markpoint occurring later in said memory sequence than said management area begin point.

5,712,741
SYNCHRONIZING SIGNAL DETECTING APPARATUS FOR DIGITAL VIDEO CASSETTE RECORDER

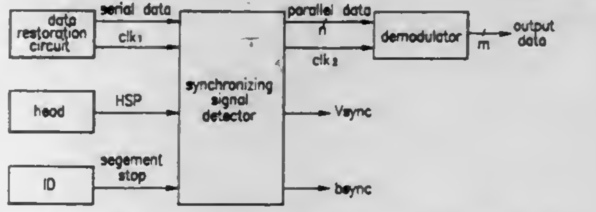
Doo Hee Lee, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 18, 1995, Ser. No. 544,869

Claims priority, application Rep. of Korea, Oct. 19, 1994, 26731

Int. Cl.^{6} G11B *5/09;* **H04N** *9/80;5/932*

U.S. Cl. 360—51 **5 Claims**



1. A synchronizing signal detecting apparatus for a digital video cassette recorder(DVCR) comprising:
- an input signal converting means for converting input serial data, a first head switching pulse and a first clock into a parallel data, a second head switching pulse and a second clock;

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- a vertical synchronizing signal detecting means and block synchronizing signal detecting means for respectively detecting a vertical synchronizing signal and a block synchronizing signal from said parallel data, second head switching pulse and second clock output from said input signal converting means; and
- a data forming means for outputting finally output data in accordance with synchronizing patterns using said parallel data and second clock,

wherein said vertical synchronizing signal detecting means further comprises:

- a vertical synchronizing signal pattern matching portion for matching a vertical synchronizing signal pattern using the parallel data and second clock;
- a vertical synchronizing window signal generating means for generating a window pulse for notifying a position at which the vertical synchronizing signal is a floating signal using the second clock and second head switching pulse;
- an N-track vertical synchronizing window signal generating means for generating a window pulse in the unit of 4 tracks using a vertical synchronizing signal and a start block synchronizing signal;
- a first OR gate for performing an OR operation with respect to outputs of said vertical synchronizing signal pattern matching portion and said vertical synchronizing window signal generating means;
- a second OR gate for performing an OR operation with respect to an output of said N-track vertical synchronizing window signal generating means and said start block synchronizing signal; and
- an AND gate for performing an AND operation with respect to outputs of said first and second OR gates to generate a vertical synchronizing signal.

5,712,742
RECORDING AND/OR REPRODUCING APPARATUS

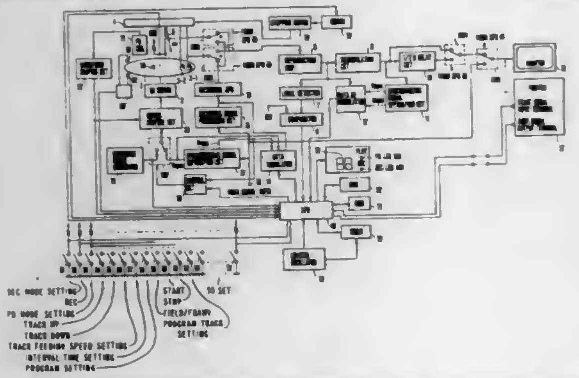
Shigeo Yamagata; Yasutomo Suzuki, and Masahiro Takei, all of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 231,370, Apr. 19, 1994, Pat. No. 5,379,158, which is a continuation of Ser. No. 921,423, Jul. 28, 1992, abandoned, which is a continuation of Ser. No. 517,395, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 207,374, Jan. 27, 1987, abandoned. This application Sep. 2, 1994, Ser. No. 300,129

Claims priority, application Japan, Jan. 31, 1986, 61-020507; Jan. 31, 1986, 61-020508; Jan. 31, 1986, 61-020509; Jan. 31, 1986, 61-020510; Jan. 31, 1986, 61-020511; Jan. 31, 1986, 61-020512; Jan. 31, 1986, 61-020513; Jan. 31, 1986, 61-020514

Int. Cl.^{6} G11B *19/02*

U.S. Cl. 360—69 **17 Claims**



1. A reproducing apparatus for reproducing information from memory means having said information recorded in a plurality of blocks, comprising:

- a) storage means for storing a signal designating a reproducing sequence in which said blocks of information are to be reproduced;
- b) reproducing means for reproducing said information from said memory means on the basis of the signal stored by said storage means;
- c) designating means for designating the reproducing sequence; and
- d) control means for controlling the reproducing means such that said reproducing means reproduces said information while said designating means designates the reproducing sequence.

5,712,743

Patent Not Issued For This Number

5,712,744
MAGNETIC TAPE LOADING DEVICE

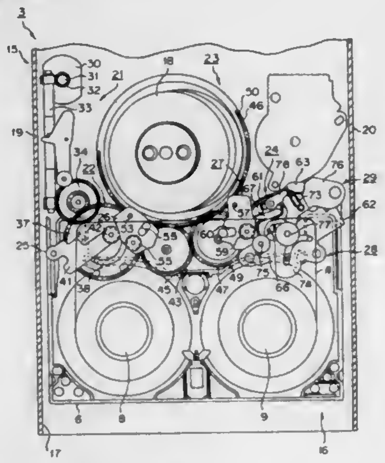
Mitsunori Sakama; Joichi Daiba; Satoshi Ota; Toshiya Kurokawa, and Katsumi Maekawa, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 9, 1996, Ser. No. 728,161

Claims priority, application Japan, Oct. 13, 1995, 7-265947; Nov. 8, 1995, 7-314669

Int. Cl.^{6} G11B *15/665*

U.S. Cl. 360—85 **6 Claims**



1. A loading device comprising:

- driving means having a driving gear;
- first transmission means having a transmission gear driven by said driving means;
- first magnetic tape actuating means moved by said first transmission means for pulling out a magnetic tape placed on a tape supply reel;
- second transmission means having a transmission gear driven by said first transmission means;
- second magnetic tape actuating means moved by said second transmission means for pulling out the magnetic tape for abutting the tape thus pulled out against a sliding surface of a drum-shaped magnetic head;
- third transmission means having a transmission gear driven by said second transmission means; and
- third magnetic tape actuating means moved by said third transmission means for pulling out the magnetic tape placed on a tape take-up reel;

wherein said first transmission means, second transmission means and the third transmission means are responsive to rotation of said gears for causing said first magnetic tape actuating means, second magnetic tape actuating means and said third magnetic tape actuating means to pull out said magnetic tape.

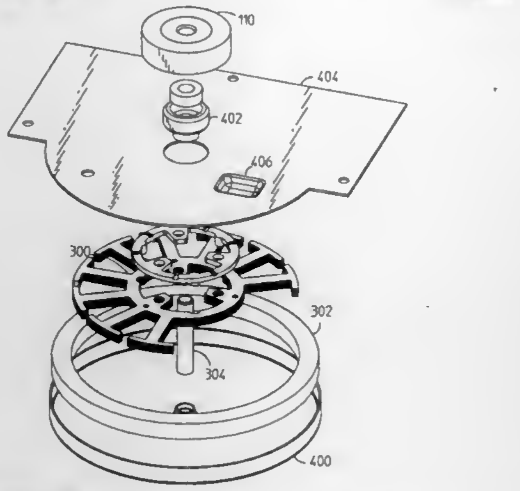
5,712,745
MAGNETIC TAPE DRIVE HAVING DIRECT DRIVE MOTOR AND EXTENDED HEAD TRAVEL

Kenneth G. Richardson, Fort Collins, and Gregory A. Standiford, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 528,180, Sep. 14, 1995, abandoned, which is a continuation of Ser. No. 282,126, Jul. 28, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 639,535

Int. Cl.^{6} G11B *5/55;5/56;15/32*

U.S. Cl. 360—96.1 **2 Claims**



1. A magnetic tape drive comprising:

- a magnetic head, the magnetic head being moveable with a range of movement;
- a motor, adjacent to the magnetic head;
- the motor having a rotor, the rotor having a plane of rotation;
- the motor having a stator, the stator positioned internal to the rotor;
- a cover on the motor; and
- a cavity in the cover, protruding into the stator, the cavity positioned so that at least part of the range of movement of the magnetic head is within the cavity, transverse to the plane of rotation of the rotor, thereby reducing a dimension of the magnetic tape drive transverse to the plane of rotation of the rotor.

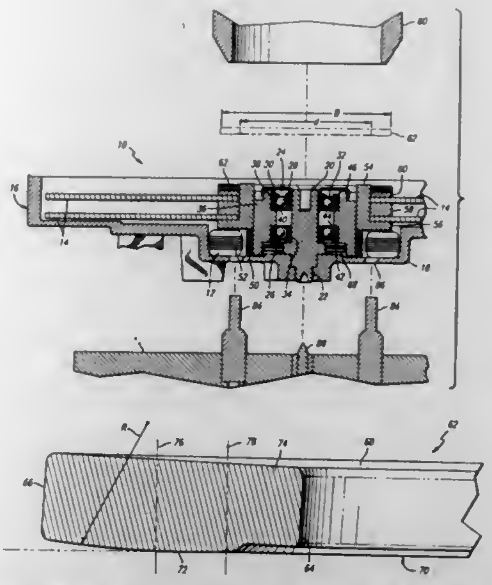
5,712,746
CLAMP RING FOR A DISK STACK ASSEMBLY

Michael B. Moir, and Khosrow Mohajerani, both of Newbury Park, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 422,057, Apr. 14, 1995, abandoned. This application Mar. 4, 1997, Ser. No. 811,509

Int. Cl.^{6} G11B *17/02*

U.S. Cl. 360—98.08 **9 Claims**



8. A clamp ring for assembly to a disk stack assembly of a computer disk drive unit, comprising:

- an inner cylindrical wall;
- an outer cylindrical wall uniformly spaced from the inner cylindrical wall;
- an upper planar surface extending from an upper edge of the inner wall to an upper edge of the outer wall;
- a lower surface spaced from the upper surface and extending between the inner and outer walls, the lower surface including arcuate rolling contact surface means for uniformly distributing a load applied to the clamp ring to components of the disk stack assembly underlying the clamp ring without damaging such disk stack assembly components on load-induced flexion of the clamp ring; and
- a cantilevered section disposed radially inwardly of the arcuate rolling contact surface means, wherein the cantilevered section is defined by a portion of the lower surface and the inner wall disposed radially inwardly of the arcuate rolling contact surface means and raised relative thereto approximately ten percent of the maximum height of the clamp ring so as to not contact the disk stack assembly components on load-induced flexion of the clamp ring, and wherein the radius of an arc of curvature of the arcuate rolling contact surface means is greater than an outer diameter of the clamp ring.

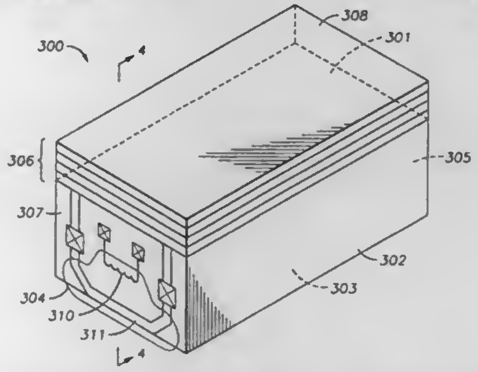
5,712,747
THIN FILM SLIDER WITH ON-BOARD MULTI-LAYER INTEGRATED CIRCUIT

Steven Howard Voldman, South Burlington, Vt., and Albert John Wallash, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1996, Ser. No. 590,652

Int. Cl.^{6} G11B *5/60*

U.S. Cl. 360—103 **19 Claims**



1. An apparatus for exchanging electromagnetic signals with a magnetic recording medium, comprising:

- a substrate including an air bearing surface, an upper surface opposing the bearing surface, and a deposit end adjoining the bearing surface and the upper surface;
- an electromagnetic transducing head provided in the deposit end;
- an accessory circuit including multiple substantially planar and substantially parallel stacked integrated circuit layers, each integrated circuit layer including a plurality of active circuit elements, said accessory circuit having a backside and also having an opposing underside adhered to the upper surface, each said integrated circuit layer being substantially planar and having an edge substantially coincident with the deposit end, each said integrated circuit layer including conductive pads located at the edge; and
- conductive vias spanning the edge to interconnect at least one conductive pad of each integrated circuit layer with at least

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one of the following: (1) at least one conductive pad of a different integrated circuit layer, and (2) the electromagnetic transducing head.

5,712,748

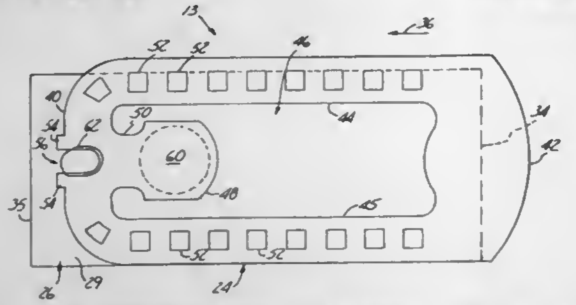
SLIDER-SUSPENSION IN A DISC DRIVE

Robert Wayne Masse, Rosemount, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 11, 1996, Ser. No. 661,599

Int. Cl.^{6} G11B *5/48*

U.S. Cl. 360—104 **16 Claims**



1. A slider-suspension assembly for a magnetic disc drive, the slider-suspension assembly comprising:

a slider;

a gimbal electrically coupled to electrical ground and bonded to the slider, the gimbal having:

a pair of struts and a cross-member connected to the struts, the struts and cross-member defining an open portion; the struts are in abutting contact with the slider and not adhered thereto;

a support extending from the cross-member and protruding into the open portion wherein the support is bonded to the slider;

a shear tab, opposite the cross-member from the support, extending from the cross-member and having a slot defined in the shear tab and cross-member, wherein the support is substantially larger than the shear tab; and

a conductive adhesive deposited on the shear tab and within the slot for physically and electrically coupling the gimbal to the slider so as to dissipate charge built up on the slider.

5,712,749

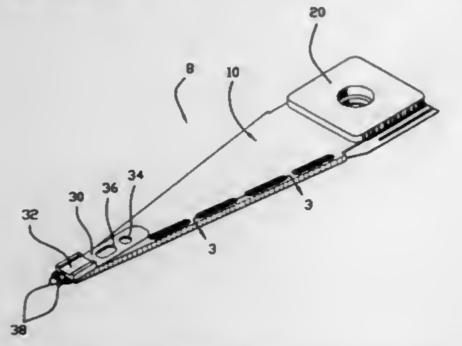
REDUCED CAPACITANCE OF ELECTRICAL CONDUCTOR ON HEAD SUSPENSION ASSEMBLY

Gary Gustafson, Darwin, Minn., assignor to Hutchinson Technology Incorporated, Hutchinson, Minn.

Continuation of Ser. No. 397,491, Mar. 2, 1995, abandoned. This application Feb. 24, 1997, Ser. No. 804,889

Int. Cl.^{6} G11B *5/55;21/08*

U.S. Cl. 360—104 **14 Claims**



1. In a magnetic head suspension assembly wherein a transducer head incorporated in a slider is moved to selected locations across a rotating media for reading and writing data thereon, and wherein a conductive trace interconnect is connected to the transducer head for conducting signals therefrom along a load beam of the magnetic head suspension assembly for transmission to remote signal utilization means, and wherein the conductive trace interconnect comprises a pre-shaped, single-conductive layer, self-supporting, plastic-deformation resistant, thin, elongated, substrate-free conductive trace shaped to match surface spatial topography of the magnetic head suspension assembly, and selected areas of said conductive trace having a minimum thickness of dielectric coating for insulation of the trace from the load beam, an improved load beam structure for minimizing capacitive coupling between the conductive trace interconnect assembly and the load beam, and capacitive coupling between traces capacitively coupled to the load beam, said improved structure comprising: a conductive trace operably connected at a first end of the load beam to the transducer head and operably connected at a second opposing end of the load beam to means adapted for connection to remote signal utilization means; and a plurality of capacitance reducing holes extending completely through a thickness of the load beam positioned between a first perimeter edge of the load beam and a second perimeter edge of the load beam at locations below a path of the conductive trace interconnect assembly, whereby the conductive trace interconnect assembly is in adjoining relationship to the surface of the load beam only to the extent necessary for routing the conductive trace interconnect assembly without undesired diminution of mechanical strength characteristics of the load beam, thereby reducing capacitance coupling between the conductive trace interconnect assembly and the load beam across the dielectric coating.

5,712,750

ACTUATOR FIXING DEVICE OF HARD DISK DRIVE

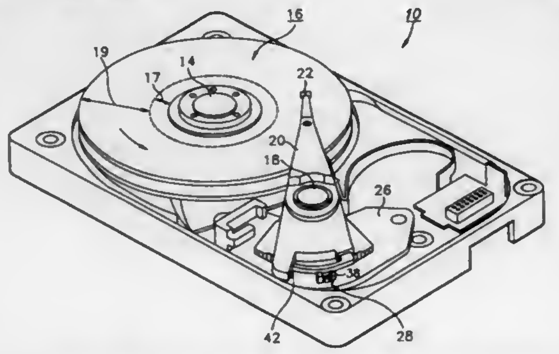
Youn-Tai Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 29, 1995, Ser. No. 520,436

Claims priority, application Rep. of Korea, Oct. 28, 1994, 27964/1994

Int. Cl.^{6} G11B *5/54*

U.S. Cl. 360—105 **17 Claims**



1. An actuator fixing device of a hard disk drive, comprising:

an actuator having a permanent magnet integrally installed at a first end, wherein said permanent magnet is comprised of first and second portions, said first portion having a first size and exhibiting a first polarity, said second portion having a second size different from said first size and exhibiting a second polarity, said first portion being installed within said first end of said actuator to facilitate a connection between said permanent magnet and said actuator;

a solenoid latch comprised of a damper for buffering an impact resulting from contact between said permanent magnet and said damper, a coil for conducting an electrical current, and an iron rod extending outwardly from a first end of said damper and having said coil wrapped around a length of said iron rod to generate an electromagnetic force upon application of the electrical current to said coil, wherein said damper comprises a groove positioned within a second end of said damper opposite said first end, said groove having a shape for accommodating insertion of approximately one half of said second portion of said permanent magnet, and said iron rod extending outwardly from a central portion of said first end of said damper; and

a yoke for accommodating installation of said solenoid latch within said hard disk drive, said iron rod exerting a first force upon said permanent magnet to separate said permanent magnet from said solenoid latch when the electrical current is applied to said coil, said iron rod exerting a second force upon said permanent magnet to magnetically attach said permanent magnet to said solenoid latch when the electrical current applied to said coil is interrupted.

5,712,751

MAGNETIC SENSOR AND MAGNETIC RECORDING-REPRODUCING HEAD AND MAGNETIC RECORDING-REPRODUCING APPARATUS USING SAME

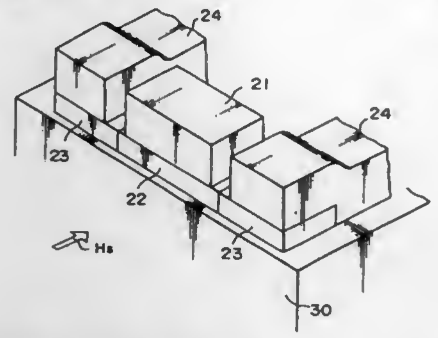
Hiroaki Yoda, Kawasaki, and Masashi Sahashi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 406,319, Mar. 16, 1995, abandoned. This application Jan. 30, 1997, Ser. No. 791,834

Claims priority, application Japan, Mar. 17, 1994, 6-046613

Int. Cl.^{6} G11B *5/127;5/33;5/147;5/39*

U.S. Cl. 360—113 **24 Claims**



1. A magnetic sensor comprising:

a pair of hard magnetic films separated from each other on a planar support, said pair of hard magnetic films being magnetized in a direction substantially perpendicular to the direction of a signal magnetic field, and having respective magnetization directions substantially parallel to each other,

a soft magnetic film on the support of said pair of hard magnetic films and between respective nearest edges of said pair of hard magnetic films and held in contact therewith or proximity thereto, wherein a direction of magnetization of said soft magnetic film is controlled so as to be parallel to a direction of trackwidth by said pair of hard magnetic films when the signal field is zero, and

a signal magnetic field detecting film directly contacting a main surface of said soft magnetic film and coupled to sense current electrodes, said signal magnetic field detecting film receiving a longitudinal bias substantially parallel to the direction of trackwidth by an exchange coupling with said soft magnetic film.

5,712,752

INPUT/OUTPUT PROTECTING CIRCUIT AND A PROTECTION ELEMENT

Kyu-hyung Kwon, Puchon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 21, 1995, Ser. No. 576,215

Claims priority, application Rep. of Korea, Dec. 22, 1994, 94-35828

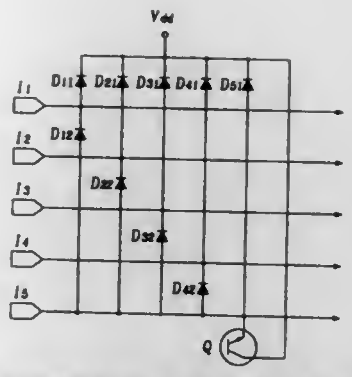
Int. Cl.^{6} H02H *9/04*

U.S. Cl. 361—56 **2 Claims**

1. A protecting circuit for protecting an internal circuit from a first voltage lower than a reference voltage and a second voltage higher than the an operation voltage applied through a pad to said internal circuit, said protecting circuit comprising;

a diode connected between said pad of said internal circuit in forward direction to a voltage terminal, said diode providing a first discharge path between said pad and said voltage terminal when said second voltage is applied to said pad; and

an NPN transistor having an emitter connected to said pad of said internal circuit, a collector connected to said voltage terminal, and a floating base, said NPN transistor providing a second discharge path between said pad and said voltage terminal when said first voltage is applied to said pad.



5,712,753

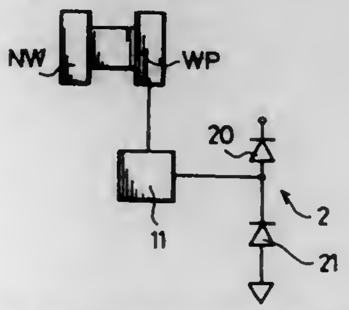
METHOD FOR PREVENTING ELECTROSTATIC DISCHARGE FAILURE IN AN INTEGRATED CIRCUIT PACKAGE

Yang-Sen Yeh, Taipei; Ta-Lee Yu, and Kow-Liang Wen, both of Hsinchu, all of Taiwan, assignors to Winbond Electronics Corp., Hsinchu, Taiwan

Filed May 6, 1996, Ser. No. 643,355

Int. Cl.^{6} H02H *3/22*

U.S. Cl. 361—56 **7 Claims**



1. A method for preventing electrostatic discharge failure in an integrated circuit package which includes a semiconductor chip, bonding pads on the semiconductor chip, a plurality of wired pins wire-bonded respectively to the bonding pads, and at least one non-wired pin, the electrostatic discharge failure being due to electrostatic discharge stressing of the non-wired pin, said method comprising the step of:

connecting electrically the non-wired pin to an adjacent one of the wired pins.

5,712,754

HOT PLUG PROTECTION SYSTEM

Chi Kim Sides, Spring; Philip James McKenzie, and Barry S. Basile, both of Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Apr. 15, 1996, Ser. No. 631,963

Int. Cl.^{6} H02H *9/00*

U.S. Cl. 361—58 **17 Claims**

8. A protection circuit for a computer having at least one peripheral component interconnect (PCI) slot for removably receiving an interface card and a power supply selectively connectable to the interface card when the interface card is received at the PCI slot, the power supply for supplying voltage and current to the interface card, said protection circuit comprising:

a current monitor for monitoring the current levels of the current drawn by the interface card when the interface card is received at the PCI slot; and

a power rail switch coupled to receive indications of the current levels monitored by said current monitor, said power rail

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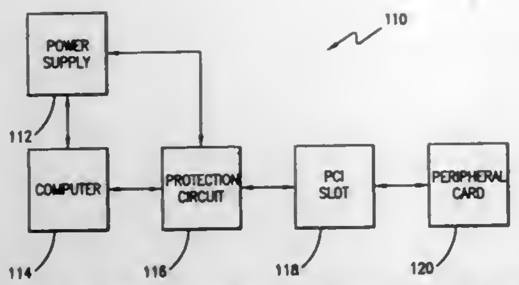


switch for disconnecting the power supply from the interface card when the indications of the current levels monitored by said current monitor are beyond a selected level;

wherein said power rail switch comprises a plurality of controllers and at least one level shifter.

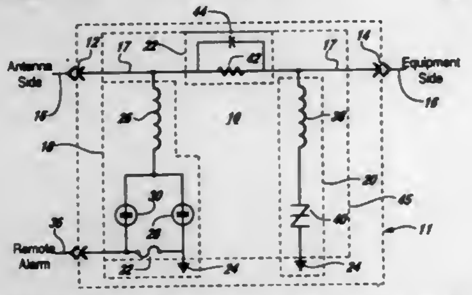
5,712,755
SURGE SUPPRESSOR FOR RADIO FREQUENCY TRANSMISSION LINES

James Albert Glaser, Bonham; Ronald William Glaser, Ector, both of Tex., and James Everett Britton, Durant, Okla., assignors to ACT Communications, Inc., Ector, Tex.

Filed Aug. 18, 1995, Ser. No. 516,864

Int. Cl.^{6} H02H *3/22*

U.S. Cl. 361—119 **10 Claims**



1. An apparatus for discharging transient voltages on a transmission line for transmitting a radio frequency (RF) signal comprising:

impedance means having first and second sides for connection to two segments of a conductor of a transmission line for passing a radio frequency signal;

a first radio frequency choke having one end connected to a first side of the impedance means and an opposite end coupled to a first means for discharging to ground when a voltage of a signal on the transmission line exceeds a first level; and

a second radio frequency choke having one end coupled to a second side of the impedance means and an opposite end coupled to a second means for discharging to ground when a voltage of a signal on the transmission line exceeds a second level greater than the first level.

5,712,756
SUBSTATION WITH SURGE ARRESTERS

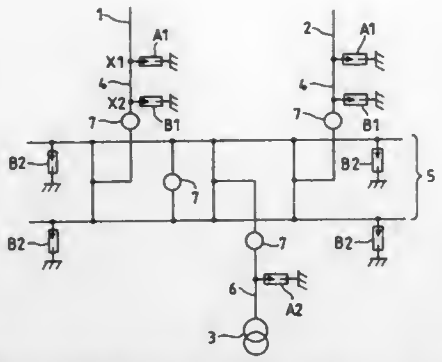
Jun Ozawa, Hitachi; Kazuya Ooishi, Tokai-mura; Katsuji Shindo, Hitachi; Takahide Matsuo, Hitachi; Yoshitaka Yagihashi, Hitachi, and Takeo Yamazaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1996, Ser. No. 610,189

Claims priority, application Japan, Mar. 8, 1995, 7-048092

Int. Cl.^{6} H02H *1/04*

U.S. Cl. 361—127 **7 Claims**



1. A substation comprising standard arresters satisfying the standard discharge voltage installed near a bushing of a power transmission line entrance and at a connecting bus of a transformer, and a high voltage arrester having a discharge voltage of 10 to 30% higher than a standard arrester installed near a power transmission line entrance part of a breaker wherein said high voltage arrester comprises ZnO as a main component and 0.01% by mol of $Al(NO_3)9H_2O$, 1% by mol of $LiCO_2$, 10 to 15% by mol of SiO_2 and 2% by mol of Sb_2O_3, and wherein a discharge voltage of zinc oxide elements used in said standard arresters is about 200 V/mm at 1 mA and a discharge voltage of zinc oxide elements used in said high voltage arrester is about 300 V/mm or more.

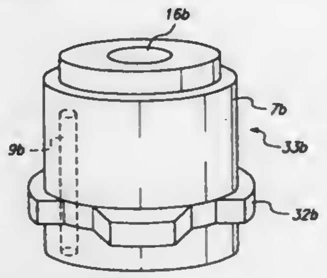
5,712,757
SURGE ARRESTER HAVING RIDGED TERMINALS

Jeffrey A. Bennett, Sunnyvale; William M. Robinson, Palo Alto; John Seymour Mattis, Sunnyvale, and Chuck F. Cooper, Mountain View, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 27, 1996, Ser. No. 672,184

Int. Cl.^{6} H02H *1/04*

U.S. Cl. 361—127 **22 Claims**



1. A surge arrester, comprising

a surge arresting means comprising at least one varistor element and having first and second opposed end surfaces and a lateral surface;

first and second electrically conductive terminals; each terminal having inner and outer facing end surfaces and a side surface; the inner facing end surface of the first terminal electrically contacting the first opposed end surface of the surge arresting means and the inner facing end surface of the second terminal electrically contacting the second opposed end surface of the surge arresting means; each terminal having a ridge projecting from the side surface thereof at a location adjacent to the inner facing end surface and circumscribing the side surface; the ridges serving as damage-tolerant sacrificial rooting points for an arc in the event of varistor element failure by presenting a substantial metal mass for the arc to erode away;

structural means for holding the first and second terminals in electrical contact with the surge arresting means and imparting structural strength to the surge arrester, disposed around the lateral surface of the surge arresting means and fastened to the first and second terminals at fastening sites on or near the side surface thereof; and

a housing made of a polymeric material, wherein the polymeric material covers the surge arresting means, the structural means, and the fastening sites on the first and second terminals but leaves uncovered at least part of the ridges.

5,712,758
MULTILAYER CERAMIC CHIP CAPACITOR AND A PROCESS FOR ITS MANUFACTURE

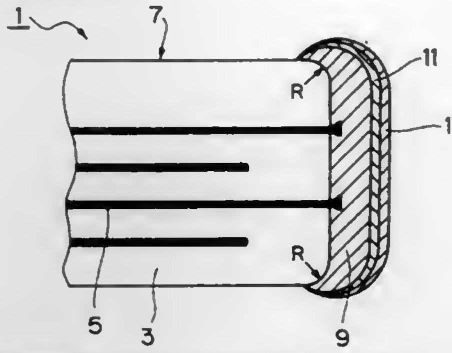
Koshi Amano, and Kotaro Ogura, both of Fujiyoshida, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 15, 1996, Ser. No. 632,115

Claims priority, application Japan, Apr. 18, 1995, 7-116507; Apr. 9, 1996, 8-112075

Int. Cl.^{6} H01G *4/06*

U.S. Cl. 361—321.2 **4 Claims**



1. In a multilayer ceramic chip capacitor comprising a multilayer ceramic capacitor chip having internal electrodes, an external electrode that is formed of a sintered layer of a paste containing both an electroconductive metal powder and a glass frit on both end faces of said multilayer ceramic capacitor chip and that has electric connection to said internal electrodes, and a coating of plated metal deposited on the surface of said external electrode, said multilayer ceramic capacitor chip being chamfered to a radius of curvature (R) of 0.10 mm or more on the periphery of each of the end faces at which the internal electrodes are to be connected to the external electrode, said external electrode having a dual structure consisting of an undercoat in contact with said internal electrodes and a topcoat in superposition on the surface of said undercoat, said undercoat being formed of a paste containing unmolten glass frit in an amount from 22 to 40 wt % of the electroconductive metal powder (based on the weight of the inorganic components of said paste) and said topcoat being formed of a paste containing unmolten glass frit in an amount from more than 0 to 7 wt % of the electroconductive metal powder (based on the weight of the inorganic components of said paste), and both the topcoat and the undercoat being formed by sintering the applied pastes at temperatures that cause only the surfaces of the particles in said glass frit to melt.

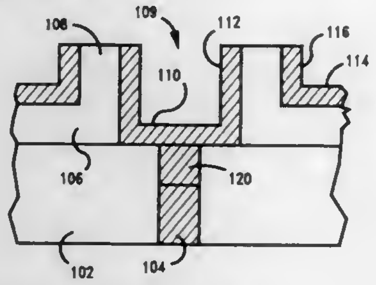
5,712,759
SIDEWALL CAPACITOR WITH L-SHAPED DIELECTRIC

Katherine Lynn Saenger, Ossining; James H. Comfort, New City; Alfred Grill, White Plains, and David Edward Kotecki, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,165

Int. Cl.^{6} H01G *4/002;4/008;4/06*

U.S. Cl. 361—321.4 **13 Claims**



1. A capacitor structure, comprising:

a generally L-shaped non-conductor as a dielectric having a horizontal portion and a vertical portion, the vertical portion defining a first opening formed therein;

a generally U-shaped conductor as a first electrode formed within the first opening; and

a generally L-shaped conductor as a second electrode formed exterior to the generally L-shaped non-conductor.

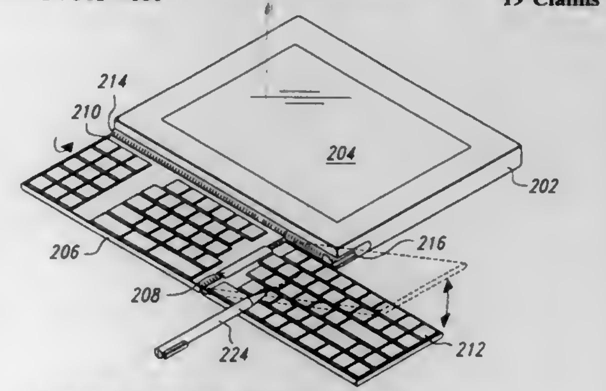
5,712,760
COMPACT FOLDABLE KEYBOARD

Kenneth E. Coulon, Plano, and Satwinder D.S. Malhi, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 26, 1996, Ser. No. 592,148

Int. Cl.^{6} G06F *1/16;* **H05K** *5/03*

U.S. Cl. 361—680 **19 Claims**



1. A portable computing device comprising:

a. a unitary housing having a top and a bottom surface;

b. a display associated with the top surface of the housing;

c. a keyboard having a plurality of keys and having at least one folding hinge for folding a first portion of the keyboard over a second portion of the keyboard; and

d. a mounting hinge connecting the keyboard to the housing for deploying the keyboard from a storage position, where said storage position is substantially located in a bottom portion of the housing through an opening in the bottom surface, the keyboard in a deployed position being able to be unfolded, and where the keyboard keys are protected in the storage position.

5,712,761
COMPUTER SYSTEM HAVING COOPERATING SPRING, GEAR TRACKS AND GEARED DAMPERS FOR ALLOWING A DRIVE HOUSING TO MOVE BETWEEN OPEN AND CLOSED POSITIONS

Edward Dials, Apex; Dean Frederick Herring, Youngsville; Aubrey Lamond Hodges, Creedmoor, and Steven Richard Luglan, Raleigh, all of N.C., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Sep. 23, 1996, Ser. No. 721,652

Int. Cl.^{6} G06F *1/16;* **F16H** *1/04*

U.S. Cl. 361—685 **17 Claims**

1. A computer system comprising:

a media console having a base member and a drive housing that can be moved within said base member between an open position and a closed position,

a spring connected to a bottom of said base member and to said drive housing for biasing said drive housing in said open position,

a pair of gear tracks integrally formed in opposite sides of said base member for cooperating with a pair of geared dampers attached to opposite ends of said drive housing,

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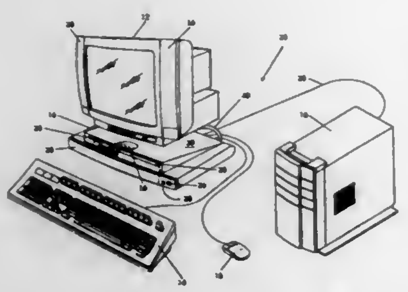
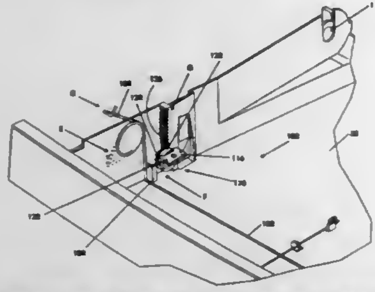




said drive housing having a direct access storage device disposed at a front end thereof, said direct access storage device having an opening for receiving a removable storage medium, and

wherein said spring, gear tracks and geared dampers cooperate with each other (1) to allow said drive housing to move smoothly from said closed position to said open position wherein a user may access said opening, and (2) to allow said drive housing to move smoothly from said open position to said closed position.

5,712,762

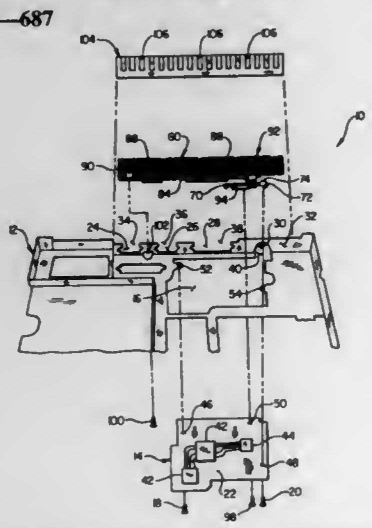
COMPUTER HAVING A HEAT SINK STRUCTURE INCORPORATED THEREIN

Matthew L. Webb, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 1, 1996, Ser. No. 609,885

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—687 **13 Claims**



1. For an electronic device, such as a computer, of the type having a chassis and a heat generating component therein, a heat sink comprising:

a heat absorbing portion, said heat absorbing portion being configured for conformal attachment to the heat generating component;

a conduit portion attached to, and extending outwardly from, said heat absorbing portion;

a heat dissipating portion attached to said conduit portion, said heat dissipating portion having a body and a series of axially spaced apart fins extending laterally outwardly from said body;

a continuous channel formed on said heat absorbing portion, said conduit portion, and said heat dissipating portion;

a heat pipe disposed in said channel and extending from said heat absorbing portion to said heat dissipating portion; and

means for thermally coupling said heat pipe to the heat generating component.

5,712,763

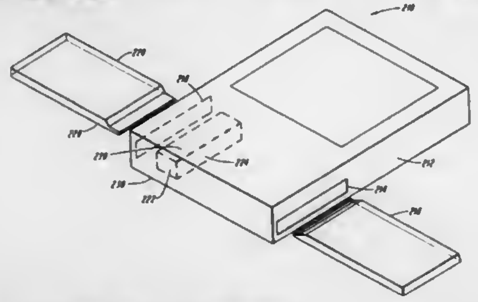
COMPATIBLE INTERNAL AND EXTERNAL CARD SLOT SYSTEM FOR A PORTABLE COMPUTING DEVICE HAVING A CONNECTOR OFFSET BETWEEN OPPOSING SIDE WALLS

Edward T. Bullister, 86 Concord St., Newton, Mass. 02139

Filed Nov. 16, 1995, Ser. No. 558,785

Int. Cl.^{6} G06F *1/16;* **H05K** *5/02;7/10*

U.S. Cl. 361—686 **6 Claims**



1. A computing device comprising:

a housing having first and second opposing sides, said first side having a first opening arranged therein, said second side having a second opening arranged therein, said first opening located opposite said second opening;

an electrical connector located within said housing, said electrical connector having first and second sets of connecting elements adapted to mate with removable computer components, said first and second sets of connecting elements arranged on opposing sides of said electrical connector; and

said electrical connector located between said openings and spaced between said openings such that when a first removable computer component having a length is mated with said first set of connecting elements and a second removable computer component having the same length as said first removable computer component is mated with said second set of connecting elements a maximum of 25% of said length of said first removable computer component fits within said housing and minimum of 75% of said length of said second removable computer component fits within said housing.

5,712,764

APPARATUS AND METHOD OF ASSEMBLING VEHICLE INSTRUMENT PANEL STRUCTURAL AND ELECTRONIC COMPONENTS

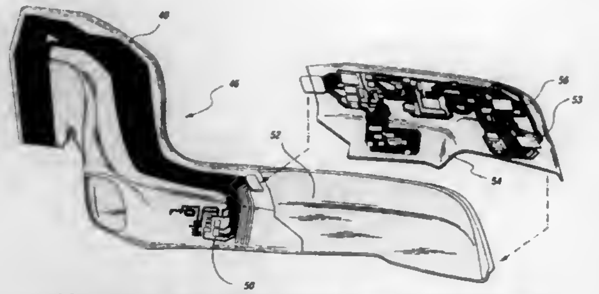
Jay DeAvis Baker, West Bloomfield; Lawrence Leroy Kneisel, Novi, and Myron Lemecha, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1996, Ser. No. 642,723

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—690 **6 Claims**

6. An apparatus supporting electronic components on a vehicle instrument panel, comprising:



a molded plastic vehicle instrument panel ventilation duct;

a plurality of circuit traces forming a conductive pattern metalized onto the ventilation duct; and

a plurality of said electronic components secured in electrical communication with the conductive pattern and supported by the ventilation duct.

5,712,765

HOUSING FOR PRINTED CIRCUIT BOARD

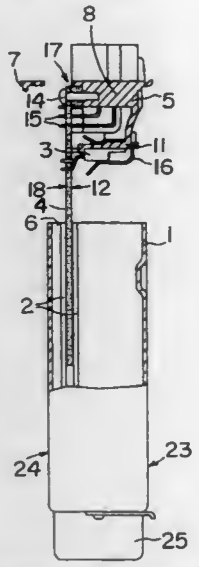
Joachim Lehrmann, Lehrte, and Wolfgang Gudat, Seelze, both of Germany, assignors to WABCO Vermogensverwaltungs GmgH, Hanover, Germany

Filed Jun. 23, 1995, Ser. No. 494,355

Claims priority, application Germany, Jun. 24, 1994, 44 22 113.4

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—704 **3 Claims**



1. A housing for a printed circuit board comprising:

a housing box in the form of a cuboid hollow open on one side;

a cover which covers said open side of said housing box;

a printed circuit board on which components are installed within said housing box, said printed circuit board having first and second lateral sides, said first lateral side being a soldering side and said second lateral side having said components installed thereon, said printed circuit board having a border section, said printed circuit board being connected to said cover on said lateral side at said border section;

wherein said cover extends along said lateral side having said components installed thereon and does not extend along said soldering side of said circuit board;

wherein said cover includes at least one receptacle which contains at least one connection plug passing through said cover to connect with at least one strip conductor on said printed circuit board.

5,712,766

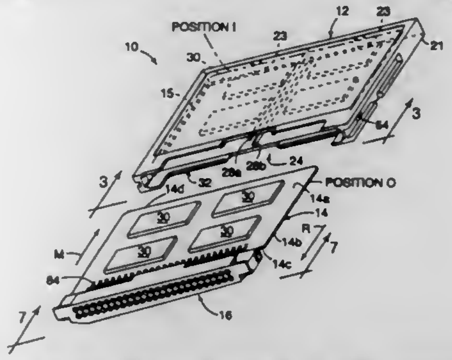
ONE-PIECE HOUSING AND INTERLOCKING CONNECTOR FOR IC CARD ASSEMBLIES

Steven Feldman, Madison, Ohio, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1996, Ser. No. 733,375

Int. Cl.^{6} H05K *1/14*

U.S. Cl. 361—737 **20 Claims**



1. An IC card package for use with an IC card comprising:

a one-piece molded housing, the housing having an open end including an interface defining a plurality of spaced apart keyed first interlock surfaces contoured to include housing reliefs, a connector in snap-fitting engagement therewith, the connector having a mating interface including a plurality of spaced apart second interlock surfaces keyed into oriented engagement with the keyed first interlock surfaces, and means for latching the connector and the housing.

5,712,767

CIRCUIT ELEMENTS MOUNTING

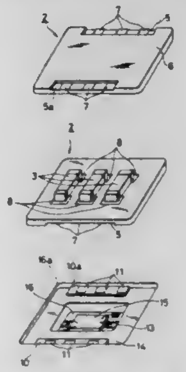
Takao Koizumi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 15, 1995, Ser. No. 559,448

Claims priority, application Japan, Nov. 16, 1994, 6-306940

Int. Cl.^{6} H05K *1/00;1/11;* **H01R** *9/09*

U.S. Cl. 361—761 **20 Claims**



1. A circuit element mounting structure comprising:

a substrate having a pattern A of wirings therein;

at least one cavity formed at a surface of said substrate; and

a cap for covering said cavity therewith, said cap including (a) a pattern B of wirings therein and (b) at least one connection B for electrically connecting said pattern B of wirings to said pattern A of wirings;

said substrate including at least one connection A for electrically connecting said connection B to said pattern A of wirings;

said cap having a thickness equal to a depth of said cavity.

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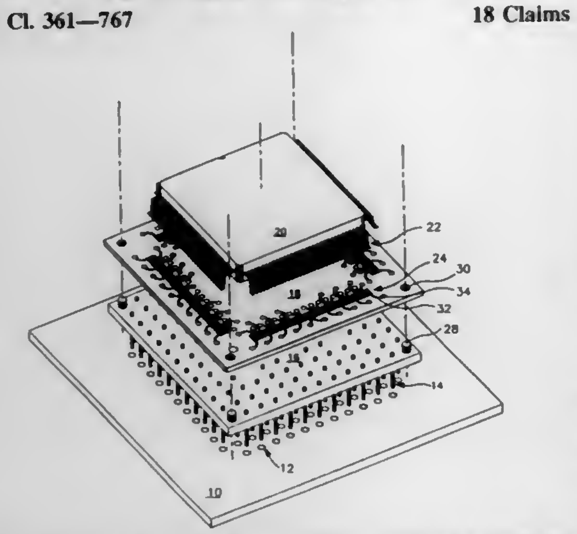
5,712,768
SPACE-SAVING ASSEMBLIES FOR CONNECTING INTEGRATED CIRCUITS TO CIRCUIT BOARDS

William E. Werther, Wood Ranch, Calif., assignor to Interconnect Systems, Inc., Simi Valley, Calif.

Division of Ser. No. 998,476, Dec. 30, 1992, Pat. No. 5,479,319. This application Oct. 26, 1995, Ser. No. 548,674

Int. Cl.^{6} H01R *23/68;* H05K *1/11*

U.S. Cl. 361—767 **18 Claims**



1. A multi-level electrical assembly for coupling at least one integrated circuit having a plurality of electrically conductive leads to at least one attachment area of a circuit board comprising:

(a) an interconnect board, including an electrically insulating substrate, having a top surface, a flat bottom surface, and two cores;

(b) an electrically insulating pin carrier disposed generally parallel to the interconnect board;

(c) a plurality of electrically conductive pins held by the pin carrier parallel to each other, perpendicular with the pin carrier, and in relative positions predetermined so as to align with receptacles of a circuit board;

(d) a plurality of electrically conductive receiving devices configured to receive leads of an integrated circuit supported on one of the surfaces of the interconnect board;

(e) a plurality of electrically conductive flat pads on the bottom surface of the interconnect board;

(f) wherein the area within a first perimeter line surrounding all of the receiving devices on the surface of the interconnect board that supports the receiving devices is larger than the area within a second perimeter line surrounding all of the flat pads on the bottom surface of the interconnect board;

(g) a plurality of contacts electrically coupling ends of selected of the pins to the pads and physically holding the pin ends against the pads, wherein no portion of the pins extends beyond the flat bottom surface of the interconnect board; and

(h) a plurality of electrically conductive pathways, at least in part supported by the interconnect board, at least some of which pathways electrically couple at least one of the contacts to at least one of the receiving devices;

(i) wherein the electrically conductive pathways form three distinct pattern on (1) two exterior surfaces of the board having conductive material disposed on selected lateral regions of each, and (2) at least one buried surface between the cores having conductive material disposed in selected lateral regions and

(j) wherein the electrically conductive pathways include a plurality of conductive vias connecting conductive material of the exterior surfaces with conductive material of the buried surface.

5,712,769
SUBRACK FOR ELECTRONIC CIRCUIT BOARDS

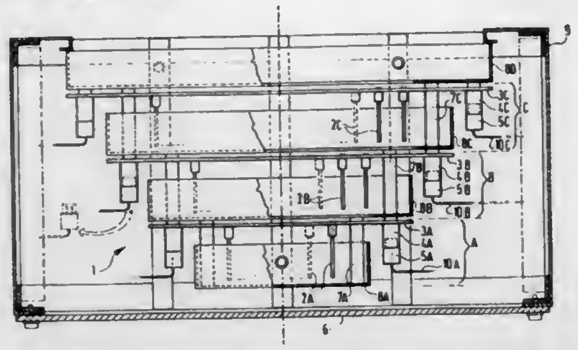
Christian Ruque, Corbas, France, assignor to GEC Alsthom Transport SA, Paris, France

Filed Oct. 24, 1995, Ser. No. 547,135

Claims priority, application France, Oct. 27, 1994, 94 12879

Int. Cl.^{6} H05K *7/14;1/11*

U.S. Cl. 361—796 **11 Claims**



1. A subrack comprising at least two mother boards disposed in different planes, said planes each containing one or more of said mother boards, wherein said mother boards are substantially parallel to a front face of said subrack and are superposed to form a stack of compartments in the general shape of a pyramid, and wherein said mother boards have connectors on at least one side adapted to receive output connectors, said connectors of one compartment being offset relative to the connectors of any other compartment so that the connectors are not disposed one above the other and are accessible from the front face of said subrack.

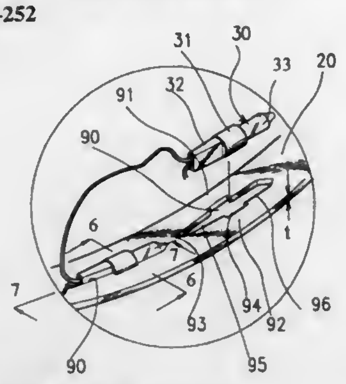
5,712,770
FIGURE LIGHT ASSEMBLY

Peter K. H. Huang, Taipei, Taiwan, assignor to Shining Blick Enterprises Co., Ltd., Taipei, Taiwan

Filed Oct. 8, 1996, Ser. No. 727,009

Int. Cl.^{6} F21P *1/02*

U.S. Cl. 362—252 **4 Claims**



1. A figure light assembly comprising:

a) a plurality of elongate light mounts longitudinally connected together and defining a figure;

b) a plurality of light assemblies, each light assembly being of a substantially elongate configuration;

c) each light mount being of a flat strip configuration and having a plurality of substantially elongate mounting holes formed therein and longitudinally spaced therealong, a longitudinal axis of each mounting hole extending longitudinally of the light mount, and each mounting hole having a configuration corresponding to the configuration of the light assembly; and

d) each light assembly being press fitted into each elongate mounting hole and extending outwardly from both sides of the light mount and providing illumination in substantially all directions from the light mount.

5,712,771
POWER CONVERTER

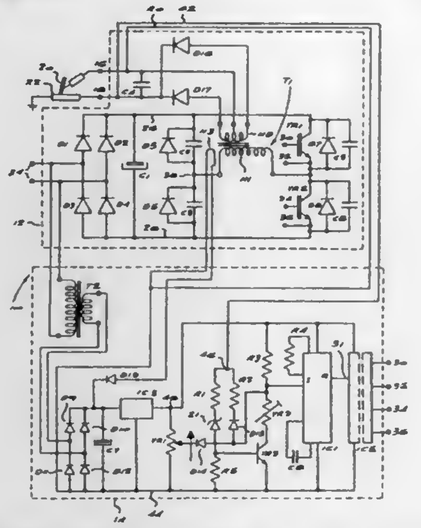
Johan Christiaan Fitter, 51 Mount Street, Bryanston, Sandton; Jan Abraham Ferreira, Ruiterhof, and Philippus Coenraad Theron, Auckland Park, all of South Africa, assignors to Johan Christiaan Fitter, South Africa

Filed Nov. 14, 1994, Ser. No. 339,003

Claims priority, application South Africa, Nov. 12, 1993, 93/8447

Int. Cl.^{6} H02M *3/335*

U.S. Cl. 363—17 **15 Claims**



1. A power converter comprising a power supply circuit arranged to supply power to a load of dynamically varying impedance and a control circuit for controlling the operation of the power supply circuit, the control circuit including first sensing means for sensing a variation in load impedance below a lower threshold value, and first regulating means responsive to the sensing means for reducing the power supplied to the load, the control circuit being arranged to operate the power supply circuit without feedback and at a desired power level in a first normal load mode when the impedance of the load is above the threshold value wherein the power supplied to the load is maintained at a substantially constant level, and a second reduced load mode when the impedance of the load is below the threshold value, wherein the power supply circuit is operated in a first feedback mode and the level of power supplied to the load is reduced so as to limit a rise in current through the load, and wherein the control circuit includes second sensing means for sensing a variation in load impedance above an upper threshold value, and second regulating means responsive to the second sensing means arranged to operate the power supply circuit in a second feedback mode for increasing the voltage across the load when the load impedance is above the upper threshold value.

5,712,772
CONTROLLER FOR HIGH EFFICIENCY RESONANT SWITCHING CONVERTERS

Mark Telefus, Orinda; Anatoly Shteynberg, San Jose, and Sharon Pellerin, San Francisco, all of Calif., assignors to Ericsson Raynet, Menlo Park, Calif.

Continuation-in-part of Ser. No. 383,094, Feb. 3, 1995. This application Aug. 16, 1995, Ser. No. 515,720

Int. Cl.^{6} H02M *3/335;* G05F *1/56*

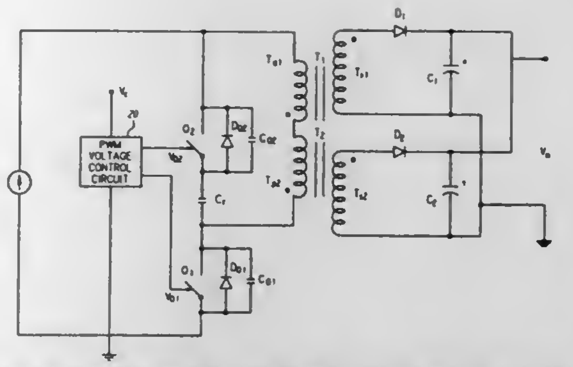
U.S. Cl. 363—21 **18 Claims**

6. A DC to DC flyback converter for supplying power from an input voltage source to one or more output terminals, comprising:

a transformer which isolates the one or more output terminals from the input voltage source;

a first semiconductor switch that, when ON, electrically couples said transformer with the input voltage source;

a resonant capacitor;



a second semiconductor switch that, when ON, electrically couples said resonant capacitor with said transformer;

control circuitry for alternately turning said first and second switches ON and OFF, respectively, said first switch according to a first duty cycle and said second switch according to a second duty cycle, said first and second duty cycles characterized in that a substantially constant time period transpires between each time said second switch is turned OFF and said first switch is turned ON, said time period being only so long as is required to prevent cross conduction of said first and second switches, said second duty cycle further characterized in that said second switch is turned ON only so long as is required to discharge said resonant capacitor following a transfer of energy across said transformer.

5,712,773
GAS TUBE SIGN POWER SUPPLY

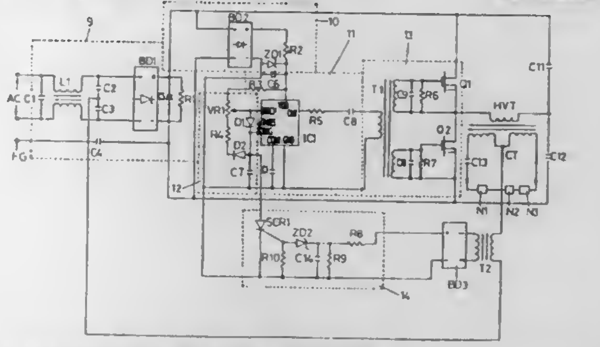
Hyung-Kwang Kim, Room 502, 2th Dong Yar-Su Apartment, Sang Do 4-Dong, Dong-Chak Ku Seoul, Rep. of Korea

Filed Oct. 15, 1996, Ser. No. 730,449

Claims priority, application Rep. of Korea, Oct. 13, 1995, 35282/1995

Int. Cl.^{6} H02M *5/45*

U.S. Cl. 363—37 **6 Claims**



1. A power supply apparatus comprising:

a first rectifying portion for bridge-rectifying an alternating current input thereto;

a second rectifying portion for bridge-rectifying an output voltage of said first rectifying portion;

a high voltage transformer driving portion for driving a high voltage transformer;

a switching means for receiving stable power from said second rectifying portion and for controlling the operation of said high voltage transformer driving portion;

an oscillating frequency and duty cycle ratio controller for controlling an oscillating frequency and duty cycle ratio of said switching means;

said high voltage transformer driving portion selectively interrupting a flow of current of said high voltage transformer in accordance with the output of said switching means; and

a high voltage output preventing portion for halting the operation of said oscillating frequency and duty cycle ratio controller by being turned on when a secondary side center tap

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voltage of said high voltage transformer is greater than a predetermined voltage.

5,712,774

DEVICE FOR SUPPRESSING HIGHER HARMONIC CURRENT OF POWER SOURCE

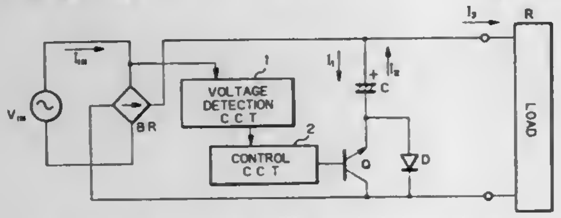
Hiroshi Uramoto, Hadano, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 392,085, Feb. 22, 1995, abandoned. This application Feb. 18, 1997, Ser. No. 802,791

Claims priority, application Japan, Feb. 24, 1994, 6-026830

Int. Cl.⁶ H02M *1/12*

U.S. Cl. 363—46 **10 Claims**



1. A device for suppressing higher harmonic current of a power source, comprising:

switching means for causing a capacitor, included in a capacitor input type rectifying circuit for a commercial power source, to selectively charge or discharge;

voltage detecting means for receiving and detecting a sinusoidal voltage out of the commercial power source and generating an output signal only when an absolute value of said received and detected sinusoidal voltage is lower than a predetermined voltage; and

control means for turning on said switching means in response to receiving the output signal from said voltage detecting means to thereby cause the capacitor to release a charge only when the sinusoidal voltage is lower than the predetermined voltage.

5,712,775

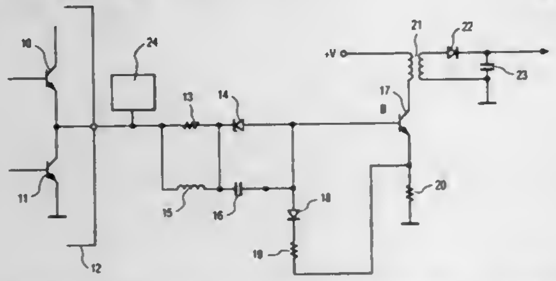
STARTUP PROTECTING FOR A SWITCH MODE POWER SUPPLY

Chun Hsing Wu, Singapore, Singapore, assignor to Thomson multimedia S.A., Courbevoie, France

Filed Mar. 27, 1996, Ser. No. 622,983

Int. Cl.⁶ H02M *3/335*

U.S. Cl. 363—49 **3 Claims**



1. Protection Circuit for a switch mode power supply, characterised in that

current-supply means (**24**) are provided which charge a capacitor (**16**) during a time before normal operation of said switch mode power supply;

means (**18, 19**) are provided between the base and the emitter of an output transistor (**17**) of said switch mode power supply, whereby discharge of said capacitor (**16**) is reduced.

5,712,776

STARTING CIRCUIT AND METHOD FOR STARTING A MOS TRANSISTOR

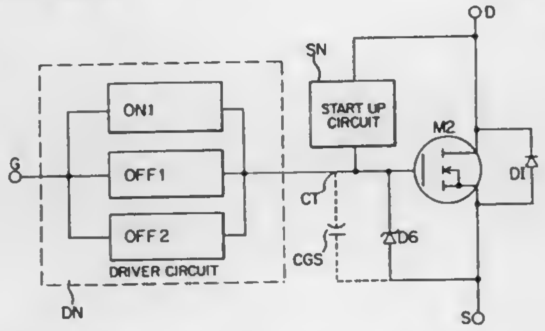
Sergio Palara, Acitrezza, and Vito Graziano, Palermo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, both of Italy

Filed Jul. 30, 1996, Ser. No. 688,296

Claims priority, application European Pat. Off., Jul. 31, 1995, 95830340

Int. Cl.⁶ H02M *7/122*

U.S. Cl. 363—49 **62 Claims**



1. A start up circuit for a MOS transistor having a drain terminal and a control terminal, the start up circuit comprising an electrical network adapted to couple the drian terminal of the MOS transistor to the control terminal of the MOS transistor.

5,712,777

VOLTAGE MULTIPLIER WITH LINEARLY STABILIZED OUTPUT VOLTAGE

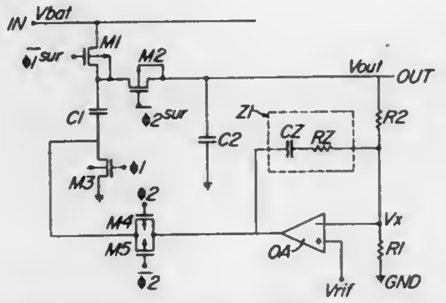
Germano Nicollini, Piacenza, and Pierangelo Confalonieri, Canoica D'Adda, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Italy

Filed Mar. 31, 1995, Ser. No. 414,277

Claims priority, application European Pat. Off., Aug. 31, 1994, 94830413

Int. Cl.⁶ H02M *3/07*

U.S. Cl. 363—60 **19 Claims**



1. An output voltage stabilization circuit for a voltage multiplier having an input terminal, an output terminal, a charge transfer capacitor designed to take and transfer electrical charges from the input terminal to the output terminal, said stabilization circuit comprising:

an integrator having a first input coupled with the output terminal of the multiplier, a second input for receiving a reference voltage and an output for generating a continuous voltage corresponding to the difference between the reference voltage and the output voltage of the voltage multiplier;

wherein said continuous voltage is applied to one terminal of said charge transfer capacitor.

5,712,778

VOLTAGE MULTIPLYING DC-DC CONVERTER FOR A THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY

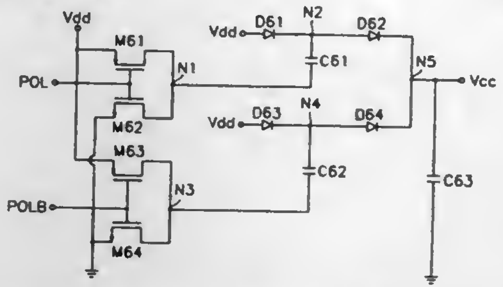
Seung-hwan Moon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 16, 1996, Ser. No. 633,288

Claims priority, application Rep. of Korea, Apr. 18, 1994, 95-9107

Int. Cl.⁶ H02M *3/07*

U.S. Cl. 363—60 **3 Claims**



1. A DC-DC converter for a TFT-LCD, comprising:

a first PMOS type transistor and a first NMOS type transistor which have source terminals connected to a power signal line and a ground line, respectively, gate terminals connected in common to a first polar signal line, and drain terminals;

a second PMOS type transistor and a second NMOS type transistor which have source terminals connected to the power signal line and the ground line, respectively, gate terminals connected in common to a second polar signal line, and drain terminals;

first and second diodes which have anode terminals connected to the power signal line, respectively, and cathode terminals;

third and fourth diodes which have anode terminals connected to the cathode terminals of the first and second diodes, respectively, and cathode terminals;

a first capacitor which is connected between the cathode terminal of the first diode and the drain terminal of the first PMOS type transistor connected in common to the drain terminal of the first NMOS type transistor;

a second capacitor which is connected between the cathode terminal of the second diode and the drain terminal of the second PMOS type transistor connected in common to the drain terminal of the second NMOS type transistor; and

a third capacitor which is connected between the ground line and the cathode terminal of the third diode connected in common to the cathode terminal of the fourth diode.

5,712,779

DC ELECTRICAL POWER SUPPLY SYSTEM

J. Steven Sheppard, Allen; Mark L. Barnett, Arlington; Guenter H. Lehmann, Rowlett; Arif Oguz, Arlington, and Richard Vasquez, Mesquite, all of Tex., assignors to Yuasa Exide, Inc., Reading, Pa.

Filed Aug. 1, 1996, Ser. No. 690,766

Int. Cl.⁶ H02H *7/125*

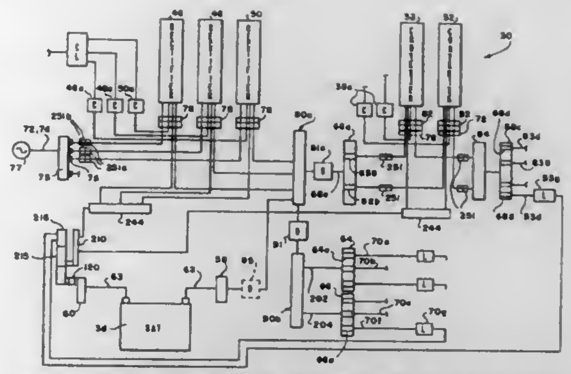
U.S. Cl. 363—69 **49 Claims**

1. A power supply system, particularly adapted for converting AC electrical power into DC electrical power for supply to one or more power consuming devices, said system comprising:

a frame;

circuit means supported on said frame including means for connecting said power supply system to a source of AC electrical power;

at least one shelf means supported on said frame including plural slots thereon and operable to removably support plural AC to DC rectifier units whereby each of said rectifier units may be selectively positioned on said shelf means and removed from said shelf means, at will, to accommodate changes in electrical power requirements of DC electrical loads connected to said power supply system;



connector means on said shelf means for connecting said rectifier units, respectively, to a bus, a ground plate and to said source of AC electrical power, said bus and said ground plate being supported on said frame; and

plural circuit breakers mounted on said frame and operable to be connected to said bus and including respective connector means for connecting said rectifier units to plural DC electrical loads, through respective ones of said circuit breakers.

5,712,780

UNITY POWER FACTOR CONVERTER FOR HIGH QUALITY POWER SUPPLY WITH MAGNETICALLY COUPLED COMPENSATION

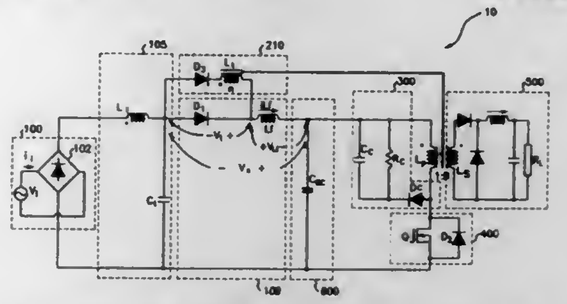
Myoung Joong Youn; Gun Woo Moon; Young Seok Jung; Chung Wook Roh, all of Daejeon, and Che Hong Ahn, Seoul, all of Rep. of Korea, assignors to Korea Telecommunication Authority, Seoul, Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 747,448

Int. Cl.⁶ H02M *7/537*

U.S. Cl. 363—131 **6 Claims**

FIG.



1. A power supply including a power source, a low-pass filter including an inductor, a transformer primary and secondary coils, a ripple energy storing means and a switching control means, said power supply comprising:

a rectifying means including a first diode and an inductor connected in series, the rectifying means coupled to the low-pass filter; and

a magnetic induction means including an inductance element and a second diode, said magnetic induction means being coupled to said first diode in parallel, said inductance element being wound around a core where said transformer primary and secondary coils are wound and being coupled to said rectifying means;

whereby said inductance element compensates a voltage applied to said inductor in said rectifying means with a voltage applied to said transformer primary coil.

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5,712,781

PROGRAMMABLE CONTROLLER AND EXCLUSIVE CONTROL COMMUNICATING METHOD THEREFOR

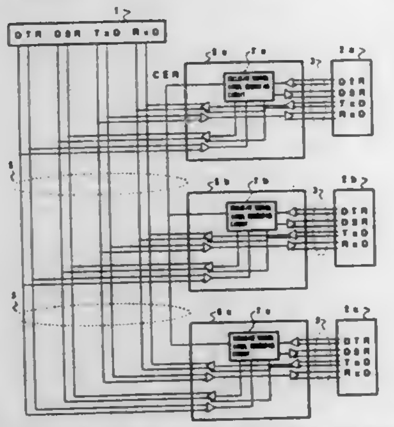
Shun Ohta, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 365,248, Dec. 28, 1994. This application May 6, 1996, Ser. No. 643,608

Claims priority, application Japan, Dec. 28, 1993, 5-338340

Int. Cl.^{6} G05B *15/00;* **H01J** *13/00*

U.S. Cl. 364—131 **5 Claims**



1. An exclusive control communicating method for operating a programmable controller having a processing unit and which controls a plurality of program devices, comprising:

making a first determination as to whether or not a data set ready (DSR) signal for each of the program devices is ON;

turning ON a data terminal ready (DTR) signal for at least one of the program devices when the respective DSR signal is ON;

making a second determination as to whether or not said DSR signal is ON;

executing a data transaction if it is determined in the second determination that said DSR signal is ON;

retrying said second determination if it is determined in said second determination that said DSR signal is not ON;

making a third determination as to whether or not said second determination has been retried a predetermined number of times when said DSR signal is determined in said second determination not to be ON if said second determination has not been retried a predetermined number of times repeating said retrying said second determination; and

turning said DTR signal OFF without executing a data transaction when in said third determination it is determined that a retry operation has been executed said predetermined number of times.

5,712,782

METHOD OF OPTIMIZING UTILIZATION OF A GROUP OF AGRICULTURAL MACHINE

Horst Weigelt, Guetersloh; H. H. Wippersteg, Buende; Stefan Boettinger, Bielefeld, and Thilo Steckel, Harsewinkel, all of Germany, assignors to Claas KGaA, Harsewinkel, Germany

Filed Apr. 15, 1996, Ser. No. 631,968

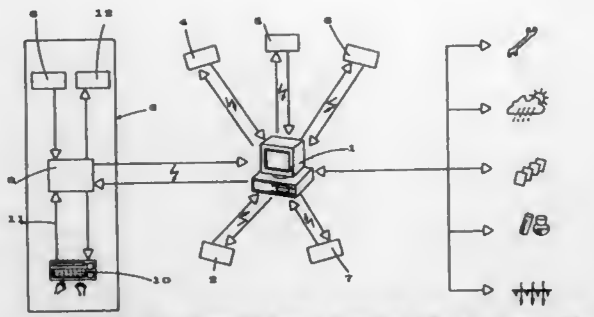
Claims priority, application Germany, Apr. 15, 1995, 195 14 223.3

Int. Cl.^{6} G05D *1/00*

U.S. Cl. 364—424.07 **17 Claims**

1. A method of optimizing operation of a plurality of agricultural machines and devices, the method comprising the steps of:

a) providing a controlling processor (1) for controlling operation of the agricultural machines and devices (2 to 7), each of the agricultural machines and devices (2 to 7) having at least one on-board processor (8) and telemetric means for transmitting and receiving data available in the at least one on-board processor (8) to and from the controlling processor (1) for exchanging data telemetrically between the at least one on-board processor (8) and the controlling processor (1);



b) categorizing said data exchangeable between the controlling processor (1) and the at least one on-board processor (8) of each of the agricultural machines and devices (2 to 7) into processing categories according to data processing and memory locations;

c) processing one portion of said data on a level of the agricultural machines and devices (2 to 7) according to said processing categories to at least partially optimize operation of said agricultural machines and devices without transmitting said one portion of said data to and processing said one portion of said data in said controlling processor, said processing including storing at least a part of said one portion of said data on said level of the agricultural machines and devices; and

d) transmitting another portion of the data on said level of the agricultural machines and devices telemetrically to a level of the controlling processor (1) for processing together with additional data not available in the agricultural machines and devices (2 to 7); and

e) optimizing control of said agricultural machines based on controlling information available in individual ones of said agricultural machines and completing said optimizing according to said additional data not available in the agricultural machines and devices (2 to 7).

5,712,783

CONTROL METHOD FOR SEMI-ACTIVE DAMPER

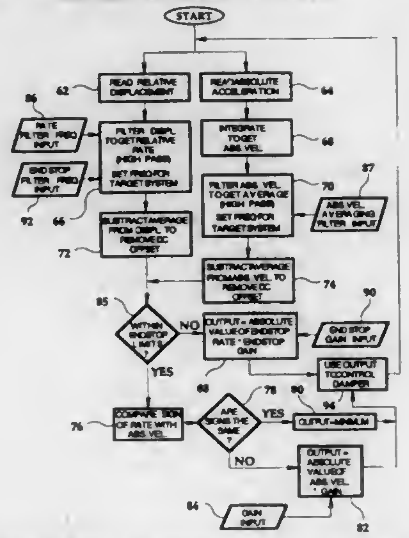
David M. Catanzarite, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Apr. 26, 1996, Ser. No. 639,139

Int. Cl.^{6} B60G *17/015;* **B60N** *2/50*

U.S. Cl. 364—424.046 **14 Claims**

FLOWCHART OF MODIFIED RATE CONTROL


START
READ RELATIVE DISPLACEMENT
READ ABSOLUTE ACCELERATION
INTEGRATE TO GET ABS VEL
SUBTRACT AVERAGE
ARE SIGNS THE SAME ?
COMPARE SIGN OF RATE WITH ABS VEL
YES
NO
OUTPUT = MINIMUM
OUTPUT = ABSOLUTE VALUE OF ABS VEL * GAIN
GAIN INPUT
62
64
66
72
74
76
78
80
82
84
86
90
94

1. A control method for implementing skyhook-type control in a controllable damper system, said method comprising the steps of

a) determining a relative displacement of said damper system;

b) feeding said relative displacement to a controller;

c) sensing an absolute acceleration of said damper system;

d) feeding said absolute acceleration to said controller;

e) processing said relative displacement through a filter within said controller to determine a displacement rate of said damper system, said processing including phase shifting said relative displacement through an angle greater than 0° and less than 90°;

f) integrating said absolute acceleration to find an absolute velocity;

g) subtracting a steady-state component from each of said displacement rate and absolute velocity;

h) comparing a sign of said displacement rate with a sign of said absolute velocity;

i) deriving an output signal equal to a minimum value if the compared signs are the same and to a value equal to said absolute velocity times a desired gain if the compared signs are opposed;

j) feeding said output control signal to a controllable damper to adjust its force output setting to an appropriate value.

5,712,784

DATA TRANSMISSION PROCESS WITHIN A DATA PROCESSING SYSTEM SUITABLE FOR USE IN MOTOR VEHICLES

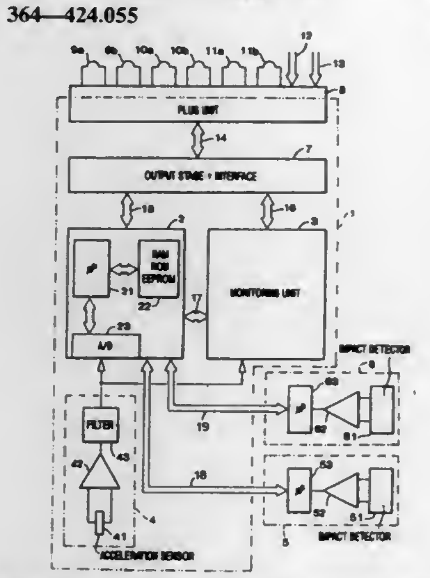
Günter Fendt, Schrobenhausen; Hans Spies, Pfaffenhofen; Peter Hora, and Derrick Zechmair, both of Schrobenhausen, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Jul. 19, 1995, Ser. No. 504,247

Claims priority, application Germany, Jul. 21, 1994, 44 25 845.3

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 364—424.055 **8 Claims**



1. A data transmission process within a data processing system suitable for use in motor vehicles and comprising one control unit and at least one peripheral unit connected to the control unit via a data line, said process comprising the steps of:

setting a period duration of a pulse width modulated (PWM) signal suitable for use with the control unit as a nominal value;

generating an actual pulse width modulated signal (PWM signal) by the at least one peripheral unit as the smallest unit of information;

transmitting the PWM signal to the control unit;

determining the period duration as an actual value of the transmitted PWM signal;

comparing the actual value with the nominal value; and,

if the actual and nominal values do not match, disregarding that particular transmitted unit of information represented by the PWM signal in the control unit.

5,712,785

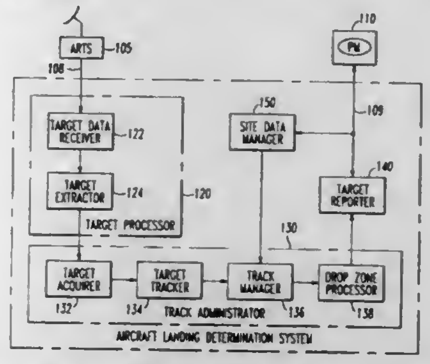
AIRCRAFT LANDING DETERMINATION APPARATUS AND METHOD

Din Mok, Weston, and Marshall Watnick, Trumbull, both of Conn., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 23, 1995, Ser. No. 494,118

Int. Cl.^{6} G06G *7/76;* **G01S** *13/00*

U.S. Cl. 364—428 **23 Claims**



1. An aircraft landing determination apparatus for use at an airport, comprising:

(a) a target track processor for culling a plurality of target tracks from a target data transmission, said target data transmission being provided by a target track sensor;

(b) a track administrator for receiving said plurality of target tracks and selecting at least one arrival track therefrom, said track administrator including i) a target acquirer for acquiring selected ones of said plurality of target tracks, ii) a target tracker for tracking positions of said selected ones of said plurality of target tracks, and iii) a track manager for identifying track candidates from said selected ones of said plurality of target tracks responsive to said positions and selecting said at least one arrival track from said track candidates and allocating a unique runway assignment to said at least one arrival track; and

(c) a track reporter for receiving said at least one arrival track and said allocated unique runway assignment, and preparing a track report thereabout, said reporter transmitting said track report to a position monitoring apparatus, wherein said track reporter reformatting said track report and effecting transmission protocols necessary to communicate the track report to the position monitoring apparatus.

5,712,786

IDLING SPEED CONTROL METHOD AND APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Katsunori Ueda, Tokyo, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,606

Claims priority, application Japan, Oct. 12, 1993, 5-254505

Int. Cl.^{6} G06G *7/70;* **F02M** *3/00;* **H02H** *7/06*

U.S. Cl. 364—431.07 **6 Claims**

1. An idling speed control method for an internal combustion engine, in which a field current of an alternator is turned on and off to control a power generation rate of the alternator in accordance with a terminal voltage of a battery, and an air intake of the internal combustion engine is increased or decreased to keep an engine speed at a target speed during an idle operation of the engine, such that, when an electric load suddenly increases during the idle operation of the engine, the field current of the alternator is gradually increased toward a field current value corresponding to the suddenly increased electric load, comprising:

detecting the battery voltage;

estimating a battery current consumption value from a state of change in the detected battery voltage;

determining a generated current value of the alternator without directly detecting current generated by the alternator;

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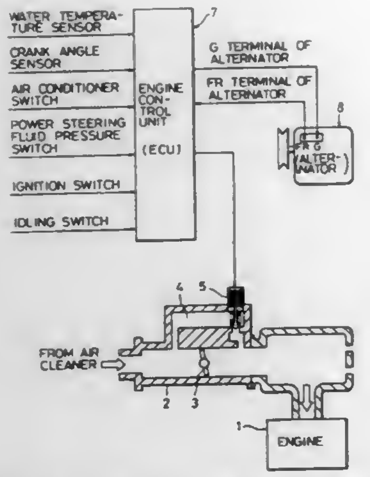


calculating a target value of an electric load current to be outputted from the alternator, based on the estimated battery current consumption value and the determined current value of the alternator; and

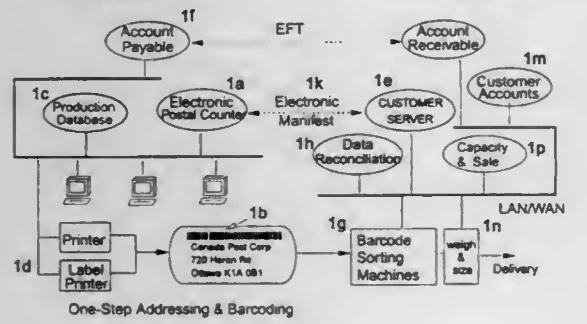
increasing the air intake based on the calculated target value of the electric load current,

wherein said air intake is increased when a first set value is exceeded by the calculated target value of the electric load, and an increment of said air intake is set based on a difference between the calculated target value and a second set value, and

wherein said intake air is increased only when such detected battery voltage decreases to an extent that charging of the battery is required due to the determined alternator current value.

5,712,787
ELECTRONIC POSTAL COUNTER

Yukee Yeung, Baie D'Urfe, Canada, assignor to Canada Post Corporation, Ottawa, Canada
Filed Jul. 10, 1995, Ser. No. 500,090
Int. Cl.⁶ G06F *19/00*
U.S. Cl. 364—478.09 **11 Claims**

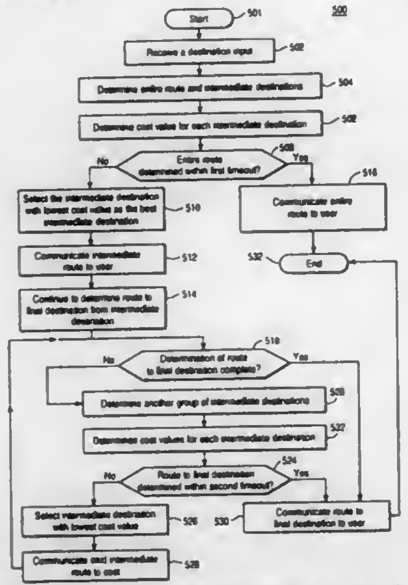


Process Schematic

1. A computer system for purchasing services without the use of postage stamps or meters from a postal administration for the delivery by the postal administration of mail pieces, comprising means at a mailer's premises for entering data by a mailer relating to the mail pieces including for each mail piece address information and type of service required, means for displaying an estimate of the cost of mailing each mail piece, means for the mailer to enter a method of payment and provide information related to the choice of payment, means for determining whether or not to accept the method of payment, means dependent on acceptance of the method of payment for creating a unique identifier for each mail piece based on the data entered by the mailer, means for printing the identifier in a coded format directly onto the mail piece or onto an address label for the mail piece, and means for transmitting to the postal administration premises an electronic manifest containing the data entered for each mail piece.

5,712,788
INCREMENTAL ROUTE CALCULATION

Jeff Jyh-Min Llaw, San Jose; Simon Peter Desai, and Haruhisa Tamai, both of Sunnyvale, all of Calif., assignors to Zexel Corporation, Tokyo, Japan
Filed Feb. 9, 1995, Ser. No. 385,611
Int. Cl.⁶ G06F *165/00*
U.S. Cl. 364—449.3 **14 Claims**



1. A method for determining a route from a source location to a final destination using a vehicle navigation system having a map database, wherein the map database comprises a plurality of roads stored therein, each road having a hierarchy level associated therewith, the source location corresponding to a source road having a first hierarchy level, the method comprising the steps of:

determining at least one intermediate destination candidate from the map database, each intermediate destination candidate being at one end of an intermediate route from the source location, wherein the step of determining at least one intermediate destination candidate comprises the steps of:

exploring possible routes from a first road segment connected to the source location until a connecting road is encountered having a second hierarchy level, the connecting road having an access point associated therewith and the second hierarchy level being greater than the first hierarchy level;

designating the access point to the connecting road as the at least one intermediate destination candidate; and

repeating the exploring and designating steps for each road segment connected to the source location;

calculating a cost value for each intermediate destination candidate;

selecting an intermediate destination, the cost value corresponding to the intermediate destination being lower than the cost values corresponding to any other intermediate destination candidates;

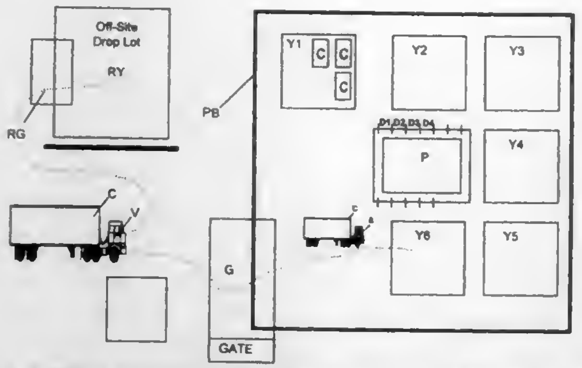
communicating the intermediate route corresponding to the intermediate destination to a user of the vehicle navigation system; and

determining a remainder route to the final destination.

5,712,789
CONTAINER MONITORING SYSTEM AND METHOD

Joseph E. Radican, Wellington, Ohio, assignor to K&T Ltd., Avon, Ohio
Filed Aug. 28, 1995, Ser. No. 519,888
Int. Cl.⁶ G06F *19/00*
U.S. Cl. 364—478.14 **19 Claims**

1. A container monitoring system for accumulating and storing information on shipping containers including container location and container load status, the system comprising:



a receiving area for receiving containers to be monitored by the system, said receiving area within a defined boundary within which containers are to be monitored by the system,

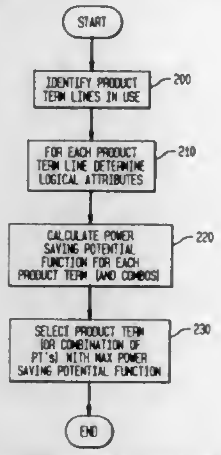
a container entry point at the boundary at which containers are identified by pre-existing identification codes which are recorded at the container entry point,

a switching vehicle for moving containers to and from a receiving area and to and from a facility within the boundary according to instructions received from the facility, and

means for recording information on locations and load status of containers within the defined boundary.

5,712,790
METHOD OF POWER REDUCTION IN PLA'S

Gary Stephen Ditlow, Garrison, N.Y., and Paul David Kartschoke, Williston, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 11, 1995, Ser. No. 419,772
Int. Cl.⁶ H03K *19/177;* **G06F** *17/50*
U.S. Cl. 364—489 **10 Claims**


START
IDENTIFY PRODUCT TERM LINES IN USE
200
FOR EACH PRODUCT TERM LINE DETERMINE LOGICAL ATTRIBUTES
210
CALCULATE POWER SAVING POTENTIAL FUNCTION FOR EACH PRODUCT TERM (AND COMBOS)
220
SELECT PRODUCT TERM (OR COMBINATION OF PT's) WITH MAX POWER SAVING POTENTIAL FUNCTION
230
END

1. A method for selectively activating at least one device of a second conductivity in a programmable logic array comprising a product term array for selectively combining at least two inputs and providing at least one product term signal, a product term selection array for connecting selected ones of the at least one product term signal to selected ones of the at least one output line by way of at least one device of a first conductivity type, and a device of the second conductivity type coupled to each of the at least one output lines for setting the voltage of the at least one output lines if none of the devices of the first conductivity type connected to the output line is activated, wherein at least one of the devices of the second conductivity type are selectively activated, the method comprising the steps:

identifying product terms which have at least one connection to an input in the product term array;

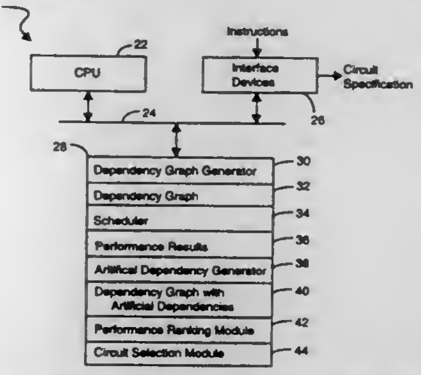
determining logical attributes contributing to array power dissipation for each identified product term;

determining a power saving potential function for each product term line having at least one connection in the product term array array; and

gating at least one device of the second conductivity type by a product term that maximizes the power saving potential function.

5,712,791
METHOD AND APPARATUS FOR DESIGNING A CIRCUIT BY ANALYZING SELECTED ARTIFICIAL HARDWARE DEPENDENCIES INSERTED INTO A DYNAMIC DEPENDENCY GRAPH

Gary R. Lauterbach, Los Altos Hills, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.
Filed Oct. 31, 1995, Ser. No. 550,800
Int. Cl.⁶ G06F *17/50*
U.S. Cl. 364—489 **18 Claims**



1. A method of improving the design of a circuit, said method comprising the steps of:

building a dependency graph for a set of instructions to be executed by said circuit;

inserting a set of artificial dependencies into said dependency graph to form a modified dependency graph corresponding to a modified circuit, said set of artificial dependencies corresponding to hardware dependencies specifying circuit limitations of said modified circuit;

analyzing the execution performance of selected artificial dependencies of said modified dependency graph to generate a set of performance results; and

selecting a final circuit configuration based upon said performance results.

5,712,792
LOGIC CIRCUIT SYTHESIZING METHOD UTILIZING BINARY DECISION DIAGRAM EXPLORED BASED UPON HIERARCHY OF CORRELATION BETWEEN INPUT VARIABLES

Shunzo Yamashita, Tokyo; Kazuo Yano, Hino; Yasuhiko Sasaki, Koganei, and Koichi Seki, Hino, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Apr. 17, 1996, Ser. No. 633,486
Claims priority, application Japan, Apr. 21, 1995, 7-096487
Int. Cl.⁶ G06F *17/50*
U.S. Cl. 364—489 **33 Claims**

1. A method of synthesizing a logic circuit by a computer system, based on a logic function defining relationship between a group of input variables representative of a group of input signals of a logic circuit to be synthesized and at least one output variable representative of an output signal of the logic circuit, the method comprising steps executed by the computer system, the steps including:

(a) determining a plurality of groups arranged in a hierarchy, based on the logic function, so that the hierarchy reflects hierarchical structure of strength of logical correlation between the group of input variables;

a relatively upper group among said plurality of groups including members having relatively weak correlation with each other;

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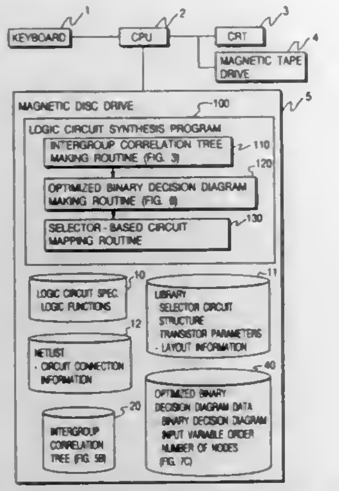

KEYBOARD
1
CPU
2
CRT
3
MAGNETIC TAPE DRIVE
4
MAGNETIC DISC DRIVE
5
100
LOGIC CIRCUIT SYNTHESIS PROGRAM
INTERGROUP CORRELATION TREE MAKING ROUTINE (FIG. 3)
110
OPTIMIZED BINARY DECISION DIAGRAM MAKING ROUTINE (FIG. 8)
120
SELECTOR - BASED CIRCUIT MAPPING ROUTINE
130
LOGIC CIRCUIT SPEC. LOGIC FUNCTIONS
10
LIBRARY SELECTOR CIRCUIT STRUCTURE TRANSISTOR PARAMETERS - LAYOUT INFORMATION
11
NETLIST - CIRCUIT CONNECTION INFORMATION
12
OPTIMIZED BINARY DECISION DIAGRAM DATA BINARY DECISION DIAGRAM INPUT VARIABLE ORDER NUMBER OF NODES (FIG. 7C)
40
INTERGROUP CORRELATION TREE (FIG. 5B)
20

a member of each group being one group one level lower than said each group or one input variable which does not belong to any of one or plural groups lower than said each group;

(b) sequentially selecting said plurality of groups from the uppermost group;

(c) determining an intragroup order of members of one of the groups so as to satisfy a predetermined condition, each time when the one group is selected in the step (b);

(d) determining a binary decision diagram corresponding to the order of said group of variables as a binary decision diagram for said logic function;

said order being one determined by a plurality of intragroup orders respectively determined as a result of execution of said step (c) to said plurality of groups; and

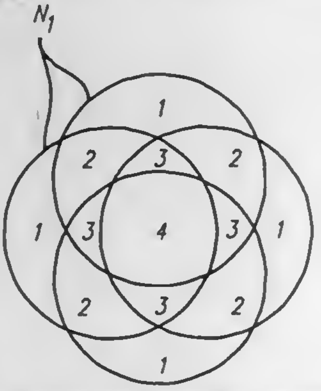
(e) mapping the determined binary decision diagram into a logic circuit and outputting the logic circuit obtained by said mapping as a logic circuit for said logic function.

5,712,793
PHYSICAL DESIGN AUTOMATION SYSTEM AND PROCESS FOR DESIGNING INTEGRATED CIRCUIT CHIPS USING FUZZY CELL CLUSTERIZATION

Ranko Scepanovic; James S. Koford, both of San Jose, Calif.; Valeriy B. Kudryvavtsev, Moscow, Russian Federation; Alexander E. Andreev, Moskovskaja Oblast, Russian Federation; Stanislav V. Alesbin; Alexander S. Podkolzin, both of Moscow, Russian Federation, and Edward M. Roseboom, San Carlos, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Nov. 20, 1995, Ser. No. 560,588
Int. Cl.^{6} G06F *17/50*

U.S. Cl. 364—490 **36 Claims**



1. A computer implemented method for generating a cluster of cells for integrated circuit design, comprising the steps of:

(a) providing a netlist including cells, and nets of wires interconnecting the cells;

(b) designating one of the cells as a center;

(c) specifying a metric for measuring distance between cells as a function of netlist interconnections;

(d) specifying a maximum cluster size criterion;

(e) processing the netlist using said metric to determine distances of cells from the center; and

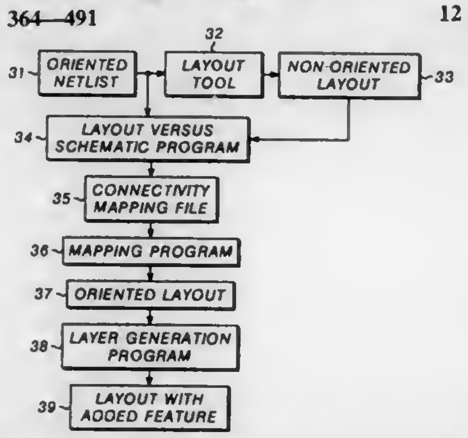
(f) assigning cells having progressively increasing distances from the center to the cluster until said maximum cluster size criterion is reached.

5,712,794
AUTOMATED METHOD FOR ADDING ATTRIBUTES INDENTIFIED ON A SCHEMATIC DIAGRAM TO AN INTEGRATED CIRCUIT LAYOUT

Merit Hong, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1995, Ser. No. 552,425
Int. Cl.^{6} G06F *17/50*

U.S. Cl. 364—491 **12 Claims**



12. A method for adding an attribute identified on a schematic diagram to a layout of an integrated circuit, the method comprising the steps of:

using a Layout Versus Schematic (LVS) program to generate a database of information correlating the layout to the schematic diagram;

retrieving information correlating the attribute in the schematic diagram to the layout; and

generating layers which identify the attribute on the layout.

5,712,795
POWER MANAGEMENT SYSTEM

Douglas C. Layman, and Oliver J. Smith, both of San Diego, Calif., assignors to Alaris Medical Systems, Inc., San Diego, Calif.

Filed Oct. 2, 1995, Ser. No. 538,096
Int. Cl.^{6} H02J *7/04*

U.S. Cl. 364—472 **52 Claims**

1. A power management system for managing the power to operate a biomedical device from a rechargeable battery and from an external power source, the biomedical device having a power requirement for operation, the system comprising:

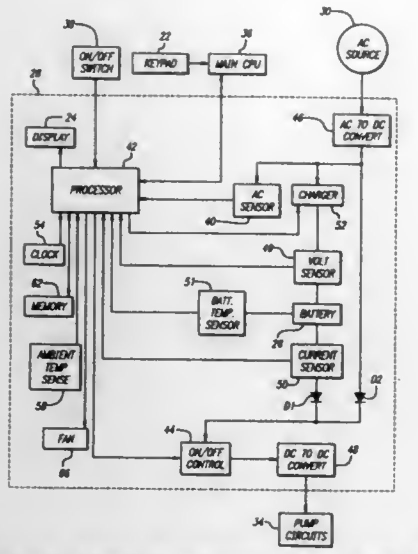
connection means for powering the biomedical device from an external power source when said source is connected to the power management system and for powering the biomedical device from the battery when an external power source is not connected to the power management system;

a charger connected to the battery to provide charge to the battery in response to charge control signals;

a processor that:

provides a charge control signal to the charger to cause the charger to provide charge to the battery when an external power source is connected to the power management system;

automatically determines a value for the amount of charge in the battery;



automatically adjusts the determined value for the amount of charge in the battery based on the number of discharge/charge cycles undergone by the battery;

automatically determines the run time of the battery based on the adjusted determined value of the amount of charge in the battery and the power requirement of the biomedical device;

provides a display signal representative of said run time; and

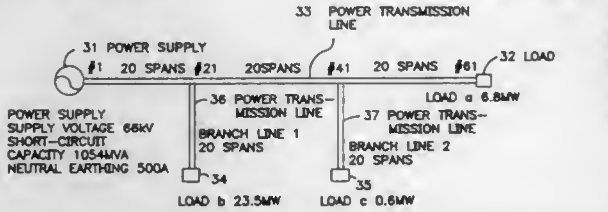
a display that displays the determined run time in response to the display signal.

5,712,796
METHOD FOR EVALUATING THE FAULTED SECTIONS AND STATES IN A POWER TRANSMISSION LINE

Kazutaka Ohura, Tokyo; Ryouji Matsubara, and Masahisa Kaneta, both of Hitachi, all of Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,573
Claims priority, application Japan, Jul. 14, 1994, 6-162419
Int. Cl.^{6} G01R *31/08;* **H02J** *00/00*

U.S. Cl. 364—495 **4 Claims**



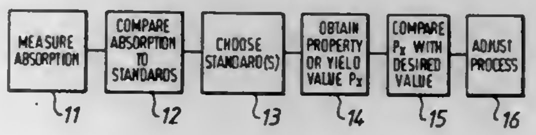
1. A method for evaluating a faulted section in power transmission line by measuring the current flowing through an aerial earth wire at a plurality of places along the power transmission line to evaluate the fault section from the measured information, comprising the steps of calculating the measuring information resulted from the faults in various positions by the previous fault simulative calculation; introducing the resulting fault simulative measuring information into a self-organizing neural network having output elements of which number being more than that of input elements to permit the self-organizing neural network to learn the classification of the simulative measuring information; preparing an evaluation rule representing the correspondent relation between the output from the classification of the simulative measuring information and the faulted position; thereafter introducing actual measured information into the self-organized neural network to permit the self-organizing neural network to classify the introduced actual measured information and evaluating the faulted section from an output classified by the self-organizing neural network on the basis of the evaluation rule.

5,712,797
PROPERTY DETERMINATION

Bernard Descales, Marseille; Didier Lambert, Saint-Mitre-Les-Remparts; Jean-Richard Llinas, Marseille; Andre Martens, Chateauneuf-Les-Martigues; Sebastien Osta, Istres, and Michel Sanchez, Lavera, all of France, assignors to BP Chemicals Limited, and BP Oil International Limited, both of London, England

Filed Jun. 6, 1995, Ser. No. 465,680
Claims priority, application United Kingdom, Oct. 7, 1994, 94430009
Int. Cl.^{6} G01N *21/35;* **G01J** *3/42*

U.S. Cl. 364—499 **32 Claims**


MEASURE ABSORPTION
COMPARE ABSORPTION TO STANDARDS
CHOOSE STANDARD(S)
OBTAIN PROPERTY OR YIELD VALUE P_x
COMPARE P_x WITH DESIRED VALUE
ADJUST PROCESS
11
12
13
14
15
16

1. A method of determining or predicting a value P_x which is a value of a property of a material X or a property of a product of a process from said material or yield of said process, which method comprises measuring the absorption D_{ix} of said material at more than one wavelength in the region 600–2600 nm, comparing the said absorptions or a derivative thereof with absorptions D_{im} or derivatives thereof at the same wavelength for a number of standards S in a bank for which the said property or yield P is known, and choosing from the bank at least one standard S_m with property P_m said standard having the smallest average value of the absolute difference at each wavelength 1 between the absorption D_ix (or derivative thereof) for the material and the absorption D_im (or derivative thereof) for the standard S_m to obtain P_x, with averaging of said properties or yields P_m when more than one standard S_m is chosen and wherein the standard S_m chosen for the property or yield wanted is such that in relation to the unknown material X and each chosen standard S_m a function i_{xm}, which is a proximity index defined by $i^2(xm)=\Sigma(D_{ix}D_{im})^2$, is less than a minimal index i_m which has been determined from preselected standards by (a) calculating for each pair of the standards a value of a corresponding proximity index to obtain a series of proximity indices with corresponding property differences, (b) relating values of the proximity indices to corresponding property differences, (c) calculating an average of the corresponding property differences for predetermined values L which are greater than a corresponding proximity index, and (d) calculating the minimal index based on the average property differences and a reproducibility standard for the property.

5,712,798
BLOOD COMPONENT COLLECTION SYSTEM WITH OPTIMIZER

Robert W. Langley, Westminster; John J. Keller, and Steven Gage Urdahl, both of Golden, all of Colo., assignors to Cobe Laboratories, Inc., Arvada, Colo.

Continuation of Ser. No. 140,254, Oct. 21, 1993, Pat. No. 5,496,265, which is a continuation-in-part of Ser. No. 912,973, Jul. 10, 1992, Ser. No. 845,677, Mar. 4, 1992, Pat. No. 5,421,812, and Ser. No. 110,432, Aug. 23, 1993, Pat. No. 5,437,624. This application May 12, 1995, Ser. No. 439,649
Int. Cl.^{6} G05B *13/00*

U.S. Cl. 364—500 **23 Claims**

1. A computer-readable storage medium for use in performing a blood component collection procedure having a plurality of control parameters associated therewith using a blood component collection system comprising a blood component collection device, said computer-readable storage medium comprising:

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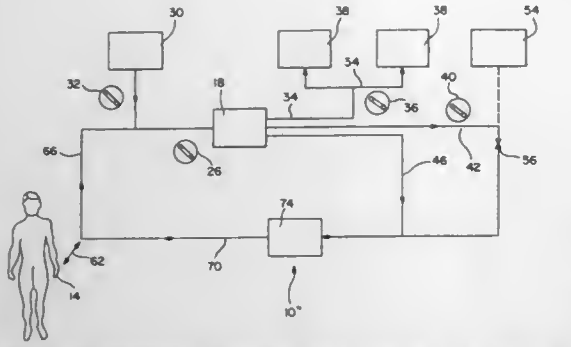


means for requesting biological data relating to a source of blood comprising a plurality of blood component types, said source comprising a donor and said data comprising at least one of said donor's hematocrit, height, weight and sex;

means for requesting a desired yield for at least one predetermined blood component type to be collected, said means for requesting a desired yield allowing an operator to input a magnitude for said desired yield for each said blood component collection procedure which is performed using said computer-readable storage medium; and

means for associating a magnitude with each said control parameter, said means for associating comprising first means for deriving a magnitude for at least one of said control parameters from said means for requesting biological data and said means for requesting a desired yield.

5,712,799

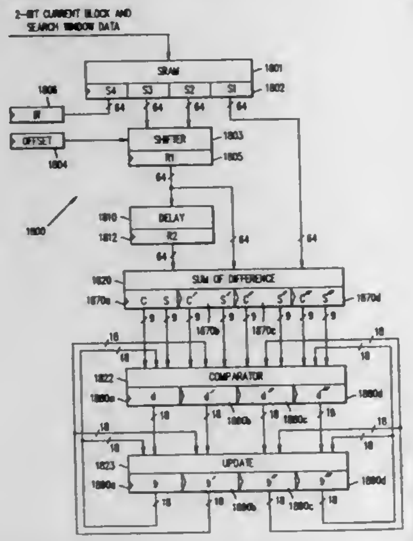
METHOD AND STRUCTURE FOR PERFORMING MOTION ESTIMATION USING REDUCED PRECISION PIXEL INTENSITY VALUES

P. Michael Farmwald, Portola Valley; Stephen C. Purcell, Mountain View; Andrew C. Hung, Los Altos Hills, and Chad E. Fogg, Sunnyvale, all of Calif., assignors to Chromatic Research, Inc., Sunnyvale, Calif.

Filed Apr. 4, 1995, Ser. No. 416,372

Int. Cl.^{6} H04N *7/015*

U.S. Cl. 364—514 R **26 Claims**



1. A method of approximating pixel intensity values of pixels in a current frame from pixel intensity values of pixels in a reference frame, said method comprising the steps of:

defining a current block which includes a subset of the pixels of the current frame;

defining a search window which includes a subset of the pixels of the reference frame;

thresholding the pixel intensity values of the pixels of the current block and the pixel intensity values of the pixels of the search window, thereby creating a thresholded current block and a thresholded search window.

5,712,800

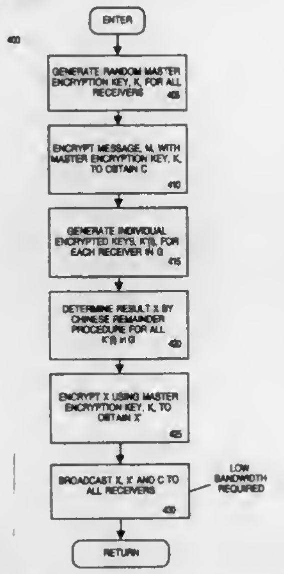
BROADCAST KEY DISTRIBUTION APPARATUS AND METHOD USING CHINESE REMAINDER

David W. Aucsmith, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 310,845, Sep. 22, 1994. This application Jan. 6, 1997, Ser. No. 779,138

Int. Cl.^{6} G09C *1/00*

U.S. Cl. 364—514 R **7 Claims**


ENTER
400
GENERATE RANDOM MASTER ENCRYPTION KEY, K, FOR ALL RECEIVERS
405
ENCRYPT MESSAGE, M, WITH MASTER ENCRYPTION KEY, K, TO OBTAIN C
410
GENERATE INDIVIDUAL ENCRYPTED KEYS, K'(i), FOR EACH RECEIVER IN G
415
DETERMINE RESULT X BY CHINESE REMAINDER PROCEDURE FOR ALL K'(i) in G
420
ENCRYPT X USING MASTER ENCRYPTION KEY, K, TO OBTAIN X'
425
BROADCAST X, X' AND C TO ALL RECEIVERS
430
LOW BANDWIDTH REQUIRED
RETURN

1. An apparatus for performing network communication, said apparatus comprising:

a plurality of receiver units individually having a prime value and a private key;

transmitter processing logic for selecting a subset of said plurality of receiver units, said subset comprising at least two of said plurality of receiver units, said transmitter processing logic also individually encrypting a master key, K, with each private key of said subset of receiver units;

wherein said transmitter processing logic is also for solving a set of relationships that contain values associated with said subset of receiver units wherein a single value, X, solves each relationship; and

broadcast processing logic coupled to communicate with said transmitter processing logic for transmitting said single value, X, to each receiver unit of said plurality of receiver units.

5,712,801

METHOD FOR CHARACTERIZING DYNAMICAL SYSTEMS

Robert Turcott, Redwood City, Calif., assignor to Pacesetter, Inc., Sunnyvale, Calif.

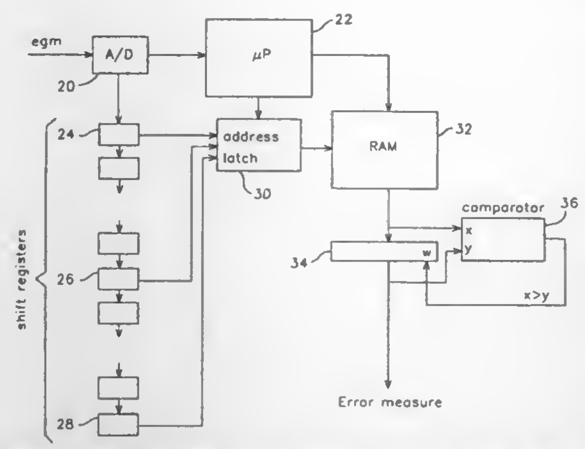
Filed Sep. 25, 1995, Ser. No. 533,292

Int. Cl.^{6} A61B *5/02*

U.S. Cl. 364—550 **18 Claims**

1. A method for characterizing a degree of similarity between phase space representations of trajectories arising from different dynamical systems comprising the steps of:

designating a first one of said trajectories as a template against which others of said trajectories are to be compared;



determining a measure of a shortest distance in phase space of each point of a second trajectory to said template trajectory; and

determining the largest of said shortest distances to provide a characterizing value.

5,712,802

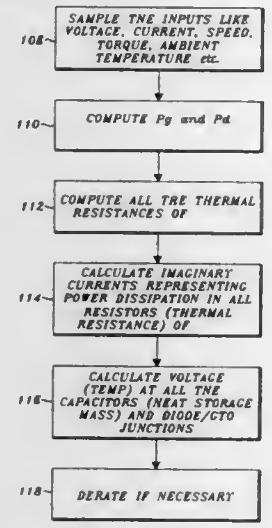
THERMAL PROTECTION OF TRACTION INVERTERS

Ajith Kuttannair Kumar, Erie, Pa., and Peter Billey Macchiaroli, Jacksonville, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1996, Ser. No. 633,390

Int. Cl.^{6} H01L *23/34*

U.S. Cl. 364—557 **5 Claims**


108
SAMPLE THE INPUTS LIKE VOLTAGE, CURRENT, SPEED, TORQUE, AMBIENT TEMPERATURE etc.
110
COMPUTE Pg and Pd
112
COMPUTE ALL THE THERMAL RESISTANCES OF
114
CALCULATE IMAGINARY CURRENTS REPRESENTING POWER DISSIPATION IN ALL RESISTORS (THERMAL RESISTANCE) OF
116
CALCULATE VOLTAGE (TEMP) AT ALL THE CAPACITORS (HEAT STORAGE MASS) AND DIODE/GTO JUNCTIONS
118
DERATE IF NECESSARY

1. A method for providing thermal protection for forced air cooled power electronic semiconductors without direct measurement of semiconductor temperature, the semiconductors being mounted on a heat sink over which cooling air is blown, the method comprising the steps of:

measuring the temperature of the cooling air prior to passage over the heat sink;

measuring atmospheric pressure of the cooling air;

determining the volumetric air flow rate of the cooling air;

computing, from the cooling air temperature, pressure and volumetric flow rate, the cooling air mass flow rate;

calculating power dissipation in the semiconductors;

estimating heat sink and semiconductor temperatures from the calculated power dissipation and computed cooling air mass flow rate; and

limiting semiconductor power dissipation so as to restrict semiconductor temperature to a safe operating value.

5,712,803

METHOD OF ACQUIRING AND DIGITIZING OBJECTS THROUGH A TRANSPARENT WALL

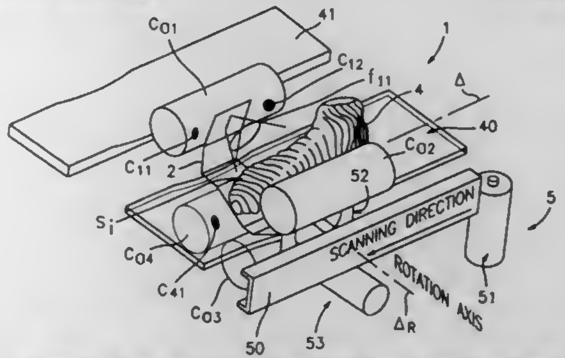
Jean-Claude Garuet-Lempirou, Limoges, France, assignor to Kreon Industrie, Limoges, France

Filed Jun. 21, 1996, Ser. No. 669,985

Claims priority, application France, Jun. 23, 1995, 95 07591

Int. Cl.^{6} A61B *5/107;5/103*

U.S. Cl. 364—560 **21 Claims**



1. Method of acquiring and digitizing an object through a transparent wall using at least one sensor comprising a laser source emitting a lamellar beam towards said object forming a measurement laser plane and at least one camera observing said object through said transparent wall, said at least one sensor being fixed to a mobile sensor support, said transparent wall being of constant thickness and having a profile that can be scanned continuously by an individual laser plane orthogonal to one surface of said transparent wall, along a particular axis, said method comprising at least the following phases:

- a preliminary phase comprising at least the following steps:
  - a/ defining a measuring space encompassing said object to be acquired and digitized;
  - b/ digitizing said transparent wall in order to determine geometric characteristics thereof relative to a frame of reference;
  - c/ defining a displacement profile along said particular axis, including said at least one sensor relative to said axis so that said individual laser plane from said at least one sensor remains at all times perpendicular to said one surface of said transparent wall, and calibrating all of said measurement space by means of a calibration pattern moving perpendicular to said transparent wall along said particular axis;
  - d/ translating coordinate data acquired and digitized in the above manner into an absolute frame of reference and storing said translated coordinate data in memory; and
- a phase of acquisition and digitization of said object comprising at least the following steps:
  - a/ displacing said sensor support along said particular axis in accordance with said displacement profile so that said measurement laser plane remains perpendicular to said transparent wall;
  - b/ acquiring and digitizing all or part of sections of said object in successive slices;
  - c/ translating the coordinate data obtained in the above manner to said absolute frame of reference by correlation with said data obtained by calibration of said measurement space and stored in memory.

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5,712,804
DIGITAL SHEET-THICKNESS MEASURING APPARATUS

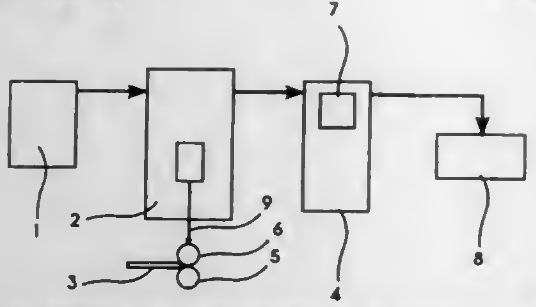
Joseph Elbling, Porto Alegre, Brazil, assignor to Perto S.A., Gravatai, Brazil

Filed Jan. 19, 1996, Ser. No. 588,723

Claims priority, application France, Jan. 20, 1995, 95 00628

Int. Cl.^{6} G01B *7/06;11/06*

U.S. Cl. 364—563 **9 Claims**



1. An apparatus for digitally measuring the thickness of sheets comprising:
- a fixed roller;
- a sensor roller biased toward the fixed roller;
- a transducer with at least one input winding, at least one output winding, and an element coupled to, and sensitive to the position of, the sensor roller;
- an oscillator for providing an input to a respective input winding of the transducer; and
- a digital processing unit coupled to at least one output winding of said transducer for providing a digital representation of sheet thickness based on the digital subtraction of two measurements, one measurement taken in the absence of a sheet and the otber measurement taken in its presence.

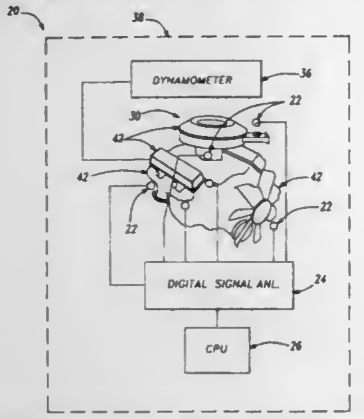
5,712,805
NOISE DIAGNOSTIC SYSTEM

Zhaoxi Wang, Westland, and Sean F. Wu, Troy, both of Mich., assignors to Wayne State University, Detroit, Mich.

Filed Feb. 16, 1996, Ser. No. 602,695

Int. Cl.^{6} H04B *15/00*

U.S. Cl. 364—574 **23 Claims**



1. A method for diagnosing noise sources including the steps of:
- measuring sound at a plurality of measurement points around said noise sources;
- determining the amplitude at a plurality of frequencies of said sound at said measurement points; and
- reconstructing the acoustic field at points other than said measurement points based upon said amplitude at said plurality of frequencies of said sound at said points by solving the Helmholtz equation.

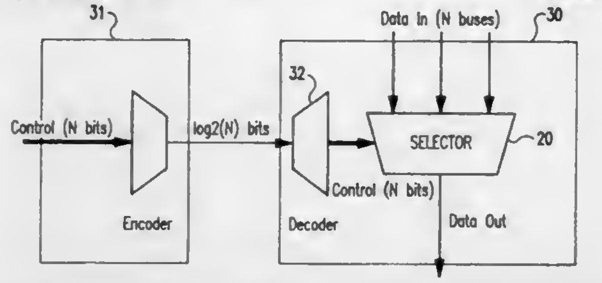
5,712,806
OPTIMIZED MULTIPLEXER STRUCTURE FOR EMULATION SYSTEMS

Eric Todd Hennenhoefer, Essex Junction, and Jonathan Henry Raymond, Underhill, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1995, Ser. No. 549,992

Int. Cl.^{6} G06F *15/00;* **H03M** *7/50*

U.S. Cl. 364—578 **7 Claims**



1. An optimized multiplexer structure for an emulation system of the type comprising an array of programmable gate arrays (PGAs) controlled to implement the logic and input/output (I/O) functions of a complex logic design, said PGAs including multiplexers controlled externally to select data busses for connection to an output bus, said optimized multiplexer structure comprising:
- a plurality of selectors, each selector having a plurality of N-bit input busses and one N-bit output bus and N selector lines for selecting one of said input busses for connection to said output bus;
- a plurality of encoders, one for each of the plurality of selectors, said encoders receiving N control signals and outputting $\log_2N$ encoded control signals; and
- a plurality of decoders, one for each of the plurality of selectors, said decoders receiving $\log_2N$ encoded control signals from a corresponding ones of said plurality of encoders and decoding N control signals to select one of the N-bit input busses to pass to said output bus.

5,712,807
PULSE ANALYZING METHOD AND APPARATUS

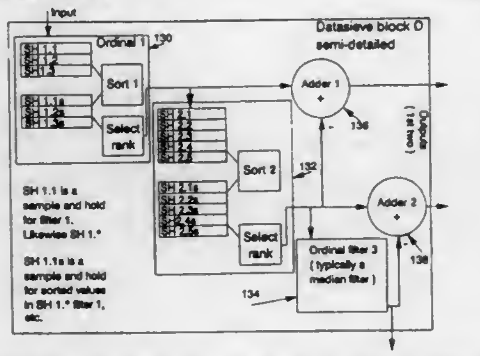
James Andrew Bangham, 26 Park Lane, Norwich, Norfolk NR2 2EE, England

Continuation of Ser. No. 972,992, Nov. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 473,976, Apr. 17, 1990, abandoned. This application Dec. 13, 1994, Ser. No. 355,109

Claims priority, application United Kingdom, Oct. 21, 1987, 8724619; Jan. 11, 1988, 8800509; Sep. 2, 1988, 8821682

Int. Cl.^{6} G06F *17/10*

U.S. Cl. 364—724.01 **5 Claims**



1. Apparatus for producing an electrical signal conglomerate including wanted electrical signals and unwanted electrical signals, and for selecting the wanted electrical signals from the electrical signal conglomerate, comprising:
- (i) an electronic scanning device for producing the electrical signal conglomerate;

- (ii) an analog to digital converter for digitizing the electrical signal conglomerate;
- (iii) a succession of ordinal value filters of order integrally increasing from N (less than M) up to M for filtering the digitized electrical signal, each filter producing an output and the output of each filter serving as the input to the next filter in the succession except for the last in the line;
- (iv) means for forming a succession of bandpass filter outputs by subtracting each filter output from its respective input;
- (v) means for selecting a subset of values from the succession of bandpass output signals; and
- (vi) means for adding the values of the selected subset to produce an electrical output signal representing the sum of the selected subset of values and thereby containing only the wanted electrical signals.

5,712,808
DIGITAL SIGNAL PROCESSING

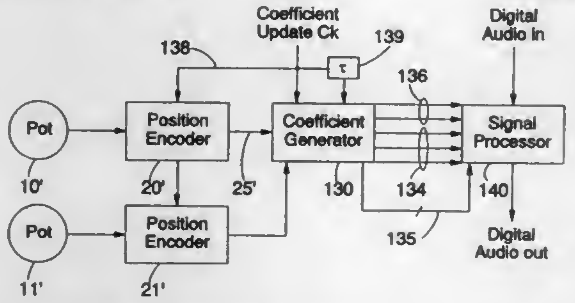
Peter Charles Eastty, Oxford; Tetsuya Konishi, Wootton, and Conrad Charles Cooke, Witney, all of United Kingdom, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed Aug. 2, 1995, Ser. No. 510,167

Claims priority, application United Kingdom, Sep. 20, 1994, 9418901

Int. Cl.^{6} G06F *17/10*

U.S. Cl. 364—724.02 **13 Claims**



1. Digital filtering apparatus comprising:
- (i) pipelined digital signal processing means for generating each output sample of an output digital signal from input samples of an input digital signal, by combining said input samples with a plurality of subsets of a set of filter coefficients associated with said each output sample during a respective plurality of sample periods of said input digital signal; and
- (ii) coefficient generating means for supplying sets of filter coefficients to said signal processing means in response to a current state of a filter control signal;
- in which said coefficient generating means is operable to supply said plurality of subsets of each set of filter coefficients to said signal processing means during said respective plurality of sample periods of said input digital signal.

5,712,809
METHOD AND APPARATUS FOR PERFORMING FAST REDUCED COEFFICIENT DISCRETE COSINE TRANSFORMS

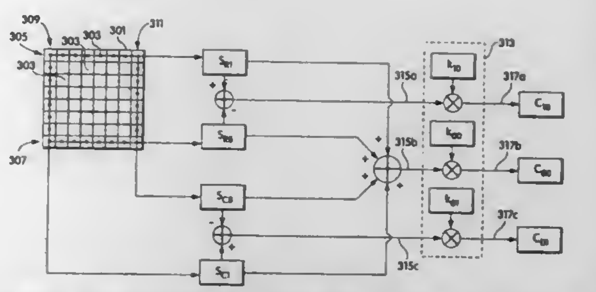
Bernd Girod, Spardorf, Germany, and Staffan Ericsson, Brookline, Mass., assignors to Vivo Software, Inc., Waltham, Mass.

Filed Oct. 31, 1994, Ser. No. 332,535

Int. Cl.^{6} G06F *17/14*

U.S. Cl. 364—725 **15 Claims**

1. Apparatus for performing a three-coefficient discrete cosine transform on a block of N×N image samples, each image sample represented by a sample value, the apparatus comprising:



- at least one summing unit connected to sum sample values of selected rows and columns in the block; and
- a linear arithmetic combination unit connected to receive the summed sample values, to form by linear arithmetic combination thereof coefficients C_{00}, C_{01} and C_{10}, and to set all other coefficients C_{mn}, to a value of zero.

5,712,810
ANALOG MULTIPLIER AND MULTIPLIER CORE CIRCUIT USED THEREFOR

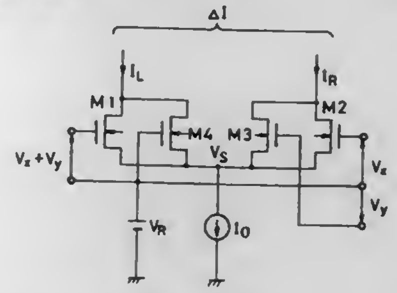
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,639

Claims priority, application Japan, Jun. 13, 1994, 6-130468

Int. Cl.^{6} G06G *7/16*

U.S. Cl. 364—841 **39 Claims**



1. A multiplier core circuit comprising:
- a quadritail circuit formed of first, second, third and fourth transistors whose emitters or sources are coupled together;
- collectors or drains of said first and fourth transistors being coupled together;
- collectors or drains of said second and third transistors being coupled together;
- said quadritail circuit being driven by a tail current through said coupled emitters or sources;
- a sum of a first input signal and a second input signal to be multiplied being applied to a base or gate of said first transistor with regard to a reference point;
- said first input signal being applied to a base or gate of said second transistor with regard to said reference point; and
- said second input signal being applied to a base or gate of said third transistor with regard to said reference point;
- neither said first input signal nor said second input signal being applied to a base or gate of said fourth transistor;
- wherein
  - an output signal showing a result of multiplication of said first and second input signals is differentially derived between said collectors or drains of said first and fourth transistors and said collectors or drains of said second and third transistors.

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5,712,811

IC MEMORY CARD

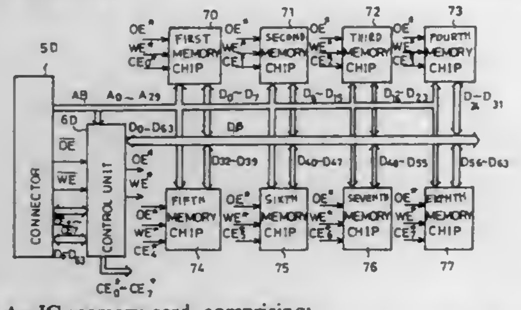
Jo-Han Kim, Choongchungbook-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 5, 1996, Ser. No. 583,391

Claims priority, application Rep. of Korea, May 17, 1995, 12254/1995

Int. Cl.⁶ G11C *5/06*

U.S. Cl. 365—63 **11 Claims**



1. An IC memory card, comprising:

a connector means for interfacing with an external apparatus which generates a plurality of signals including a plurality of external chip selection signals;

a control means for controlling read and write operations in accordance with control signals inputted via the connector means; and

a plurality of memory chips being respectively selected when appropriate internal chip selection signals are inputted among a plurality of internal chip selection signals outputted from said control means, and inputting/outputting data in accordance with the read and write signals outputted from the control means, wherein there is a one-to-one correspondence between a number of memory chips and a number of external chip selection signals, and said connector means includes one hundred and thirty-six pins for interfacing including thirty pins for address signals, sixty-four pins for data signals, and eight pins for internal chip selections signals.

5,712,812

SEMICONDUCTOR MEMORY DEVICE WITH STACKED CAPACITOR STRUCTURE

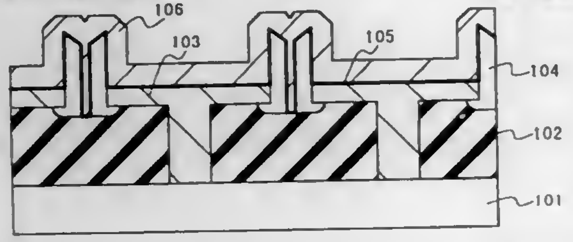
Kazutaka Manabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 12, 1996, Ser. No. 695,410

Claims priority, application Japan, Aug. 11, 1995, 7-227092

Int. Cl.⁶ G11C *11/24*

U.S. Cl. 365—149 **20 Claims**



10. A semiconductor memory device with a stacked capacitor structure, comprising:

a MOS transistor formed on a substrate and having a gate electrode, a source region and a drain region;

an insulating film formed on MOS transistor;

a conductive storage electrode connected to said one of the source and drain regions of said MOS transistor through said insulating film and having a first portion extending along a top surface of said insulating film and a second portion provided at each of edges of said first portion and including a first subportion extending in an upper direction from an upper surface of said first portion and a second subportion below a lower surface of said first portion;

a capacitive insulating film; and

a conductive plate electrode film on said capacitive insulating film, wherein a memory cell capacitor is composed of said conductive storage electrode, said capacitive insulating film, and said conductive plate electrode.

5,712,813

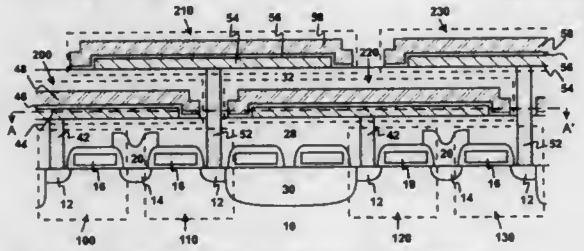
MULTI-LEVEL STORAGE CAPACITOR STRUCTURE WITH IMPROVED MEMORY DENSITY

Guobiao Zhang, P.O. Box 9562, Berkeley, Calif. 94709-0562

Filed Oct. 17, 1996, Ser. No. 733,210

Int. Cl.⁶ G11C *11/24*

U.S. Cl. 365—149 **20 Claims**



1. A semiconductor dynamic memory comprising

a semiconductor substrate;

first and second transistors, each having a source, a drain and a gate, said source and drain being formed in said substrate;

a first insulating film covering said first and second transistors;

a first storage capacitor, having a first bottom electrode, a first insulating dielectric, and a first top electrode, said first bottom electrode formed on said first insulating film and connected to a first contact plug which extends through a first contact hole made in said first insulating film and connects to a first source/drain junction of said first transistor, said first insulating dielectric covering at least a portion of the surface of said first electrode, said first top electrode formed on said first insulating dielectric;

a second insulating film covering said first storage capacitor;

a second storage capacitor, having a second bottom electrode, a second insulating dielectric, and a second top electrode, said second bottom electrode formed on said second insulating film and connected to a second contact plug which extends through a second contact hole made in said first and second insulating films and connects to a second source/drain junction of said second transistor, said second insulating dielectric covering at least a portion of the surface of said second electrode, said second top electrode formed on said second insulating dielectric.

5,712,814

NONVOLATILE MEMORY CELL AND A METHOD FOR FORMING THE SAME

Lorenzo Fratin, Buccinasco; Leonardo Ravazzi, Dalmine, and Carlo Riva, Renate, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

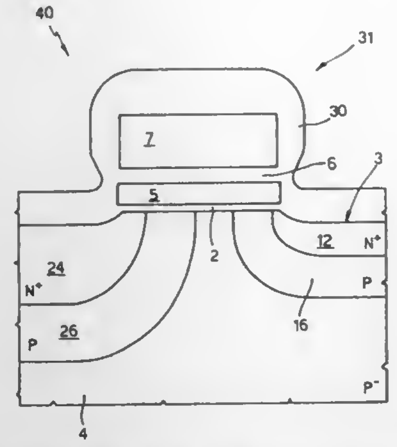
Filed Jul. 18, 1995, Ser. No. 503,303

Claims priority, application European Pat. Off., Jul. 18, 1994, 94830363

Int. Cl.⁶ G11C *13/00*

U.S. Cl. 365—182 **21 Claims**

1. An EPROM and flash-EEPROM nonvolatile memory comprising a memory cell having drain and source regions of a first conductivity type and embedded in a substrate having a second opposite conductivity type and a first doping agent concentration level, said substrate forming a channel region separating said drain and source regions; and a drain pocket surrounding said drain region towards said channel region and having said second opposite conductivity type and a second doping agent concentration level; characterized in that it comprises a source pocket surrounding said source region and having said second opposite conductivity type and a third doping agent concentration level differing from said first and second levels; said source pocket forming snap-back reducing means.



5,712,815

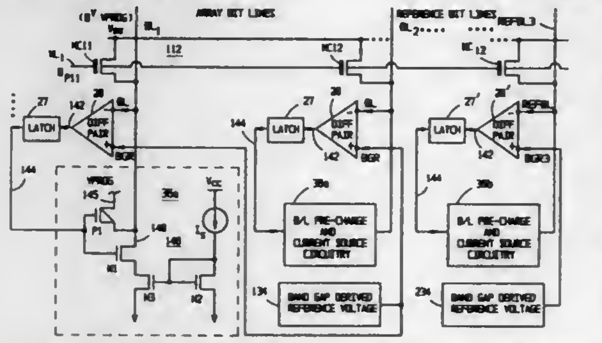
MULTIPLE BITS PER-CELL FLASH EEPROM CAPABLE OF CONCURRENTLY PROGRAMMING AND VERIFYING MEMORY CELLS AND REFERENCE CELLS

Colin S. Bill, Cupertino, and Sameer S. Haddad, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 22, 1996, Ser. No. 635,995

Int. Cl.⁶ G11C *16/06*

U.S. Cl. 365—185.03 **20 Claims**


ARRAY BIT LINES
REFERENCE BIT LINES
112
LATCH
DIFF PAIR
B/L PRE-CHARGE AND CURRENT SOURCE CIRCUITRY
BAND GAP DERIVED REFERENCE VOLTAGE
27
142
144
134
234

1. An improved programming structure for performing a programming operation and a concurrent verify operation in an array of multiple bits-per-cell flash EEPROM memory cells on a more effective and efficient basis, said programming structure comprising in combination:

a memory core array (**12**) having a plurality of memory core cells arranged in rows of word lines and columns of bit lines intersecting said rows of word lines, each of said memory core cells including a floating gate array transistor having its control gate connected to one of said rows of word lines, its source connected to one of said columns of bit lines, and its drain connected to a common array ground line;

row decoder means (**14**) responsive to row address signals and being operatively connected to said memory core array for selecting certain ones of said rows of word lines;

column decoder means (**16,20**) responsive to column address signals and being operatively connected to said memory core array for selecting certain ones of said columns of bit lines;

reference cell array means (**22**) including a plurality of reference core cells arranged in rows of word lines corresponding to the number of rows in said memory core array and in columns of reference bit lines corresponding to the number of programmable memory states and which are selected together with the selected memory core cells;

each of said reference core cells including a reference cell transistor having its control gate connected to the same one of said rows of word lines, its source connected to one of the columns of reference bit lines, and its drain connected to the common array ground line;

pre-charging means (**36**) for initially precharging all of said array bit lines and all of said reference bit lines to a predetermined potential prior to said programming operation;

reference voltage generator means (**134**) having an output for selectively generating one of a plurality of target memory core cell bit line program-verify voltages, each one corresponding to one of a plurality of programmable memory states;

switching means (**36*a***) for selectively connecting a program current source to the selected certain ones of said columns of bit lines containing the selected memory core cells which are to be programmed;

sensing logic means (**26,27**) having a first input connected to the output of said reference voltage generator means and having a second input connected to one of the selected certain ones of said columns of bit lines for continuously comparing a potential on the one of the selected bit lines and one of the plurality of target program-verify voltages generated by said reference voltage generator means;

said sensing logic means having an output for generating a logic signal which is switched to a low logic level when said potential on said one of the selected bit lines falls below said selected one of the plurality of target program-verify voltages; and

said switching means being responsive to said low logic level for disconnecting said program current source so as to inhibit further programming of said selected memory core cells.

5,712,816

METHOD FOR EVALUATING THE DIELECTRIC LAYER OF NONVOLATILE EPROM, EEPROM AND FLASH-EEPROM MEMORIES

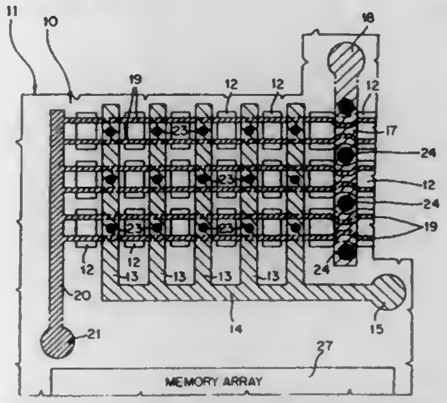
Paolo Giuseppe Cappelletti, Seveso, and Leonardo Ravazzi, Dalmine, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 140,628, Oct. 21, 1993, abandoned. This application Jul. 24, 1996, Ser. No. 685,782

Claims priority, application European Pat. Off., Oct. 29, 1992, 92830589; Apr. 1, 1993, 93830134

Int. Cl.⁶ G11C *29/00*

U.S. Cl. 365—185.05 **44 Claims**



1. A method of evaluating a dielectric layer of a plurality of cells of one of a nonvolatile EPROM, EEPROM and flash-EEPROM memory array, the plurality of cells being arranged in a plurality of rows and a plurality of columns, each cell having a drain, a source and a gate, the method comprising the steps of:

connecting the drain of each of the plurality of cells together such that a drain of a first cell of a first row and a first column is un-interruptibly connected to a drain of a second cell of a second row and a second column, the source of each of the plurality of cells together such that a source of the first cell is un-interruptibly connected to a source of the second cell, and

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the gate of each of the plurality of cells together such that a gate of the first cell is un-interruptibly connected to a gate of the second cell,

applying to said plurality of cells a stress to extract electrons from floating gate regions of defective cells of said memory array, wherein said stress is less than a tunneling stress required to cause Fowler-Nordheim tunneling in a non-defective cell, and

subsequently measuring a characteristic of said plurality of cells.

5,712,817
HIGHLY INTEGRATED CELL HAVING A READING TRANSISTOR AND A WRITING TRANSISTOR

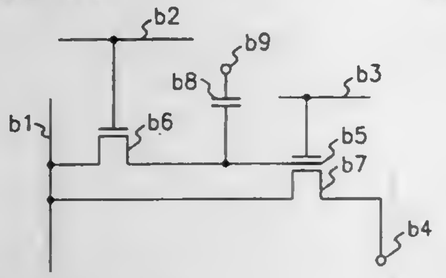
Jung Won Suh, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed May 16, 1996, Ser. No. 648,755

Claims priority, application Rep. of Korea, May 17, 1995, 1995-12293

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—185.08 **18 Claims**



1. A DRAM cell comprising:

an input/output bit line;

a first word line being activated by a write control signal;

a second word line being activated by a read control signal;

a first transistor having a first terminal coupled to said input/output bit line and a second terminal, and having a gate electrode coupled to said first word line for coupling said first terminal to said second terminal responsive to said write control signal;

a second transistor having a gate electrode coupled to said second word line, a first terminal coupled to a reference voltage terminal, a second terminal coupled to said input/output bit line, and having a floating gate electrode coupled to said second terminal of said first transistor for coupling said first terminal to said second terminal responsive to said read control signal, wherein the voltage level of said input/output bit line is transferred to said floating gate; and

a capacitor between said second terminal of said first transistor and said floating gate of said second transistor,

wherein said first transistor varies the threshold voltage of said second transistor at a write operation and is turned off at a read operation, and said second transistor transfers the voltage level of said reference voltage terminal to said input/output bit line at said read operation and is turned off at said write operation.

5,712,818
DATA LOADING CIRCUIT FOR PARTIAL PROGRAM OF NONVOLATILE SEMICONDUCTOR MEMORY

Sung-Soo Lee, and Jin-Ki Kim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

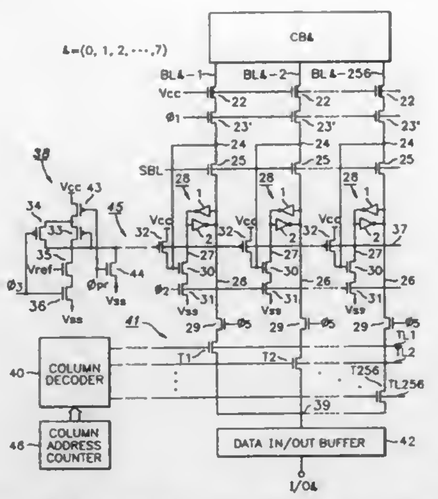
Filed Oct. 2, 1995, Ser. No. 537,615

Claims priority, application Rep. of Korea, Oct. 1, 1994, 25243/1994

Int. Cl.^{6} G11C *16/04*

U.S. Cl. 365—185.23 **12 Claims**

1. A nonvolatile semiconductor memory comprising:



a plurality of floating gate-type memory cells arranged in a matrix form of rows and columns;

a plurality of bit lines respectively connected to said memory cells arranged in said columns;

a plurality of data lines respectively connected to said plurality of bit lines;

a plurality of latch circuits respectively connected to said plurality of data lines;

preset means for presetting all of said plurality of latch circuits to a predetermined logic state during a presetting operation;

means for loading data to selected ones of said plurality of latch circuits through data input/output terminals during a data loading operation after said presetting operation; and

means for programming to said memory cells arranged and erased in one selected row, said data loaded to said selected latch circuits and data presetted to remaining latch circuits except for said selected latch circuits during a programming operation after said data loading operation.

5,712,819
FLASH EEPROM SYSTEM WITH STORAGE OF SECTOR CHARACTERISTIC INFORMATION WITHIN THE SECTOR

Eliyahou Harari, 104 Auzerais Ct., Los Gatos, Calif. 95030

Continuation of Ser. No. 468,061, Jun. 6, 1995, Pat. No. 5,568,439, which is a continuation of Ser. No. 116,867, Sep. 3, 1993, Pat. No. 5,434,825, which is a division of Ser. No. 563,287, Aug. 6, 1990, Pat. No. 5,268,870, which is a division of Ser. No. 380,854, Jul. 17, 1989, Pat. No. 5,043,940, which is a division of Ser. No. 204,175, Jun. 8, 1988, Pat. No. 5,095,344. This application May 22, 1996, Ser. No. 652,725

Int. Cl.^{6} G11C *16/04*

U.S. Cl. 365—185.29 **27 Claims**

1. In an array of a plurality of electrically erasable and programmable read only memory (EEPROM) cells that individually include a field effect transistor having a threshold voltage that is alterable by controlling a level of charge on a floating gate thereof and which has an erase electrode, wherein:

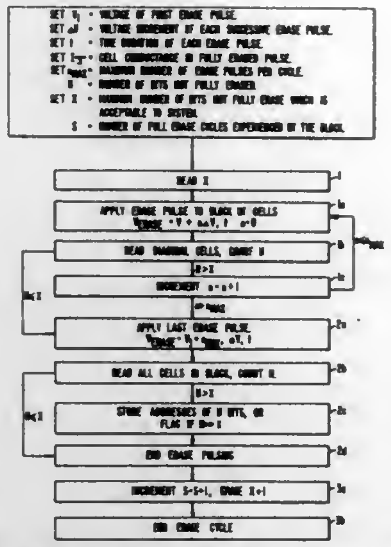
the memory array is operated with the cells thereof being partitioned into individual distinct blocks of cells to be simultaneously erasable upon an erase voltage being applied to the erase electrodes thereof,

a characteristic of the individual blocks is stored within the respective individual block of cells,

a selected block of cells is erased by a method that comprises:

reading the characteristic of the selected block from the selected block itself,

temporarily storing outside of the selected block the characteristic read from the selected block,



thereafter subjecting the selected block to an erase cycle by simultaneously applying an erase voltage to the erase electrodes of the memory cells therein,

terminating the erase cycle, and

after termination of the erase cycle, writing the characteristic back into the selected block, and

after termination of the erase cycle, data is programmed into the erased cells of the selected block.

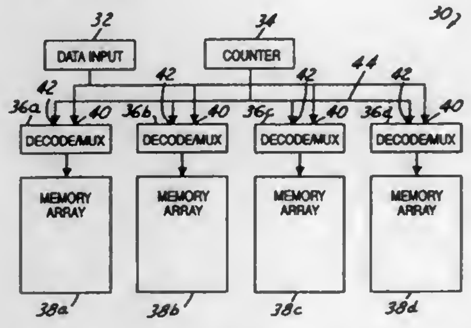
5,712,820
MULTIPLE WORD WIDTH MEMORY ARRAY CLOCKING SCHEME

Roland T. Knaack, Starkville, Miss., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Nov. 17, 1995, Ser. No. 559,983

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—189.02 **20 Claims**



1. A circuit for distributing data to a number of memories comprising:

a plurality of decoders each receiving: (i) an input signal comprising one or more fixed width digital words and (ii) a timing signal changing to a different value on each cycle of a clock input, at least one of said plurality of decoders presenting an output when said timing signal is present;

a counter circuit configured to provide said timing signal to said plurality of decoders; and

a plurality of memory devices for storing information, wherein each of said memory devices is configured to receive an input from one of said outputs of said plurality of decoders in an order defined by said timing signal.

5,712,821
REDUNDANCY CIRCUIT OF SEMICONDUCTOR MEMORY DEVICE

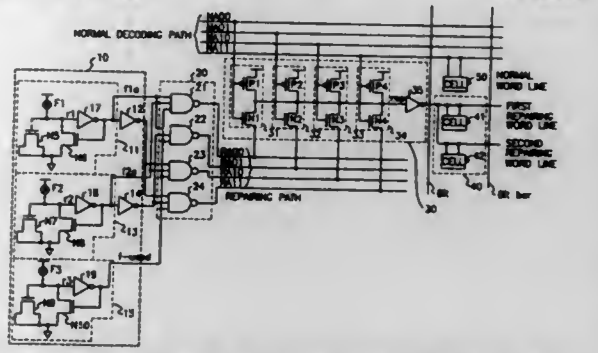
Douk Hyoun Ryu, and Taek Moo Kim, both of Kyoungkido, Rep. of Korea, assignors to Hyundai Electronics Industries Co. Ltd., Kyoungkido, Rep. of Korea

Filed Jul. 1, 1996, Ser. No. 673,524

Claims priority, application Rep. of Korea, Jun. 30, 1995, 1995-19166

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—200 **8 Claims**



1. A redundancy circuit of a semiconductor memory device having a plurality of normal word lines and a plurality of normal decoding paths for selecting one of said plurality of normal word lines, said circuit comprising:

a plurality of repairing word lines for repairing said normal word line connected to a failed cell;

a plurality of repairing paths for selecting a random repairing word line of said repairing word lines; and

at least one comparing means for enabling at least two repairing word lines in case the respective paths corresponding to the same address on said normal decoding path and said repairing path are simultaneously enabled,

whereby the normal word line of the failed cell is simultaneously enabled with at least two repairing word lines.

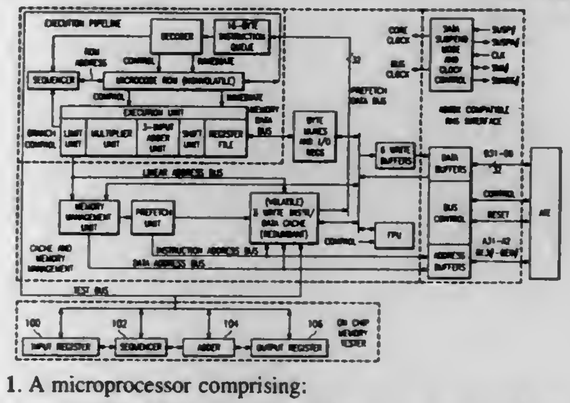
5,712,822
MICROPROCESSOR MEMORY TEST CIRCUIT AND METHOD

Gianluca Petrosino, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 27, 1995, Ser. No. 579,007

Int. Cl.^{6} G11C *7/00*; G01R *31/28*

U.S. Cl. 365—201 **18 Claims**



1. A microprocessor comprising:

a non-volatile memory having an address bus and a data bus;

a test bus coupled to the address bus and data bus of said non-volatile memory; and

an on-chip memory test circuit coupled to said test bus, the on-chip memory test circuit having an input register, a sequencer, an adder, and an output register, coupled together by the test bus.

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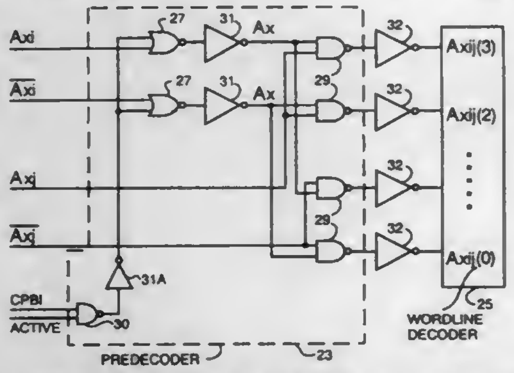
5,712,823
FLEXIBLE DRAM ARRAY

Peter B. Gillingham, Kanata, Canada, assignor to Mosaid Technologies Incorporated, Kanata, Canada

Division of Ser. No. 355,957, Dec. 14, 1994. This application Feb. 2, 1996, Ser. No. 597,510

Int. Cl.⁶ G11C *7/00*

U.S. Cl. 365—203 **10 Claims**



1. A method of storing data in a DRAM array comprised of cells coupled to complementary bitline pairs, comprising:

(a) programming said DRAM to determine whether each bit of a plurality of bits should be stored in one cell or as opposite logic level bits in a pair of cells of said DRAM,

(b) applying each bit and its complement to a respective bitline pair of said DRAM,

(c) activating a wordline and storing said bit associated with said wordline in one cell or activating a pair of wordines and storing said bit and its complement in said pair of cells, depending on said programming.

5,712,824
SEMICONDUCTOR STATIC MEMORY DEVICE WITH PULSE GENERATOR FOR REDUCING WRITE CYCLE TIME

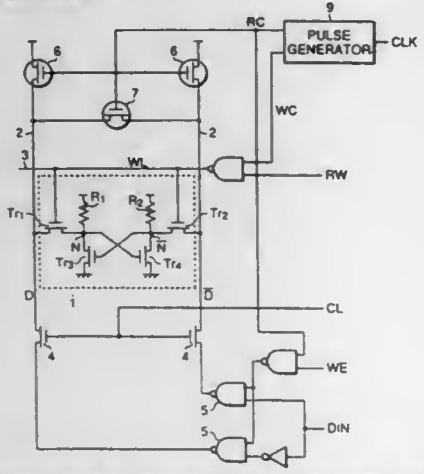
Teruyuki Uchihira, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 16, 1996, Ser. No. 631,896

Claims priority, application Japan, Apr. 24, 1995, 7-123128

Int. Cl.⁶ G11C *7/00*

U.S. Cl. 365—203 **2 Claims**



1. A semiconductor memory device in which an activation period of a word line and precharging period of digit lines are controlled using an internal pulse signal generated in synchronization with a clock signal, said semiconductor memory device having an internal pulse signal generator which receives said clock signal, divides said internal pulse signal and outputs a first pulse signal and a second pulse signal, respectively, as a recovery control signal for controlling said precharging period of said digit lines and a word line selection signal for controlling said activation period of said word line, said pulse signal generator comprising a first delay circuit and a second delay circuit connected in series, said first delay circuit providing a delay time for a pulse width of said recovery control signal, and said second delay circuit together with said first delay circuit providing a delay time for a pulse width of said word line selection signal.

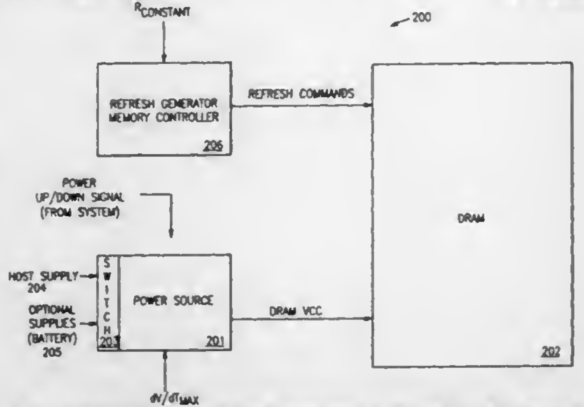
5,712,825
MAINTAINING DATA INTEGRITY IN DRAM WHILE VARYING OPERATING VOLTAGES

Scott Jeffrey Hadderman, Pleasant Valley, N.Y.; David Elson Douse, Jericho, and Kraig Richard White, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1996, Ser. No. 729,220

Int. Cl.⁶ G11C *11/401*

U.S. Cl. 365—222 **26 Claims**


R CONSTANT
200
REFRESH GENERATOR MEMORY CONTROLLER
206
REFRESH COMMANDS
POWER UP/DOWN SIGNAL (FROM SYSTEM)
DRAM
HOST SUPPLY 204
OPTIONAL SUPPLIES (BATTERY) 205
SWITCH
203
POWER SOURCE
201
DRAM VCC
202
dV/dT MAX

1. In a memory system for supporting a memory, said memory capable of performing refresh operations to maintain a logical state for data stored therein, said memory system including a power source for providing supply voltage to the memory, and a refresh signal generator for providing a refresh signal to the memory for causing the memory to perform the refresh operation, and wherein a predetermined level of supply voltage variation may be experienced by the memory prior to the performance of said refresh operations for said data, without loss of the logical state associated with the data stored therein, a method for operating the memory system to permit the supply voltage to be varied beyond said predetermined level of supply voltage variation without loss of the logical state associated with the data, the method comprising the steps of:

determining a first threshold rate for one of said power source and said refresh signal generator;

establishing a second threshold rate for the other of said power source and said refresh signal generator, said established second threshold rate being derived from said determined first threshold rate to ensure that the data stored in said memory has been refreshed before the supply voltage provided to the memory varies beyond said predetermined level; and

designing the other of said power source and said refresh signal generator to operate within said established second threshold rate.

5,712,826
APPARATUS AND A METHOD FOR EMBEDDING DYNAMIC STATE MACHINES IN A STATIC ENVIRONMENT

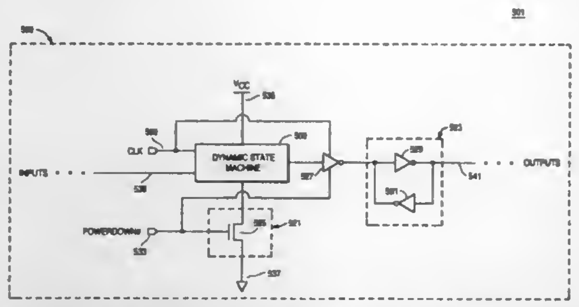
Keng L. Wong, and Roshan Fernando, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 26, 1996, Ser. No. 624,704

Int. Cl.⁶ H03K *19/00*

U.S. Cl. 365—226 **28 Claims**

1. In an integrated circuit on a substrate, the integrated circuit configured so as to be coupled to a power supply, a device comprising:



a static integrated circuit environment, the static integrated circuit environment suspending operation during a power down condition, the static integrated circuit environment drawing minimal power during the power down condition, the static integrated circuit resuming operation after the power down condition from a stored state, wherein the stored state is based upon a state of the device at approximately an initiation of the power down condition;

a dynamic state machine having a dynamic latch embedded in the static integrated circuit environment, the dynamic state machine suspending operation during the power down condition, the dynamic state machine drawing minimal power during the power down condition, the dynamic circuit resuming operation after the power down condition from the stored state: and

a static latch coupled to an output of the dynamic state machine, wherein an output of the dynamic state machine is stored in the static latch.

5,712,827
DYNAMIC TYPE MEMORY

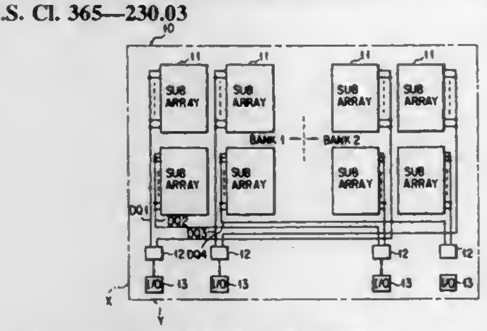
Masaki Ogihara; Satoru Takase, and Kiyofumi Sakurai, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 19, 1995, Ser. No. 530,725

Claims priority, application Japan, Sep. 22, 1994, 6-227614

Int. Cl.⁶ G11C *13/00;11/34*

U.S. Cl. 365—230.03 **24 Claims**



1. A dynamic type memory comprising:

a memory cell array formed on a semiconductor chip having a first edge and a second edge perpendicular to the first edge;

a plurality of sub arrays into which said memory cell array is divided, said plurality of sub arrays being arranged in a first direction parallel to the first edge and a second direction perpendicular to said first direction, and grouped into a plurality of banks, each of said plurality of sub arrays having a plurality of memory cells arranged in matrix;

a plurality of word lines formed on the semiconductor memory chip for each of said plurality of sub arrays and extending in the first direction, each of said plurality of word lines being connected to those of the memory cells which are in a row;

a plurality of bit lines formed on the semiconductor memory chip for each of said plurality of sub arrays and extending in the second direction, each of said plurality of bit lines being connected to those of the memory cells which are in a column;

a plurality of sense amplifiers formed on the semiconductor memory chip for each of said plurality of sub arrays and connected to said plurality of bit lines, each for sensing and amplifying a potential read out from a memory cell when a corresponding bit line is selected;

a plurality of data lines formed on the semiconductor memory chip for said plurality of sub arrays and extending in the first direction in which said word lines extend, each of said plurality of data lines being connected to the sense amplifiers of a corresponding sub array, for transferring data sensed and amplified by a sense amplifier the bit line connected to which is selected;

a plurality of data buffer and multiplexer circuits formed on the semiconductor memory chip in the second direction and in parallel to said second edge of said semiconductor memory chin, each of said plurality of data buffer and multiplexer circuits being connected to one of said sub arrays of each of said banks; and

a plurality of input/output pads connected to said data buffer and multiplexer circuits, the input/output pads being in an arrangement in the second direction on the semiconductor memory chip and being in parallel to said second edge of said semiconductor memory, chip, the arrangement being closer to the second edge of the semiconductor memory chip than said data buffer and multiplexer circuits.

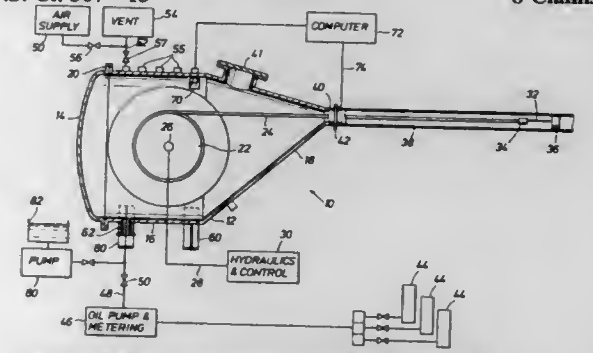
5,712,828
HYDROPHONE GROUP SENSITIVITY TESTER

John Luscombe, Sugarland, and Michael L. Maples, Houston, both of Tex., assignors to Syntron, Inc., Houston, Tex.

Filed Aug. 20, 1996, Ser. No. 699,915

Int. Cl.⁶ H04B *17/00*

U.S. Cl. 367—13 **8 Claims**



1. A hydrophone-group sensitivity tester comprising:

a tank having a nozzle adapted for attachment of a streamer jacket;

a harness reel inside the tank for reversibly retaining a group of hydrophones;

fluid passage means into the tank for introducing and withdrawing fluid into and out of the tank;

an oscillating pump in fluid communication with the tank to introduce a time varying pressure pulse in the tank;

a reference hydrophone inside the tank;

electrical coupling means to couple a hydrophone signal from the group of hydrophones and the reference hydrophone to a central processing unit; and

means for comparing the hydrophone signal of the reference hydrophone to the hydrophone signal of the group of hydrophones.

5,712,829
METHOD FOR DETERMINING EARTH FORMATION SHEAR WAVE ANISOTROPY PARAMETERS BY INVERSION PROCESSING OF SIGNALS FROM A MULTIPLE-COMPONENT DIPOLE ARRAY ACOUSTIC WELL LOGGING INSTRUMENT

Xiaoming Tang, Sugarland, and Raghu K. Chunduru, Houston, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Aug. 14, 1996, Ser. No. 696,668

Int. Cl.⁶ G01V *1/40;1/28*

U.S. Cl. 367—75 **30 Claims**

1. A method for determining orientations and velocities of slow shear waves and fast shear waves in an azimuthally anisotropic

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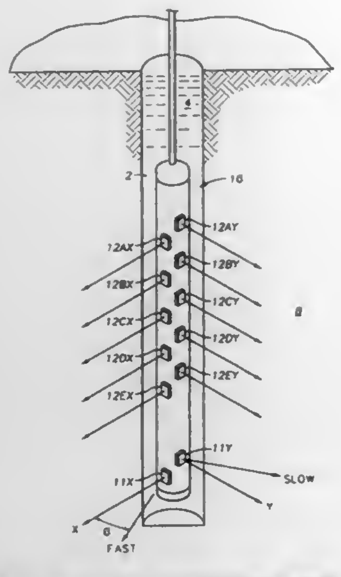


earth formation by processing signals from a well logging instrument including dipole acoustic transmitters and dipole receivers at axially spaced apart positions from said transmitters, said transmitters oriented at a known angle to each other, a first array of said receivers oriented axially parallel to one of said transmitters, a second array of said receivers oriented axially parallel to another one of said transmitters, said method comprising:

a) selecting an initial value of an angle subtended between said orientation of said fast shear waves and orientation of said one of said transmitters;

b) calculating a waveform of a fast principal wave and a slow principal wave at first and at second selected axial receiver positions from said initial value of said angle and from acoustic signals received at said axial positions, said received signals corresponding to each combination of receiver and transmitter orientations at each of said first and said second axial positions;

c) calculating a derivative waveform with respect to said subtended angle of said fast principal wave and said slow principal wave;

d) selecting an initial value of said velocity of said slow shear waves, and time shifting said calculated waveforms of said slow principal wave and said derivative waveform of said slow principal wave from said first axial position by an amount of time corresponding to axial distance between said first and said second axial receiver positions and said selected initial value of velocity;

e) selecting an initial value of a difference in velocity between said initial value of said velocity of said slow shear waves and said velocity of said fast shear waves, and time adjusting said time-shifted slow principal, wave and its corresponding derivative waveform by a time value corresponding to said initial value of difference in said velocities, said initial selected value of said velocity of said slow shear waves and a difference in axial spacing from said one of said transmitters between said first axial position and said second axial position;

f) determining differences between said time-adjusted slow principal wave and its corresponding derivative waveform, and respectively, said calculated fast principal wave and its derivative waveform previously calculated for said second axial position; and

g) adjusting said initial value of said velocity of said slow shear waves, said initial value of said difference in velocity and said initial value of said subtended angle, and repeating said steps of calculating said waveforms and derivative function waveforms, time shifting said waveforms and said derivative waveforms, time adjusting said timeshifted waveforms and derivative waveforms until said differences determined in step (f) reaches a minimum.

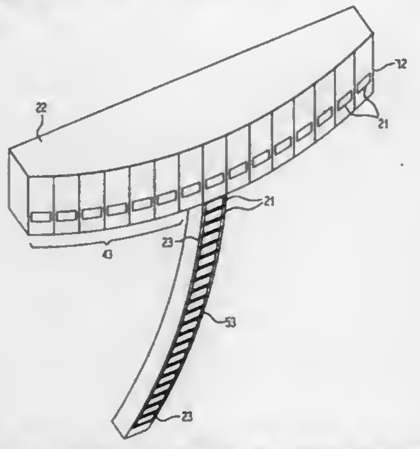
5,712,830
ACOUSTICALLY MONITORED SHOPPER TRAFFIC SURVEILLANCE AND SECURITY SYSTEM FOR SHOPPING MALLS AND RETAIL SPACE

Paul C. Ross, Morris Plains; Alex Kononov, Bridgewater, and William Wayne Plumlee, Andover, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 108,268, Aug. 19, 1993, Pat. No. 5,519,669. This application Dec. 28, 1995, Ser. No. 580,219

Int. Cl.^{6} G01S *15/00*

U.S. Cl. 367—93 **11 Claims**



1. For a defined spatial zone having fixed structures and a pattern of normal human movement, apparatus for identifying said human movement and deriving therefrom traffic flow indicia, said apparatus comprising:

means for transmitting periodic bursts of acoustic energy from one or more sites in said zone to generate return echoes from said fixed structures and from individual humans in movement;

an array of horizontally oriented directional microphones at selected ones of said sites and an array of vertically oriented directional microphones mounted at selected ones of said sites,

the adjacent microphones of each said array being disposed at successive incremental horizontal or vertical angles, thereby to create at each site a plurality of adjacent horizontal and/or vertical beams of return echoes from discrete horizontal or vertical sectors of said spatial zone;

a data base comprising:

means for storing data frames representing a time series of spatial maps generated from said return echoes of objects, each said map containing indicia of said moving humans, including data on the distance and relative direction from said transmitting means for each said object; and

means for comparing said maps of successive said data frames to determine the total number of humans and the changes in the spatial location of said moving humans within said spatial zone.

5,712,831
TIMEPIECE

Toshimasa Ikegami, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 864,153, Apr. 2, 1992, Pat. No. 5,416,752, which is a continuation of Ser. No. 221,497, Jul. 19, 1988, which is a continuation-in-part of Ser. No. 164,299, Mar. 4, 1988. This application Mar. 21, 1995, Ser. No. 407,816

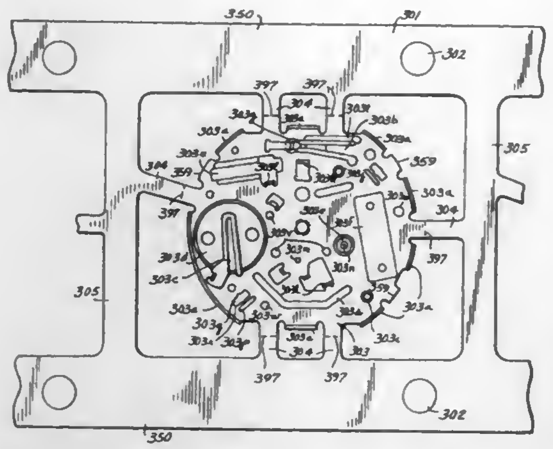
Claims priority, application Japan, Jul. 21, 1987, 181341/87; Dec. 9, 1987, (UM) 187315/87U

Int. Cl.^{6} G04C *23/00;* **G04B** *37/00*

U.S. Cl. 368—88 **9 Claims**

1. A timepiece, comprising:

a timekeeping mechanism including a plurality of internal members for performing functions associated with timekeeping;



at least two frames positioned in spaced relation, formed of a thin plate material and integrally formed for supporting and positioning at least a portion of a plurality of said internal members, at least one of said frames being formed with a plurality of integral elongated portions deformed out of the plane of the plate in the vicinity of the periphery thereof for providing rigidity to said plate and at least one of the frames including a plate spring formed integrally therein by plastic working for resiliently positioning the height of at least one of the plurality of internal members between said at least two frames by direct pressure exerted by said plate spring on said at least one of said internal members.

5,712,832
ELECTRONIC CLOCK AND TIME SETTING METHOD

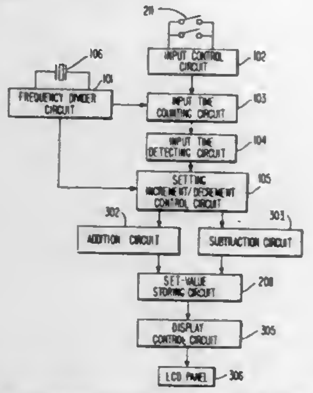
Yumi Sakamoto, Tatsuno-machi, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 468,156

Claims priority, application Japan, Jun. 22, 1994, 6-140469

Int. Cl.^{6} G04C *9/00*

U.S. Cl. 368—187 **22 Claims**


201
106
101
FREQUENCY DIVIDER CIRCUIT
INPUT CONTROL CIRCUIT
102
INPUT TIME COUNTING CIRCUIT
103
INPUT TIME DETECTING CIRCUIT
104
SETTING INCREMENT/DECREMENT CONTROL CIRCUIT
105
302
ADDITION CIRCUIT
301
SUBTRACTION CIRCUIT
SET-VALUE STORING CIRCUIT
208
DISPLAY CONTROL CIRCUIT
305
LCD PANEL
306

1. An electronic timepiece for indicating a time, comprising:

a source oscillator having a predetermined frequency;

a frequency divider circuit, operatively coupled to said source oscillator, dividing down said frequency of said source oscillator to a clock signal;

an input device generating a continuous input signal when actuated;

an input control circuit, operatively coupled to said input device, detecting said input signal from said input device;

an input time counting circuit, operatively coupled to said input control circuit and said frequency divider circuit, utilizing said clock signal to measure a predetermined period of time while the input control circuit detects a continuous input signal from said input device;

an input time detecting circuit, operatively coupled to said input time counting circuit, and counting the number of said measured predetermined periods of time; and

a setting increment/decrement control circuit, operatively coupled to said input time detecting circuit for incrementing or decrementing a set time by a set value in response to each count of said input time detecting circuit, said setting increment/decrement control circuit varying said set value at selected counts of said input time detecting circuit.

5,712,833
DURABLE MAGNETO-OPTICAL DISK HAVING A RARE EARTH-TRANSITION AMORPHOUS MAGNETO-OPTICAL LAYER

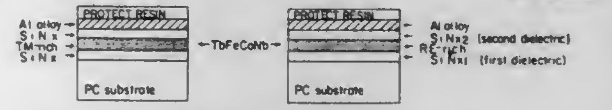
Noriyuki Ogihara, 5-2-2 Tennoudai, Abiko-shi, Chiba, and Yukinobu Yamazaki, 1510-71 Oohata, Niihari-Mura, Niihari-Gun, Ibaraki, both of Japan

Continuation of Ser. No. 362,136, Dec. 22, 1994, abandoned. This application Mar. 31, 1997, Ser. No. 829,618

Claims priority, application Japan, Dec. 28, 1993, 5-349704

Int. Cl.^{6} G11B *11/00*

U.S. Cl. 369—13 **8 Claims**



1. A magneto-optical disk comprising:

a transparent substrate having a track, said track having a groove and/or a prepit for address, timing and tracking information on one surface thereof;

a first dielectric layer formed on said track surface of said substrate;

a magneto-optical recording layer formed on said first dielectric layer, said magneto-optical recording layer comprising an alloy material;

a second dielectric layer formed on said magneto-optical recording layer; and

a reflective layer for increasing the apparent Kerr rotation angle of said disk formed on said second dielectric layer;

wherein said magneto-optical recording layer is ferrimagnetic material made of a rare earth element metal-transition element metal amorphous having a compensation temperature and a Curie temperature and containing from 22 to 26 atomic % of Tb, said compensation temperature being between said Curie temperature and room temperature, a heat conductivity of said first dielectric layer being smaller than that of said second dielectric layer.

5,712,834
CONTROL APPARATUS FOR DATA REPRODUCTION AND RECORDING DEVICES

Naoki Nagano; Harumi Kawamura, both of Tokyo, and Hisato Shima, Chiba, all of Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 426,463, Apr. 19, 1995, abandoned, which is a continuation of Ser. No. 262,039, Jun. 17, 1994, abandoned, which is a continuation of Ser. No. 9,789, Jan. 27, 1993, abandoned, which is a division of Ser. No. 728,985, Jul. 12, 1991, abandoned. This application Feb. 7, 1996, Ser. No. 598,130

Claims priority, application Japan, Jul. 19, 1990, 2-191151; Jul. 23, 1990, 2-194192; Jul. 27, 1990, 2-200094

Int. Cl.^{6} G11B *31/00*

U.S. Cl. 369—19 **4 Claims**

1. A separate control apparatus associated with each one of a plurality of recording and reproducing apparatus, each said control apparatus comprising:

time elapse measuring means, responsive to an input reset signal determining an input time point, for measuring a time elapse with reference to the input time point;

a recording position output means, responsive to an input predetermined signal, for detecting and outputting recording

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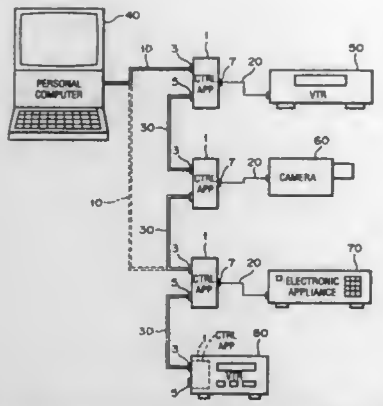


position information from a recording medium of a given one of the plurality of recording or reproducing apparatus; and

a control means for receiving the time elapse measured by said time elapse measuring means, determining an execution time in response to the time elapse, and executing an operation command to the given one of the plurality of recording or reproducing apparatus at said execution time in response to said operation command.

5,712,835

TRACK JUMP DEVICE AND INFORMATION RECORDING MEDIUM DRIVING APPARATUS

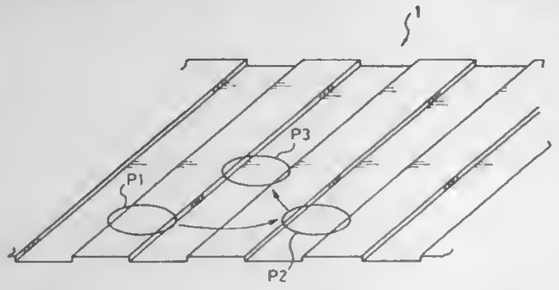
Jun Akiyama, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 615,880, Mar. 14, 1996, abandoned. This application Apr. 15, 1997, Ser. No. 834,230

Claims priority, application Japan, Apr. 4, 1995, 7-079203

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—32 **8 Claims**



1. A track jump device of an information recording medium driving apparatus, for the use with an information recording medium wherein adjacent tracks have first and second polarities different from each other respectively, said apparatus for conducting at least either recording or reproduction of information with respect to the information recording medium, said track jump device comprising:

optical means, provided movably over the information recording medium, for irradiating with light a surface of the information recording medium so as to form a light spot thereon;

track jump control means for controlling said optical means so that the light spot carries out a pair of a target-direction track jump and an opposite-direction track jump during a movement of the light spot from a track A having the first polarity to a track B which is adjacent to the track A and has the second polarity, the target-direction track jump being an (N+1)-track jump ($N \geqq 2$) in a target direction from the track A to the target track B, the opposite-direction track jump being an N-track jump in a direction opposite to the target direction; and

polarity switching means for switching a tracking polarity during an odd-number-track jump in the target or opposite direction.

5,712,836

APPARATUS AND METHOD FOR ADJUSTING A ROTATIONAL VELOCITY OF A DISK STORAGE MEDIUM WITH MEASURING THE AMOUNT OF TIME TO REPRODUCE ADDRESS DATA STORED THEREON

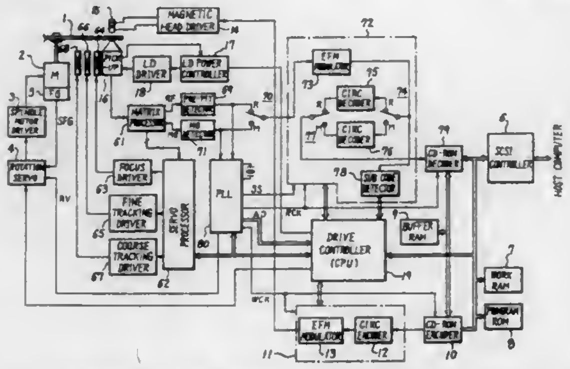
Hidetoshi Kamoto, and Shigeaki Wachi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 331,928, Oct. 31, 1994, Pat. No. 5,640,383. This application Mar. 26, 1996, Ser. No. 622,670

Claims priority, application Japan, Nov. 5, 1993, 5-276867

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—50 **6 Claims**



1. Apparatus for adjusting a rotational velocity of a disk storage medium having a plurality of tracks, each of said tracks having therein a plurality of address areas and each of said address areas having respective address data stored therein, said apparatus comprising:

means for rotating said disk storage medium at a rotational velocity;

means for reproducing address data from an address area on said disk storage medium;

means for measuring an amount of reproduction time for reproducing address data from one of said address areas; and

means for adjusting said rotational velocity of said disk storage medium in accordance with the measured amount of reproduction time to reproduce address data from said one of said address areas such that said rotational velocity of said disk storage medium remains substantially constant.

5,712,837

METHOD AND APPARATUS FOR RECORDING DATA

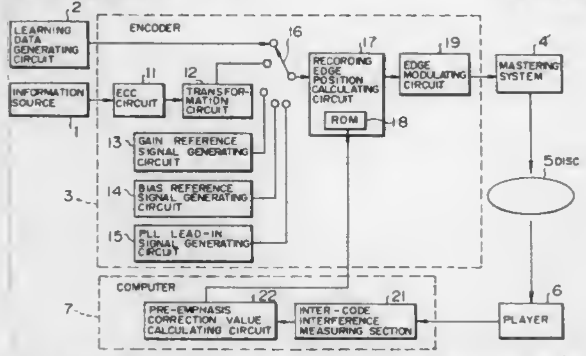
Toshihiro Horigome; Seiji Kobayashi, both of Kanagawa, and Joost De Kock, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1995, Ser. No. 573,991

Claims priority, application Japan, Dec. 20, 1994, 6-316319

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—59 **6 Claims**


LEARNING DATA GENERATING CIRCUIT
INFORMATION SOURCE
ENCODER
ECC CIRCUIT
TRANSFORMATION CIRCUIT
GAIN REFERENCE SIGNAL GENERATING CIRCUIT
BIAS REFERENCE SIGNAL GENERATING CIRCUIT
PLL LEAD-IN SIGNAL GENERATING CIRCUIT
RECORDING EDGE POSITION CALCULATING CIRCUIT
ROM
EDGE MODULATING CIRCUIT
MASTERING SYSTEM
5 DISC
COMPUTER
PRE-EMPHASIS CORRECTION VALUE CALCULATING CIRCUIT
INTER-CODE INTERFERENCE MEASURING SECTION
PLAYER

1. A method for recording data on a recording medium having a plurality of pits, each pit of said plurality of pits having at least one edge located in one of a plurality of locations, said method comprising the step of changing a respective location of said edge in a step-by-step manner using a first step width based on data to be recorded and the step of correcting said respective location using a second step width smaller than said first step width for reducing inter-code interference, said method further comprising the steps of:

recording uncorrected data on said recording medium;

reproducing said uncorrected data from said recording medium;

calculating a first value representing said inter-code interference from the reproduced data;

calculating a second value representing an amount of correction required by said second step width as a function of the calculated first value; and

recording said data on said recording medium using the calculated second value.

5,712,838

METHOD AND APPARATUS FOR RECORDING ON A DISK MEDIUM A ΣΔ-MODULATED SIGNAL WITH A SAMPLING FREQUENCY N×44.1 KHZ

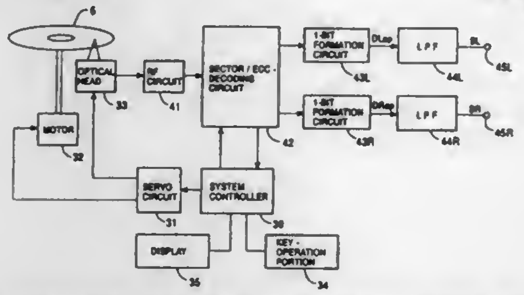
Yoshizumi Inazawa, and Tadao Suzuki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 18, 1996, Ser. No. 746,840

Claims priority, application Japan, Nov. 24, 1995, 7-329894

Int. Cl.^{6} H04N *5/76*

U.S. Cl. 369—59 **11 Claims**



1. A reproducing apparatus for a disc-shaped recording medium having both a first recording region in which a digital audio signal is recorded and a second recording region in which signals including a discrimination signal for discriminating a type of said digital audio signal recorded in said first recording region are recorded, said digital audio signal having one bit per sample and being generated by performing a ΣΔ-modulation for converting an analog audio signal with a sampling frequency set to a multiple of a frequency fs for each channel where fs=44.1 kHz,

said reproducing apparatus comprising:

reading means for reading said signals recorded in said disc-shaped recording medium;

determination means for determining whether said reproducing apparatus is loaded with said disc-shaped recording medium in which said digital audio signal is recorded and providing an output signal in accordance therewith, said digital audio signal having one bit per sample and being generated by performing said ΣΔ-modulation for converting an analog audio signal with a sampling frequency set to a multiple of fs for each channel at said frequency fs=44.1 kHz;

reproducing means for reproducing said digital audio signal having one bit per sample for each channel, from said output signal provided by said determination means and read by said reading means when said output signal indicates that said reproducing apparatus is loaded with said disc-shaped recording medium in which said digital audio signal is recorded, said digital audio signal having one bit per sample and being generated by performing said ΣΔ-modulation for converting said analog audio signal with the sampling frequency set to a multiple of said frequency fs for each channel at said frequency fs=44.1 kHz; and

low-pass-filter means to which said digital audio signal having one bit per sample corresponding to each said channel, outputted by said reproducing means, is supplied and from which an analog audio signal is outputted.

5,712,839

LASER LIGHT POWER CONTROL SYSTEM HAVING REFLECTED LIGHT DETECTOR

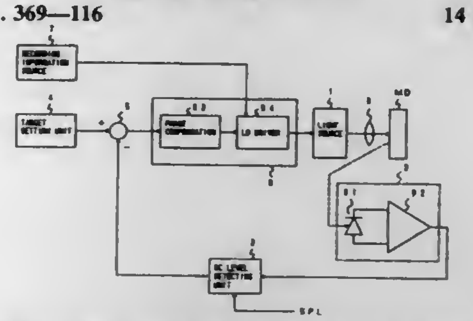
Ikuo Aoki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 18, 1996, Ser. No. 588,143

Claims priority, application Japan, Jan. 19, 1995, 7-024646

Int. Cl.^{6} G11B *7/12;7/13*

U.S. Cl. 369—116 **14 Claims**



1. A power control system for controlling power of light emitted from a light source to a phase-change type recording medium, the light having a first power level being used to erase previous information from the recording medium and the light having a second power level being used to record information in the recording medium in a recording operation, said power control system comprising:

detecting means for detecting light reflected from the recording medium when said light source emits light at the first power level to erase the information from the recording medium and outputting a reflection signal corresponding to the reflected light; and

control means for controlling the first power level of the light emitted from said light source so that a level of the reflection signal output from said detecting means is controlled at a predetermined target level.

5,712,840

OPTICAL INFORMATION RECORDING/REPRODUCIING APPARATUS HAVING TWO-DIVISION DETECTORS

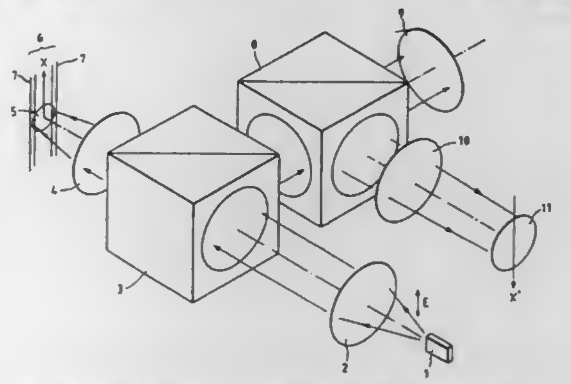
Susumu Matsumura, Kawaguchi; Masakuni Yamamoto, Yamato; Eiji Yamaguchi, Sagamihara; Hiroaki Hoshi, Yokohama, and Hideki Morishima, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 777,122, Oct. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 670,253, Mar. 15, 1991, abandoned. This application Jul. 29, 1994, Ser. No. 282,768

Claims priority, application Japan, Mar. 16, 1990, 2-064305; Oct. 17, 1990, 2-279710; Oct. 29, 1990, 2-292708; Nov. 13, 1990, 2-307910; Nov. 15, 1990, 2-310524; Nov. 16, 1990, 2-310682; Nov. 27, 1990, 2-321116

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—112 **19 Claims**



1. An optical information recording/reproducing apparatus comprising:

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irradiation means for irradiating an opto-magnetic recording medium with a light beam polarized in a predetermined direction;
application means for applying a predetermined magnetic field to said recording medium to effect recording;
optical means for condensing the light beam from said recording medium; and
detection means for detecting the light beam condensed by said optical means, said detection means comprising a two-division detector, which has a division line extending in a direction perpendicular to tracks on said recording medium, for producing a difference signal to detect an edge position of a bit recorded on the recording medium.

5,712,841
OPTICAL UNIT HAVING A RADIATION SOURCE, A DETECTOR AND A GRATING, AND SCANNING DEVICE INCLUDING THE OPTICAL UNIT

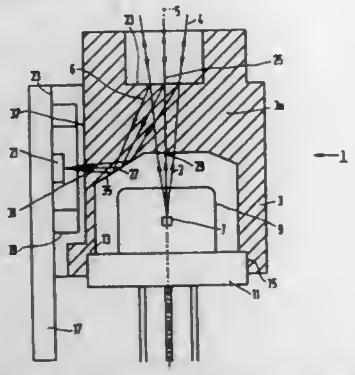
Willem G. Opheij, Groenewoudseweg 1, 5621 BA Eindhoven; Pieter A. Schoneveld, Evreuxlaan 38, 5627 PV Eindhoven, and Dirk B.J. Samoy, Groenewoudseweg 1, 5621 BA Eindboven, all of Netherlands

Filed Mar. 28, 1996, Ser. No. 623,647

Claims priority, application European Pat. Off., Mar. 29, 1995, 95200788

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—112 **23 Claims**



1. An optical unit comprising a first holder with a radiation source, a second holder with a radiation-sensitive detector, and a grating, characterized by the presence of a cylindrical, optically transparent mounting having a cylinder axis and a wall oriented at least approximately transversely of the cylinder axis, the grating being formed by an optically transparent wall portion of said wall and the mounting having a first positioning surface to which the first holder with the radiation source is secured and a second positioning surface to which the second holder with the radiation-sensitive detector is secured.

5,712,842
OPTICAL PICK-UP DEVICE

Kenji Yamamoto, Saitama; Fumisada Maeda, Tokyo; Isao Ichimura, Kanagawa; Kiyoshi Ohsato, Chiba, and Toshio Watanabe, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

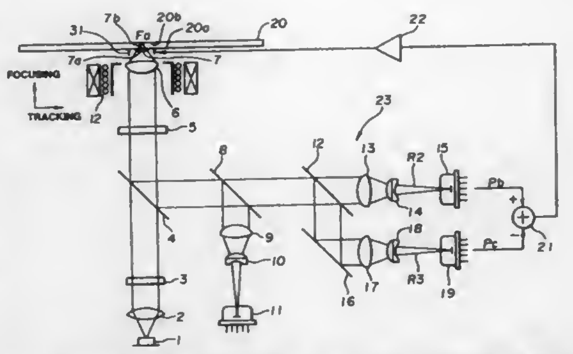
Filed Feb. 12, 1996, Ser. No. 744,007

Claims priority, application Japan, Feb. 15, 1995, 7-026563

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—112 **2 Claims**

1. An optical pick-up device for focusing a light emitted from a light source on a optical recording medium, comprising:
a convex lens having a flat surface opposed to a light-incident surface of said optical recording medium, and having a predetermined refractive index;
an objective lens disposed such that said convex lens is interposed between said optical recording medium and the objective lens;



a converging optical system for converging the light reflected from the light-incident surface of the optical recording medium and the flat surface of said convex lens;
a first light-detecting means for detecting the light reflected from the light-incident surface of said optical recording medium and passing through said converging optical system, and generating a first detection signal;
a second light-detecting means for detecting the light reflected from the flat surface of said convex lens and passing through said converging optical system, and generating a second detection signal;
a position-detecting means for detecting a positional relation between said the light-incident surface of said optical recording medium and the flat surface of said convex lens, based on said first and second detection signals; and
a drive means for driving said convex lens along an optical axis thereof such that said convex lens moves in the opposite directions toward said optical recording medium or said objective lens, whereby a distance between the light-incident surface of said optical recording medium and the flat surface of said convex lens is controlled corresponding to said first and second detection signals.

5,712,843
MINIATURE OPTICAL ACCESS HEAD APPARATUS

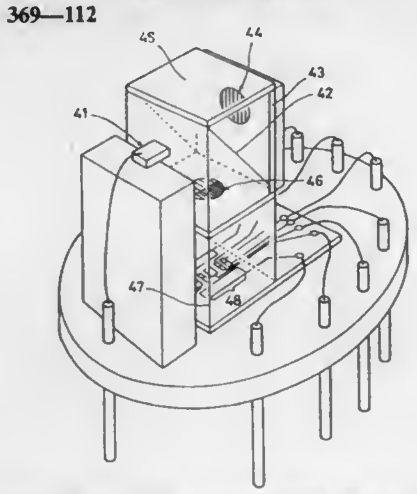
Zu-Wen Chao, and Jau-Jiu Ju, both of Shinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Dec. 27, 1996, Ser. No. 774,361

Claims priority, application Taiwan, Sep. 13, 1996, 85111228

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—112 **13 Claims**



1. A miniature optical access head apparatus for an optical disk drive device comprising:
a polarizing beam-splitter having a block-shaped body;
a laser light source for providing laser light at a predetermined wavelength into said block-shaped body;
a first quarter-wavelength plate arranged at a first surface of said block-shaped body opposite said laser light source;
a reflective diffraction grating arranged external to said first quarter-wavelength plate for receiving the laser light through the first quarter-wavelength plate and for reflectively diffracting the received laser light back through said first quarter-wavelength plate;
a second quarter-wavelength plate arranged at a second surface of said block-shaped body perpendicular to said first quarter-wavelength plate, for receiving light from said polarizing beam-splitter and providing circularly polarized light to an optical disk surface;
a holographic optical element arranged at a third surface of said block-shaped body opposite said second quarter-wavelength plate, for receiving and diffracting light reflected from the optical disk surface through said second quarter-wavelength plate; and
a light sensor array arranged to receive diffracted light from said holographic optical element, and provide an output representing data contained therein.

5,712,844
OPTICAL PICKUP

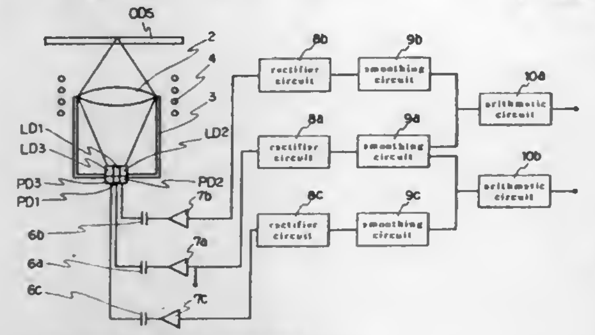
Haruo Tanaka, Kyoto, Japan, assignor to Rohm Co. Ltd., Kyoto, Japan

Division of Ser. No. 575,962, Dec. 20, 1995, Pat. No. 5,615,201, which is a division of Ser. No. 220,500, Mar. 31, 1994, Pat. No. 5,530,689. This application Aug. 16, 1996, Ser. No. 698,804

Claims priority, application Japan, Apr. 12, 1993, 5-084872

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—121 **10 Claims**



1. An optical pickup comprising:
at least one laser diode each including
  a light-emitting device, and
  a detecting device detecting a variation of quantity of light emission of said light-emitting device depending on a returning light returning to said light-emitting device reflected by an optical disk; and
an objective lens for focusing light on said optical disk emitted from said light-emitting device;
wherein said light-emitting device is provided to have an optical path length from said optical disk such that no interference component is substantially caused between light from said light-emitting device and the returning light reflected from said optical disk.

5,712,845
METHOD FOR CONTROLLING CONDITIONAL CONNECTIONS IN A SYNCHRONOUS DIGITAL TELECOMMUNICATIONS SYSTEM

Arto Peltomäki, Espoo, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI94/00092, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/22249, PCT Pub. Date Sep. 29, 1994

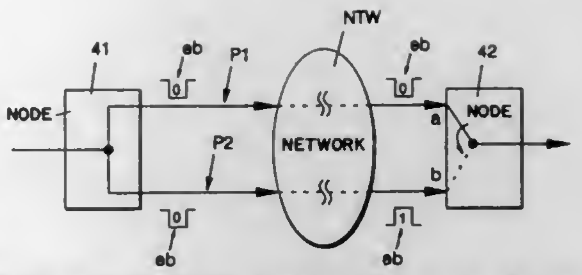
PCT Filed Mar. 14, 1994, Ser. No. 513,983

Claims priority, application Finland, Mar. 16, 1993, 931164

Int. Cl.^{6} H04L *1/22*

U.S. Cl. 370—226 **7 Claims**

1. A method for controlling conditional connections in a synchronous digital telecommunications network without using the



effective payload-transmitting capacity of the network, for transmitting a signal from one node to another node via multiple possible alternative pathways existing along the network between the nodes, the signal having a frame structure in which each frame is constituted by a predetermined number of fixed length bytes organized into at least one payload section and at leats one overhead section, said sections having fixed relative locations from frame to frame and said at least one overhead section ikncluding a pointer indicating the phase of a payload within the frame structure, said method comprising:
designating at least one byte, each in a predetermined location in an overhead section of each frame for carrying condition information;
transmitting said signal from said one node to said other node along multiple ones of said possible alternative pathways, with condition information carried in at least one said predetermined location of at least one said frame of said signal;
at said other node, reading said condition information from frames of said signal as received from multiple ones of said pathways; and
further transmitting along said network an instance of said signal as received along a one of said pathways selected based on said reading as indicating a given condition.

5,712,846
ORDER WIRE COMMUNICATION CONTROL METHOD FOR LINE-SWITCHED RING NETWORK SYSTEM

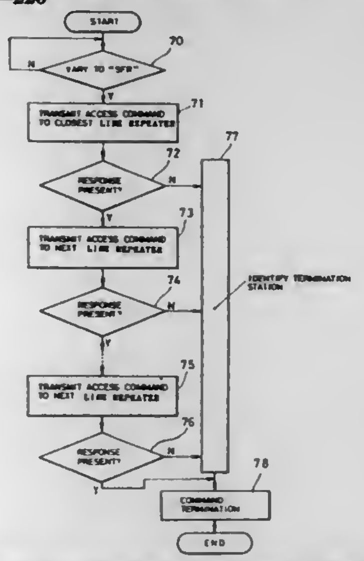
Masatoshi Yoshimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,376

Claims priority, application Japan, Dec. 21, 1994, 6-317393

Int. Cl.^{6} H04L *12/24*

U.S. Cl. 370—226 **8 Claims**


START
70
N
Y
71
TRANSMIT ACCESS COMMAND TO CLOSEST LINE REPEATER
72
RESPONSE PRESENT?
N
Y
77
73
TRANSMIT ACCESS COMMAND TO NEXT LINE REPEATER
74
RESPONSE PRESENT?
N
Y
IDENTIFY TERMINATION STATION
75
TRANSMIT ACCESS COMMAND TO NEXT LINE REPEATER
76
RESPONSE PRESENT?
N
Y
78
COMMAND TERMINATION
END

1. An order wire communication control method in a ring network system including a plurality of line terminal ends, a plurality of line repeaters respectively provided between the line terminal ends, a pair of communication lines connecting said line terminal ends and the line repeaters in a ring form for bidirectional data communication, and a pair of bidirectional order wires individually associated with said pair of communication lines and having a termination point at one line terminal end for order communication between the line terminal ends, comprising:

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a first step of transmitting failure occurrence information indicative of an occurrence of a failure, utilizing an automatic protective switching protocol from two adjacent line terminal ends at both sides of a location where said failure is caused, in response to said occurrence of a failure at a faulty location on the ring network, via one of said bidirectional order wires;

a second step of automatically releasing said termination point of said bidirectional order wire in response to reception of said failure occurrence information in said one line terminal end; and

a third step of automatically designating a new termination point of said bidirectional order wire at a line repeater positioned at a closest position to the faulty location from one of first and second line terminal ends adjacent the faulty location.

5,712,847

LINE SWITCHING SYSTEM FOR DUPLEXED FIBER INTERFACE SHELF BETWEEN DIFFERENT MODES

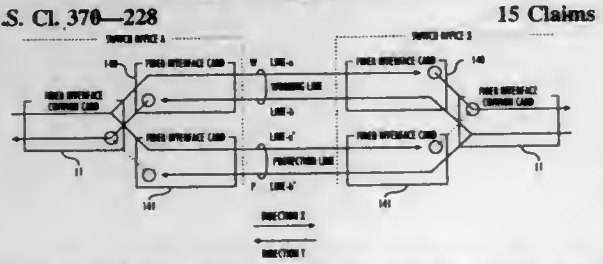
Emi Hata, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 14, 1995, Ser. No. 572,765

Claims priority, application Japan, Apr. 18, 1995, 7-092072

Int. Cl.^{6} H04L *1/22*

U.S. Cl. 370—228 **15 Claims**



1. A line switching system for switching transmission lines when a fault is found on a transmission line, comprising:

working and protection transmission lines, each including first and second direction paths;

a first switch coupled to one end of the working transmission line and having a bidirectional mode in which the first and second direction paths of the working transmission line are concurrently switched to the first and second direction paths of the protection transmission line when a fault is found on either one of the first and second direction paths of the working transmission line; and

a second switch coupled to another end of the working transmission line and having a unidirectional mode in which either one of the first and second direction paths of the working transmission line is switched to the corresponding one of the first and second direction paths of the protection transmission line when a fault is found on one of the direction paths of the working transmission line,

wherein when the second switch switches to send out signals via the first direction path of the protection transmission line, the first switch notifies the second switch as if a fault is found on the second direction path of the working transmission line so that the second switch switches to receive signals via the second direction path of the protection line.

5,712,848

TIME DIVISION MULTIPLEX COMMUNICATIONS SYSTEM INCLUDING MEANS FOR REDUCING UNDESIRED ECHOES RESULTING FROM CIRCUIT DELAYS

Brian Mark Deutsch, Maple Valley, Wash., assignor to WAVTrace, Inc., Bellevue, Wash.

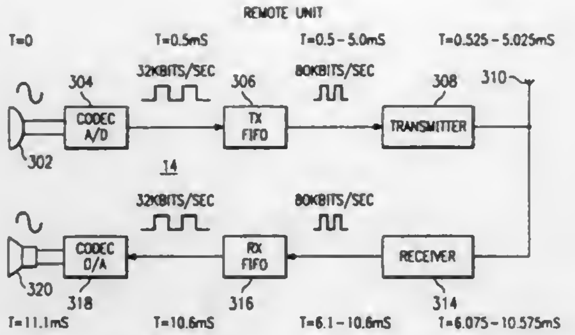
Filed Dec. 11, 1995, Ser. No. 570,538

Int. Cl.^{6} H04B *1/56;* **H04L** *5/14*

U.S. Cl. 370—280 16 Claims

1. A communications system, comprising:

at least one transmitter unit;



at least one receiver unit;

means associated with at least one said transmitter unit for controlling a delay of data to be transmitted, wherein said means for controlling a delay of data to be transmitted comprises a transmitter first-in-first-out buffer; and

means associated with at least one said receiver unit for controlling a delay of data received by said receiver, wherein said means for controlling a delay of data received comprises a receiver first-in-first-out buffer;

wherein said transmitter first-in-first-out buffer and said receiver first-in-first-out buffer are precisely reset at periodic intervals to control a system echo, said precise resetting of said buffers operating to clear all data from said buffers.

5,712,849

INFORMATION TRANSMISSION SYSTEM COMPRISING AT LEAST A BASE STATION AND A SATELLITE STATION, AND STATION FORMING PART OF SUCH A SYSTEM

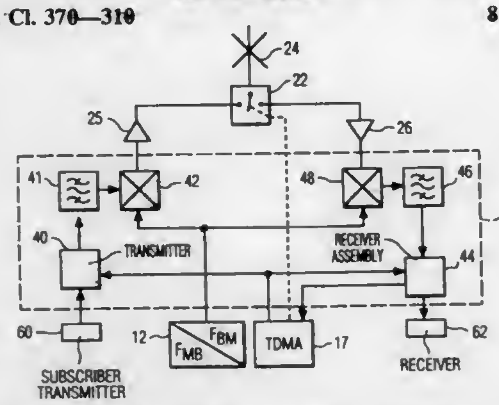
Pierre Makowski, Prunay, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 402,766, Mar..13, 1995, abandoned, which is a continuation of Ser. No. 105,818, Aug. 11, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 573,909

Claims priority, application France, Aug. 14, 1992, 92 10037

Int. Cl.^{6} H04J *3/16*

U.S. Cl. 370—310 **8 Claims**



1. An information transmission system, comprising:

a base station including a base transmitter;

a plurality of satellite stations, each satellite station including (i) a satellite receiver for receiving a transmission from said base station, and (ii) a satellite transmitter including a transmitter amplifier, said transmitter amplifier requiring a preparation time period to prepare said amplifier for operation;

means for allocating the transmission of information from said satellite stations to said base station within a time frame including a plural succession of time slots;

means for starting the transmission of information between a said satellite station and said base station during a transmission portion of a selected time slot; and

means for preparing said amplifier in each of a plurality of said satellite stations during a preparation portion of a same time slot occurring prior to said selected time slot, said preparation portion having a duration at least equal to said preparation time period for said transmitter amplifiers.

5,712,850

SYSTEM FOR DIGITAL BROADCASTING BY SATELLITE

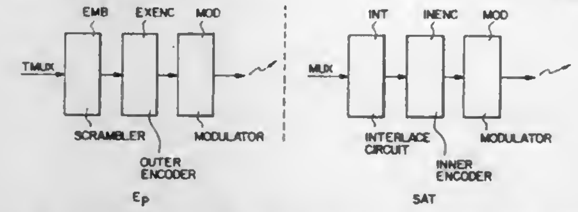
Carlo Elia, Oegstgeest, and Enrico Colzi, Rijnsburg, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France

Filed Jul. 31, 1995, Ser. No. 509,061

Claims priority, application France, Jul. 29, 1994, 94 09438

Int. Cl.^{6} H04B *7/185;* **H04J** *3/00*

U.S. Cl. 370—326 **17 Claims**



1. A system for digital broadcasting by satellite, the system including an uplink sending digital information to the satellite, wherein said satellite retransmits a broadcast multiplex signal to a plurality of ground receivers, wherein said uplink includes a plurality of individual ground transmitter stations, each of which transmits a transmission signal at a first rate, wherein the transmission signal from each of said individual ground transmitter stations is a multiplexed transmission signal carrying digital information corresponding to at least one program, wherein the satellite includes an onboard multiplexer module combining said transmission signals to make up said broadcast multiplex signal at a second rate that is higher than the first rate, wherein at least one individual ground transmitter station includes a transport multiplexer multiplexing at least audio and video signals which correspond to one transmission signal of said transmission signals, and wherein said onboard multiplexer module includes an onboard channel adaptation generator of a first type requiring information to be interchanged between different programs and containing an onboard channel adaptation block.

5,712,851

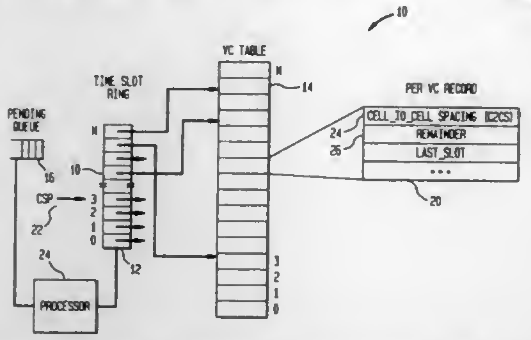
ADAPTIVE TIME SLOT SCHEDULING APPARATUS AND METHOD UTILIZING A LINKED LIST MECHANISM

Chinh Kim Nguyen, San Diego, Calif.; Sunder Raj Rathnavelu, Marlboro, N.J., and Don Tipon, San Diego, Calif., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 28, 1995, Ser. No. 579,961

Int. Cl.^{6} H04L *12/56*

U.S. Cl. 370—399 **17 Claims**



1. An apparatus for scheduling communications traffic from an end-point host over an ATM network, said apparatus comprising:

a time slot ring including an array of 1 through N time slots, wherein each of said time slots includes a virtual channel identifier (VCID) of a virtual channel (VC) to be serviced;

a VC table including an array of VC descriptors, wherein said VCID stored in said time slot ring points to a VC descriptor in said VC table; and

processing means for scheduling said VCs in said time slots of said time slot ring, wherein said time slots are circularly processed in a continuous fashion such that a first time slot is the next to be processed after an Nth time slot thereby enabling scheduled transmission of ATM cells in said network, a newly calculated target time slot for a processed VC being calculated according to a cell spacing parameter, said processing means being operable to queue the VCID of said newly calculated target slot in an already occupied time slot, said newly calculated time slot if said newly calculated target slot is occupied, thereby creating a linked list of VCs, said processing means operable to service all VCs at a single time slot before proceeding to a next time slot, each said VC descriptor including a pointer variable to facilitate use of said linked list.

5,712,852

D2B DEVICE STATION ADDRESS INITIALIZATION STARTING WITH STORED ADDRESS

Neil A. Wilson, Weybridge, United Kingdom, assignor to DB2 Systems Company Limited, Redhill, Great Britain

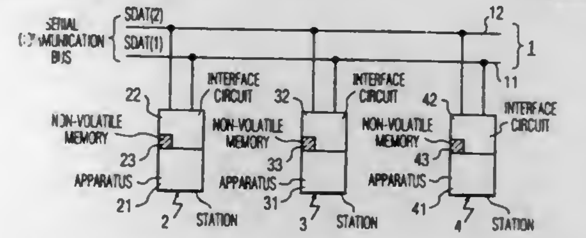
PCT No. PCT/IB94/00174, § 371 Date Jan. 25, 1995, § 102(e) Date Jan. 25, 1995, PCT Pub. No. WO95/01026, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 24, 1994, Ser. No. 374,680

Claims priority, application European Pat. Off., Jun. 25, 1993, 93201840

Int. Cl.^{6} H04L *12/403*

U.S. Cl. 370—451 **7 Claims**



1. A single channel communication bus system comprising

a. a communication bus

b. a plurality of stations connected to the communication bus, which plurality of stations can communicate with one another via the communication bus, each respective one of the plurality of stations requiring a respective unique station address and including

i. a respective interface circuit for

A. calling a destination station, from amongst the plurality of stations, by generating and transmitting a destination station address of said destination station,

B. for receiving an acknowledge signal that is transmitted by said destination station if the respective unique station address of said destination station corresponds to the transmitted destination address,

C. performing an initialisation program under the control of which the interface circuit

α. generates and transmits at least one of a plurality of different destination addresses according to a predetermined sequence, starting from a start value

β. discontinues said generation and transmission of the at least one of the plurality of different destination station addresses, upon absence of an acknowledge signal,

γ. assigns, as the respective unique station address of the respective one of the plurality of stations, a last one of at least one of the plurality of different destination station addresses, which is the last that was generated and transmitted, and

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δ. stores the respective unique station address in a non-volatile fashion for use as a next start value in a future initialisation, and

ii. a respective non volatile memory for storing the start value and next start value as the respective unique address of the respective one of the plurality of stations, such that upon start of the initialisation program, the generation and transmission of the at least one of the plurality of different destination station addresses starts with the start value without added bits.

5,712,853

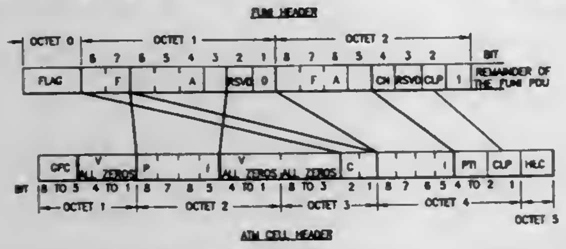
APPARATUS AND METHOD FOR TRANSFERRING OPERATION, ADMINISTRATION AND MANAGEMENT CELLS ACROSS AND ATM DATA FRAME USER NETWORK INTERFACE

Deepak Mathur, Waterbury, Conn., and Peter T. Marino, Raleigh, N.C., assignors to General DataComm, Inc., Middlebury, Conn.

Filed Sep. 11, 1995, Ser. No. 526,846

Int. Cl.^{6} H04J *3/16*

U.S. Cl. 370—467 **20 Claims**



1. A method of transporting an asynchronous transfer mode (ATM) layer operation, administration, and management (OAM) cell across a frame based user network interface (FUNI), the ATM OAM cell having a first five byte header and forty-eight bytes of data, said method comprising:

generating a FUNI frame at least partially from the ATM layer OAM cell, said FUNI frame having a second header having at least two bytes, a trailer, and a data payload portion, said data payload portion of said FUNI frame including said forty-eight bytes of data of said ATM OAM cell, and said second header including selected information from said first five byte header of said ATM OAM cell and an indicator that said FUNI frame contains OAM cell data.

5,712,854

METHOD OF ROUTING CELLS IN AN ASYNCHRONOUS TIME-DIVISION MULTIPLEX SWITCHING NETWORK AND CORRESPONDING NETWORK INPUT SWITCH AND APPLICATION

Marc Dieudonne, Igny; Patrick Frene, Malakoff, and Pierre Parmentier, Saclay, all of France, assignors to Alcatel Cit, Paris, France

Filed Nov. 30, 1995, Ser. No. 565,105

Claims priority, application France, Dec. 1, 1994, 94 14 451

Int. Cl.^{6} H04L *12/56*

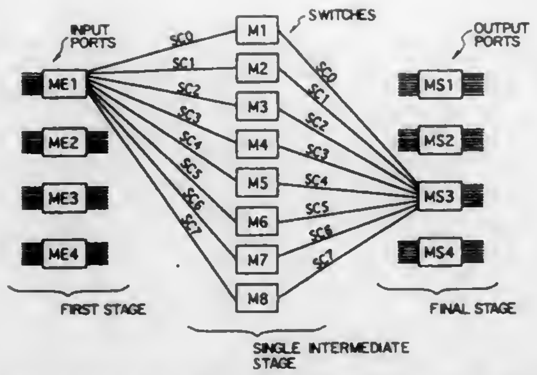
U.S. Cl. 370—536 **7 Claims**

1. A method of routing cells in an asynchronous time-division multiplex switching network, said network interconnecting input switches and output switches via switches,

each of said input switches being adapted to be connected to each of said output switches via at least two paths, each of said paths corresponding to a different series of said switches,

each of said switches having at least two inputs and at least two outputs and each of said switches being adapted to transfer to one of its outputs a cell received at one of its inputs,

wherein said method of routing being a transmission of a sequence of cells of a given call between one of said input switches, hereinafter referred to as a call input switch, and one of said output switches, hereinafter referred to as a call output switch, comprises the following steps:



determining a set of all N possible paths between said call input switch and said call output switch,

setting up N sub-connections corresponding to said N paths,

in said call input switch, systematically and equitably distributing the cells of said sequence to said N sub-connections, and

in said call output switch, assembling the cells of aid sequence to reconstitute said sequence.

5,712,855

APPARATUS FOR TESTING AND MEASURING ELECTRONIC DEVICE AND METHOD OF CALIBRATING ITS TIMING AND VOLTAGE LEVEL

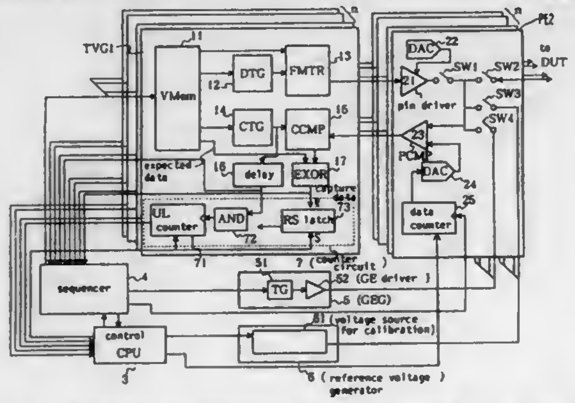
Masaharu Goto, Hannou, and Kenichi Ito, Hachioji, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 145,419

Claims priority, application Japan, Oct. 30, 1992, 4-316572

Int. Cl.^{6} G06K *5/04;* **G11B** *27/00*

U.S. Cl. 371—1 **8 Claims**



2. An apparatus for calibrating timing of a plurality of units of an electronic circuit tester, each of the units having a timing generating circuit for generating a timing signal, the apparatus comprising:

(a) at least one reference timing circuit for providing a reference timing signal for the units;

(b) at least one sequencer for varying a phase of the reference timing signal in a stepwise fashion by a predefined time step;

(c) a plurality of timing comparing circuits each located in corresponding one of the units for comparing the timing signal and the reference timing signal so as to determine a sequence of the timing signal and the reference timing signal whenever the sequencer varies the phase of the timing signals;

(d) a plurality of counter circuits each located in corresponding one of the units for counting a number of comparisons made by the timing comparing circuit until the sequence of the timing signal and the reference timing signal is reversed; and

(e) a controller connected to the counter circuits for receiving data indicative of the number of comparisons from the counter circuits and calibrating timing of the units according to the data.

5,712,856

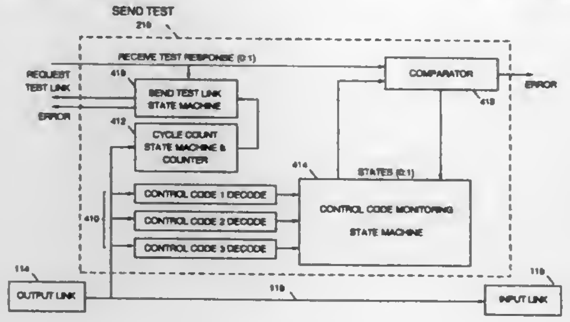
METHOD AND APPARATUS FOR TESTING LINKS BETWEEN NETWORK SWITCHES

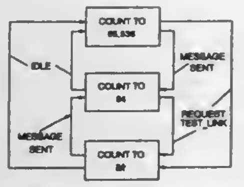
Damon W. Finney, San Jose, Calif., and Michael James Rayfield, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 419,213, Apr. 10, 1995, abandoned. This application Nov. 15, 1996, Ser. No. 749,880

Int. Cl.^{6} G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—20.1 **19 Claims**





1. A network having an error detection protocol, said network comprising:

a first switch;

a second switch linked to said first switch;

a send test component having a plurality of states associated with said first switch for sending messages, in response to said states, to said second switch and comparing messages received from said second switch with said messages sent by said send test component to detect network errors;

a receive test component associated with said second switch for responding to messages received from said send test component;

counter means, said counter means associated with said send test component, for determining when to send messages to said second switch and when to determine when a reply should be received from said second switch, said counter means including means for prompting said send test component to send said messages after a maximum count and means for prompting said send test component to wait for said reply from said second switch after said maximum count; and wherein

said counter means further includes means for changing said maximum count from a first count to a second count in response to said states of said send test component.

5,712,857

METHODS AND APPARATUS FOR CORRELATING STUCK-AT FAULT TEST COVERAGE AND CURRENT LEAKAGE FAULT TEST COVERAGE

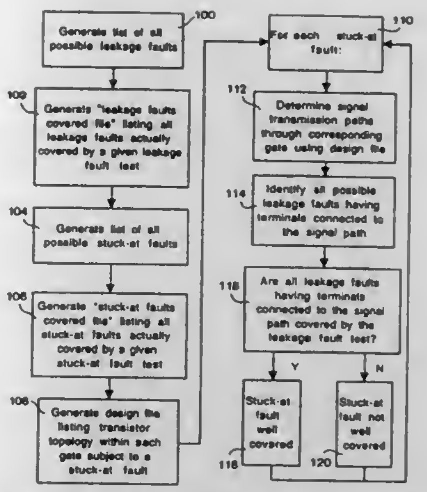
Wendy Whitman, Phoenix, Ariz.; Dean Arriens, Boulder, Colo., and Vandana Verman, Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,112

Int. Cl.^{6} G01R *31/28*

U.S. Cl. 371—22.1 **20 Claims**

1. A method for correlating stuck-at fault coverage with current leakage fault coverage for an integrated circuit having a plurality of logic gates, said method comprising the steps of:


Generate list of all possible leakage faults
100
102
Generate "leakage faults covered file" listing all leakage faults actually covered by a given leakage fault test
104
Generate list of all possible stuck-at faults
106
Generate "stuck-at faults covered file" listing all stuck-at faults actually covered by a given stuck-at fault test
108
Generate design file listing transistor topology within each gate subject to a stuck-at fault
For each stuck-at fault:
110
112
Determine signal transmission paths through corresponding gate using design file
114
Identify all possible leakage faults having terminals connected to the signal path
116
Are all leakage faults having terminals connected to the signal path covered by the leakage fault test?
Y
N
Stuck-at fault well covered
118
Stuck-at fault not well covered
120

for each gate of the integrated circuit subject to a stuck-at fault,

determining signal paths for transmission of signals from an input of the gate to an output of the gate;

determining all leakage faults having at least one terminal connected to said signal transmission paths; and

identifying a stuck-at fault as being well covered by a current leakage fault test if and only if, the current leakage fault test can detect all leakage faults having at least one terminal connected to the signal transmission path corresponding to the stuck-at fault.

5,712,858

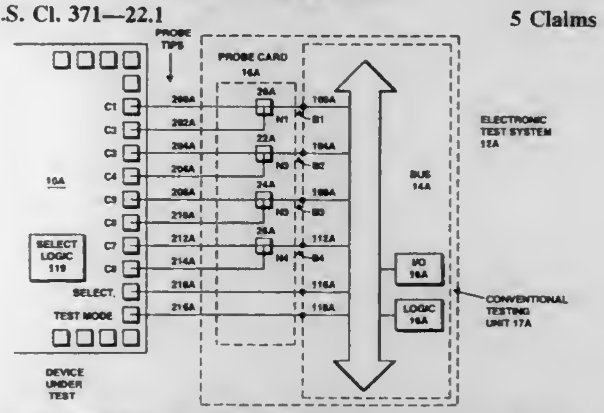
TEST METHODOLOGY FOR EXCEEDING TESTER PIN COUNT FOR AN ASIC DEVICE

Nitin Dhiroobhai Godiwala, Boylston; Andrew Myer Ebert, Ashland, and Chester Walenty Pawlowski, Westford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 419,865, Apr. 11, 1995. This application Apr. 4, 1996, Ser. No. 627,523

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—22.1 **5 Claims**



1. An apparatus for testing electronic devices each having a plurality of contacts including a plurality of input/output contacts having an input capability of receiving an input signal and an output capability of transmitting an output signal, said apparatus comprising:

a test unit having a plurality of signal lines for applying signals to and receiving signals from said electronic device;

means for electrically connecting a plurality of groups of said input/output contacts of said electronic device to said signal lines; and

logic means for selectively and temporarily activating the output capability of only a single contact at a time of the set of

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contacts, whereby the output signal from said contact having an activated output capability is provided via said connecting means to said testing unit.

5,712,859
SEMICONDUCTOR INTEGRATED CIRCUIT

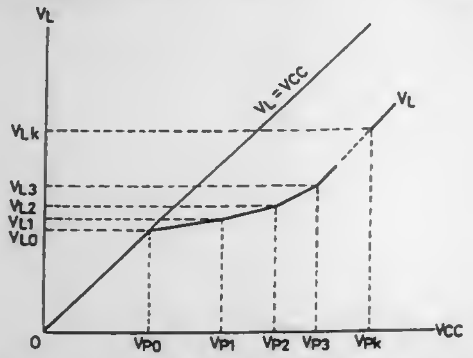
Ryoichi Hori, Hinode-machi; Kiyoo Itoh, Higashikurume, and Hitoshi Tanaka, Tachikawa, all of Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 371,973, Jan. 12, 1995, Pat. No. 5,566,185, which is a continuation of Ser. No. 869,851, Apr. 16, 1992, Pat. No. 5,493,572, which is a continuation of Ser. No. 458,507, Dec. 28, 1989, abandoned, which is a division of Ser. No. 140,628, Jan. 4, 1988, Pat. No. 4,916,389, which is a continuation of Ser. No. 562,969, Dec. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 368,162, Apr. 14, 1982, Pat. No. 4,482,985. This application Sep. 3, 1996, Ser. No. 707,316

Claims priority, application Japan, Dec. 17, 1982, 57-220083

Int. Cl.^{6} G01R *31/317*

U.S. Cl. 371—22.1 **58 Claims**



1. A method of performing an aging test of a semiconductor circuit having an external power supply node, a voltage generator supplied with an external voltage through the external power supply node, an internal power supply node coupled to an output of the voltage generator, and an internal circuit supplied with an internal voltage through the internal power supply node, comprising the steps of:

supplying an internal aging test voltage at an aging test operation, wherein the internal aging test voltage is larger than an internal voltage at a normal operation, to the internal power supply node by supplying an external aging test voltage which is larger than an external voltage at the normal operation,

wherein the external voltage at the normal operation is larger than the internal voltage at the normal operation.

5,712,860
METHODS AND SYSTEM FOR USING MULTI-BLOCK BURSTS IN HALF DUPLEX SUBSCRIBER UNIT TRANSMISSIONS

Tom Hardin, Encinitas, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

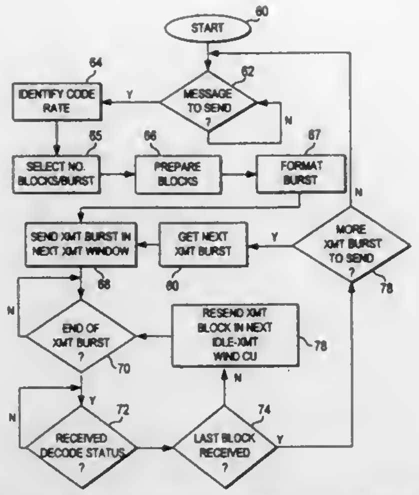
Filed Sep. 27, 1995, Ser. No. 535,308

Int. Cl.^{6} H04L *1/16*

U.S. Cl. 371—32 **19 Claims**

7. A method of extending channel access for half-duplex transmitters in a wireless communications system, comprising the steps of:

transmitting at least two successive blocks of data in a single transmit burst;



upon completion of said transmit burst, receiving a transmission from a base station indicating whether or not the last of the successive blocks of data was successfully received by the base station; and

retransmitting said transmit burst if the last of the successive blocks of data was not successfully received.

5,712,861
ERROR CORRECTING METHOD AND DECODER WITH IMPROVED RELIABILITY

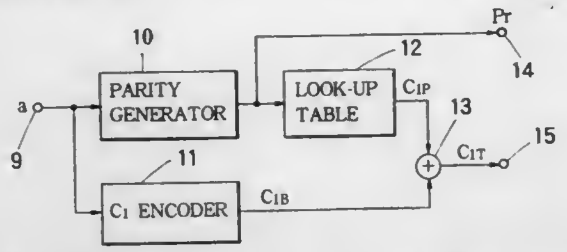
Tohru Inoue; Ken Onishi; Sadayuki Inoue, all of Nagaokakyo, and Mitsuru Matsui, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,322

Claims priority, application Japan, Jul. 12, 1994, 6-184110; Aug. 23, 1994, 6-198455; Sep. 22, 1994, 6-228305; Mar. 1, 1995, 7-041941

Int. Cl.^{6} G11B *20/18*

U.S. Cl. 371—37.1 **60 Claims**



39. An encoder for generating a parity check symbol and additional check symbols for a set of information symbols which can be treated as coefficients of a first polynomial over a Galois field, comprising:

a parity generator for evaluating said first polynomial at a certain element of said Galois field, thereby generating said parity check symbol;

a memory device storing a look-up table for converting said parity check symbol to a first plurality of symbols;

encoding means for generating a second plurality of symbols as remainder coefficients in a division operation having as a dividend a second polynomial of which said information symbols are coefficients, and as a divisor a generator polynomial of which said certain element is not a root; and

an adder for adding said first plurality of symbols to said second plurality of symbols as elements of said Galois field, thereby obtaining said additional check symbols.

5,712,862
ERROR DETECTION SYSTEM FOR DIGITAL DATA TRANSMISSION MULTIPLEXING SYSTEM

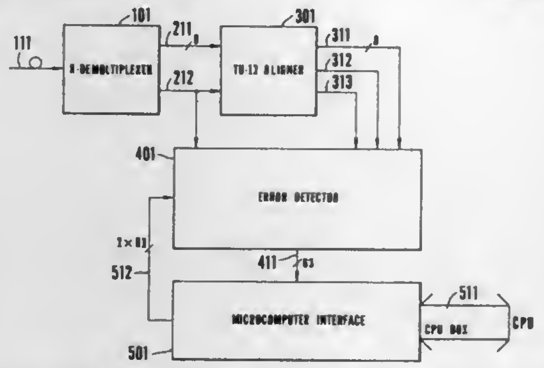
Yoshitaka Fujita, Tokyo, and Yasushi Ono, Miyagi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,630

Claims priority, application Japan, Jun. 18, 1993, 5-147536

Int. Cl.^{6} H04J *3/14*

U.S. Cl. 371—49.1 **4 Claims**



1. An error detection system for a digital transmission multiplexing system comprising:

a TU aligner positioned at a signal receiver side, for setting an AU pointer value to zero such that all byte in a POH (Path Overhead) of a VC4 signal floating in a multiplexed signal is located next to a rightward one of three H3 bytes in an SOH (Section Overhead) and also next to changing pointer values (V1 and V2) in each TU channel signal; and

an error detector for detecting an error which is determined by analyzing each channel signal in an STM-N signal processed by said TU aligner and a V5 byte as the POH byte in the signal without demultiplexing the multiplexed STM-N signal in units of TU channels and for reporting the error as an alarm.

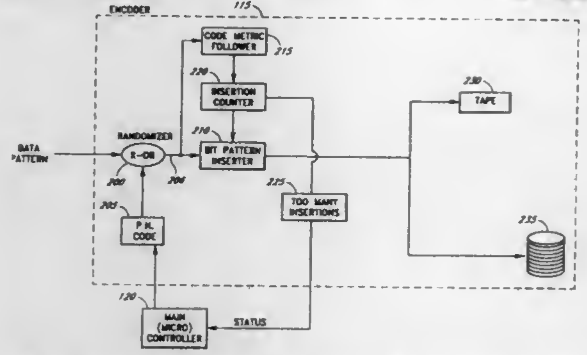
5,712,863
RANDOMIZING ENCODER FOR DIGITAL DATA STORAGE

Martin D. Gray, 3236 Caminito Ameca, La Jolla, Calif. 92037

Filed Feb. 9, 1996, Ser. No. 599,146

Int. Cl.^{6} H03M *13/02*

U.S. Cl. 371—52 **10 Claims**



10. An apparatus for encoding a digital data stream to be stored onto a data storage medium, said apparatus comprising:

means for randomizing said digital data stream using a first randomizer code to produce a first randomized data stream;

means for determining locations in said first randomized data stream at which a bit insertion is to be performed;

means for inserting bits at said locations;

means for monitoring the number of locations at which bit insertions were performed on said randomized data stream; and,

means for randomizing said data stream using a second randomizer code different from said first randomizer code when the number of insertions into said first randomized data stream exceeds a determined value.

5,712,864
PHOTONIC DIPLEX TRANSCEIVER

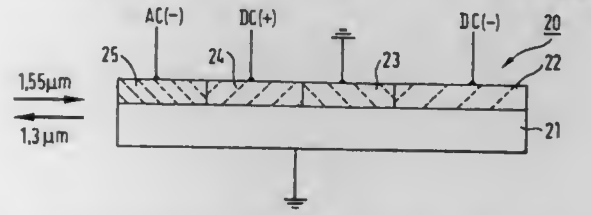
Léon Goldstein, Chaville; Jean-Louis Gentner, Gif sur Yvette, and François Brillouet, Sevres, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Mar. 15, 1996, Ser. No. 616,382

Claims priority, application France, Mar. 16, 1995, 95 03057

Int. Cl.^{6} H01S *3/19;3/10;3/08;* **H04B** *10/24*

U.S. Cl. 372—50 **14 Claims**



1. Semiconductor diplex transceiver comprising means for generating a first optical signal having a certain wavelength and means for detecting a second optical signal having another wavelength, said generator means and said detector means forming integral parts of an optical waveguide adapted to propagate said first and second optical signals and being disposed in an inline configuration along a longitudinal axis of said optical waveguide, wherein said generator means generate said first optical signal in the form of a continuous wave and are disposed in an inline configuration along said longitudinal axis between said detector means and means for selectively modulating said first optical signal forming an integral part of said optical waveguide.

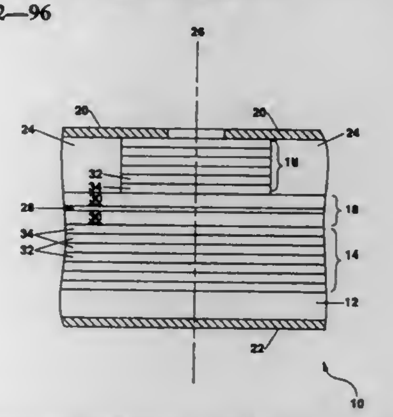
5,712,865
TEMPERATURE-INSENSITIVE VERTICAL-CAVITY SURFACE-EMITTING LASERS AND METHOD FOR FABRICATION THEREOF

Weng W. Chow, Sandia Park; Kent D. Choquette, and Paul L. Gourley, both of Albuquerque, all of N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Sep. 28, 1995, Ser. No. 535,597

Int. Cl.^{6} H01S *3/19*

U.S. Cl. 372—96 **21 Claims**



1. A temperature-insensitive vertical-cavity surface-emitting laser (VCSEL) comprising a quantum-well active region within a resonant cavity, the active region providing a gain spectrum at a predetermined threshold carrier density, the threshold carrier density being sufficiently large to generate a high-order subband (n≧2) contribution to the gain spectrum, thereby substantially reducing any variation in operating characteristics of the VCSEL over a temperature range of interest.

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5,712,866

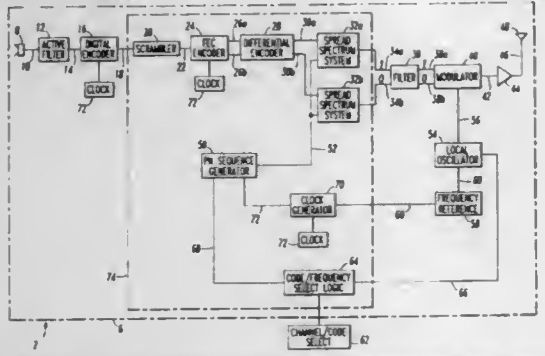
SMALL LOW POWERED DIGITAL TRANSMITTER FOR COVERT REMOTE SURVEILLANCE

Louis E. Stein, Baltimore, and Thomas S. Diviney, Pasadena, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 18, 1995, Ser. No. 503,579

Int. Cl.^{6} H04B *1/69*

U.S. Cl. 375—200 **18 Claims**



1. A low power portable transmitter for transmitting data signals, comprising:
   - a. a first input device for converting a first input signal into a first electric signal;
   - b. a spread spectrum system for increasing the bandwidth of the first electric signal and providing immunity against interference and interception and said spread spectrum system being connected to said first input device; and
   - c. a modulator for superimposing the spread first electric signal onto a carrier signal for the transmission of the first electric signal and said modulator being connected to said spread spectrum system;

wherein said spread spectrum system is implemented in a programmable logic device.

5,712,867

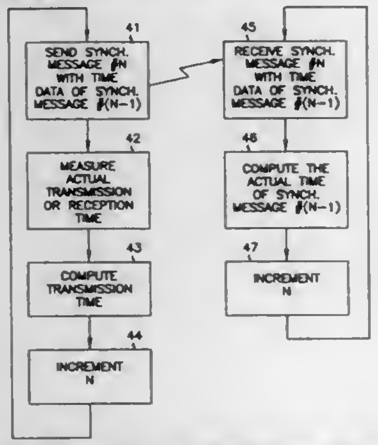
TWO-WAY PAGING APPARATUS HAVING HIGHLY ACCURATE FREQUENCY HOPPING SYNCHRONIZATION

Hanoch Yokev, Ramat-Gan; Yehouda Meiman, Rishon Letzian; Shimon Peleg, Hod Hasharon; Oren Yokev, Ramat-Gan, and Boaz Porat, Haifa, all of Israel, assignors to NEXUS 1994 Limited, London, England

Continuation-in-part of Ser. No. 158,441, Nov. 24, 1993, Pat. No. 5,430,759, which is a continuation-in-part of Ser. No. 961,776, Oct. 15, 1992, Pat. No. 5,335,246, which is a continuation-in-part of Ser. No. 140,716, Oct. 21, 1993, Pat. No. 5,379,047. This application Mar. 3, 1995, Ser. No. 398,372

Int. Cl.^{6} H04K *1/04;* **H04J** *3/06;* **H04L** *7/027*

U.S. Cl. 375—202 **3 Claims**


41
SEND SYNCH. MESSAGE #N WITH TIME DATA OF SYNCH. MESSAGE #(N−1)
42
MEASURE ACTUAL TRANSMISSION OR RECEPTION TIME
43
COMPUTE TRANSMISSION TIME
44
INCREMENT N
45
RECEIVE SYNCH. MESSAGE #N WITH TIME DATA OF SYNCH. MESSAGE #(N−1)
46
COMPUTE THE ACTUAL TIME OF SYNCH. MESSAGE #(N−1)
47
INCREMENT N

1. A remote mobile two-way pager using frequency hopped spread spectrum communication, comprising:

a paging receiver for receiving a serial plurality of time-of-day packets at non-deterministic intervals, each of said packets containing a time of transmission of a previous time-of-day packet;

an internal clock;

an error counter;

a processor connected to the receiver, the internal clock and the error counter and operable for:

- generating an error value based upon a difference in a measured time of reception of each of the serial plurality of time-of-day packets and the time of transmission contained in each of the serial plurality of time-of-day packets;
- placing the error value on the error counter;
- building a history of previous times of transmissions from the plurality of packets of information;
- extrapolating a current time of day from the history of previous times of transmissions,
- periodically correcting the internal clock with the error counter to within ±250 microsecond accuracy; and

a frequency hopped spread spectrum transmitter connected to the internal clock and the control means for synchronizing the frequency hopping sequence with a base station.

5,712,868

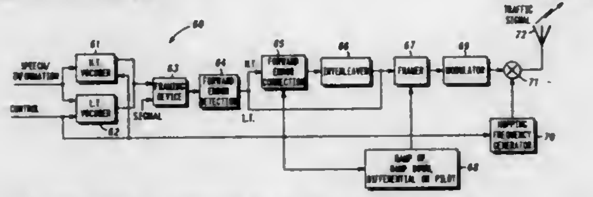
DUAL MODE COMMUNICATION NETWORK

Morton Stern, Skokie; John S. Csapo, Glenview; David Edward Borth, Palatine, all of Ill.; Charles N. Lynk, Jr., Bedford, Tex.; John Richard Haug, Arlington Heights, Ill.; Eric R. Schorman, Bedford, Tex.; Phillip David Rasky, Buffalo Grove, Ill., and Walter Joseph Rozanski, Jr., Hurst, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1992, Ser. No. 906,785

Int. Cl.^{6} H04B *7/216;* **H04J** *13/02;13/06*

U.S. Cl. 375—200 **22 Claims**



1. A dual mode communication network comprising:

a first communication system using a frame structure and a first traffic channel protocol for transmitting; and

a second communication system using said frame structure and a second traffic channel protocol for transmitting;

wherein only one of said first and second traffic channel protocols uses a forward error correction coding feature and a combination of a code division and a time division multiple access methods and a remaining one of said first and second traffic channel protocols utilizes a time division multiple access method.

5,712,869

DATA TRANSMITTER AND RECEIVER OF A SPREAD SPECTRUM COMMUNICATION SYSTEM USING A PILOT CHANNEL

Byeong-Ho Lee, and Jong-Hyeon Park, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 22, 1995, Ser. No. 562,281

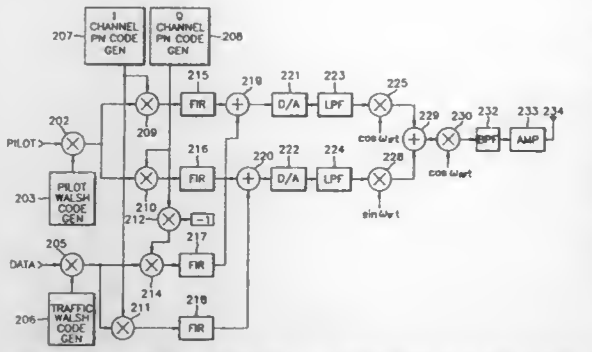
Claims priority, application Rep. of Korea, Nov. 22, 1994, 30743/1994

Int. Cl.^{6} H04B *1/707*

U.S. Cl. 375—206 **18 Claims**

1. A spread spectrum communication system, comprising:

a pilot channel signal generator for generating a pilot signal exhibiting a predetermined binary value;



a pseudo-random noise generator for generating first and second pseudo-random noise codes in response to a pseudo-random noise clock;

first Walsh code generator means for generating a first Walsh code according to a first set of Walsh functions, and generating a second Walsh code according to a second set of Walsh functions;

modulator means coupled to receive an input information signal and the pilot signal, for modulating the pilot signal according to the first Walsh code and modulating the input information signal according to the second Walsh code to generate a modulated pilot signal and a modulated information signal, respectively; and

spreader means for band spreading the modulated pilot signal and the modulated information signal with each of the first and second pseudo-random noise codes to generate a spread spectrum signal to be transmitted via a communication channel.

5,712,870

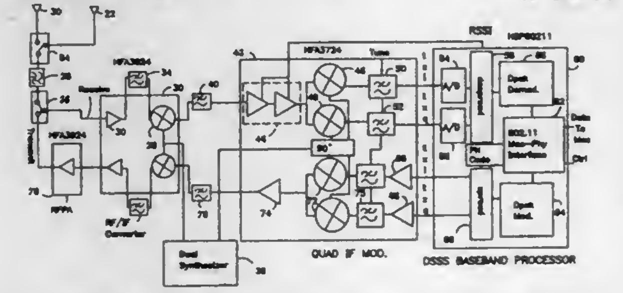
PACKET HEADER GENERATION AND DETECTION CIRCUITRY

Al Petrick, Orlando, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 31, 1995, Ser. No. 509,462

Int. Cl.^{6} H04B *15/00*

U.S. Cl. 375—206 **20 Claims**



1. A circuit for detecting a message header in a signal which has been transmitted using direct sequence spread spectrum modulation, comprising a single device having:

means for receiving an analog signal having modulated thereon in a spread spectrum format a message having a header portion and a data portion;

means for converting said analog signal into a digital signal;

means for demodulating the header of the digital signal using digital binary phase shift keyed (BPSK) demodulation and for demodulating the data portion of the same message using quarterary phase shift keyed demodulation (QPSK);

means contained on said single device for timing a transition from BPSK mosulation to QPSK modulation; and,

means for providing the demodulated data signal to a media access control (MAC) layer.

5,712,871

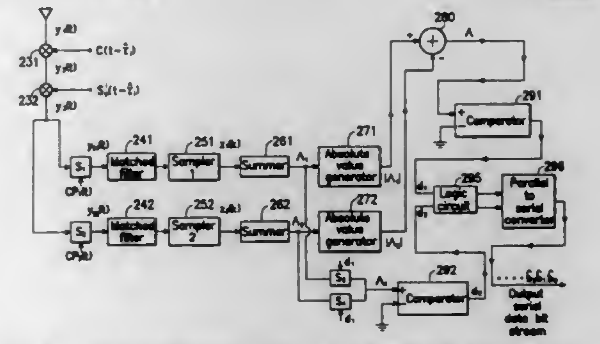
METHOD AND APPARATUS FOR IMPLEMENTING A DIRECT-SEQUENCE CODE DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM WITH AN M-ARY PULSE-POSITION MODULATED SPREADING-SEQUENCE SIGNAL

Chen-Yi Chang, 1001 Ta Hsueh Road, Hsinchu, Taiwan

Continuation-in-part of Ser. No. 077,347, Jun. 14, 1993, Pat. No. 5,446,757. This application Jul. 6, 1995, Ser. No. 498,744

Int. Cl.^{6} H04B *15/00*

U.S. Cl. 375—206 **23 Claims**



11. An apparatus for recovering a serial data bit stream from a received carrier-modulated signal in a direct-sequence code devision multiple access communication system, comprising:

a carrier demodulator for demodulating the received carrier-modulated signal with a locally generated carrier signal synchronously into a pulse-position modulated spreading-sequence signal;

a pulse demodulator connected to said carrier demodulator for demodulating said pulse-position modulated spreading-sequence signal with a locally generated spreading-sequence signal synchronously into a duty-pulse train as an output signal of said pulse demodulator;

an array of M switches connected to the output of said pulse demodulator and respectively activated by M control-pulse trains, where $M=2^{K-1}$ and K is an integer larger than 1 and is defined in the transmission portion of the communication system, such that the duty-pulse train output from said pulse demodulator is demultiplexed into M pulse trains, which have the duration of each pulse in the M pulse trains equal to the duration of duty-pulse of said duty-pulse train, as M output signals of said array of M switches;

an array of M matched filters connected respectively to said array of M switches to process the signals output from said array of M switches;

an array of M samplers connected respectively to said array of M matched filters for sampling the signals output from said array of M matched filters periodically with periods equal to T_{cp}, where T_{cp} is the chip duration of said spreading-sequence signal;

an array of M summers connected respectively to said array of M samplers to sum the sampling data output from each sampler of said array of M samplers, respectively, and thus to form M signals representative of M statistics periodically with periods equal to K×T, where T is the bit duration of said serial data bit stream;

an array of M absolute-value generators connected respectively to said array of M summers for generating M signals representative of the absolute values of said M statistics;

a magnitude comparator for receiving and comparing the signals representative of the absolute values of said M statistics output from said array of M absolute-value generators to find the statistic that has the largest absolute value among said M statistics and sending out a decision-bit vector as an output of said magnitude comparator to indicate the statistic that has the largest absolute value among said M statistics;

a switch circuit with M inputs connected respectively to said array of M summers and activated by said decision-bit vector to allow only the signal representative of the statistic that has the largest absolute value among said M statistics to pass therethrough as an output signal of said switch circuit;

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- a comparator for receiving the signal output from said switch circuit and for comparing the signal with a reference voltage of zero volt to generate a polarity decision bit as an output signal of said comparator;
- a logic circuit for transforming said decision-bit vector and said polarity decision bit into a deciphered K-bit vector including K data bits in parallel; and
- a parallel-to-serial converter connected to said logic circuit for converting a sequence of K-bit vectors into a serial data bit stream.

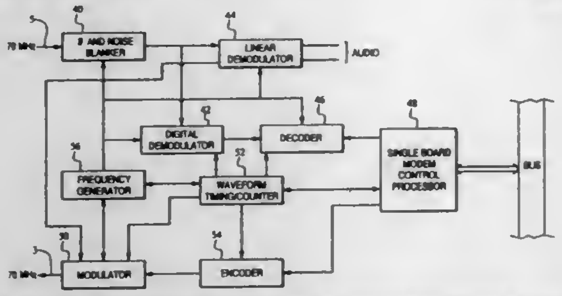
5,712,872
COMMUNICATIONS SYSTEM USING OPEN ARCHITECTURE BUS LINES

Steve Keith Hawkins, Plano, and Bruce Raymond Whitney, Terrell, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 84,622, Jul. 1, 1993, Pat. No. 5,504,777, which is a continuation-in-part of Ser. No. 959,258, Oct. 9, 1992, Pat. No. 5,384,805. This application Mar. 23, 1995, Ser. No. 409,922

Int. Cl.^{6} H04B *1/38*

U.S. Cl. 375—222 12 Claims



8. A programmable single board modulator/demodulator comprising:
- a control processor for processing programming commands received over an open architecture bus line and for processing received signals and transmitted signals, said control processor dynamically responsive to changing commands received over the open architecture bus line thereby facilitating the generation of changing programming commands;
- an IF and noise blanker receiving IF signals for filtering and blocking unwanted noise and spurious signals from the received IF signals;
- a programmable demodulator receiving the IF signal from the IF and noise blanker, said demodulator connected to the control processor and dynamically responsive to programming commands from the control processor for demodulating the received IF signals in accordance with a processing protocol identified by the programming commands;
- a programmable decoder receiving the demodulated IF signals for decoding and deinterleaving the demodulated received IF signals, said decoder connected to the control processor and dynamically responsive to programming commands received from the control processor, the decoded and deinterleaved demodulated received signals transmitted to the control processor for further processing;
- a programmable encoder receiving transmit signals from the control processor for encoding and interleaving the transmit signals prior to modulation, said encoder connected to the control processor and dynamically responsive to programming commands received from the control processor;
- a programmable modulator connected to the control processor in parallel to said programmable demodulator and dynamically responsive to programming commands from the control processor and receiving the transmit signals from the programmable encoder for modulating the transmit signals from the control processor prior to transmission, thereby enabling independent operation of the modulator and demodulator elements.

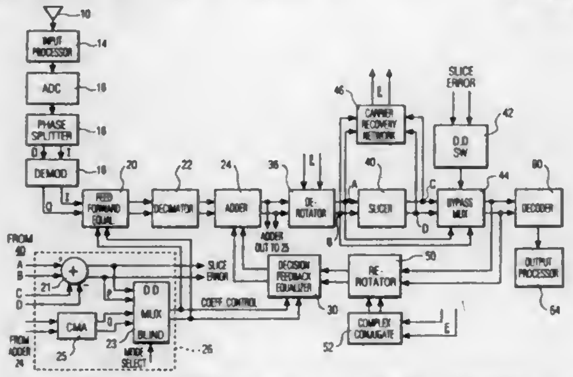
5,712,873
MULTI-MODE EQUALIZER IN A DIGITAL VIDEO SIGNAL PROCESSING SYSTEM

Dong-Chang Shiue, Carmel; Kumar Ramaswamy, and Paul Gothard Knutson, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 4, 1996, Ser. No. 655,269

Int. Cl.^{6} H03H *7/30;7/40*

U.S. Cl. 375—233 8 Claims



1. A system for processing a received signal containing a constellation of symbols and subject to exhibiting unwanted perturbations, comprising
- an adaptive feed forward filter (FFF) for equalizing said received signal;
- an adaptive decision feedback filter (DFF) for equalizing said received signal; and
- a demodulator responsive to an equalized signal, wherein
- said FFF exhibits (1) non-adaptive operation during an initial phase of a non-decision directed equalizing interval, (2) non-decision directed adaptive operation during a later phase of said non-decision directed equalizing interval, and (3) decision-directed adaptive operation during a final equalizing interval following said non-decision directed equalizing interval; and
- said DFF exhibits (1) non-decision directed adaptive linear operation during said initial non-decision directed equalizing phase, (2) non-decision directed adaptive linear operation during said later phase of non-decision directed equalizing interval, and (3) non-linear decision-directed adaptive operation during said final equalizing interval.

5,712,874
NOISE SHAPER CAPABLE OF GENERATING A PREDETERMINED OUTPUT PATTERN IN NO-SIGNAL CONDITION

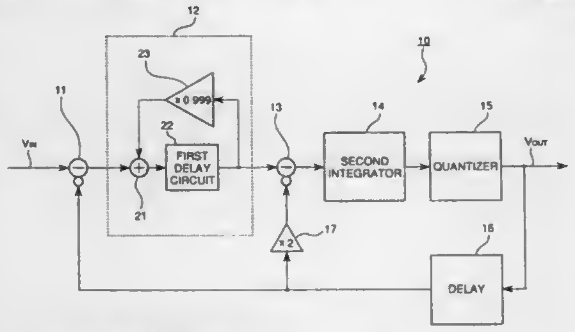
Toshiyuki Okamoto, Tokyo, Japan, assignor to NEC Corpoation, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,964

Claims priority, application Japan, Dec. 7, 1993, 5-306849

Int. Cl.^{6} H04B *14/04*

U.S. Cl. 375—243 14 Claims



1. A noise shaper comprising:
- at least two cascaded integration means,

- a quantizing means receiving an output signal of a final stage integration means of said at least two cascaded integration means, and
- a feedback means for feeding back an output of said quantizing means to each integration means of said at least two cascaded integration means,
- at least one integration means of said at least two cascaded integration means being configured to perform leak integration by adding (i) a current data of an input signal applied to said at least one integration means with (ii) data obtained by multiplying a data-before-one-sample of the input signal applied to said at least one integration means by a positive coefficient smaller than but substantially equal to "1",
- one other integration means of said at least two cascaded integration means being configured to add a current data of an input signal applied to the one other integration means with a data-before-one-sample of the input signal applied to the one other integration means,
- wherein the leak integration performed by said at least one integration means includes an accumulative integration of a resulting integration amount multiplied by said positive coefficient smaller than but substantially equal to "1" so that, in a no-signal condition, the output of said at least one integration means becomes "0" with a lapse of time and a single predetermined pattern is outputted from the noise shaper.

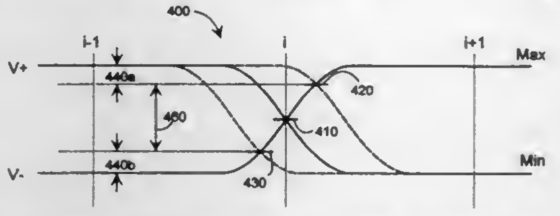
5,712,875
ASYNCHRONOUS DIFFERENTIAL COMMUNICATION

David R. Wooten, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 485,814

Int. Cl.^{6} H04B *3/00*

U.S. Cl. 375—257 12 Claims



1. A method for providing three signal states in a pair of signaling wires, comprising
- (a) providing a first signal on a first signaling wire;
- (b) providing a second signal on a second signaling wire, both the first and the second signals having respective maximum voltages, minimum voltages and midpoint voltages, the first and second signals crossing at crossing voltages at a plurality of points in time;
- (c) maintaining the crossing voltages at either greater than a threshold voltage and less than the maximum voltages, or less than the threshold voltage and greater than the minimum voltages, the threshold voltage being different than the midpoint voltages, wherein maintaining the crossing voltages comprises delaying either the falling edges of the first signal and the second signal, or the rising edges of the first signal and the second signal.

5,712,876
RADIO STATION APPARATUS AND SIGNAL TRANSMISSION METHOD THEREOF

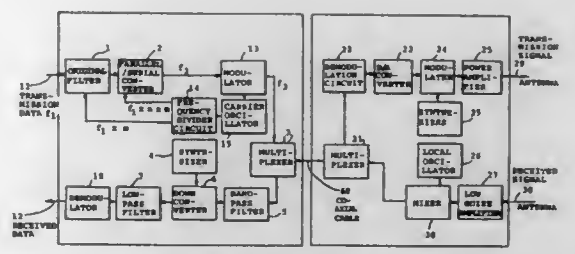
Yasunori Yoshizawa, and Shinichi Ohmagari, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Mar. 17, 1995, Ser. No. 405,908

Claims priority, application Japan, Apr. 26, 1994, 6-088588

Int. Cl.^{6} H04B *1/38;1/40*

U.S. Cl. 375—268 11 Claims



1. A radio station apparatus which comprises an indoor unit and an outdoor unit tied to the indoor unit by a coaxial cable wherein an inputted first binary digital data signal having a variable data rate is converted into a corresponding signal, modulated with a predetermined radio carrier frequency and transmitted through an antenna, and a signal received through said antenna is demodulated and outputted, said radio station apparatus comprising:
- data rate conversion means provided in said indoor unit for converting said first binary digital data of frequency f_1 (Hz) into a serial second binary digital data of frequency f_2 (Hz) where f_2 (Hz)$=f_1 \times n \times m$ (Hz), where n is a sampling number and m is a quantization amount, m and n are each integers larger than two;
- modulation means provided in said indoor unit for modulating said second binary digital data to generate a modulated signal with frequency f_3 (Hz) which is proportional to a multiple of frequency f_1 (Hz) and f_2 (Hz);
- demodulation means provided in said outdoor unit for demodulating said modulated signal inputted from said modulation means into a third binary digital data consisting of said number m with a frequency which is a product of f_1 and said number n; and
- radio frequency modulation means within said outdoor unit for directly modulating said third binary digital data demodulated by said demodulation means with a predetermined radio frequency.

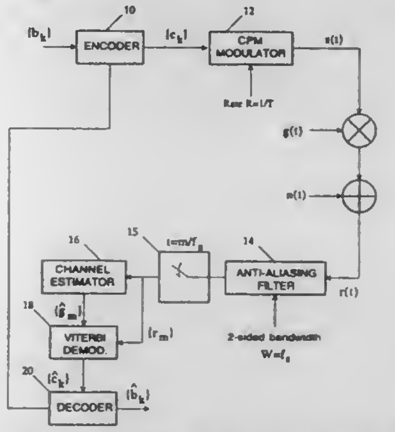
5,712,877
PILOT-SYMBOL AIDED CONTINUOUS PHASE MODULATION SYSTEM

Paul K. M. Ho, Surrey, Canada, and Jae Hyung Kim, Kyungnam, Rep. of Korea, assignors to Simon Fraser University, British Columbia, Canada

Filed May 26, 1995, Ser. No. 451,445

Int. Cl.^{6} H04L *27/10*

U.S. Cl. 375—284 29 Claims



1. Apparatus for transmitting and receiving digital information over mobile communication channels, said apparatus comprising:
- (a) a pilot symbol insertion device for periodically inserting data dependent pilot symbols into frames of digital data for subsequent channel estimation;
- (b) a continuous phase modulator for modulating and transmitting over a mobile communication channel the frames of digital data, wherein said pilot symbol insertion device uses

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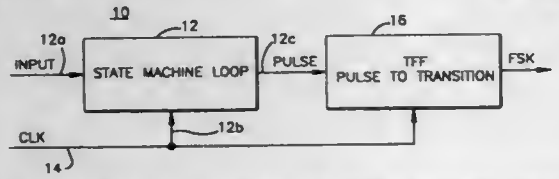
data dependent pilot symbols to force the continuous phase modulator to return periodically to a set of known phase states;
- (c) means for receiving and filtering the transmitted data;
- (d) a channel estimator for estimating the channel amplitude and phase distortion from the received pilot signal at different time instants; and
- (e) means for demodulating the received signal.

5,712,878
DIGITAL FSK MODULATOR

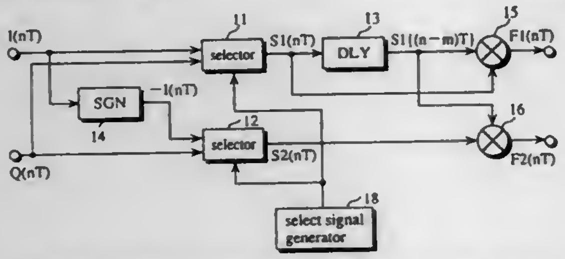
Joseph C. Nemer, Mayfield Hts., Ohio, assignor to Elsag International N.V., Amsterdam, Netherlands
Filed Aug. 19, 1996, Ser. No. 699,638
Int. Cl.^{6} H03C *3/00*
U.S. Cl. 375—303 **14 Claims**



1. A modulator for generating a FSK signal having a rectangular waveform comprising:
- a) a state machine having a closed loop, said closed loop having a predetermined total number of states, said state machine responsive to one or more first signals each having a level which may vary between a predetermined number of levels, said first signal level determining how many of said predetermined total number of states said state machine must traverse to complete said closed loop, and to a second signal with a known frequency for producing an output signal with a frequency that is a function of said second signal known frequency and said first signal level; and
- b) means for converting said state machine output signal to said rectangular waveform FSK signal.

5,712,879
DIFFERENTIAL DETECTING DEVICE

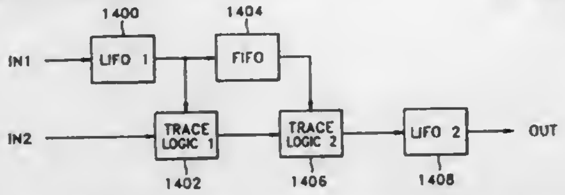
Akihiro Tatsuta, Nara; Yoshio Urabe, Ibaraki, and Hitoshi Takai, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd, Osaka-fu, Japan
Filed Jul. 24, 1995, Ser. No. 506,321
Claims priority, application Japan, Jul. 27, 1994, 6-175478
Int. Cl.^{6} H04L *27/22;27/06*
U.S. Cl. 375—330 **5 Claims**



1. A differential detecting device for detecting, from inphase and quadrature-phase baseband signals which are obtained by a quadrature detection on a phase-modulated signal, cosine and sine components of a phase difference at two instants of said phase-modulated signal, comprising:
- two A/D converters for digitizing and converting said inphase and quadrature-phase baseband signals to respective inphase data and quadrature-phase data at every predetermined time period (sampling period);
- a cosine component calculating means for calculating said cosine component by alternately selecting said inphase data and said quadrature-phase data;
- a sine component calculating means for calculating said sine component by alternately selecting said inphase data and said quadrature-phase data; and
- two lowpass filters for respectively receiving said cosine component calculated by said cosine component calculating means and said sine component calculated by said sine component calculating means, and for cutting frequency components whose frequencies are higher than a first predetermined frequency level from said received cosine and sine components, and passing frequency components of said received cosine and sine components whose frequencies are lower than a second predetermined frequency level, said second predetermined frequency level being lower than said first frequency level.

5,712,880
TRACEBACK-PERFORMING APPARATUS IN VITERBI DECODER

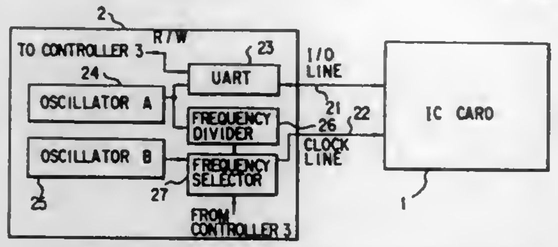
Min-joong Rim, Seoul, and Young-uk Oh, Incheon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 14, 1995, Ser. No. 557,539
Claims priority, application Rep. of Korea, Nov. 14, 1994, 94-29806
Int. Cl.^{6} H03D *1/00*
U.S. Cl. 375—341 **4 Claims**



1. A traceback-performing apparatus in a Viterbi decoder implemented in a VLSI which comprises branch metric means for calculating branch metric values by receiving a bit-stream to correct errors of the bit-stream, adding-comparing-selecting means for calculating new path metric values from current path metric values corresponding to the branch metric values, minimum path metric means for calculating a minimum path metric value among the new path metric values and temporarily storing the calculated value, and traceback means for receiving said new path metric values and minimum path metric value and searching a survival path to find decoded bits, and in which a constraint length is K, the size of a memory action group is L, where K and L are positive integers, and best state detecting means generates a current state value every uniform period, said traceback means comprising:
- first storing means for receiving and storing said new path metric values and minimum path metric value so that the first input value is output later and the later input value is output first;
- first trace logic means for receiving outputs of said first storing means and said current state value and generating a first state which is the next state to be traced;
- second storing means for receiving and storing the output of said first storing means so that the first input value is output first and the later input value is output later;
- second trace logic means for receiving the output of said second storing means and the first state and generating a second state which is the next state to be traced; and
- third storing means for receiving and storing the second state so that the first input value is output later and the later input value is output first, so as to find the decoded bits.

5,712,881
DATA TRANSMISSION APPARATUS SELECTIVELY USING TWO CLOCK SIGNALS

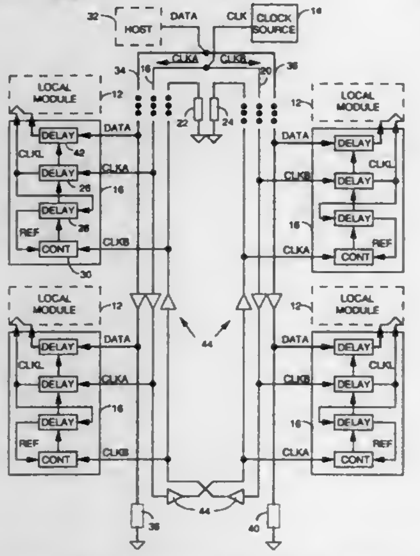
Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 207,616, Mar. 9, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 637,598
Claims priority, application Japan, Mar. 24, 1993, 5-065073
Int. Cl.^{6} H04L *7/00*
U.S. Cl. 375—354 **4 Claims**



1. A portable medium processing apparatus for transmitting data to and for receiving data from a portable medium by supplying a clock signal to said portable medium, the apparatus comprising:
- a first oscillator for generating a first clock signal of 1200×2^n Hz, where n is a natural number, based upon which data is transmitted between said apparatus and said portable medium;
- a second oscillator for generating a second clock signal of 3.5712 MHz used to operate said portable medium;
- a frequency divider dividing said first clock signal generated by said first oscillator by 2^m, where m is a natural number, and where $m<n$;
- a frequency selector, connected to said second oscillator and said frequency divider, to select one of said second clock signal and an output of said frequency divider; and
- a data exchange circuit connected to said frequency selector for transmitting data to and receiving data from said portable medium on the basis of output from said frequency selector.

5,712,882
SIGNAL DISTRIBUTION SYSTEM

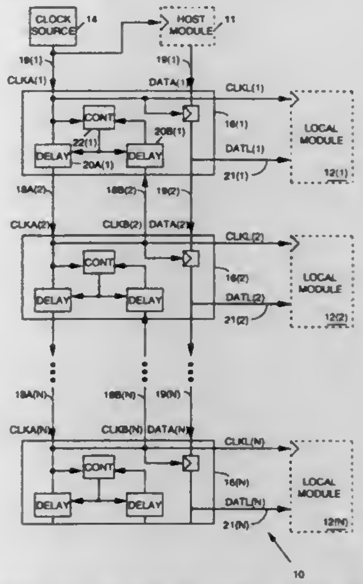
Charles A. Miller, Fremont, Calif., assignor to Credence Systems Corporation, Fremont, Calif.
Filed Jan. 3, 1996, Ser. No. 582,573
Int. Cl.^{6} H04L *7/00*
U.S. Cl. 375—356 **4 Claims**



1. An apparatus for generating a set of synchronized, spatially distributed local clock signals, the apparatus comprising:
- a clock source for producing a periodic reference clock signal,
- a set of spatially distributed deskewing circuits;
- a first transmission line for routing the reference clock signal from the clock source to the deskewing circuits in a first order of succession; and
- a second transmission line for routing the reference clock signal from the clock source to each deskewing circuit in a second order of succession that is reverse to the first order of succession,
- wherein each deskewing circuit includes local clock signal generator means for receiving the reference clock signal arriving via the first and second transmission lines and for producing in response thereto an output local clock signal having a phase that is midway between phases of the reference clock signal arriving via the first and second transmission lines,
- wherein said local clock signal generator means comprises:
- a first delay circuit for receiving and delaying said reference clock signal arriving on another of said first and second transmission lines to produce one of said output local clock
- a second delay circuit for receiving and delaying said local clock signal to produce a local reference signal; and
- control means receiving the local reference signal and the reference clock signal arriving on another of said first and second transmission lines, for adjusting delays provided by said first and second delay circuits such that the local reference signal is phase locked to the reference clock signal arriving on said another of said first and second transmission lines.

5,712,883
CLOCK SIGNAL DISTRIBUTION SYSTEM

Charles A. Miller, Fremont, Calif., and Daniel J. Bedell, Portland, Oreg., assignors to Credence Systems Corporation, Fremont, Calif.
Filed Jan. 3, 1996, Ser. No. 581,000
Int. Cl.^{6} H04L *7/00*
U.S. Cl. 375—371 **27 Claims**



1. An apparatus for distributing signals comprising:
- a sequence of stages, each stage comprising first delay means for receiving and delaying a periodic first input signal by a first adjustable delay time to produce a periodic first output signal, second delay means for receiving and delaying a periodic second input signal by a second adjustable delay time to produce a periodic second output signal, control means for receiving said first input signal and said second output signal and generating a delay control signal supplied to said first and second delay means for adjusting said first and second adjustable delay times so as to phase lock said second output signal to said first input signal, and means for producing a periodic third output signal having a phase and frequency tracking a phase and frequency of said first input signal;
- means for supplying a periodic reference clock signal as the first input signal to a first stage of said sequence;
- first signal conductor means for conveying the first output signal of each stage other than a last stage of said sequence as the first input signal to a next succeeding stage of said sequence; and

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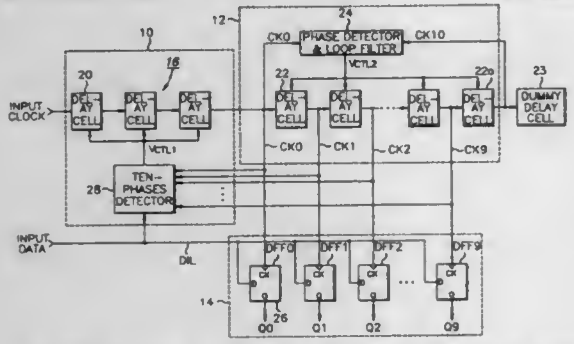
second signal conductor means for conveying the third output signal of each stage other than the first stage as the second input signal to a next preceding stage of said sequence.

5,712,884
DATA RECEIVING METHOD AND CIRCUIT OF DIGITAL COMMUNICATION SYSTEM

Deog-Kyoon Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Mar. 31, 1995, Ser. No. 415,056
Int. Cl.^{6} H03D *3/24;* **H04L** *7/00*

U.S. Cl. 375—375 **8 Claims**



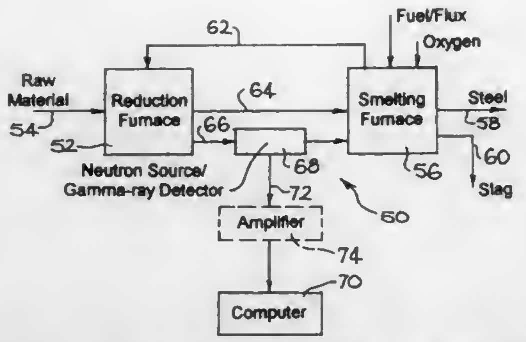
1. A data receiving circuit of a digital communication system which receives a transmitted input data bit column and input clock, said data receiving circuit comprising:

- a first clock generator having a first delay cell that receives a frequency from said input clock and outputs a first clock having said frequency;
- a delay locked loop having 2n–1 secondary delay cells and a final node delay cell connected in series to each other which allow said first clock to be sequentially phase-delayed by 2π/2n, said 2n–1 secondary delay cells outputting 2n–1 clocks, each of said 2n–1 clocks having a respective phase delay from said first clock, said delay locked loop locking a phase difference of 2π radians between said first clock and an output clock of said final node delay cell;
- a phase detector that outputs a phase control signal which controls a delay time of said first delay cell so that 2n clocks, comprised of said first clock generated by said first clock generator and said 2n–1 clocks outputted from said 2n–1 secondary delay cells of said delay locked loop, can have rising edges in the middle point of a corresponding input data bit by detecting a phase difference between phases of said input data bit column and said 2n clocks and controlling said first delay cell in accordance with the detected phase difference; and
- a data register controlled by said 2n clocks so as to receive said input data bit column.

5,712,885
DETERMINATION OF PRE-REDUCTION DEGREE IN IRON ORE MATERIALS

Brian David Sowerby, Kareela, and Cheryl Su-Lean Lim, Heathcote, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australian Capital Territory, Australia
Filed Jun. 7, 1995, Ser. No. 475,858
Claims priority, application Australia, Jun. 9, 1994, PM6167
Int. Cl.^{6} G21G *1/06*

U.S. Cl. 376—159 **32 Claims**



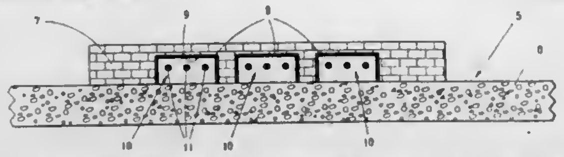
1. A process for determining the pre-reduction degree (PRD) of pre-reduced iron oxide material, wherein a neutron inelastic scattering technique is applied to the material by the steps of:

- (i) exposing the material to bombardment with neutrons, from a source yielding the neutrons at an energy level sufficient to cause nuclei of the material to produce prominent gamma-rays from neutron inelastic scattering;
- (ii) capturing, by use of a suitable detector, gamma-rays so produced;
- (iii) analysing the captured gamma-rays to obtain an output representative of the relative weight percentages of the elements iron and oxygen, based on at least one characteristic energy level for gamma-rays emitted by those elements; and
- (iv) determining the PRD for the material on the basis of the determined weight percentage of iron and oxygen.

5,712,886
DEVICE FOR DETECTING AND MONITORING PERFORATION OF THE BOTTOM HEAD OF THE VESSEL OF A NUCLEAR REACTOR

Jean Baldy, Rueil Malmaison, France, assignor to Atea, Societe Atlantique de Techniques Avancées, Carquefou, France
Filed Sep. 6, 1996, Ser. No. 708,268
Claims priority, application France, Sep. 11, 1995, 95 10623
Int. Cl.^{6} G21C *17/00;9/016;* **H01L** *35/02*

U.S. Cl. 376—247 **15 Claims**



1. Device for detecting and monitoring penetration of the bottom head of a vessel of a nuclear reactor, in the event of meltdown of a core of the reactor contained in the vessel and of internals arranged inside the vessel which has a cylindrical shape and which is placed with its axis vertical, in a reactor pit of a safety building of the nuclear reactor, the detection device including at least one thermocouple which rests on a slab constituting a bottom of the reactor pit, which is aligned with a bottom head of the vessel and which has a first branch made of a first metallic material and at least one second branch which is made of a second metallic material, different from the first material, and is welded to a point on the first branch, the first branch of the thermocouple having the form of an elongate hollow section.

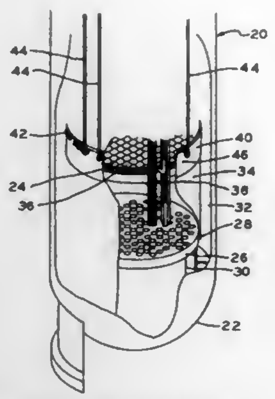
5,712,887
METHODS AND APPARATUS FOR APPLYING A COMPRESSIVE FORCE TO A CORE SHROUD

Jeffrey L. Thompson; Thomas Armine Lewis, and Frank Ortega, all of San Jose, Calif., assignors to General Electric Company, Schnenectady, N.Y.
Filed Dec. 20, 1996, Ser. No. 769,470
Int. Cl.^{6} G21C *19/02*

U.S. Cl. 376—260 **19 Claims**

1. A spring assembly for compressing a core shroud of a nuclear reactor, the nuclear reactor including at least one guide rod, the core shroud including a shroud head flange, said spring assembly comprising:

first and second trusses;

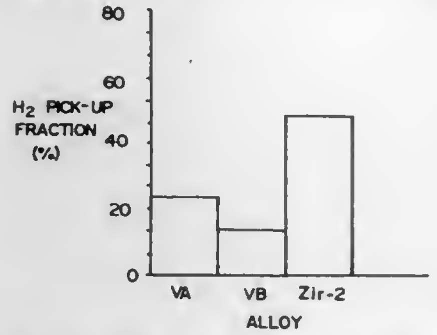


a first torsion bar having opposing ends;
a second torsion bar having opposing ends; and
one end of each said torsion bar rotatably connected to said first truss, said other end of each said torsion bar rotatably connected to said second truss.

5,712,888
ALLOY FOR IMPROVED HYDRIDING RESISTANCE AND CORROSION RESISTANCE NUCLEAR REACTOR COMPONENTS

Ronald B. Adamson, Fremont, and Bo-Ching Cheng, Cupertino, both of Calif., assignors to General Electric Co., Schenectady, N.Y.
Continuation-in-part of Ser. No. 412,499, Mar. 28, 1995, abandoned. This application Jun. 5, 1996, Ser. No. 658,544
Int. Cl.^{6} C21D *1/26*

U.S. Cl. 376—416 **19 Claims**



1. A zirconium-based alloy having a composition consisting essentially of, by weight, about 0.3–1.2% tin, at least 0.8 to about 1.4% chromium, about 0.05–0.7% iron, and the remainder substantially zirconium.

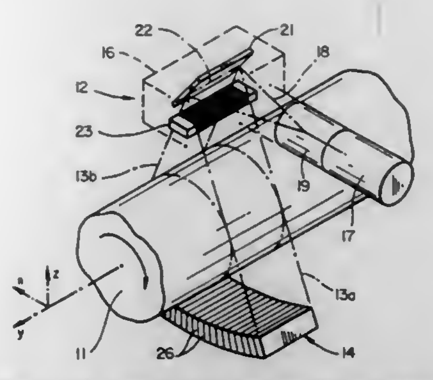
5,712,889
SCANNED VOLUME CT SCANNER

Giovanni Lanzara, Largo Dell'Olglata, Isola 61/A, 00123 Rome, Italy, and Douglas Perry Boyd, 1115 Lakeview Dr., Hillsborough, Calif. 94010
Continuation of Ser. No. 675,420, Jul. 3, 1996, abandoned, which is a continuation of Ser. No. 294,964, Aug. 24, 1994, abandoned. This application Apr. 11, 1997, Ser. No. 827,781
Int. Cl.^{6} G01N *23/00*

U.S. Cl. 378—19 **7 Claims**

1. A volume CT scanner for scanning an object including:

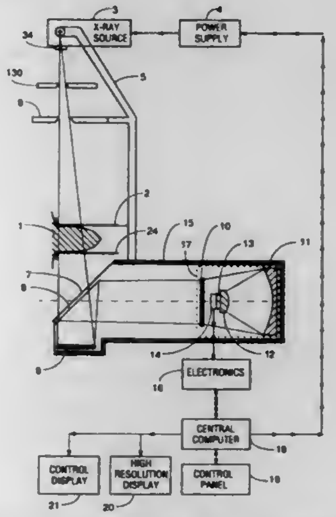
a target;
means for generating an electron beam and linearly scanning the beam along said target to form a succession of cone-shaped x-ray beams;
a vane collimator disposed to receive said successive cone-shaped x-ray beams and form a succession of adjacent parallel fan-shaped x-ray beams which successively irradiate adjacent planar slices along the length of a volume of said object to be Scanned; and a single detector array extending along said length comprising a plurality of adjacent longitudinally elongated detector elements extending across each of said beams for receiving said receiving said succession of transmitted parallel fan-shaped x-ray beams and successively generating data signals representative of the amplitude of each of said transmitted parallel fan-shaped x-ray beams across each of said beams as they are transmitted through and along said volume, each of said longitudinally elongated detector elements being arranged to successively receive said plurality of said transmitted x-ray beams representing a plurality of planar slices in said volume.



5,712,890
FULL BREAST DIGITAL MAMMOGRAPHY DEVICE

Brett Spivey, Encinitas; Jean-Marie Tran, San Diego; Lee Morsell, Del Mar; George Houghton, San Diego; Steve Horton, Oceanside, and Peter Martin, Encinitas, all of Calif., assignors to Thermotrex Corp., San Diego, Calif.
Continuation of Ser. No. 344,141, Nov. 23, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,053
Int. Cl.^{6} A61B *6/04*

U.S. Cl. 378—37 **48 Claims**



1. A digital x-ray mammography device comprising:

a) a frame,
b) an x-ray source mounted on said frame,
c) a breast damp adapted to position a breast on said frame in a fixed position with respect to said source,
d) an x-ray aperture movable mounted, with respect to said source, on said frame,
e) an x-ray detector movable mounted, with respect to said source, on said frame and aligned with respect to said aperture so as to detect x-ray beams from said x-ray source passing through said aperture, said detector including:

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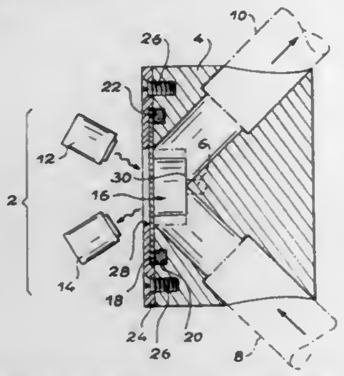
(1) an x-ray to visible light medium for converting x-rays to visible light,
(2) a detector array, and
(3) an optical system for directing visible light onto said detector array to produce images on said detector array,
a positioning system adapted to sequentially position said aperture and said x-ray detector in order to provide a plurality of overlapping x-ray beam paths extending radially from said x-ray source to said conversion surface, said overlapping beam paths defining corresponding overlapping breast regions,
g) a data acquisition system for acquiring digital image data from said detector array for each of said overlapping breast regions, said digital image data for each of said overlapping breast regions defining an image pane,
h) a computer programmed with a stitching algorithm for stitching together said image pane create a composite x-ray image of at least a portion of said breast, the programmed computer performing the functions of:
  (1) registering each image pane onto a common pattern such that a portion of each image pane overlaps a portion of at least one other image pane,
  (2) blending overlapped portions of said image panes to create the composite x-ray image of at least a portion of said breast.

5,712,891
APPARATUS FOR THE ANALYSIS OF A SOLUTION BY X-RAY FLUORESCENCE

Gilbert Benony, Pujaut; Dominique Pouyat, Roquemaure, and Thierry Davin, Lapalud, all of France, assignors to Compagnie Generale Des Matieres Nuclealres, Velizy Villacoublay, France

Filed Nov. 12, 1996, Ser. No. 747,450
Claims priority, application France, Nov. 15, 1995, 95 13533
Int. Cl.^{6} G01N *23/223*
U.S. Cl. 378—47 **9 Claims**

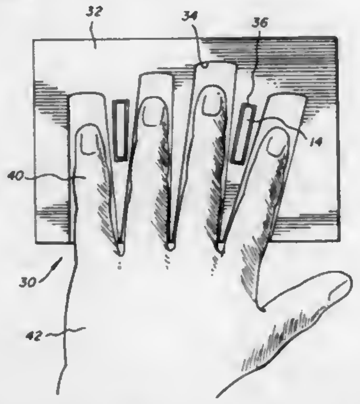


1. An apparatus for the analysis of a solution by X-ray fluorescence, this apparatus being characterized in that it includes;
excitation and analysis means (**12**, **14**), intended to excite the solution by an excitation X-radiation and to analyze an analysis X-radiation emitted by the solution thereby excited,
means (**4**, **8**, **10**) for receiving the solution, these receiving means including at least one area (**18**) which is transparent to the excitation and analysis X-radiation, said excitation and analysis X-radiation passing through said at least one area,
a reference element (**6**) exterior to the solution, integral with the receiving means, positioned opposite said area in such a way that the solution is between this area and this element, and capable of emitting a reference X-radiation distinct from the analysis X-radiation when this element receives the excitation radiation, said area being transparent to the reference radiation, this reference X-radiation being analyzed with the analysis X-radiation and making it possible to correct any measurement drift that is liable to occur during the analysis of the solution.

5,712,892
APPARATUS FOR MEASURING THE BONE MINERAL CONTENT OF AN EXTREMITY

Richard Weil, Pittsford, N.Y.; David Gur, Pittsburgh, Pa., and James Frederick Owen, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1995, Ser. No. 579,955
Int. Cl.^{6} G01N *23/06*
U.S. Cl. 378—54 **7 Claims**

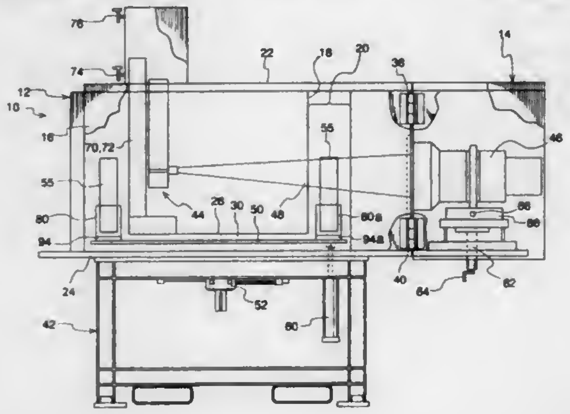


1. Apparatus for determining the bone density of a human body comprising:
a body extremity positioner having several aligned cutouts for positioning the digits of a body extremity and at least one cutout aligned with said cutouts for receiving a calibration wedge which is smaller than said digits;
an x-ray source for projecting a continuous spectrum x-ray beam through body extremity digits and a calibration wedge positioned in said positioner to produce x-ray images of said digits and said calibrating wedge;
a plurality of separate x-ray image converters, positioned adjacent respective of said body extremity digits and said calibration wedge positioned in said positioner, for converting said x-ray images into digital image signals representative of said body extremity digits and of said calibration wedge; and
a digital image processor for processing said digital image signals representative of said body extremity digits and said calibration wedge to determine the bone density of at least a portion of said body extremity to establish whether there has been a loss of bone mass.

5,712,893
REAL TIME RADIOGRAPHIC INSPECTION SYSTEM

Kerry R. Dykster, West Haven, and Jeffery P. England, Clinton, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Nov. 5, 1996, Ser. No. 743,866
Int. Cl.^{6} G01B *15/06*
U.S. Cl. 378—58 **20 Claims**

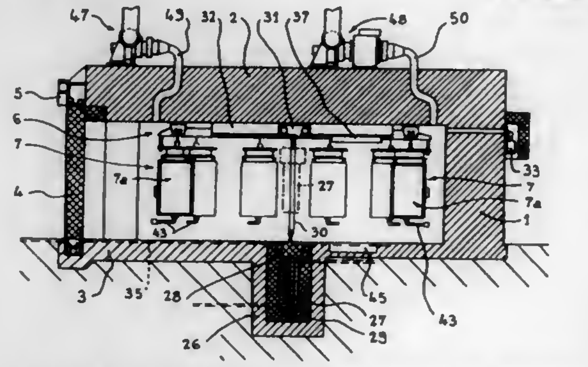


1. A real time radiographic inspection system for inspecting an article, comprising: a first, generally cylindrical housing having inner and outer substantially cylindrical coaxially aligned walls defining a substantially annular chamber therebetween, and means defining respective opposite end closures for said annular chamber; means defining a pair of through openings in said outer cylindrical wall spaced substantially 180° apart; means defining a through opening in said inner wall aligned with one of the pair through openings in said outer wall; a second housing extending radially outwardly from and surrounding said one through opening in said outer wall; the other of said pair of through openings in said outer wall defining an entrance to said annular chamber; an X-ray source mounted in one of said first and second housings for directing an X-ray beam through the aligned through openings of said inner and outer walls; an image intensifier mounted in the other of said first and second housings in alignment with aligned through openings and positionable in registry with X-ray beam; and rotating means mounted in said first housing for rotating a part to be inspected through said chamber between said entrance opening and a position in registry with said X-ray beam.

5,712,894
STERILIZATION CELL

Michel Lanotte, 12 Chemin des Meules, Jons, France, 69330

Filed Nov. 28, 1995, Ser. No. 556,545
Claims priority, application France, Nov. 30, 1994, 94 14611
Int. Cl.^{6} G21K *5/08*
U.S. Cl. 378—68 **10 Claims**

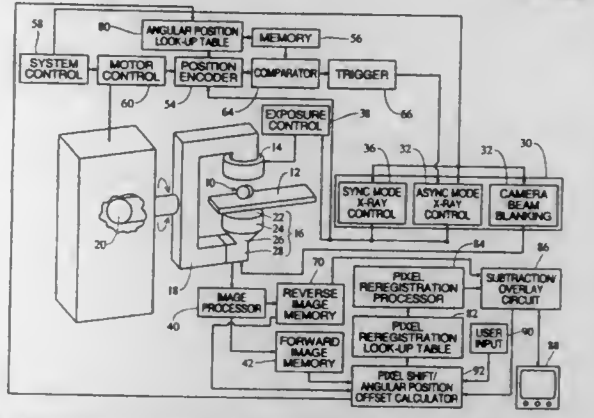


1. A gamma radiation cell for sterilizing products and including a shielded enclosure provided with at least one access door, wherein the cell comprises in combination:
a central well in a floor of the enclosure adapted to form a dry storage area for a source of irradiation;
a lifting mechanism adapted to vertically move the source of radiation between an upper work position and a lower storage position;
a fluid circuit connecting said central well to a reserve of oxygen and to an ozone storing reservoir for producing ozone by radiolysis of a stream of oxygen when the source of irradiation is in the lower storage position;
a conveyor including a series of transports adapted to receive the products to be sterilized and means for moving said conveyor to displace said transports within an internal space of the enclosure;
connecting means for connecting an interior space of each of said transports to said ozone storing reservoir and to an evacuation system; and
insufflation and aspiration means for adjusting pressure within said internal space of the enclosure.

5,712,895
ROTATIONAL DIGITAL SUBTRACTION ANGIOGRAPHY PHANTOM

Donald E. Negrelli, Gates Mills, and Hung Y. Wong, Solon, both of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Jan. 14, 1997, Ser. No. 783,503
Int. Cl.^{6} G01D *18/00*
U.S. Cl. 378—207 **23 Claims**



1. A calibration system for a rotational subtraction angiography system, the calibration system comprising:
a gantry;
an x-ray source and x-ray detector mounted on the gantry on opposite sides of an examination region, the gantry rotating the x-ray source and detector in an arcuate path around the examination region;
a test phantom supported in the examination region, the test phantom including:
  a block of x-ray transparent material;
  a plurality of x-ray opaque vertical indicia partially encircling the block, the indicia corresponding to a plurality of registration angles along the arcuate path around the block;
  an x-ray opaque element located at an isometric center of the block, an image of the element being projected on at least one of the indicia when the element is exposed to x-rays; and,
  a plurality of x-ray opaque horizontal indicia radiating at an angular displacement from one another, the angular displacement representing a range of misalignment;
a rotation control for rotating the gantry, x-ray source, and x-ray detector in a forward sweep rotation direction around the examination region and in a reverse sweep rotation direction around the examination region; and,
a control for at least one of the x-ray source and x-ray detector for generating a plurality of projection images of the test phantom at generally corresponding angular positions during the forward and reverse sweep rotations.

5,712,896
METHOD FOR DIAGNOSING A FAULT OF DIGITAL EXCHANGER

Sang-Ho Lee; Jeoung-Lak Ha; Sung-Hee Kim, all of Daejeon, and Young-Tack Park, Seoul, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Aug. 5, 1996, Ser. No. 692,136
Claims priority, application Rep. of Korea, Aug. 5, 1995, 95/24218
Int. Cl.^{6} H04M *1/24;3/08*
U.S. Cl. 379—10 **3 Claims**

1. A method for diagnosing fault messages using a fault diagnosis expert system in an electronic switching system comprising:
searching rules corresponding to each fault message of the electronic switching system among all fault messages and creating a table of a relationship between the searched rules and each fault message;
creating a window on a multimedia screen for each fault message; .

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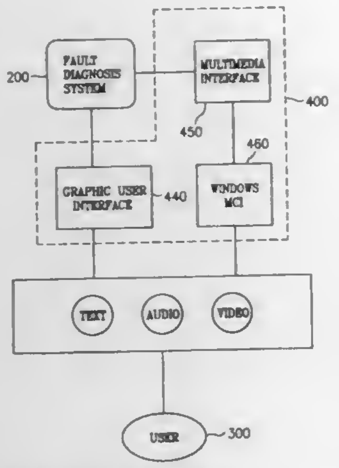


inputting one of the fault messages;
requiring an input of initial information corresponding to the inputted fault message;
inputting initial information in accordance with questions from the fault diagnosis expert system;
executing applicable rules from rules which are searched by the fault diagnosis expert system;
selecting a message and questioning the user via an interface module;
executing an operation in accordance with the questions presented by the fault diagnosis expert system and inputting results so that the interface module transfers the user's response relating to the questions to the fault diagnosis expert system; and
determining whether the handling of the fault message is completed and outputting the result to the created window.

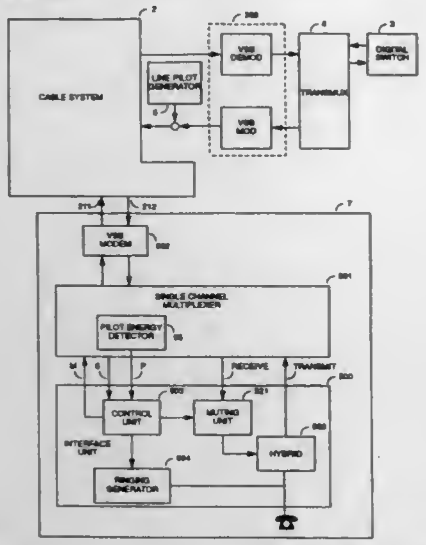
5,712,897
FAULT DETECTION IN BROADBAND CABLE SYSTEMS

William G. Ortel, New York, N.Y., assignor to Nynex Science & Technology, White Plains, N.Y.

Filed Dec. 27, 1995, Ser. No. 579,389

Int. Cl.⁶ H04M *1/24;3/08;3/22;7/10*

U.S. Cl. 379—22 **5 Claims**



1. A fault detection system for use in a broadband network, said broadband network having a central switch for switched telecommunications connections among subscribers, subscriber interface equipment for each subscriber providing at baseband signals for voice telephony carried at a carrier frequency the broadband network, said subscriber interface equipment having a received voice path, and a network interconnecting the central switch and the subscriber interface equipment, said fault detection system comprising:

a tone generator for providing a constant, continuous pilot throughout said network,
pilot tone detection means located at said subscriber interface equipment to indicate the absence of pilot tone at that subscriber, and
means responsive to the pilot tone detection means for recognizing at the central switch the absence of pilot tone at the subscriber location.

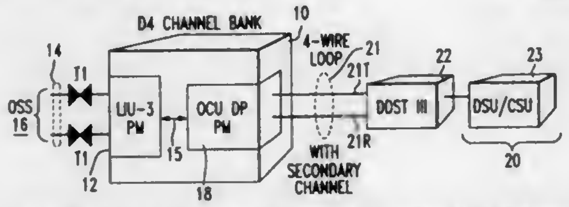
5,712,898
D4 CHANNEL BANK WITH MULTI-MODE FORMATTED, PERFORMANCE-MONITORING COMMUNICATION BUS

Clifford L. Hall, III, Huntsville; Scott C. Bailey, Harvest, and Jeffrey B. Wells, Madison, all of Ala., assignors to Adtran, Inc., Huntsville, Ala.

Continuation-In-part of Ser. No. 27,948, Mar. 8, 1993, Pat. No. 5,473,665. This application Mar. 14, 1995, Ser. No. 404,288

Int. Cl.⁶ H04M *3/08;3/22*

U.S. Cl. 379—29 **35 Claims**



1. For use with a telephone communication network containing a first communication link over which first digital communication signals are conveyed at a first data rate between a first site and a line interface unit of a channel bank at a second site, said channel bank further including a channel unit coupled to said line interface unit by way of a first channel bank link through which said first digital communication signals are conveyed from said line interface unit to said channel unit, said channel unit being operative to transmit said first digital communication signals at a second data rate over a second communication link to a digital communications network interface at a customer site, and to transmit second digital communication signals, that have been conveyed thereto at said second data rate over said second communication link from said digital communications network interface, to said line interface unit by way of a second channel bank link, so that said line interface unit may transmit said second digital communication signals over said first communication link at said first data rate to said first site, a method of conveying command and response message signals between said line interface unit and said channel unit comprising the steps of:

(a) controlling said first channel bank link so as to allow said line interface unit to convey thereover command message signals from said line interface unit to said channel unit, without interrupting the transmission of said first digital communication signals over said first channel bank link; and
(b) interleaving a command message signal from said line interface unit to said channel unit between selected successive ones of said first digital communication signals.

5,712,899
MOBILE LOCATION REPORTING APPARATUS AND METHODS

Harold Pace, II, 1632 Apt. #5, San Diego, Calif.

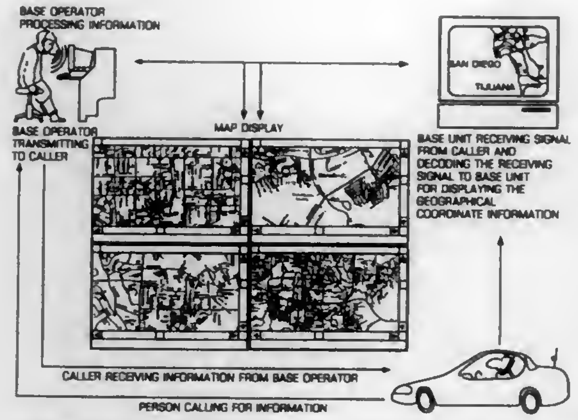
Continuation-in-part of Ser. No. 281,481, Jul. 26, 1994, which is a continuation-in-part of Ser. No. 192,851, Feb. 7, 1994, abandoned. This application Jan. 19, 1996, Ser. No. 588,202

Int. Cl.⁶ H04Q *7/20;7/38*

U.S. Cl. 379—58 **15 Claims**

1. A mobile communications system for providing geographic location information and voice communication comprising:

a mobile communications unit comprising means for receiving global positioning system signals; means for processing said global positioning system signals; and a cellular telephone means for simultaneously transmitting said processed global positioning system signals and voice communication signals from an operator of the mobile communications unit;
and a base communications unit comprising a telephone means for receiving processed global positioning system signals and voice communications signals from said mobile communications unit through said mobile communications system, means for simultaneously processing said signals and extracting voice and global positioning information; means for transmitting global positioning update data to said cellular telephone means through said mobile communications system
a decoding means for processing said global positioning information into geographic position information; and a visual display means for conveying said geographic position information to an operator; and an audio communications means utilizing said voice information and allowing an operator of said base unit to communicate with said mobile unit operator while simultaneously analyzing said geographic positioning information on said visual display means.


BASE OPERATOR PROCESSING INFORMATION
SAN DIEGO
TIJUANA
BASE OPERATOR TRANSMITTING TO CALLER
MAP DISPLAY
BASE UNIT RECEIVING SIGNAL FROM CALLER AND DECODING THE RECEIVING SIGNAL TO BASE UNIT FOR DISPLAYING THE GEOGRAPHICAL COORDINATE INFORMATION
CALLER RECEIVING INFORMATION FROM BASE OPERATOR
PERSON CALLING FOR INFORMATION

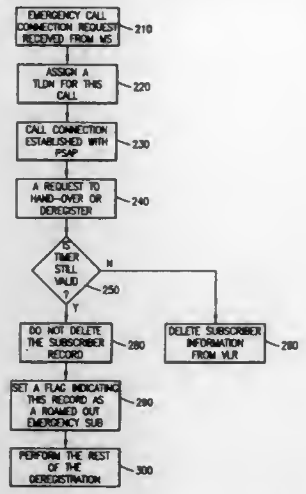
5,712,900
EMERGENCY CALL BACK FOR ROAMING MOBILE SUBSCRIBERS

Alain Guy Maupin, Richardson, and Vladimir Alperovich, Dallas, both of Tex., assignors to Ericsson, Inc., Research Triangle Park, N.C.

Filed May 21, 1996, Ser. No. 655,349

Int. Cl.⁶ H04M *11/00;11/04*

U.S. Cl. 379—59 **28 Claims**


EMERGENCY CALL CONNECTION REQUEST RECEIVED FROM MS
210
ASSIGN A TLDN FOR THIS CALL
220
CALL CONNECTION ESTABLISHED WITH PSAP
230
A REQUEST TO HAND-OVER OR DEREGISTER
240
IS TIMER STILL VALID ?
250
N
Y
DO NOT DELETE THE SUBSCRIBER RECORD
280
DELETE SUBSCRIBER INFORMATION FROM VLR
260
SET A FLAG INDICATING THIS RECORD AS A ROAMED OUT EMERGENCY SUB
290
PERFORM THE REST OF THE DEREGISTRATION
300

1. A method for establishing a call connection between a mobile station (MS) having an identification number and a telecommunications terminal (TT), said method comprising the steps of:

receiving a first signal at a first mobile switching center (MSC), said first signal being transmitted by said MS and requesting a call connection with said TT;
assigning a first wireline directory number associated with said first MSC to said mobile station;
setting a particular timer to a preselected value and associating said particular timer with said assigned first wireline directory number;
storing first data correlating said particular timer and its associated first wireline directory number with said identification number;
establishing a call connection between said MS and said TT using said first wireline directory number as a Calling Party Number (Cgpn);
determining that said first MSC needs to deregister said MS as a result of said MS roaming into another geographic area served by a second MSC;
determining whether said preselected value set for said particular timer has expired; and
maintaining said first data correlating said first wireline directory number with said identification number representing said mobile station in response to a determination that said timer has not expired.

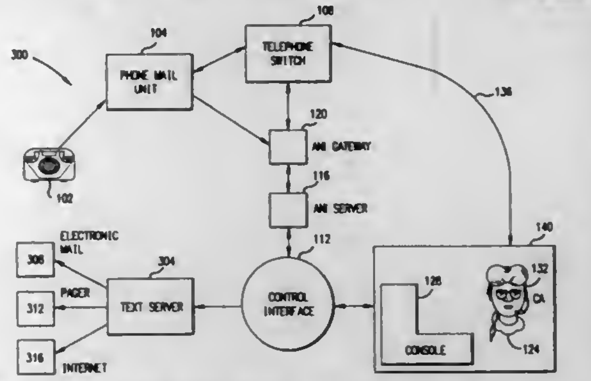
5,712,901
AUTOMATIC VOICE/TEXT TRANSLATION OF PHONE MAIL MESSAGES

David R. Meermans, Plano, Tex., assignor to MCI Communications Corporation, Washington, D.C.

Filed Jun. 26, 1996, Ser. No. 670,906

Int. Cl.⁶ H04M *1/64*

U.S. Cl. 379—88 **15 Claims**



4. A system for providing phone mail service for a customer, comprising:

a phone mail unit for receiving a message from a caller;
a switch connected to said phone mail unit for receiving said message from said phone mail unit and for routing said message to a translation unit;
a gateway connected to said phone mail unit for receiving a data packet containing call information relating to said message; and
a control interface disposed between said gateway and said translation unit, for transferring said data packet from said gateway to said translation unit, wherein said translation unit receives said message and said data packet and translates said message from voice to text or text to voice, and wherein said message is routed back to said phone mail unit for storage in a phone mail box associated with the customer, after said message has been translated by said translation unit.

5,712,902
TELECOMMUNICATIONS ANSWERING FEATURE METHOD AND APPARATUS

Lloyd Malcolm Florence, Scarborough, and Paul Michael Brennan, Toronto, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 18, 1992, Ser. No. 993,284

Int. Cl.⁶ H04M *3/58*

U.S. Cl. 379—89 **4 Claims**

1. A method of operating a telephone switching facility wherein the switching facility performs the steps of:

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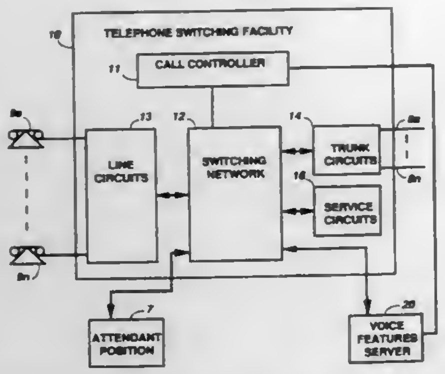


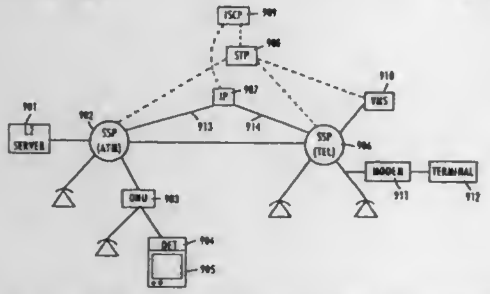
- a) transmitting a signal for causing an indication of a call screening feature at a telephone set, in response to the call screening feature having been invoked at the telephone set;
- b) in an event of the telephone set being called while the call screening feature is invoked, intercepting the call and connecting the call to one of an attendant position and a voice features server;
- c) if the called telephone set is OFF HOOK, transmitting a signal for indicating an occurrence of an intercepted call, to the called telephone set; where following step b), if the called telephone set is ON HOOK or becomes ON HOOK during the progress of the intercepted call, in step c) the switching facility routes the intercepted call to include a communications link linking the intercepted call to the called party's telephone set, whereby the intercepted call is audible at the called party's telephone set.

5,712,903

SPLIT INTELLIGENT PERIPHERAL FOR BROADBAND AND NARROWBAND SERVICES

Dale Bartholomew, Vienna, Va.; Bing N. Der, Silver Spring, Md.; Robert D. Farris, Sterling, Va.; Christine D. McDermott, Reston, Va.; Colleen Harp, Annandale, Va., and Richard G. Backus, Manassas, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Aug. 21, 1995, Ser. No. 518,471
Int. Cl.^{6} H04M *7/00;* H04L *12/56*
U.S. Cl. 379—89 38 Claims



17. A split switch intelligent peripheral for narrowband and broadband services comprising:

- a switch selectively providing separate broadband and narrowband data connections to a communications network;
- at least one processing module, coupled to said switch, for providing an enhanced service feature on the basis of received broadband data; and
- at least one processing module, coupled to said switch, for providing an enhanced service feature on the basis of received narrowband data.

5,712,904

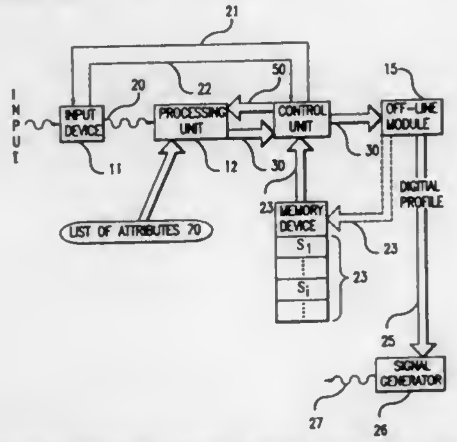
Patent Not Issued For This Number

5,712,905

SEQUENTIAL DIGITAL PROFILE FOR PROCESSING ANALOG SIGNALS

Venson M. Shaw, and Andrzej Sluzek, both of School of Applied Science, Nanyang Technological University Nanyang Avenue, Singapore, Singapore, 2268

Filed Jun. 8, 1995, Ser. No. 490,106
Int. Cl.^{6} H04M *11/00*
U.S. Cl. 379—95 2 Claims



1. A system method for creating digital representation and developing a sequential digital profile from incoming analog signals received from a telephony network, comprising:

- (1) evaluating said incoming analog signals in time domain and generating analog signal templates;
- (2) performing on-line segmentation of said analog signal templates according to a sequence of threshold values such that each element of said sequence of threshold values consist of a low threshold value and a high threshold value;
- (3) representing the results of said segmentation through on-line computation of a sequence of measurements in accordance with selective attributes of said incoming analog signals including off-segment attribute measurements and in-segment attribute measurements;
- (4) determining rules, conditions and algorithms for the development of said sequential digital profile from said results of segmentation and said sequence of measurements, and further selecting an analog signal sequence from said incoming analog signals for converting said analog signal sequence from analog to digital domain;
- (5) applying said sequential digital profile for encryption or decryption of said analog signal sequence through comparing the behavior of front-end-identification fragments of said converted analog signal sequence with said sequential digital profile.

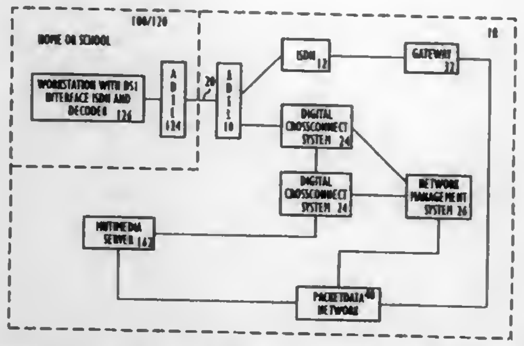
5,712,906

COMMUNICATIONS SYSTEMS SUPPORTING SHARED MULTIMEDIA SESSION

John Grady, Fairfax, Va.; Kenneth Hand, Silver Spring; John Modrowsky, Burtonsville, both of Md., and Arthur A. Richard, III, Springfield, Va., assignors to Bell Atlantic Network Services, Arlington, Va.

Division of Ser. No. 455,782, May 31, 1995, Pat. No. 5,625,404, which is a division of Ser. No. 99,381, Jul. 30, 1993, Pat. No. 5,528,281, which is a continuation-in-part of Ser. No. 42,107, Apr. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 766,535, Sep. 27, 1991. This application Mar. 29, 1996, Ser. No. 623,804
Int. Cl.^{6} H04M *11/00;* H04N *7/14*
U.S. Cl. 379—93.17 9 Claims

1. A communications system supporting a multimedia session involving at least two subscriber terminals and a multimedia information server, said communications system comprising:


106/120
HOME OR SCHOOL
WORKSTATION WITH DS1 INTERFACE ISDN AND DECODER 126
ADSL 124
20
ADSL 10
18
ISDN 12
GATEWAY 32
DIGITAL CROSSCONNECT SYSTEM 24
DIGITAL CROSSCONNECT SYSTEM 24
NETWORK MANAGEMENT SYSTEM 26
MULTIMEDIA SERVER 162
PACKET DATA NETWORK 40

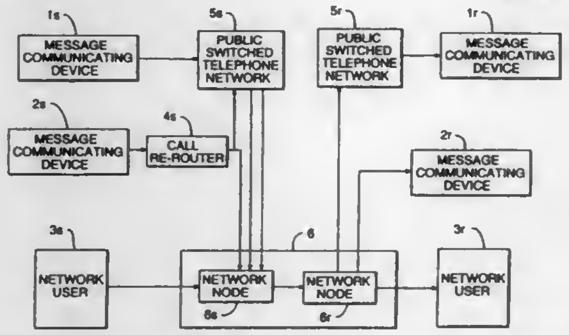
- a plurality of subscriber software modules, each one of said plurality of subscriber software modules being resident at a respective one of said at least two subscriber terminals and comprising groupware functionality enabling said at least two subscriber terminals to share said multimedia session,
- a server resident software module, comprising a general utility communication program for setting communication between one or more of said at least two subscriber terminals and the multimedia information server or between two or more subscriber terminals sharing in a multimedia session, and
- a gateway, controlling access to said multimedia information server and originating control messages to set up a communications link between said multimedia information server and said at least two subscriber terminals.

5,712,907

PRO-ACTIVE MESSAGE DELIVERY SYSTEM AND METHOD

Martin T. Wegner, Barrington; Omprasad S. Nandyal, Bloomingdale, both of Ill.; Antonio Dutra, Buffalo, N.Y., and Randy Storch, Highland Park, Ill., assignors to Open Port Technology, Inc., Chicago, Ill.

Continuation of Ser. No. 529,923, Sep. 18, 1995. This application Jan. 4, 1996, Ser. No. 582,475
Int. Cl.^{6} H04M *15/00;* H04N *1/00*
U.S. Cl. 379—112 20 Claims


1s
MESSAGE COMMUNICATING DEVICE
5s
PUBLIC SWITCHED TELEPHONE NETWORK
5r
PUBLIC SWITCHED TELEPHONE NETWORK
1r
MESSAGE COMMUNICATING DEVICE
2s
MESSAGE COMMUNICATING DEVICE
4s
CALL RE-ROUTER
2r
MESSAGE COMMUNICATING DEVICE
3s
NETWORK USER
6
NETWORK NODE
NETWORK NODE
6s
6r
3r
NETWORK USER

17. An apparatus for transmitting digitally-encoded messages, comprising:

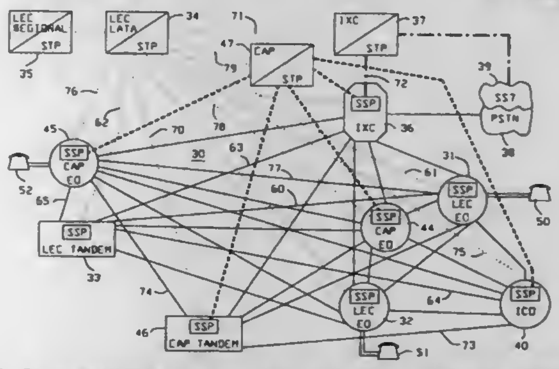
- (a) a wide-area network connected to a public-switched telephone network;
- (b) means for determining a preferred route for transmitting a digitally-encoded message from an input message communicating device to a receiving message communicating device, said preferred route comprising a portion of the wide-area network and a portion of the public-switched telephone network;
- (c) means for storing the digitally-encoded message;
- (d) means for transmitting the digitally-encoded message over the preferred route to the receiving message communicating device;
- wherein the means for determining the preferred route comprises means for determining the cost of transmitting the digitally-encoded message over a plurality of routes; and
- wherein the means for determining the preferred route further comprises means for assigning additional costs for transmission over certain portions of the wide-area network.

5,712,908

APPARATUS AND METHOD FOR GENERATING CALL DURATION BILLING RECORDS UTILIZING ISUP MESSAGES IN THE CCS/SS7 TELECOMMUNICATIONS NETWORK

Anthony J. Brinkman, West Chicago, Ill.; Yi Lin; Michael H. Penrod, both of Chesapeake, Va.; Nancy L. Sweet, Virginia Beach, Va.; Linda Trout-Jordan, Norfolk, Va., and Gerald J. Wardzinski, Virginia Beach, Va., assignors to Unisys Corporation, Blue Bell, Pa.

Filed May 17, 1996, Ser. No. 649,561
Int. Cl.^{6} H04M *15/00*
U.S. Cl. 379—119 95 Claims



1. In a telephone network that includes a Common Channel Signaling (CCS) network designed to transport SS7 Signal Units (SU), said SUs including Message Signal Units (MSU), said telephone network having switching offices with respect to which telephone calls can be set up and terminated, said switching offices setting up a particular call by transmitting on said CCS network call setup MSUs of respective call setup types containing call data identifying said particular call, said switching offices terminating said particular call by transmitting on said CCS network call terminating MSUs of respective call terminating types containing said call data, said CCS network including means for copying said SUs transitting said CCS network, apparatus for generating a call duration billing record for said particular call, comprising:

- input means for receiving said copied SUs and applying a timestamp to each of said copied SUs in accordance with the time of receipt thereof,
- filtering means responsive to said copied SUs for selectively passing MSUs of said call setup and call terminating types,
- correlating means responsive to said passed MSUs for correlating said call setup and call terminating MSUs with each other in accordance with said call data so as to obtain correlated call setup and call terminating MSUs for said particular call,
- elapsed time computing means responsive to said correlated call setup and call terminating MSUs for computing elapsed time of said particular call in accordance with the difference between a start time and an end time of said particular call, said start time based on the timestamp of one of said correlated call setup MSUs and said end time based on the timestamp of one of said correlated call terminating MSUs, and
- record generating means for generating said call duration billing record for said particular call from said correlated MSUs, said record generating means operative to generate said call duration billing record including said elapsed time of said particular call.

5,712,909

KEY TELEPHONE APPARATUS WITH AUTOMATIC CALL DISTRIBUTION FUNCTION

Masahiko Hara, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 24, 1995, Ser. No. 518,711
Claims priority, application Japan, Aug. 25, 1994, 6-200984
Int. Cl.^{6} H04M *1/00;3/00;13/00*
U.S. Cl. 379—165 14 Claims

1. A key telephone apparatus which comprises a plurality of extension terminals each having a built-in display, and a key-telephone main unit housing the plurality of extension terminals

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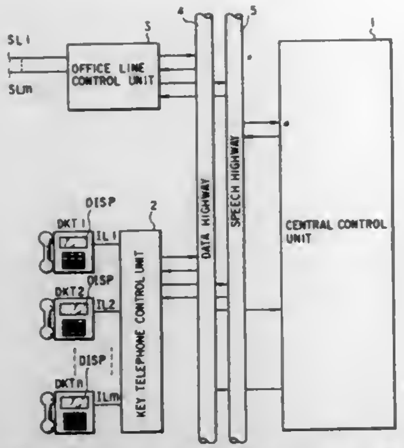


via extensions and connected to a network via an office line, and which has an automatic call distribution function of grouping the plurality of extension terminals and selectively distributing incoming calls received from the network to the plurality of extension terminals belonging to groups to receive the incoming calls,

said key telephone main unit having:

processing condition management means for monitoring a processing condition of the incoming calls distributed by said automatic call distribution function, and storing data indicating the processing condition for each extension terminal; and

display control means for receiving a predetermined processing condition display request output from an arbitrary extension terminal included in the plurality of extension terminals constituting a group, generating display data for displaying the data which is requested with the processing condition display request and thus retrieved from the data indicating the processing condition and stored in said processing condition management means, and supplying the display data to said arbitrary extension terminal so that the display data is displayed on the built-in display of said arbitrary extension terminal.

5,712,910

RING TRIP CIRCUIT HAVING A SIMPLE TRIP DETECTING CIRCUIT OF A HIGH RESPONSE SPEED

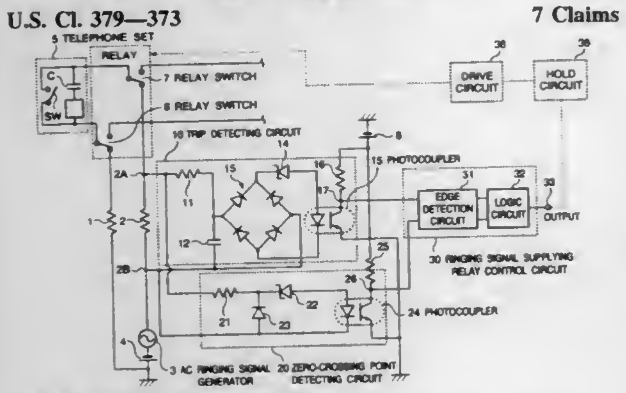
Masashi Saito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 686,729

Claims priority, application Japan, Jul. 28, 1995, 7-212656

Int. Cl.^{6} H04M ***1/00***

U.S. Cl. 379—373 **7 Claims**



1. A ring trip circuit comprising:

a trip detecting circuit having a low pass filter connected to opposite ends of a first resistor detecting an AC ringing signal;

a diode bridge connected to an output of said low pass filter;

a first series circuit connected to an output of said diode bridge and composed of a Zener diode and an input side path of a first photocoupler, so that an output side path of said first photocoupler outputs a trip detection signal;

a zero-crossing point detecting circuit having a second series circuit connected to said opposite ends of said first resistor and composed of a second resistor, a second Zener diode and an input side path of a second photocoupler, so that an output side path of said second photocoupler outputs a zero-crossing point detection signal; and

a ringing signal supplying relay control circuit receiving said trip detection signal and said zero-crossing point detection signal, for generating a switching signal at a zero-crossing point of said AC ringing signal.

5,712,911

METHOD AND SYSTEM FOR AUTOMATICALLY ACTIVATING AND DEACTIVATING A SPEAKERPHONE

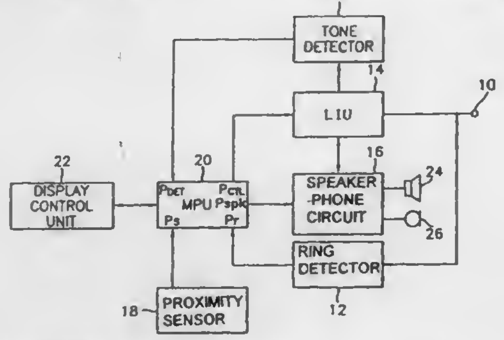
Ju-Won Her, Gumi, Rep. of Korea, assignor to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Sep. 13, 1995, Ser. No. 527,561

Claims priority, application Rep. of Korea, Sep. 16, 1994, 23622/1994

Int. Cl.^{6} H04M ***1/64***

U.S. Cl. 379—420 **20 Claims**



1. A telephone system, comprising:

a ring detector for detecting when an incoming call placed by a caller via a central switching network is received at an installation maintained by a subscriber;

a proximity sensor for sensing whether the subscriber is present within a predetermined proximity zone of said installation;

a speakerphone comprising a microphone and a loudspeaker; and

controller means for enabling the subscriber to engage in conversation with the caller via said speakerphone when said proximity sensor senses that the subscriber is present within said predetermined proximity zone by automatically activating the speakerphone in response to said incoming call, and for automatically deactivating the speakerphone upon termination of said incoming call.

5,712,912

METHOD AND APPARATUS FOR SECURELY HANDLING A PERSONAL IDENTIFICATION NUMBER OR CRYPTOGRAPHIC KEY USING BIOMETRIC TECHNIQUES

George J. Tomko, East York, and Alexei Stolanov, Toronto, both of Canada, assignors to Mytec Technologies Inc., Don Mills, Canada

Filed Jul. 28, 1995, Ser. No. 508,978

Int. Cl.^{6} H04L ***9/32***

U.S. Cl. 380—23 **31 Claims**

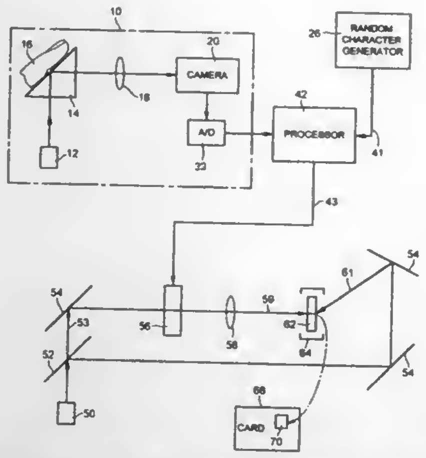
1. A method for securely storing at least a personal identification number (PIN), comprising the following steps:

obtaining a biometric information signal bearing information from a body part;

generating a sequence of random characters to obtain a PIN;

obtaining a generating function such that said random characters of said PIN are parameters of said generating function;

obtaining a transform of said generating function;



encrypting said transform of said generating function with said biometric information signal to obtain an encrypted PIN; and writing said encrypted PIN into a store.

5,712,913

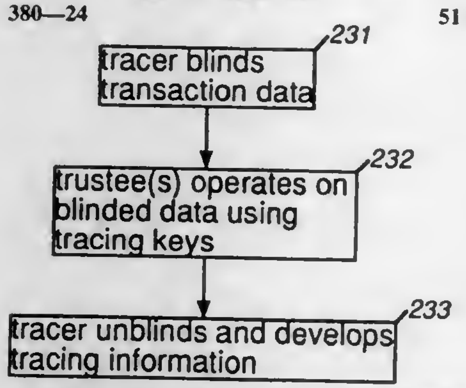
LIMITED-TRACEABILITY SYSTEMS

David Chaum, Sherman Oaks, Calif., assignor to DigiCash Incorporated, New York, N.Y.

Filed Feb. 8, 1994, Ser. No. 193,500

Int. Cl.^{6} H04L ***9/00***

U.S. Cl. 380—24 **51 Claims**


231
tracer blinds transaction data
232
trustee(s) operates on blinded data using tracing keys
233
tracer unblinds and develops tracing information

1. In a machine-implemented payment system method, the improvement comprising the steps of:

forming with an automated machine, signals representing tracing signals depending on tracing key data substantially concealed by at least one trustee party apparatus; and

convincing at least one party, while keeping the tracing key data secret from that party, that the tracing key data allows linking of payment data with data representing payer accounts;

such that without the tracing key data of the at least one trustee party apparatus it is infeasible to link payment transaction data with data representing payer accounts and that with the cooperation of the at least one trustee party apparatus using the tracing key data, at least under predetermined conditions, at least a predetermined linking is feasible.

5,712,914

DIGITAL CERTIFICATES CONTAINING MULTIMEDIA DATA EXTENSIONS

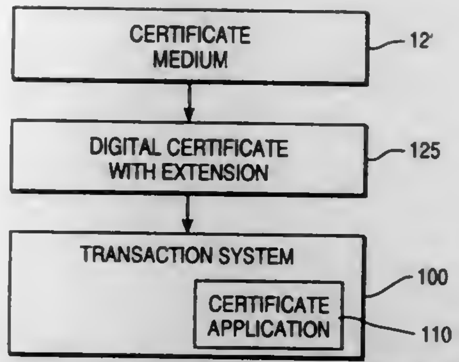
David W. Aucsmith; George Cox, both of Portland, and Paul E. Onnen, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,271

Int. Cl.^{6} H04L ***9/30***

U.S. Cl. 380—30 **47 Claims**

1. A method of communicating information comprising providing a datum which includes a digital certificate containing data, said digital certificate including an extension which includes:



a. a first identifier which specifies a first classification of said data, the first classification specifies a basic use of said digital certificate;

b. a second identifier which specifies a second classification of said data, the second classification specifies a specific type of said digital certificate; and

c. said data in a format according to said first classification and said second classification, said data indicating an owner of said datum and a use for which said datum is intended.

5,712,915

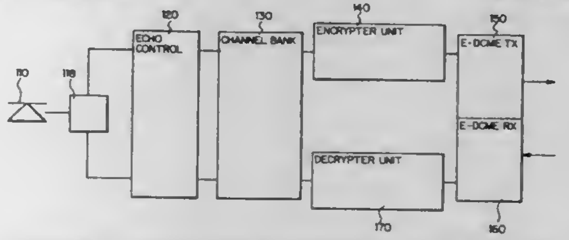
ENCRYPTED DIGITAL CIRCUIT MULTIPLICATION SYSTEM

Michael Onufry, Jr., Bethesda, Md., assignor to Comsat Corporation, Bethesda, Md.

Filed Jun. 7, 1995, Ser. No. 478,650

Int. Cl.^{6} H04L ***9/00***

U.S. Cl. 380—49 **16 Claims**



1. A digital circuit multiplication (DCM) system for providing a multiplication gain for a signal which originates at an originating location, is borne across at least two terrestrial channels and a transmission channel, and which arrives at a destination location, said system comprising:

digital circuit multiplication means for interfacing the transmission channel with the terrestrial channels; and

means for achieving a multiplication gain when the signal has been encrypted.

5,712,916

METHOD AND ARRANGEMENT FOR GENERATING AND CHECKING A SECURITY IMPRINT

Harald Windel, and Wolfgang Thiel, both of Berlin, Germany, assignors to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Division of Ser. No. 309,986, Sep. 20, 1994. This application Nov. 7, 1996, Ser. No. 747,030

Claims priority, application Germany, Dec. 21, 1993, 43 44 471.7

Int. Cl.^{6} G07B ***17/04***

U.S. Cl. 380—51 **28 Claims**

1. A method for producing a security imprint in a postage meter machine, comprising the steps of:

generating a franking imprint by said postage meter machine as said security imprint;

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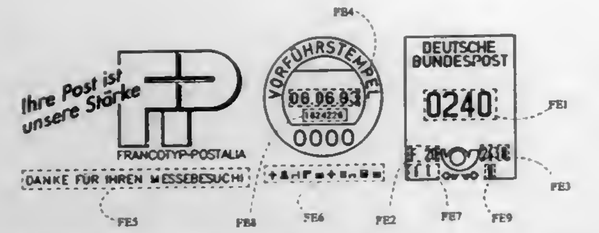


including a mark symbol sequence in said franking imprint in the form of an encoded combination number including a first number, a second number and a third number;
locating said first, second and third numbers at respective, predetermined places within said combination number;
assigning a respective contextual meaning to each of said first, second and third numbers; and
evaluating said encoded combination number to extract said contextual meaning of each of said first, second and third numbers therein.

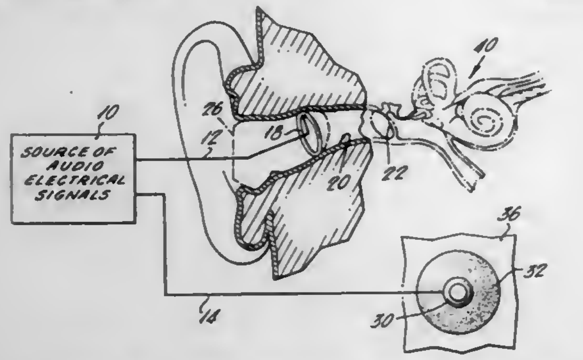
5,712,917
SYSTEM AND METHOD FOR CREATING AUDITORY SENSATIONS

George Offutt, Green Lane, Pa., assignor to George C. Offutt, Green Lane, Pa.

Filed Nov. 22, 1994, Ser. No. 344,182

Int. Cl.^{6} H04R *25/00*

U.S. Cl. 381—68.6 **2 Claims**



1. A system for providing auditory effects in the ear of a user comprising:
an electrode structure;
means for mounting said electrode structure in contact with the ear canal of the user, said means for mounting said electrode structure includes an ear mold on which said electrode structure is supported, said electrode structure includes an annular ring that extends over a surface portion of said ear mold adjacent to the end thereof which is adapted to fit farthest into the ear canal; and
means for applying electrical stimulation that corresponds to audio signals to said electrode structure.

5,712,918
PRESS-FIT EAR WAX BARRIER

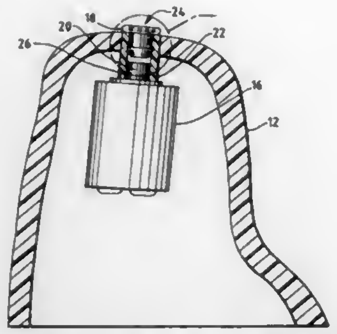
Robert S. Yoest, Deerfield, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Filed Jan. 27, 1995, Ser. No. 378,812

Int. Cl.^{6} H04R *25/00*

U.S. Cl. 381—68.6 **5 Claims**

1. A hearing aid with a removable ear wax barrier comprising:
a shell for insertion, at least in part, in the ear of a user, the shell including an acoustic output port;
a receiver positioned within the shell, wherein the receiver includes a receiver output port;
a thin walled receiver tube which extends between the receiver output port and the acoustic output port;
said removable ear wax barrier having a cylindrical body with first and second ends and an acoustic channel therebetween with a coupling barb carried at one end of the body surrounding the channel wherein the barb is adapted to be slidably inserted, without rotation, into the receiver tube adjacent to the acoustic output port wherein the barb continuously engages the tube with a press fit when so inserted, and wherein the body is not displaced from the receiver tube by rotation.



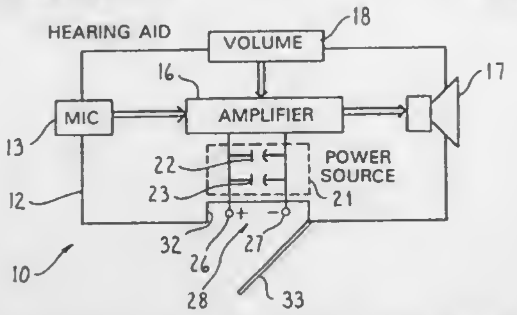
5,712,919
HEARING AID APPARATUS POWERED BY CAPACITOR

Dale M. Ruhling, Vanderbilt, Mich., assignor to Multi-Line Designs, Inc., Mecosta, Mich.

Continuation of Ser. No. 228,438, Apr. 15, 1994. This application Jun. 7, 1995, Ser. No. 479,575

Int. Cl.^{6} H04R *25/00*

U.S. Cl. 381—69.2 **19 Claims**



1. A hearing aid assembly adapted to be worn on the human body, comprising: a hearing aid unit which includes a sound pickup means responsive to sounds external to said hearing aid unit for generating an electrical signal representative of said sounds, an amplifying circuit for amplifying said electrical signal, sound emitting means responsive to said electrical signal amplified by said amplifying circuit for emitting externally of said hearing aid unit audible sound which corresponds to said electrical signal, and a capacitor coupled to said amplifying circuit and serving as the only source of power for said amplifying circuit during normal operation of said hearing aid unit; and a recharging unit physically separate from said hearing aid unit for periodically recharging said capacitor.

5,712,920
METHOD FOR THE COMPATIBLE TRANSMISSION AND/OR STORAGE AND DECODING OF AN AUXILIARY SIGNAL

Jens Spille, Laatzen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

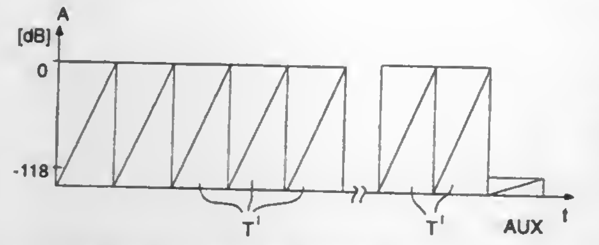
Filed Dec. 17, 1993, Ser. No. 168,295

Claims priority, application Germany, Dec. 5, 1992, 42 41 068.1

Int. Cl.^{6} H03G *3/00*

U.S. Cl. 381—104 **7 Claims**

1. A method of simultaneously transmitting an audio signal and an auxiliary signal, said auxiliary signal being inseparable from said audio signal, said method comprising the steps of:



providing respective audio and auxiliary signals;
dividing said audio signal into a number of subbands, and encoding respective said sub-bands;
allocating a loudness information scale factor to said subbands indicative of relative loudness at which corresponding subbands are to be reproduced when decoded;
inserting said auxiliary signal in one of said subbands;
establishing said scale factor corresponding to the subband in which said auxiliary signal is inserted, such that said auxiliary signal when reproduced in decoded said audio signal, will be reproduced at an inaudible amplitude, and
transmitting digitally encoded combined audio and auxiliary signal.

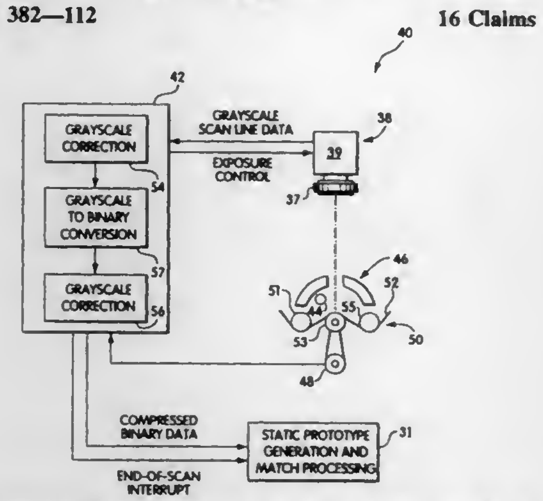
5,712,921
AUTOMATED SYSTEM FOR PRINT QUALITY CONTROL

George Stephen Zabele, North Reading, Mass., assignor to The Analytic Sciences Corporation, Reading, Mass.

Continuation of Ser. No. 78,414, Jun. 17, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 560,133

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—112 **16 Claims**



1. A system for controlling print quality of a printed product of a printer, comprising:
an image acquisition unit for acquiring an electronic test image of printing on said printed product after printing by said printer;
an image processor for comparing the test image of the printing with a prototype image of desired printing and determining a match between the printing on said test image and the corresponding printing on said prototype image; said image processor including means for performing quality assessment of a printed product that includes any differently ordered sequences of a group of pages that each contain a different arrangement of printed pixels, during printing by said printer; and
means for generating an alarm representative of a print quality problem when the match between the printing on said test image and the printing on said prototype image does not satisfy a predetermined condition.

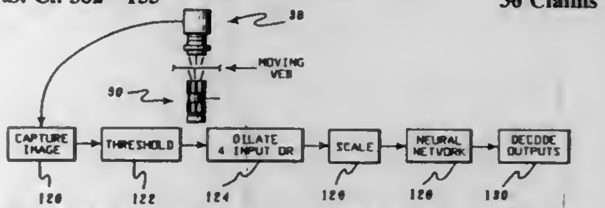
5,712,922
NEURAL NETWORK OPTICAL CHARACTER RECOGNITION SYSTEM AND METHOD FOR CLASSIFYING CHARACTERS IN A MOVING WEB

Kenneth H. Loewenthal, Rochester, and Steven M. Bryant, Holley, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 868,372, Apr. 14, 1992, abandoned. This application Nov. 15, 1994, Ser. No. 340,270

Int. Cl.^{6} G06K *9/62;* **G06F** *7/38;15/18*

U.S. Cl. 382—155 **36 Claims**



1. A neural network based optical character recognition system for extracting and classifying characters disposed on a moving web of material, said recognition system comprising:
image acquisition means defining an imaging window, said image acquisition means being positionable such that said characters pass through said defined imaging window, said image acquisition means extracting and accumulating image data on a web character passing through said imaging window;
a light source for providing illumination of said web character as said web character passes through said defined imaging window;
neural network accelerator means coupled to said image acquisition means for processing accumulated image data on said web character passing through said imaging window according to a predefined multilayer neural network, and for producing therefrom character classification information, said neural network accelerator means including:
dual-ported memory means receiving said accumulated image data from said image acquisition means, said dual-ported memory means having a first portion and a second portion, said first portion of said dual-ported memory means initially storing said accumulated image data, and n processing nodes connected in parallel to receive from said first portion and simultaneously process image data at different nodes for an input layer in said multilayer neural network, an output of each processing node for said input layer being stored in said second portion of said memory means, n being an integer $\geqq 1$, said first portion and second portion subsequently storing processing node outputs for alternate layers of said multilayer neural network, respectively; and
classification means coupled to said neural network accelerator means for classifying said web character imaged by said image acquisition means using the corresponding character classification information produced by said neural network accelerator means.

5,712,923

Patent Not Issued For This Number

5,712,924
IMAGE PROCESSING APPARATUS

Masaya Fujimoto; Haruo Yamamoto; Tadashi Miyazaki; Hidechika Kumamoto, and Shinji Hayashi, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 551,293

Claims priority, application Japan, Nov. 7, 1994, 6-272632; Nov. 7, 1994, 6-272633; Nov. 7, 1994, 6-272634; Nov. 7, 1994, 6-272635

Int. Cl.^{6} G03F *3/08*

U.S. Cl. 382—165 **6 Claims**

1. An image processing apparatus comprising:

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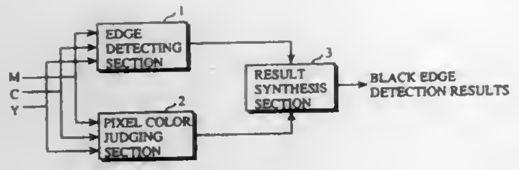
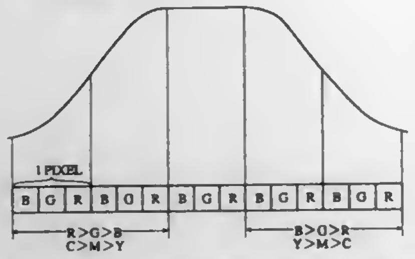




means for reading a color image to convert it into three primary color data which correspond to the respective densities of the three primary colors;

edge detecting means for detecting a pixel of an edge portion based on the three primary color data;

pixel color judging means for judging a color of a target pixel based on the three primary color data of the target pixel and pixels adjacent thereto; and

black edge detecting means for detecting a pixel of a black edge portion based on an edge detection result applied by the edge detecting means and a pixel color judgment result applied by a pixel color judging means,

the pixel color judging means including:

first judgment means which, based on the three primary color data of a target pixel, determines a color of the target pixel by selecting from black, white, chromatic color, gray and "assumed-to-be-gray", and

second judgment means which judges a color of a target pixel either gray or chromatic color based on a maximum density color of the target pixel and pixel colors and maximum density colors of pixels adjacent thereto, the target pixel having been judged to be "assumed-to-be-gray" by the first judgment means, and wherein

selection/judgment conditions of the second judgment means are established based on the characteristics of a pixel color and maximum density color of a pixel of a black edge portion, which characteristics depend upon an arrangement order of color filters in a scanner.

5,712,925

IMAGE PROCESSING SYSTEM WHICH MAPS COLOR IMAGE SIGNALS WITHIN A REPRODUCTION RANGE OF AN OUTPUT DEVICE

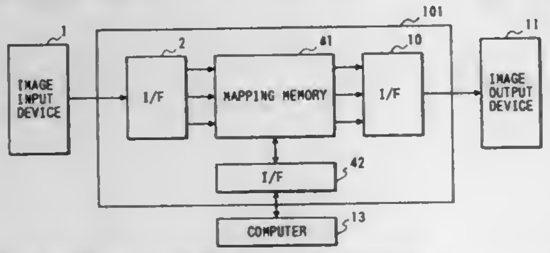
Manabu Obga, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 314,903

Claims priority, application Japan, Sep. 29, 1993, 5-242962

Int. Cl.^{6} H04N *1/60*

U.S. Cl. 382—167 **25 Claims**



17. An image processing apparatus comprising:

judging means for judging whether input color signals exist in a predetermined color space area;

counting means for counting the number of pixels associated with said input color signals judged by said judging means to exist outside of said predetermined color space area;

setting means for setting an area to reproduce the input color signals at a high fidelity in a color reproducible area of a processing device to a fidelity color reproduction area and an area to map the input color signals out of said fidelity color reproduction area to a mapping color reproduction area;

mapping control means for controlling a mapping boundary between the two set areas in accordance with a count value of said counting means; and

color mapping means for mapping said input color signals on the basis of said mapping boundary.

18. An image processing apparatus wherein an area to reproduce input color signals at a high fidelity in a color reproducible area of a processing device is set to a fidelity color reproduction area and an area to map the input color signals out of said fidelity color reproduction area is set to a mapping color reproduction area, said apparatus comprising:

mapping means for mapping the input color signals judged to exist outside of a mapping boundary between the two set areas to said mapping color reproduction area on the basis of a position of the mapping boundary and a value of a special input color signal indicative of a feature of an input image.

19. An image processing apparatus comprising:

estimating means for estimating a number of pixels outside of a predetermined color space area;

controlling means for controlling an area in a color reproducible area of an output device to reproduce input color signals at a predetermined fidelity, said controlling means controlling the area on the basis of the number of pixels estimated by said estimating means; and

mapping means for mapping the input color signals into the color reproducible area on the basis of the area controlled by said controlling means.

20. An image processing apparatus having communication means which communicates with an external output device, comprising:

first input means for inputting image data;

calculating means for calculating a color correction parameter for said image data on the basis of the image data and profile information of said external output device; and

output means for outputting said color correction parameter to said external output device,

wherein the external output device performs color space compression on the image data on the basis of the color correction parameter.

5,712,926

X-RAY COMPUTED TOMOGRAPHY (CT) SYSTEM FOR DETECTING THIN OBJECTS

Jeffrey Wayne Eberhard, 5 Tokay La., and Meng-Ling Hslao, 2191 Foxhill Dr., both of Niskayuna, N.Y. 12309

Filed Oct. 20, 1994, Ser. No. 325,145

Int. Cl.^{6} G06K *9/46*

U.S. Cl. 382—205 **6 Claims**

1. A method of detecting an explosive comprising the steps of:

(a) scanning a three-dimensional volume to determine the density of each of a plurality of voxels representing the three-dimensional volume;

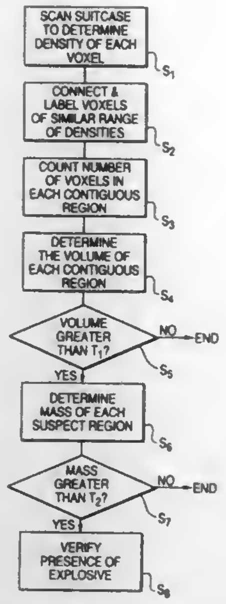
(b) connecting and labeling voxels of the plurality of voxels which have similar densities;

(c) determining the volume of each contiguous region of voxels having similar densities;

(d) comparing the volume of each such contiguous region to a first threshold and identifying each such contiguous region which exceeds the first threshold as a suspect region;

(e) determining the mass of each suspect region; and

(f) comparing the mass of each suspect region to a second threshold and identifying each suspect region which exceeds the second threshold as a region potentially containing an explosive.


SCAN SUITCASE TO DETERMINE DENSITY OF EACH VOXEL
S1
CONNECT & LABEL VOXELS OF SIMILAR RANGE OF DENSITIES
S2
COUNT NUMBER OF VOXELS IN EACH CONTIGUOUS REGION
S3
DETERMINE THE VOLUME OF EACH CONTIGUOUS REGION
S4
VOLUME GREATER THAN T1?
NO
END
S5
YES
DETERMINE MASS OF EACH SUSPECT REGION
S6
MASS GREATER THAN T2?
NO
END
S7
YES
VERIFY PRESENCE OF EXPLOSIVE
S8

5,712,927

METHOD AND APPARATUS FOR BINARY-ENCODING IMAGE DATA USING ERROR DIFFUSION WITH EDGE ENHANCEMENT

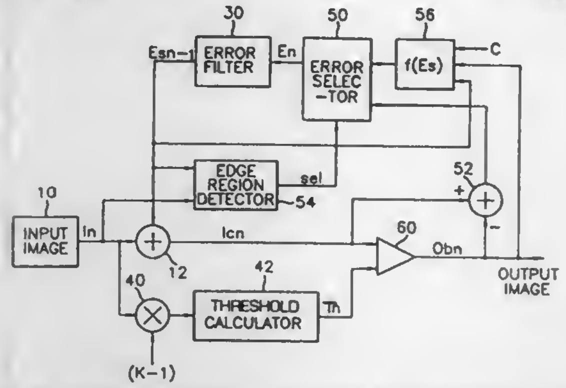
Jae-Ho Kim; Tae-Il Chung; Kyung-Sik Son, and Hyung-Soon Kim, all of Busan, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 14, 1995, Ser. No. 502,413

Claims priority, application Rep. of Korea, Jul. 14, 1994, 1994/17002; Jun. 22, 1995, 1995/16949

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—252 **22 Claims**



1. In an image processing system for binary-encoding image data representative of a plurality of pixels, each pixel having a brightness value corresponding to a given level, said system having a memory for storing error values of previously processed pixels, a method for binary-encoding said image data comprising the steps of:

generating multiplied values by multiplying said error values stored in said memory by corresponding error filter coefficients, respectively;

generating an error value corresponding to a most recently processed pixel by adding said multiplied values;

generating modified image data by adding a brightness value of a pixel presently being processed to said error value corresponding to said most recently processed pixel;

generating a modified brightness value corresponding to a predetermined edge enhancement coefficient based on said brightness value of said pixel presently being processed;

generating a modified threshold value by subtracting said modified brightness value from a predetermined reference threshold value;

generating a binary-encoded value corresponding to said pixel presently being processed by comparing a value representative of said modified image data with said modified threshold value;

determining whether said pixel presently being processed corresponds to an edge region in dependence upon said brightness value of said pixel presently being processed and said error value corresponding to said most recently processed pixel;

generating a subtracted value by subtracting said binary-encoded value from said value representative of said modified image data, and storing said subtracted value in said memory as an error value corresponding to said pixel presently being processed when said pixel presently being processed does not correspond to said edge region; and

generating an error result in dependence upon said binary-encoded value by one of adding a predetermined error parameter to said error value corresponding to said most recently processed pixel and subtracting said predetermined error parameter from said error value corresponding to said most recently processed pixel, and storing said error result in said memory as said error value corresponding to said pixel presently being processed when said pixel presently being processed corresponds to said edge region.

5,712,928

PICTURE ENCODING METHOD AND APPARATUS AND PICTURE DECODING METHOD AND APPARATUS

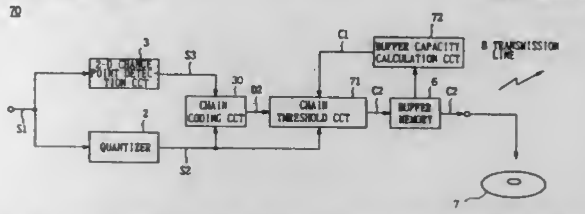
Jun Murayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 7, 1995, Ser. No. 568,560

Claims priority, application Japan, Dec. 12, 1994, 6-332600

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—242 **16 Claims**



1. A video signal coding method for coding an input video signal, comprising the steps of:

detecting feature points of said input video signal;

chain coding feature amount and coordinates of said feature points, to generate a chain of chain codes;

multiplexing a branch code representing a branch part at which the part to be branched occurs on said chain of chain codes in order to chain code said feature points as said chain;

obtaining a respective index value for each chain with respect to feature point chains having no branch point in the chain generated by said multiplexing step;

comparing said index value with a fixed threshold value; and

eliminating the branch code and following chain codes of the chain whose index value is lower than the threshold value.

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5,712,929
IMAGE PROCESSING APPARATUS

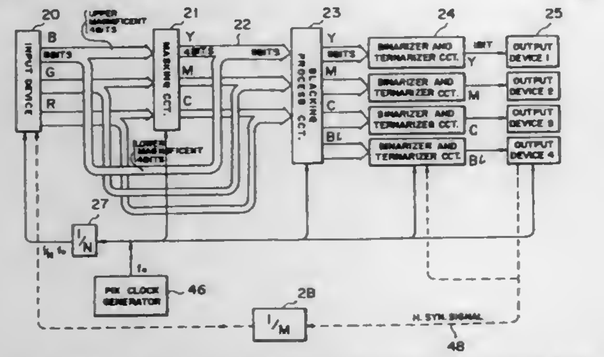
Naoto Kawamura, Inagi, and Hidejiro Kadowaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 833,649, Feb. 5, 1992, abandoned, which is a continuation of Ser. No. 152,024, Feb. 3, 1988, abandoned, which is a division of Ser. No. 881,492, Jul. 1, 1986, Pat. No. 4,783,837, which is a continuation of Ser. No. 480,823, Mar. 31, 1983, abandoned. This application Oct. 20, 1994, Ser. No. 326,343

Claims priority, application Japan, Apr. 6, 1982, 57-56964; Apr. 6, 1982, 57-56965

Int. Cl.^{6} G06K *9/38*

U.S. Cl. 382—270 **52 Claims**



1. An image processing apparatus for producing an image from image data comprising:

means for generating pixel data in sequence; and

means for processing the pixel data from said generating means to produce a reproduction signal;

wherein said processing means includes dither conversion means adapted to store data for dither conversion, and means for determining the number of thresholds regarding one pixel data in accordance with a selected magnification, said data for dither conversion in said dither conversion means corresponding to a predetermined threshold dither matrix composed of a plurality of thresholds, wherein said determining means includes means for sending a clock signal having a predetermined period and means for changing the frequency of the clock signal in accordance with the selected magnification, and wherein said dither conversion means performs dither conversion of said pixel data in synchronism with the clock signal having the predetermined period; and

wherein said generating means generates said pixel data in synchronism with the frequency-changed clock signal output from said changing means.

5,712,930
γ-CORRECTION CURVE SELECTING APPARATUS AND A γ-CORRECTION CURVE CREATING APPARATUS

Hideyuki Watanabe, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 251,312, May 31, 1994, Pat. No. 5,589,954. This application Dec. 30, 1996, Ser. No. 774,642

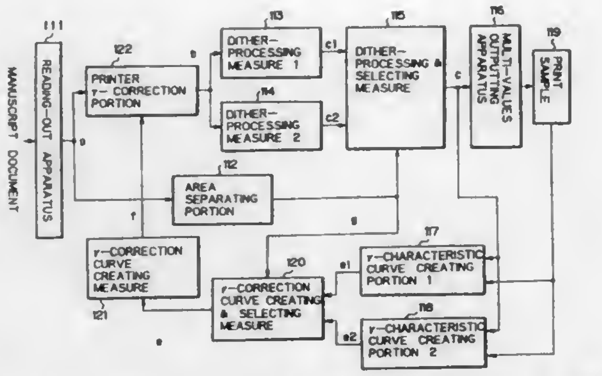
Claims priority, application Japan, May 28, 1993, 5-127559

Int. Cl.^{6} H04N *1/40;1/403*

U.S. Cl. 382—270 **5 Claims**

1. An image processing apparatus comprising: dither-processing means and a multi-value outputting apparatus for receiving the output signal of said dither-processing means and outputting at least two values which correct the first γ-characteristic of the writing-in value to be input to said dither-processing means of said image processing apparatus and the output image of said multi-value outputting apparatus; and

a γ-correction curve creating apparatus including γ-characteristic curve creating means for creating said first γ-characteristic from the second γ-characteristic of the input signal of said multi-value outputting apparatus and the output image thereof, and a γ-correction curve creating portion for creating a most suitable γ-correction curve from the output of said γ-characteristic curve creating means.


111
MANUSCRIPT DOCUMENT
READING-OUT APPARATUS
122
PRINTER γ-CORRECTION PORTION
113
DITHER-PROCESSING MEASURE 1
114
DITHER-PROCESSING MEASURE 2
115
DITHER-PROCESSING & SELECTING MEASURE
116
MULTI-VALUES OUTPUTTING APPARATUS
119
PRINT SAMPLE
112
AREA SEPARATING PORTION
γ-CORRECTION CURVE CREATING MEASURE
121
120
γ-CORRECTION CURVE CREATING & SELECTING MEASURE
117
γ-CHARACTERISTIC CURVE CREATING PORTION 1
118
γ-CHARACTERISTIC CURVE CREATING PORTION 2

5,712,931

Patent Not Issued For This Number

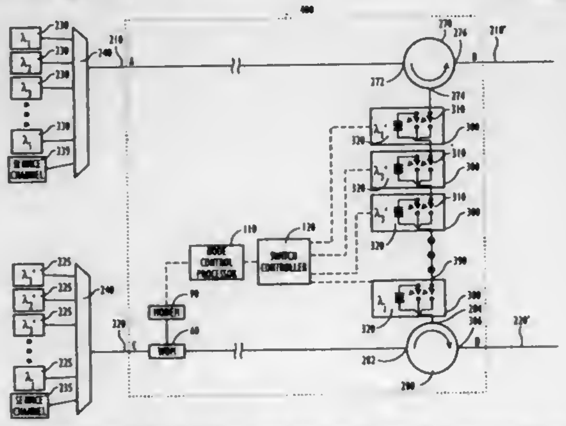
5,712,932
DYNAMICALLY RECONFIGURABLE WDM OPTICAL COMMUNICATION SYSTEMS WITH OPTICAL ROUTING SYSTEMS

Stephen B. Alexander, Millersville, and Victor Mizrahi, Columbia, both of Md., assignors to CIENA Corporation, Linthicum, Md.

Filed Aug. 8, 1995, Ser. No. 512,294

Int. Cl.^{6} G02B *6/293*

U.S. Cl. 385—24 **12 Claims**



1. A wavelength division multiplexed optical communication system with an optical cross-connect comprising:

N optical transmitters for creating N optical channels, each optical channel having a wavelength designation of λ_i where i ranges from 1 to N, where N is a whole number greater than or equal to 2, the N optical transmitters being optically coupled to a first optical transmission path;

M optical transmitters for creating M optical channels, each optical channel having a wavelength designation of λ_j where j ranges from 1 to M, where M is a whole number greater than or equal to 2, the M optical transmitters being optically coupled to a second optical transmission path;

a first optical transfer system optically coupled to the first optical transmission path, the first optical transfer system having an input port for receiving at least one of the N optical channels from the first optical transmission path and at least first and second output ports;

a second optical transfer system optically coupled to the second optical transmission path, the second optical transfer system having an input port for receiving at least one of the M optical channels from the second optical transmission path and at least first and second output ports;

an optical path including an optical filter comprising at least one Bragg grating coupled to the first output port of the first optical transfer system and to the first output port of the second optical transfer system, the at least one Bragg grating configured to reflect at least one λ_j toward the second optical transfer system for exiting the second output port of the second optical transfer system;

the first and second optical transfer systems and the optical path being configured such that the M optical channels which are not reflected by the at least one Bragg grating pass through the second output port of the first optical transfer system and the N optical channels which are not reflected by the at least one Bragg grating pass through the second output port of the second optical transfer system;

at least one optical receiver optically communicating with the second output port of the first optical transfer system; and

at least one optical receiver optically communicating with the second output port of the second optical transfer system.

5,712,933
WAVEGUIDE-TYPE OPTICAL DEVICE

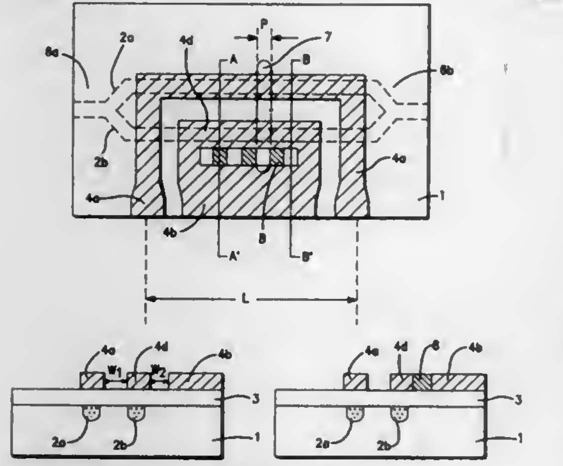
Hiroshi Nishimoto, and Tetsuyuki Suzaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,454

Claims priority, application Japan, Feb. 24, 1994, 6-025822

Int. Cl.^{6} G02F *1/295*

U.S. Cl. 385—9 **17 Claims**



1. A waveguide-type optical device comprising:

a substrate which has an electro-optical effect;

an optical circuit comprising two adjacent optical waveguides which are formed on the surface of said substrate;

a first electrode which covers a first optical waveguide, or either of said two optical waveguides, and supplies an electric signal; and

a second electrode which covers a second optical waveguide, or the rest of said two optical waveguides, said second electrode having a through-hole in the vicinity of said second optical waveguide such that the segment of said second electrode which has resulted from the formation of the through-hole and which is close to said second optical waveguide, has the same form as that of said first electrode, a plurality of connector sections being received in said through-hole for the connection of said segment and the rest of said second electrode.

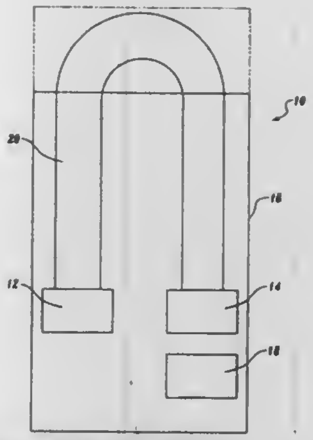
5,712,934
FIBER OPTIC INFRARED SENSOR

Douglas M. Johnson, 13247 Seventh Ave. NW., Seattle, Wash. 98177

Filed Jul. 25, 1996, Ser. No. 687,754

Int. Cl.^{6} G02B *6/00*

U.S. Cl. 385—12 **35 Claims**



30. A method for detecting the presence of a medium in an environment comprising contacting a sensing length of an optical sensor with the medium, wherein the optical sensor comprises:

(a) a light source for generating light;

(b) a light detector and signal generator for receiving light from the light source and for generating variable signals dependent on the amount of light received;

(c) an optical fiber made of a light conducting material extending between the light source and the light detector and having a sensing length comprising a return bend in the optical fiber forming an apex, wherein the return bend has a bend radius less than or equal to 2.5 times the radius of the optical fiber, wherein the sensing length comprises a planar sensing surface at the apex of the return bend, and wherein the planar sensing surface has a maximum length of about twice the radius of the return bend; and

(d) processing means connected to the light detector and signal generator for output signaling and for indicating the detection of a medium in the environment, such that the presence of the medium in the environment is detected.

5,712,935
OPTICAL SWITCH

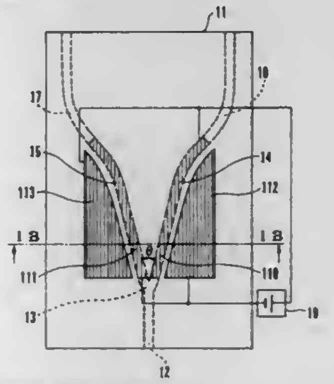
Tosiya Miyakawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 13, 1996, Ser. No. 716,638

Claims priority, application Japan, Sep. 18, 1995, 7-238024

Int. Cl.^{6} G02B *6/26*

U.S. Cl. 385—22 **7 Claims**



1. An optical switch comprising:

a substrate having an electro-optic effect,

a first optical waveguide formed on said substrate and on which light is incident,

second optical waveguides formed on said substrate and branched from said light-incident optical waveguide into a Y snape,

third optical waveguides formed on said substrate and continuous to said second optical waveguides to form S-shaped curves,

a pair of first control electrodes formed on said second waveguides and parts of said third optical waveguides continuous to said second optical waveguides, and

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a pair of second control electrodes formed on said substrate to be close to said first control electrodes at predetermined gaps thereto.

5,712,936

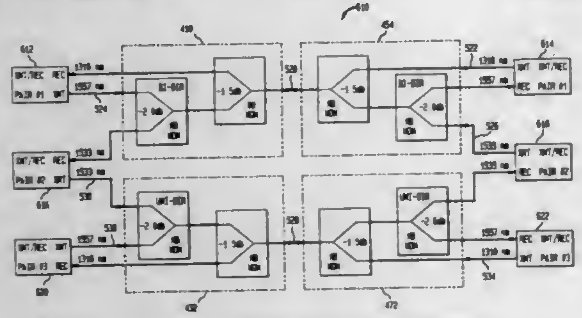
HYBRID BI-DIRECTIONAL THREE COLOR WAVE DIVISION MULTIPLEXER AND METHOD USING SAME

Mark Hoag, and David Keiser, both of Garland, Tex., assignors to MCI Communications Corporation, Washington, D.C.

Continuation of Ser. No. 671,183, Jun. 27, 1996, abandoned. This application Dec. 9, 1996, Ser. No. 762,035

Int. Cl.^{6} G02B *6/28;* **H04J** *14/02*

U.S. Cl. 385—24 **26 Claims**



1. A fiber optic communication system, comprising:
a first optic fiber extending between a first transmit/receive site and a second transmit receive site;
a second optic fiber, substantially parallel to said first optic fiber, extending between said first transmit/receive site and said second transmit/receive site;
a plurality of modularized wave division multiplexers (WDMs) located at said first and second sites for multiplexing a first pair of bi-directional signals and a first signal of a second pair of bi-directional signals over said first optic fiber and for multiplexing a third pair of bi-directional signals and a second signal of said second pair of bi-directional signals over said second optic fiber.

22. A method of communicating at least three optic signals having different wavelengths over a single optic fiber, comprising the steps of:
(1) transmitting a first signal of a first wavelength from a first transmitter and multiplexing said first signal onto an optic fiber through a first HB3-WDM;
(2) transmitting a second signal of a second wavelength from a second transmitter and multiplexing said second signal onto said optic fiber through a second HB3-WDM; and
(3) transmitting a third signal of a third wavelength from a third transmitter and multiplexing a third signal onto said optic fiber through said first HB3-WDM.

5,712,937

OPTICAL WAVEGUIDE INCLUDING SINGLEMODE WAVEGUIDE CHANNELS COUPLED TO A MULTIMODE FIBER

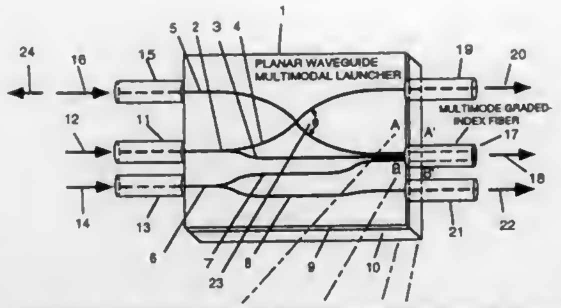
Charles K. Asawa; Mike H. Asawa; Jane K. Asawa, and Michi Asawa, all of 16766 Bollinger Dr., Pacific Palisades, Calif. 90272

Filed Dec. 1, 1994, Ser. No. 347,947

Int. Cl.^{6} G02B *6/30;6/28*

U.S. Cl. 385—49 **13 Claims**

1. A planar optical waveguide device for launching a plurality of optical beams into a plurality of sets of predetermined propagation modes of a multimode fiber, comprising:
a plurality of optical singlemode waveguide channels on said planar optical waveguide,
a plurality of optical sources for providing said plurality of optical beams,
each of said optical singlemode waveguide channel propagating one of said optical beam from one of said optical source,


PLANAR WAVEGUIDE MULTIMODAL LAUNCHER
MULTIMODE GRADED-INDEX FIBER
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A'
B
B'

each of said plurality of optical singlemode waveguide channels laterally positioned and angularly aligned with respect to each other in a predetermined arrangement for coupling with said multimode fiber,
channel-to-fiber coupling means for connecting said plurality of optical singlemode waveguide channels to said multimode fiber so as to launch said optical beams into said sets of predetermined propagation modes of said multimode fiber,
whereby each of said optical beam of said plurality of optical beams, propagating in said optical singlemode waveguide channel of said plurality of optical singlemode waveguide channels, is launched into said set of predetermined propagation modes of said multimode fiber.

5,712,938

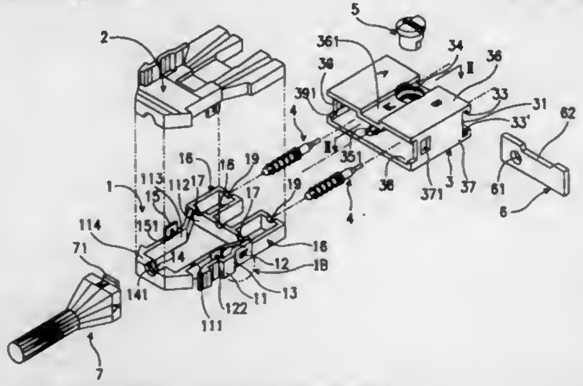
OPTICAL FIBER CONNECTOR

Samuel I-En Lin, Miao-Li Hsien, and S. H. Shan, Hsinchu Hsien, both of Taiwan, assignors to Tai Jin Mold Mfg. Co., Taipei, Taiwan

Filed May 30, 1996, Ser. No. 655,643

Int. Cl.^{6} G02B *6/38*

U.S. Cl. 385—59 **8 Claims**



1. An optical fiber connector comprising:
a main body having a first side wall, a second side wall, a third side wall opposite the first side wall, a fourth side wall opposite the second side wall, two latching arms, each of which has at least one latching lug, respectively extending out from the first and third side walls, and two receiving bases attached to the second side wall;
two ferrules received in the receiving bases;
an adapter connected to the fourth side wall of the main body, wherein an optical fiber cable extends out from the adapter and is divided into two parts in an interior of the main body, and the two parts of the optical fiber cable are connected to the ferrules; and
a shroud movably enveloping the receiving bases of the main body and having two through holes corresponding to the ferrules and at least one latching hole corresponding to the latching lug, whereby the ferrules can stick out from the through holes and the latching lug can engage into the latching hole to fix the shroud to the main body.

5,712,939

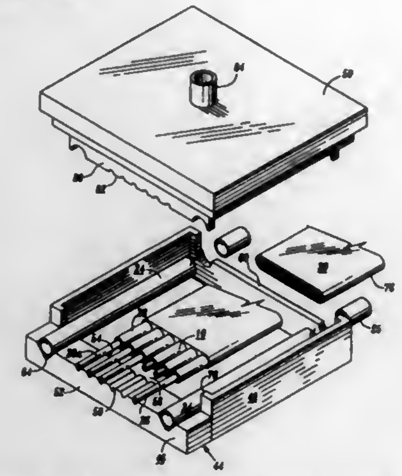
OPTICAL FIBER CONNECTORS

Muhammed Afzal Shahid, Mercer County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 28, 1995, Ser. No. 579,231

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—78 **15 Claims**



1. An optical fiber connector comprising a plug enclosing an optical fiber and an elongated first opening, said fiber extending along a line intersecting an external first surface of said plug and having an end face optically exposed at said external surface, and said opening extending inwardly from said surface along an axis parallel to said line.

5,712,940

OPTOELECTRONIC DEVICE WITH A COUPLING BETWEEN A SEMICONDUCTOR LASER MODULATOR OR AMPLIFIER AND TWO OPTICAL GLASS FIBRES

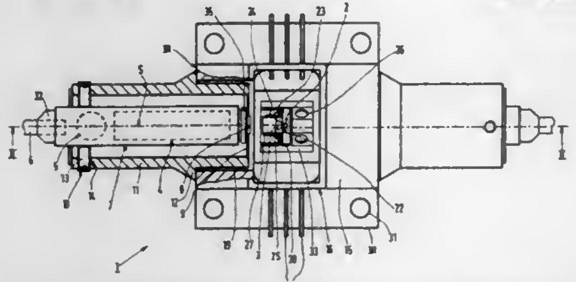
Remigius S. M. Van Roemburg, and Lukas F. Tiemeijer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Feb. 2, 1996, Ser. No. 595,533

Claims priority, application European Pat. Off., Feb. 10, 1995, 95200323

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—93 **20 Claims**



1. An optoelectronic device comprising an optoelectronic module which comprises at least a semiconductor diode laser device and, in the radiation path (S) on either side of the semiconductor diode laser device, a first lens, an optical component, a second lens, and an optical glass fiber, the second lens and the glass fiber forming part of a sub-module, the optical component being present in the sub-module, the first lens being present outside the sub-module, and the module being provided with means for fastening the sub-module to the module, the fastening means providing for adjustment of the angle of the sub-module relative to the radiation path (S).

5,712,941

RARE EARTH ELEMENT-DOPED MULTIPLE-CORE OPTICAL FIBER AND METHOD FOR FABRICATING THE SAME

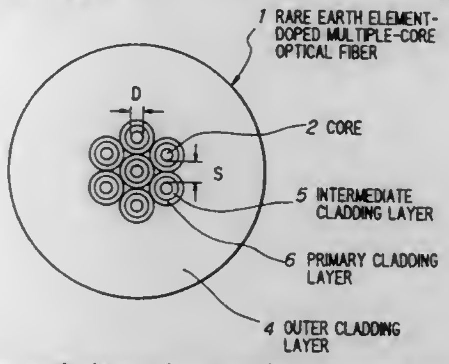
Katsuyuki Imoto, Saitama; Kazuo Koya, and Jun Abe, both of Gunma, all of Japan, assignors to Hitachi Cable, Ltd., and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Jun. 4, 1996, Ser. No. 658,074

Claims priority, application Japan, Dec. 11, 1995, 7-321937

Int. Cl.^{6} G02B *6/02*

U.S. Cl. 385—126 **15 Claims**


1 RARE EARTH ELEMENT-DOPED MULTIPLE-CORE OPTICAL FIBER
D
2 CORE
S
5 INTERMEDIATE CLADDING LAYER
6 PRIMARY CLADDING LAYER
4 OUTER CLADDING LAYER

6. A rare earth element-doped multiple-core optical fiber, comprising:
a plurality of cores each having a refractive index of n_w doped with at least one rare earth element and Al therein;
a plurality of intermediate cladding layers each having a refractive index of n_l ($n_l<n_w$) doped with at least one rare earth element, and covering said plurality of cores;
a plurality of primary cladding layers each having a refractive index of n_p ($n_p \leqq n_l$ and $n_p<n_w$) containing no rare earth element dopant, and covering said plurality of intermediate cladding layers; and
an outer cladding layer having a refractive index of n_c ($n_w>n_c$ $n_l \leqq n_c$ and $n_p \leqq n_c$), and covering said plurality of cores covered with said plurality of intermediate and primary cladding layers;
wherein said plurality of cores are positioned substantially on a central axis of said outer cladding layer, and separated with a predetermined spacing by said plurality of intermediate cladding layers.

5,712,942

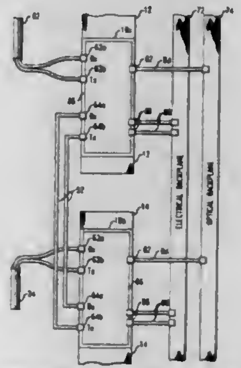
OPTICAL COMMUNICATIONS SYSTEM HAVING DISTRIBUTED INTELLIGENCE

Mark R. Jennings, Sussex County; Frank Salvatore Leone, Union County, and Richard Joseph Pimpinella, Hunterdon County, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 13, 1996, Ser. No. 645,108

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—134 **17 Claims**



1. An optical communications system having a distribution frame, said communications system for use with a system controller associated with said distribution frame, said distribution frame comprising:
at least one shelf;

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at least one interconnection module operably connected within said at least one shelf and adapted for optically connecting a first optical channel to a second optical channel,

wherein each of said interconnection modules is adapted to include a microcontroller capable of ascertaining at least one identifiable operating characteristic associated with said optical communications system; and

an electrical interconnection fabric for electrically connecting said interconnection modules including a microcontroller with said system controller and with other interconnection modules.

5,712,943

OPTICAL FIBER DISPENSER

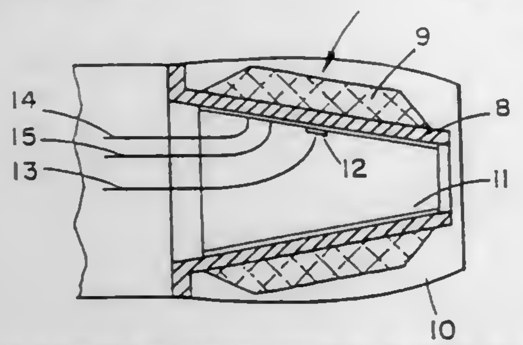
Shaul Atar, Afula; Ehud Dekel, Nofit, and Nathan Raz, Haifa, all of Israel, assignors to The State of Israel, Ministry of Defence, Rafael Armament Development Authority, Tel-Aviv, Israel

Continuation of Ser. No. 547,373, Oct. 24, 1995, abandoned, which is a continuation of Ser. No. 193,718, Feb. 9, 1994, abandoned. This application Jul. 24, 1996, Ser. No. 685,713

Claims priority, application Israel, Feb. 24, 1993, 104839

Int. Cl.^{6} G02B *6/22*

U.S. Cl. 385—134 **14 Claims**



1. In an optical fiber dispenser adapted for the payout of optical fiber from a moving vehicle so as to maintain a wire communication link between said moving vehicle and a control station, which dispenser comprises a bobbin carrying a multi-layer optical fiber pack in which the individual layers are held in place by an adhesive, the improvement comprising

said bobbin comprising a bobbin body and heating means connectable to a power or heat supply for heating said bobbin body.

5,712,944

VIDEO TAPE RECORDER FOR INTERMITTENT RECORDING AND HAVING ROTARY HEADS WITH NO STEP THEREBETWEEN

Shoichi Shintani, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 331,332, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 238,982, May 6, 1994, abandoned, which is a continuation of Ser. No. 986,028, Dec. 4, 1992, abandoned. This application Apr. 1, 1996, Ser. No. 626,269

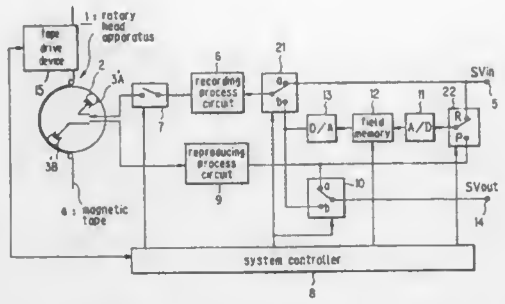
Claims priority, application Japan, Dec. 12, 1991, 3-329071

Int. Cl.^{6} H04N *5/937;5/93*

U.S. Cl. 386—46 **8 Claims**

1. A video tape recorder comprising:

a rotary head apparatus including a guide drum on which a recording tape is helically wound over an angular extent of approximately 180°, a first rotary head and a second rotary head having different first and second azimuth angles and being mounted on said drum without any step between respective planes of rotation of said first and second heads, and with an angular interval of 180° between said heads;



tape drive means having an intermittent mode of operation in which said tape is intermittently driven so as to exhibit alternating moving and stationary conditions;

memory means having a capacity to store a field of video signals to be recorded on the tape;

control means controlling said tape drive means in said intermittent mode of operation and being operative to supply a first field of a frame of said video signals to said first rotary head for recording with said first azimuth angle in a respective first track of a predetermined pitch on said tape during an interval when said tape is in said stationary condition, said control means being further operative to supply a second field of a frame of said video signals to said second rotary head for recording with said second azimuth angle in a respective second track of said predetermined pitch on said tape during another interval when said tape is again in said stationary condition. said tape drive means being controlled by said control means for moving said tape a distance corresponding to said predetermined pitch subsequent to each said interval of recording so that said first and second tracks in which said first and second rotary heads alternately record respective fields of said video signals are arranged in succession on said tape; and

means responsive to said control means for writing and temporarily storing in said memory means said second field of the video signals during movement of the tape subsequent to said interval of recording in said first track and then reading from said memory means said second field of the video signals for said supply by said control means to said second rotary head and recording by the latter in said second track only after the tape has been moved and is again disposed in its stationary condition.

5,712,945

TWO PICTURE VIDEO RECORDING/REPRODUCING APPARATUS AND A METHOD THEREFOR

Eui Duck Kim, Seo-Ku, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 365,296, Dec. 28, 1994. This application May 22, 1996, Ser. No. 651,386

Claims priority, application Rep. of Korea, Dec. 31, 1994, 32129/1993

Int. Cl.^{6} H04N *5/76;5/783*

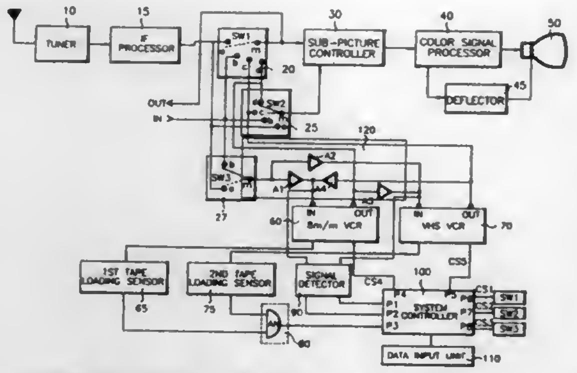
U.S. Cl. 386—52 **6 Claims**

1. An automatic editing & recording method of a two-picture video recording/reproducing apparatus having first and second video recorders/reproducers of different systems comprising:

a first recording mode conversion step of changing the mode of said first video recorder/reproducer to a playback mode, determining whether a record key is received to said second video recorder/reproducer or not, and changing the mode of said second video recorder/reproducer to a recording mode when said record key is received;

a signal output determining step of determining whether a video signal is supplied from said first video recorder/reproducer;

a still mode conversion step of automatically changing the mode of said second video recorder/reproducer to a still mode when said video signal is not supplied; and



a second recording mode conversion step of automatically changing the mode of said second video recorder/reproducer to the recording mode when said video signal is supplied within a predetermined time after being converted to said still mode to perform the recording operation.

5,712,946

RECORDING/REPRODUCING VIDEO SIGNALS WITH A PLURALITY OF PLAYBACK SPEEDS

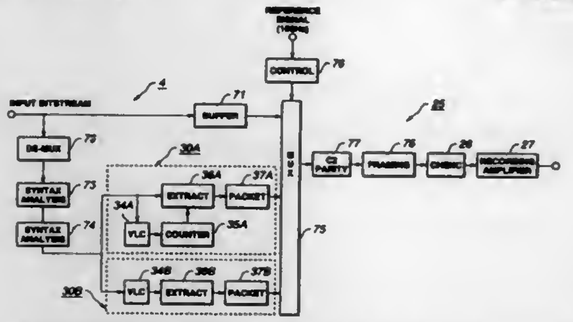
Naofumi Yanagihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 520,176

Claims priority, application Japan, Aug. 31, 1994, 6-206961

Int. Cl.^{6} H04N *5/91;5/917;7/26*

U.S. Cl. 386—68 **10 Claims**



1. A recording apparatus for recording digital video signals in which input data is a digital video signal encoded by adaptively switching between intra-picture encoding and inter-picture predictive coding and in which the digital video signal is recorded by an inclined azimuth recording system on tracks of a magnetic tape by the inclined azimuth recording system, comprising:

extracting means for extracting the input data to be directly recorded in a first area of said tape,

said extracting means being operable to extract data of the input data obtained on intra-picture coding as first data to be recorded in a plurality of second areas of said tape reserved for varying-speed reproduction data,

said extracting means being operable to extract a motion vector of data of the input data obtained on inter-picture predictive coding as second data to be recorded in a plurality of third areas of said tape reserved for varying-speed reproduction data;

multiplexing means for time-divisionally multiplexing the data extracted by said extracting means and for supplying same to said inclined azimuth recording system to cause the inclined azimuth recording system to record the input data in the first area, the first data in the second areas, and the second data in the third areas; and

control means for causing the inclined azimuth recording system to repeatedly record the first data and the second data on a number of tracks of the same azimuth equal to the maximum number of varying playback speeds.

5,712,947

METHOD OF RECORDING ID SIGNALS FOR RETRIEVING IMAGES, METHOD OF RETRIEVING IMAGES, AND APPARATUS FOR REPRODUCING RECORDED IMAGES

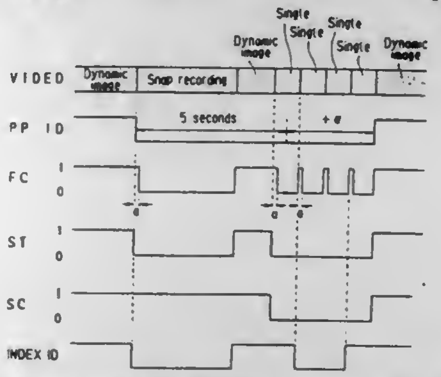
Masaki Oguro, Tokyo; Teruhiko Kori, and Ken Iizuka, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 286,213, Aug. 5, 1994, abandoned. This application Jul. 15, 1996, Ser. No. 683,024

Claims priority, application Japan, Aug. 14, 1993, 5-222237

Int. Cl.^{6} G11B *5/02;15/48;* **H04N** *5/91*

U.S. Cl. 386—69 **20 Claims**



1. A method of recording identification signals on a recording medium for retrieving static video frames during a quick search operation from among static and dynamic video frames stored in recording portions on said recording medium, said quick search operation being conducted more quickly than a normal mode search, comprising the steps of:

recording for a first predetermined time a first identification signal identifying a plurality of said static and dynamic video frames in said recording portions which include a static video frame, wherein said first predetermined time is sufficient to allow detection of said first identification signal during said quick search operation;

selecting a desired static video frame from among said static and dynamic video frames recorded in a respective recording portion of said recording portions;

implanting, for a second predetermined time shorter than a sufficient time to allow detection during said quick search operation, into said respective recording portion subsequent to the recording of said recording portions, a second identification signal identifying said desired static video frame; and

retrieving said desired static video frame by detecting said first identification signal corresponding to said respective recording portion during said quick search operation, detecting thereafter said second identification signal corresponding to said desired static video frame, and reproducing said desired static video frame identified by said second identification signal.

5,712,948

MAGNETIC RECORDING AND REPRODUCING APPARATUS WHICH REPLACES AN INSERTED AUDIO SIGNAL WITH A PRECEDING FIELD OF A REPRODUCED FM VIDEO SIGNAL

Masako Yamada; Hideki Kaneko; Sadayuki Inoue, and Ikuo Ohkuma, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 802,741, Dec. 5, 1991, Pat. No. 5,432,649. This application Feb. 28, 1995, Ser. No. 396,430

Claims priority, application Japan, Dec. 6, 1990, 2-400690; Apr. 10, 1991, 3-077705; Jun. 26, 1991, 3-154287; Sep. 26, 1991, 3-247243; Sep. 26, 1991, 3-247244; Oct. 14, 1991, 3-264325

Int. Cl.^{6} H04N *5/92;* **H09N** *5/928*

U.S. Cl. 386—95 **8 Claims**

1. A recording and reproducing apparatus wherein a video signal, recorded on the recording medium, has a digital signal inserted by a time division multiplexing mode, comprising:

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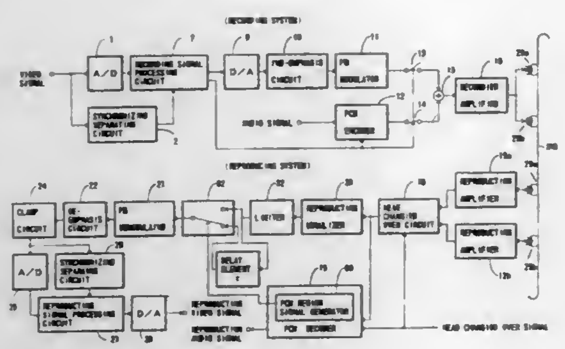


a demodulator;

identifying means for identifying a period of an inserted digital signal region in a video signal which has the inserted digital signal and for producing a first signal indicative of a period of the inserted digital signal region in response thereof; and

compensating means, in response to the first signal, for during reproduction, replacing contents within the period of the inserted digital signal with a preceding field of the video signal, thereby eliminating any effectual characteristics that the inserted digital signal has on a demodulation process performed by said demodulator.

5,712,949

DISC REPRODUCTION SYSTEM WITH SEQUENTIAL REPRODUCTION OF AUDIO AND IMAGE DATA

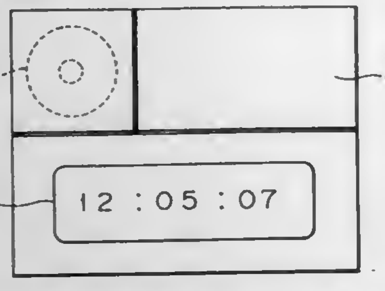
Takeshi Kato, and Takeshi Miura, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jan. 24, 1992, Ser. No. 825,604

Claims priority, application Japan, Jan. 29, 1991, 3-009206; Jan. 29, 1991, 3-009207; Jan. 30, 1991, 3-010214

Int. Cl.^{6} H04N *5/781*

U.S. Cl. 386—96 9 Claims



1. A disc reproducing apparatus for reproducing a disc on which at least audio data, for playing back as sound, and image data, corresponding to visual displays, are recorded, the disc reproducing apparatus comprising:

reproducing means for reproducing audio data recorded on the disc;

memory means for storing image data received from the disc;

video signal generating means for generating a video signal on the basis of the image data stored in the memory means;

display means supplied with the video signal and for displaying a display based on the video signal which corresponds to the image data; and

image processing means for storing the image data in the memory means when the audio data is reproduced and selecting the stored image data so that displays corresponding to selected image data are sequentially displayed on the display means, such that the displays are changed in sequence based upon the passage of predetermined amounts of time measured from the start of reproduction of the audio data.

5,712,950

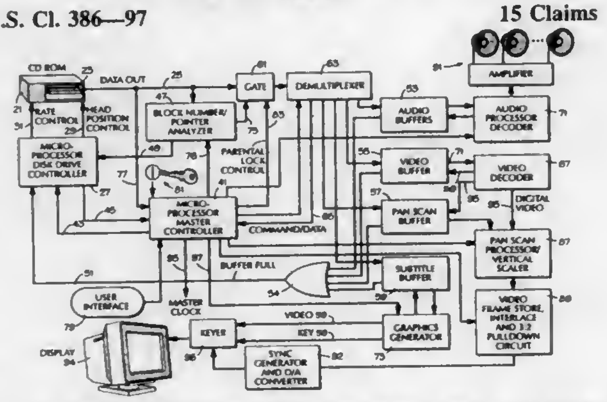
SYSTEM AND METHOD FOR CONTROLLING PLAY OF MULTIPLE DIALOG AUDIO TRACKS OF A SOFTWARE CARRIER

Christopher J. Cookson; Lewis S. Ostrover, and Warren N. Lieberfarb, all of Los Angeles, Calif., assignors to Time Warner Entertainment Co., L.P., Burbank, Calif.

Division of Ser. No. 144,791, Oct. 29, 1993, Pat. No. 5,576,843. This application Mar. 12, 1996, Ser. No. 614,205

Int. Cl.^{6} H04N *5/76*

U.S. Cl. 386—97 **15 Claims**



1. A system for controlling play of the audio tracks of a digital software carrier, said software carrier having recorded thereon a plurality of synchronized audio tracks, each audio track being made up of a plurality of data blocks, and a code for each of said audio tracks identifying its use as either a switching master, including music and effects and dialog language, or a track to be switched with the switching master, comprising means for selecting a switching master of predetermined length and a shorter track containing audio segments to be switched with said switching master, and means for reading codes in the data blocks and for automatically switching between the selected tracks in accordance with said codes.

5,712,951

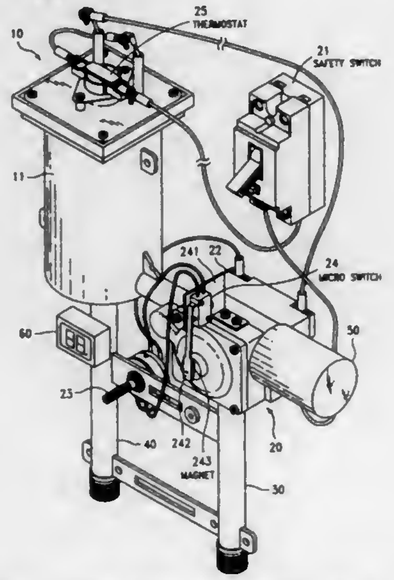
ELECTRIC WATER HEATER WITH PRIMARY AND SECONDARY PRE-HEATNG CHAMBERS

Martin Chou, 3F, No. 2, Sec.5, Cheng-Teh Road,, Hou-Kang, Shih-Lin District, Taipei, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,356

Int. Cl.^{6} F24H *1/18*

U.S. Cl. 392—450 9 Claims



1. An electric water heater with primary and secondary preheating chambers comprising a heating unit and a control unit, said heating unit comprising an insulative water container having a cold water inlet pipe and a hot water outlet pipe, and an electric heating coil mounted inside said water container and controlled by said control unit to heat water, said control unit comprising a non-fuse safety switch for protecting the water heater from an overcurrent or a leakage current, a solid-state variable resistor operated by a stepless fine-adjustment switch for controling a preset water temperature therefor, wherein a heat-conductive cylinder is mounted inside said insulative water container around said electric heating coil, defining a heating chamber on the inside connected to said hot water outlet pipe and a pre-heating chamber on the outside within said water container, said heat-conductive cylinder having a plurality of small holes for letting water pass from said pre-heating chamber to said heating chamber; a heat-conductive partition collar is mounted between said insulative water container and said heat-conductive cylinder to separate said pre-heating chamber into a primary pre-heating chamber at a lower elevation and a secondary pre-heating chamber at a higher elevation, said primary pre-heating chamber receiving cold water from said cold water inlet, said heat-conductive partition collar having a plurality of small holes for letting water pass from said primary pre-heating chamber to said secondary pre-heating chamber and then to said heating chamber through the small holes of said heat-conductive cylinder; a water-pressure activated switch means installed in said cold water inlet pipe to automatically turn on said control unit when cold water is guided through said cold water inlet pipe into said insulative water container, or to automatically turn off said control unit when cold water is stopped from passing through said cold water inlet pipe.

5,712,952

BOILER FOR COFFEE MACHINE OF THE ESPRESSO TYPE

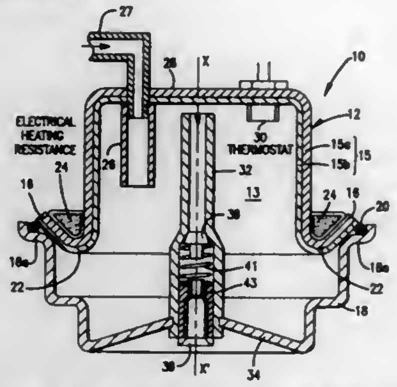
Jean-René Clech, Saint Germain du Corbeis; Francis Landais, deceased, late of Chevauer, by Pierre Chevalier, administrator, and Joël Landais, Conde sur Sarthe, all of France, assignors to Moulinex S.A., Bagnolet, France

Filed Apr. 18, 1995, Ser. No. 423,856

Claims priority, application France, Apr. 19, 1994, 94 04665

Int. Cl.^{6} F24H *1/18*

U.S. Cl. 392—458 **8 Claims**



1. In a boiler for an espresso coffee machine, comprising a metallic body (**12**) which defines a chamber (**13**) and which comprises an upper portion forming a cover (**15**) with a peripheral flange (**16**) and a lower portion forming a cup (**18**) which is connected in a sealed manner to the peripheral flange (**16**) of the cover, a water supply tube (**26**) which is mounted on the cover (**15**) to extend down into the chamber (**13**), an electric heating resistance (**24**) adapted to heat the water admitted into the chamber (**13**) by said tube (**26**), a water outlet conduit (**32**) which is disposed vertically in the chamber (**13**) secured to the bottom (**34**) of the cup (**18**) of the body (**12**) and whose lower end opens through the bottom (**34**) of the cup (**18**), and a valve (**39**) which is disposed in the water outlet conduit (**32**) and which is adapted to permit the flow of hot water from said conduit (**32**) only when the pressure of the water in the chamber (**13**) exceeds a given threshold; the improvement wherein the peripheral flange (**16**) of the cover (**15**) of the body (**12**) is shaped as an upwardly and outwardly directed gutter (**22**) in which is positioned in intimate thermal connection the electric heating resistance (**24**) outside the cover, said gutter (**22**) having an outer surface contacting an inner surface of said cup (**18**).

5,712,953

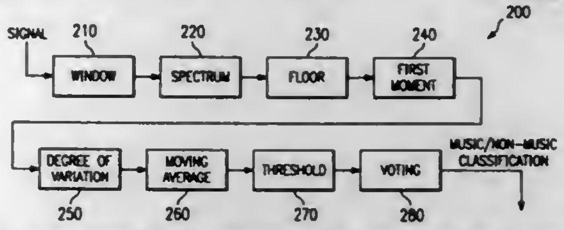
SYSTEM AND METHOD FOR CLASSIFICATION OF AUDIO OR AUDIO/VIDEO SIGNALS BASED ON MUSICAL CONTENT

Steven E. Langs, Rochester Hills, Mich., assignor to Electronic Data Systems Corporation, Plano, Tex.

Filed Jun. 28, 1995, Ser. No. 508,519

Int. Cl.^{6} G10L *9/00*

U.S. Cl. 395—2.23 **19 Claims**



1. An automated processing system for classifying audio signals as music or non-music, comprising:

a source of at least one digitized audio signal;

a spectrum module for receiving said at least one digitized audio signal and for generating representations of spectral power distribution with respect to frequency and time of said audio signal;

a first moment module for receiving said generated representations from said spectrum module, for calculating for each time instant first moment of said distribution representation with respect to frequency, and for generating a representation of time series of first moment values;

a degree of variation module for receiving said representation of time series of first moment values from said first moment module, for calculating a measure of degree of variation with respect to time of said values of said time series, thereby producing a representation of first moment time series variation measuring values; and

a module for receiving said representation of said first moment time series variation measuring values and for classifying said received representation by detecting patterns of low variation, which correspond to the presence of musical content in said at least one digitized audio signal, and patterns of high variation, which correspond to the absence of musical content in said at least one digitized audio signal.

5,712,954

SYSTEM AND METHOD FOR MONITORING AUDIO POWER LEVEL OF AGENT SPEECH IN A TELEPHONIC SWITCH

Anthony J. Dezonno, Downers Grove, Ill., assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Aug. 23, 1995, Ser. No. 518,413

Int. Cl.^{6} G10L *3/02;* **H04M** *3/50*

U.S. Cl. 395—2.34 **21 Claims**

1. A system for monitoring audio power levels of speech during an incoming telephone call from a caller, the incoming telephone call being routed by a telephonic switch to a telephonic unit corresponding to an agent, the system comprising:

an audio power detecting circuit configured to measure a power level of speech transmitted by the telephonic unit of the agent during the incoming telephone call;

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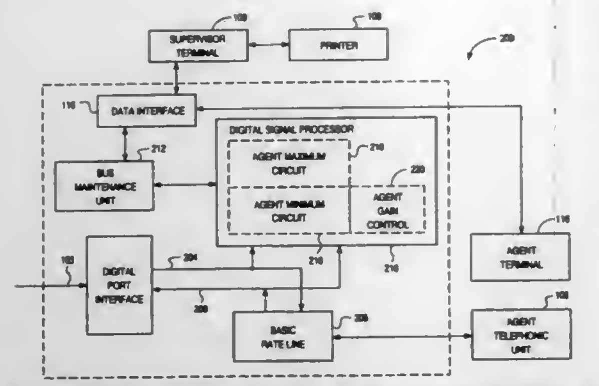


a reporting mechanism configured to receive a signal from the audio power detecting circuit indicating that the power level of the speech transmitted by the telephonic unit is not within a predetermined range; and

the reporting mechanism configured to provide an indication to at least one of the agent and a supervisory personnel if the power level of the speech transmitted by the telephonic unit of the agent is not within the predetermined range, the indication being external to the telephonic unit of the agent.

5,712,955
METHOD AND APPARATUS FOR ENCODING DIGITAL SIGNAL, METHOD AND APPARATUS FOR DECODING DIGITAL SIGNAL, AND RECORDING MEDIUM FOR ENCODED SIGNALS

Mito Sonohara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

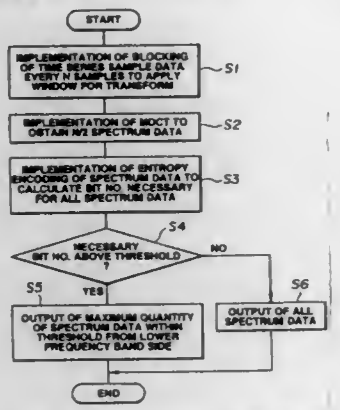
PCT No. PCT/JP94/01034, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO95/01633, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 27, 1994, Ser. No. 392,733

Claims priority, application Japan, Jun. 30, 1993, 5-183321

Int. Cl.^{6} G10L *9/00*

U.S. Cl. 395—2.38 **38 Claims**


START
IMPLEMENTATION OF BLOCKING OF TIME SERIES SAMPLE DATA EVERY N SAMPLES TO APPLY WINDOW FOR TRANSFORM
S1
IMPLEMENTATION OF MDCT TO OBTAIN N/2 SPECTRUM DATA
S2
IMPLEMENTATION OF ENTROPY ENCODING OF SPECTRUM DATA TO CALCULATE BIT NO. NECESSARY FOR ALL SPECTRUM DATA
S3
NECESSARY BIT NO. ABOVE THRESHOLD ?
S4
NO
YES
S5
OUTPUT OF MAXIMUM QUANTITY OF SPECTRUM DATA WITHIN THRESHOLD FROM LOWER FREQUENCY BAND SIDE
S6
OUTPUT OF ALL SPECTRUM DATA
END

1. An encoding method, comprising the steps of: dividing an input signal into blocks;

transforming every respective block of the input signal into spectrum signals; and

implementing variable length encoding to all or a portion of every block of the spectrum signals to output encoded signals;

wherein an upper limit of the number of bits of a signal encoded and outputted is set per plural blocks of the input signal, thus to stop outputting of a portion of spectrum signals in a block or blocks where the number of bits above the upper limit is required; and

wherein in selection of the spectrum signal or signals of which outputting is stopped, the selection is carried out from a higher frequency band side of all spectrum signals.

5,712,956
FEATURE EXTRACTION AND NORMALIZATION FOR SPEECH RECOGNITION

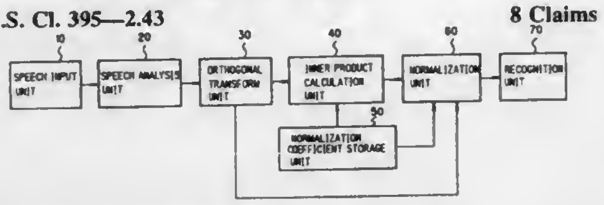
Eiko Yamada, and Hiroaki Hattori, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 381,328

Claims priority, application Japan, Jan. 31, 1994, 6-009026

Int. Cl.^{6} G10L *9/16*

U.S. Cl. 395—2.43 **8 Claims**


10
20
30
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SPEECH INPUT UNIT
SPEECH ANALYSIS UNIT
ORTHOGONAL TRANSFORM UNIT
INNER PRODUCT CALCULATION UNIT
NORMALIZATION UNIT
RECOGNITION UNIT
NORMALIZATION COEFFICIENT STORAGE UNIT

1. A speech recognition apparatus comprising:

a speech data input unit for inputting speech data;

a speech data analysis unit for converting the speech data input from the speech data input unit into logarithmic spectrum data;

an orthogonal transformation unit for performing orthogonal transformation of the logarithmic spectrum data obtained in the speech data analysis unit to develop feature vectors;

a normalization coefficient storage unit for storing normalization coefficient data and unit vector data;

an inner product calculation unit for performing an inner product calculation of the feature vectors obtained in the orthogonal transformation unit and the unit vector data stored in the normalization coefficient storage unit;

a normalization unit for regressively updating the inner product calculated in the inner product calculation unit and performing normalization of the feature vectors by subtracting a normalization vector, which corresponds to a curve of the second or higher order on a logarithmic spectrum space, from the feature vectors by using the updated inner product, the normalization coefficient data and unit vector data stored in the normalization coefficient storage unit and the feature vectors calculated in the orthogonal transformation unit; and

a recognition unit for recognizing the speech based on the normalized feature vectors.

5,712,957
LOCATING AND CORRECTING ERRONEOUSLY RECOGNIZED PORTIONS OF UTTERANCES BY RESCORING BASED ON TWO N-BEST LISTS

Alex H. Waibel, and Arthur E. McNair, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Sep. 8, 1995, Ser. No. 525,921

Int. Cl.^{6} G10L *5/06*

U.S. Cl. 395—2.49 **14 Claims**

1. A method of repairing speech recognized by a recognition engine of the type which generates an n-best list of hypotheses and scores for each hypothesis in response to the speech to be recognized, said method comprising the steps of:

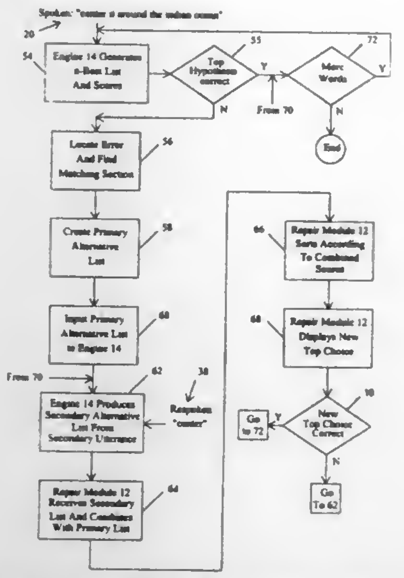
receiving from a recognition engine a first n-best list of hypotheses, and scores for each hypothesis, generated in response to a primary utterance to be recognized;

locating an error within the hypothesis having the highest score:

generating control signals from said first n-best list;

inputting said control signals to said recognition engine; generating a second n-best list of hypotheses, and scores for each hypothesis, from an event independent of the primary utterance in accordance with said control signals;

combining the scores for the hypotheses in the first n-best list with the scores for the hypotheses in the second n-best list;


Spoken: "center it around the indian ocean"
Engine 14 Generates n-Best List And Scores
Top Hypothesis correct
More Words
End
Locate Error And Find Matching Section
Create Primary Alternatives List
Input Primary Alternatives List to Engine 14
Engine 14 Produces Secondary Alternative List From Secondary Utterance
Repair Module 12 Receives Secondary List And Combines With Primary List
Respeaks "center"
Repair Module 12 Sorts According To Combined Scores
Repair Module 12 Displays New Top Choice
New Top Choice Correct
Go to 72
Go To 62
From 70
Y
N

selecting the hypothesis having the highest combined score; and replacing the located error with the selected hypothesis.

5,712,958
ANALOG FUZZY RULE CIRCUIT COMPRISING A NETWORK OF CONTROLLED AND FIXED RESISTORS IN COMBINATION

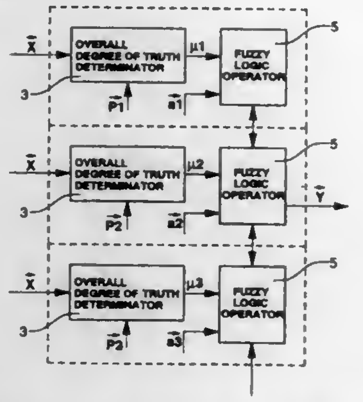
Olivier Landolt, Neuchâtel, Switzerland, assignor to CSEM Centre Suisse d 'Electronique et de Microtechnique SA - Recherche et Developpement, Neuchatel, Switzerland

Filed Sep. 22, 1995, Ser. No. 532,875

Claims priority, application France, Oct. 6, 1994, 94 11957

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 395—3 **8 Claims**



1. An analog type fuzzy logic controller adapted, by implementing a set of rules and as a function of the values from a set of input variables (X_k), to supply the values of a set of output variables (Y_j), each of said rules expressing itself as, on the one hand, a result consisting in the association of predetermined values (a_{ij}) with at least part of said output variables (Y_j) and, on the other hand, a fuzzy logic expression composed of one or several conditions connected to each other by logic operators, said conditions each consisting of an expression involving one of said input variables (X_k) and a reference value (P_{ik}), said controller determining the values (I_{out}) of said output variables (Y_j) by combining said predetermined values (a_{ij}) of the conclusions of the various rules, the predetermined values (a_{ij}) of each of said conclusions being weighted by taking into account an overall degree of truth (μ_i) of the corresponding fuzzy logic expression, said overall degree of truth being determined by combining the respective degrees of truth of the conditions appearing in said fuzzy expression and said degree of truth of one condition being maximum when said condition is strictly verified and zero when said condition is considered as non-verified; said controller comprising:

first means for supplying for each rule a current (I_i), the intensity of which is representative of the overall degree of truth (μ_i) of the fuzzy logic expression of said rule, and

second means for determining the values of said output variables (Y_j) from said current intensities (I_i) supplied by said first means for the various rules; wherein the first means of said controller have:

a network of parallel resistive bipoles, said network being disposed in series with a current source and each of said bipoles being associated with one of said rules, said bipoles each being moreover composed of a set of resistive elements interconnected in series and in parallel, the configuration of the interconnections of said resistive elements in a bipole being determined by the nature of the logic operators ("AND", "OR") present in the fuzzy logic expression of the rule associated with said bipole,

a plurality of evaluation circuits of the degree of truth of a condition, each of said circuits being adapted to command the conductance of one of said resistive elements in such a way that the relative current intensities (I_i) circulating in the various branches (**21,22,23**) of said network resistive bipoles reflect the distribution of the overall degrees of truth of the various rules.

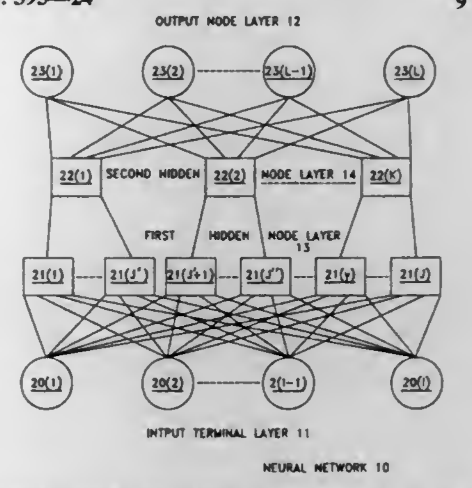
5,712,959
NEURAL NETWORK ARCHITECTURE FOR NON-GAUSSIAN COMPONENTS OF A MIXTURE DENSITY FUNCTION

Roy L. Streit, 110 Ethel Dr., Portsmouth, R.I. 02871

Filed Jul. 7, 1995, Ser. No. 499,243

Int. Cl.^{6} G06E *1/00;* **G06F** *15/18*

U.S. Cl. 395—24 **9 Claims**



1. A neural network for classifying input vectors to an outcome class comprising:

an input layer comprising a plurality of input terminals each for receiving a component of an input vector;

a first hidden layer including "H" first layer nodes each connected to the input terminals for receiving the input vector components from the input terminals and for generating a first layer output value representing a selected first layer power of the absolute value of the sum of the difference between a function of each input vector component and a threshold value, wherein, for each first layer node, the threshold value is determined as $t_i = u^T s_i$, where "u" is a mean vector of training input vectors used to train the neural network during the training operation, "T' represents a matrix/vector transpose operation, and "s_i" represents a vector defining a point on an H-component grid defined on a unit sphere having a number

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of dimensions corresponding to the number of components of an input vector;

a second hidden layer including a plurality of second layer nodes each for generating an outcome class component value, each second layer node being connected to predetermined ones of the first layer nodes and generating in response to the first layer output values an outcome class component value representing a function related to the exponential of the negative square of the sum of first layer output values, the sum being raised to a selected second layer power corresponding to a second layer power value divided by the first layer power; and

an output layer comprising a plurality of output nodes each associated with an outcome class, each output node receiving a plurality of outcome class component values, each associated with an outcome class component and each representing a contribution of the outcome class component to the outcome class determination, each output node performing a summation operation in connection with the value of product of each outcome class component and an associated outcome class component weighting value to generate an outcome class value, the collection of outcome class values from all of the output nodes identifying the outcome class associated with the input vector.

5,712,960

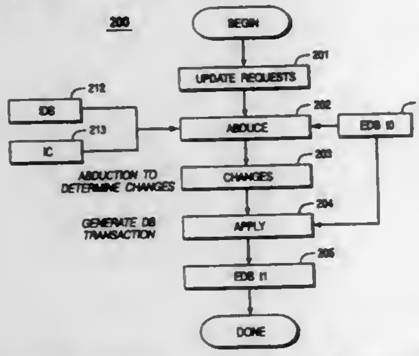
SYSTEM AND METHODS FOR INTELLIGENT DATABASE MANAGEMENT USING ABDUCTIVE REASONING

Carlo Chiopris, Verona, and Franco Losi, Piacenza, both of Italy, assignors to CV Soft, S.R.L., Bergamo, Italy

Continuation of Ser. No. 86,969, Jul. 2, 1993, abandoned. This application Apr. 15, 1996, Ser. No. 641,013

Int. Cl.⁶ G06F *17/00*

U.S. Cl. 395—77 **29 Claims**



1. In a computer system, a method for automatically maintaining a domain of objects, the method comprising:

(a) defining the domain by storing known information of the objects in a knowledgebase;

(b) specifying constraints which the domain must obey;

(c) receiving a request from a user for altering the domain;

(d) from the known information, deducing new information from the known information in response to the request from the user for altering the domain;

(e) if the new information is not sufficient for satisfying the request from the user for altering the domain, abducing additional new information which, when combined with the new information would satisfy the request from the user for altering the domain;

(f) verifying that the domain does not violate the constraints if the new information and the additional new information is stored in the knowledgebase; and

(g) storing the new information and the additional new information in the knowledgebase, whereupon a new domain satisfying the request from the user for altering the domain is defined.

5,712,961

CONTACT-TYPE SENSOR

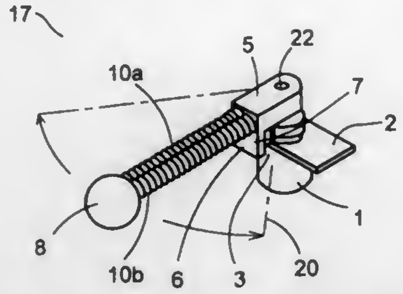
Takashi Matsuo, Amagasaki, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 16, 1996, Ser. No. 714,363

Claims priority, application Japan, Sep. 19, 1995, 7-239545

Int. Cl.⁶ G05B *15/00*

U.S. Cl. 395—93 **24 Claims**



1. A contact-type sensor for sensing an object, comprising:

a body;

a contacting member which contacts the object; and

a shaft, one end of which is connected to the body of the sensor, and another end of which supports said contacting member, said shaft being rotatable within a predetermined plane, and the shaft being more flexible in a direction perpendicular to the predetermined plane than in a direction parallel to the predetermined plane.

5,712,962

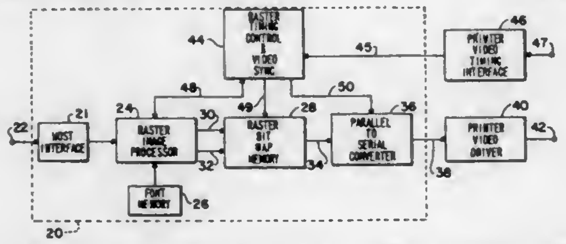
GRAY SCALE ADD-ON

Alice M. d'Entremont, Boston, Mass., assignor to Canon, Inc., Tokyo, Japan

Continuation of Ser. No. 99,401, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 636,567, Jan. 7, 1991, abandoned, which is a continuation of Ser. No. 220,484, Dec. 8, 1987, abandoned. This application May 31, 1995, Ser. No. 455,144

Int. Cl.⁶ G06K *1/00*

U.S. Cl. 395—107 **31 Claims**



1. A system for providing, in response to flag signals from a flag signal source, gray scale modulation signals to a laser printer having a source of printer video timing signals, a printer video drive circuit and a raster bit map memory for storing a raster bit map that can be read out in accordance with said printer video timing signals, said system comprising:

a gray scale image memory for storing a plurality of multibit bytes each encoding a corresponding gray scale value and flag data;

an address generator for addressing said gray scale image memory to read out said multibit bytes of gray scale values in accordance with said printer video timing signals;

modulating means for converting said gray scale values to a stream of analog pulse-width-modulated signals; and

logic switch means, receiving the flag data from said gray scale image memory, for selectively feeding either said stream of analog pulse-width-modulated signals obtained from said modulating means or the contents of said raster bit map to said printer video drive circuit in accordance with the flag data received from said gray scale image memory.

5,712,963

PRINTER CONTROL SYSTEM INCLUDING WHITE ENLARGED LINE MEMORY FOR STORING EXPANDED WHITE PRINT PIXEL SIGNALS AND BLACK ENLARGED LINE MEMORY FOR STORING EXPANDED BLACK PRINT PIXEL SIGNALS

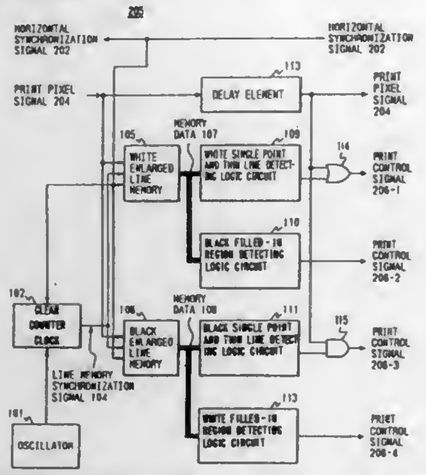
Shinya Kobayashi, Mito; Kunio Sato, Hitachi, and Yasuo Kikuchi, Katsuta, all of Japan, assignors to Hitachi, Ltd., and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 297,568, Sep. 1, 1994, abandoned. This application Dec. 20, 1996, Ser. No. 771,272

Claims priority, application Japan, Sep. 1, 1993, 5-217186

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—109 **7 Claims**


205
HORIZONTAL SYNCHRONIZATION SIGNAL 202
HORIZONTAL SYNCHRONIZATION SIGNAL 202
113
PRINT PIXEL SIGNAL 204
DELAY ELEMENT
PRINT PIXEL SIGNAL 204
MEMORY DATA 107
105
109
WHITE ENLARGED LINE MEMORY
WHITE SINGLE POINT AND THIN LINE DETECTING LOGIC CIRCUIT
114
PRINT CONTROL SIGNAL 206-1
110
BLACK FILLED-IN REGION DETECTING LOGIC CIRCUIT
PRINT CONTROL SIGNAL 206-2
102
CLEAR COUNTER CLOCK
106
MEMORY DATA 108
111
BLACK ENLARGED LINE MEMORY
BLACK SINGLE POINT AND THIN LINE DETECTING LOGIC CIRCUIT
115
PRINT CONTROL SIGNAL 206-3
LINE MEMORY SYNCHRONIZATION SIGNAL 104
101
113
OSCILLATOR
WHITE FILLED-IN REGION DETECTING LOGIC CIRCUIT
PRINT CONTROL SIGNAL 206-4

1. A printer control system for controlling a print characteristic of a printer for printing a print pixel signal synchronized to horizontal lines of an image, the print pixel signal having an arbitrary horizontal resolution and including white print pixel signals representing white pixels of the image and black print pixel signals representing black pixels of the image, the printer control system controlling the print characteristic of the printer in accordance with a type of the image and comprising:

a white enlarged line memory for receiving the print pixel signal and storing the print pixel signal at timing points spaced a predetermined time apart after expanding any portion of any white print pixel signal in the print pixel signal falling between two adjacent ones of the timing points and having a duration less than the predetermined time to have a duration equal to the predetermined time without expanding any portion of any black print pixel signal in the print pixel signal; and

a black enlarged line memory for receiving the print pixel signal and storing the print pixel signal at timing points spaced a predetermined time apart after expanding any portion of any black print pixel signal in the print pixel signal falling between two adjacent ones of the timing points and having a duration less than the predetermined time to have a duration equal to the predetermined time without expanding any portion of any white print pixel signal in the print pixel signal.

5,712,964

COMPUTER GRAPHICS DATA DISPLAY DEVICE AND METHOD BASED ON A HIGH-SPEED GENERATION OF A CHANGED IMAGE

Hiroshi Kamada; Katsuhiko Hirota; Kaori Suzuki; Atsuko Tada; Asako Yumoto; Michiteru Kodama; Hirokatsu Musha; Fujio Sato; Kiyoshi Kobayashi, all of Kawasaki, and Satoshi Kasai, Shizuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

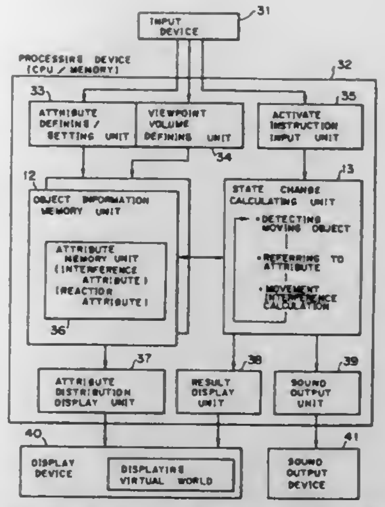
Filed Sep. 28, 1994, Ser. No. 313,914

Claims priority, application Japan, Sep. 29, 1993, 5-242974; Sep. 29, 1993, 5-242975; Sep. 29, 1993, 5-243075; Sep. 29, 1993, 5-243083; Sep. 29, 1993, 5-265613

Int. Cl.⁶ G06T *15/70*

U.S. Cl. 395—118 **27 Claims**

1. A computer graphics data display device for displaying an object in a computer graphics world comprising:


INPUT DEVICE
31
PROCESSING DEVICE (CPU / MEMORY)
32
33
35
ATTRIBUTE DEFINING / SETTING UNIT
VIEWPOINT VOLUME DEFINING UNIT
ACTIVATE INSTRUCTION INPUT UNIT
34
12
13
OBJECT INFORMATION MEMORY UNIT
STATE CHANGE CALCULATING UNIT
• DETECTING MOVING OBJECT
ATTRIBUTE MEMORY UNIT (INTERFERENCE ATTRIBUTE) (REACTION ATTRIBUTE)
• REFERRING TO ATTRIBUTE
• MOVEMENT INTERFERENCE CALCULATION
36
37
38
39
ATTRIBUTE DISTRIBUTION DISPLAY UNIT
RESULT DISPLAY UNIT
SOUND OUTPUT UNIT
40
41
DISPLAY DEVICE
DISPLAYING VIRTUAL WORLD
SOUND OUTPUT DEVICE

attribute defining/setting means for defining and setting an attribute indicating a type of calculation to determine a state change for at least one object in the computer graphics world;

attribute memory means for storing the attribute of the at least one object set by said attribute defining/setting means;

state change calculating means for calculating the state change of a displayed object according to the attribute of at least one related object in response to one of a movement of the displayed object in the computer graphics world and receipt of an external activation instruction, the at least one related object including one of the displayed object and an other object; and

result display means for displaying a result of a calculation.

5,712,965

THREE-DIMENSIONAL SOLID ARRANGING/EDITING METHOD IN A COMPUTER GRAPHIC SYSTEM AND SYSTEM

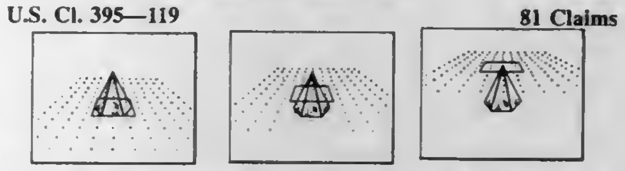
Takushi Fujita; Mitsuaki Fukuda; Chikako Matsumoto; Masaaki Oota; Hitoshi Matsumoto, all of Kawasaki; Shuro Shindo, Inagi; Waku Ooe, Inagi, and Yuichi Nagai, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 25, 1995, Ser. No. 428,408

Claims priority, application Japan, Apr. 25, 1994, 6-086781; Apr. 25, 1994, 6-086782; Apr. 24, 1995, 7-098701; Apr. 24, 1995, 7-098766

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—119 **81 Claims**



1. A three-dimensional solid arranging/editing method, to be implemented in a graphic system in which a point can be specified in a screen by a cursor, comprising the steps of:

selecting a solid displayed on the screen with said cursor;

selecting a predetermined rule from a plurality of rules for producing a reference plane;

producing a reference plane according to said selected solid and said selected rule; and

entering a position of a point, on said reference plane, as specified by said cursor which is supposed to move on said reference plane, as a three-dimensional position.

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5,712,966

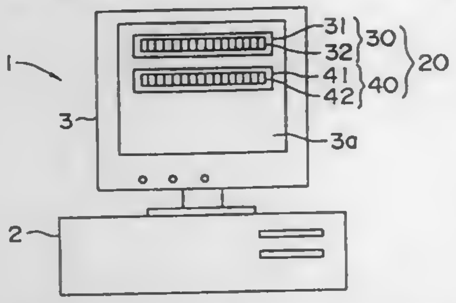
MEDICAL IMAGE PROCESSING APPARATUS

Ryoichi Nadachi, Paramus, N.J., assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation-in-part of Ser. No. 215,585, Mar. 22, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 590,149

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—128 **8 Claims**



1. A medical image processing apparatus comprising:
an image displaying device;
a system for processing medical images and for outputting the images to the image displaying device;
said processing system causing white and black background bars to be displayed in parallel on a display screen of said image displaying device when said medical image processing apparatus is turned on, said processing system having an arithmetic and control circuit which causes first and second density bars each serving as a display adjusting image to be displayed within said white and black background bars respectively; and
said processing system instructing said arithmetic and control circuit to generate said first density bar in which a density gradually varies from pale to deep from one area to another area of said first density bar and said second density bar in which a density gradually varies from pale to deep in a direction opposite to that of said first density bar.

5,712,967

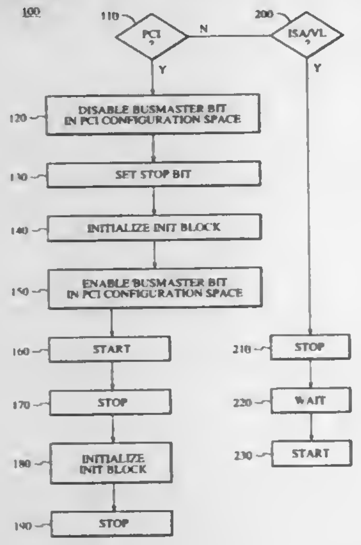
METHOD AND SYSTEM FOR GRACEFUL RECOVERY FROM A FAULT IN PERIPHERAL DEVICES USING A VARIETY OF BUS STRUCTURES

Leonid Grossman, Cupertino; Sherman Lee, Rancho Palos Verdes, and Ramkrishna Vepa, Fremont, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 22, 1996, Ser. No. 635,843

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—182.01 **12 Claims**



1. A method for resetting a peripheral device which could use a variety of buses, the variety of buses including PCI or ISA buses, comprising the steps of:
(a) determining a particular bus type of the peripheral device, step (a) further comprising the steps of:
(a1) determining whether the particular bus type used by the peripheral device is PCI;
(a2) determining whether the particular bus type used by the peripheral device is ISA if the particular bus type used by the peripheral device is not PCI; and
(b) automatically executing a reset process capable of successfully resetting the peripheral device having the particular bus type determined in step (a) without interrupting any of a plurality of processes, the plurality of processes further comprising those processes which could result in significant loss of data, loss of connection to a network or adversely affect the performance of the peripheral device if the peripheral device is reset during execution of any of the plurality of processes, automatically executing the reset step (b) further comprising the steps of:
(b1) disabling a busmaster bit;
(b2) setting a stop bit;
(b3) initializing at least a portion of the peripheral device;
(b4) enabling the busmaster bit;
(b5) starting the peripheral device;
(b6) stopping the peripheral device;
(b7) initializing at least the portion of the peripheral device; and
(b8) starting the peripheral device;
if the particular bus type used by the peripheral device is PCI.

5,712,968

SYSTEM FOR ESTABLISHING NEW PATH IN RING NETWORK AND DIVIDING RING SHAPED PATH INTO PLURALITY OF RING SHAPED PATHS BY BEING RID OF FAULTY PATH

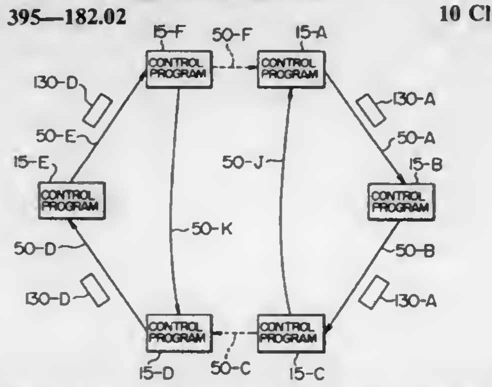
Yoshiyuki Nakayama, Pala Alto, Calif.; Takeshi Ishizaki, Kawasaki, Japan; Kenjiro Mori, Machida, Japan; Fumio Nakamura, Kawasaki, Japan, and Tadashi Yamamitsu, Handano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,454

Claims priority, application Japan, Jul. 8, 1991, 3-167141

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—182.02 **10 Claims**



5. A method of controlling a ring-shaped logical communication path formed in a network which connects a plurality of node means, each of said node means operating to relay a message to a predetermined adjacent node thereof so that said ring-shaped logical communication path is formed, said method comprising:
generating, by one of node means that has detected a fault on its message receiving communication path, a control message indicative of a fault recovery request including a node identifier assigned to the node means that has detected the fault and sending the control message to the adjacent node on said ring-shaped logical communication path;
transferring, by each node means that has received the control message, the received control message to the adjacent node means on said ring-shaped logical communication path; and
establishing by a node means that has failed to transfer the control message to the adjacent node, a new communication path for message transmission to the node means indicated by the node identifier included in the received control message, so that said ring-shaped logical communication path is divided into a plurality of ring-shaped logical communication paths by being rid of a faulty path.

5,712,969

METHOD FOR COMPLETELY REPROGRAMMING AN ERASABLE, NON-VOLATILE MEMORY

Jürgen Zimmermann, Vaihingen, and Walter Grote, Markgröningen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

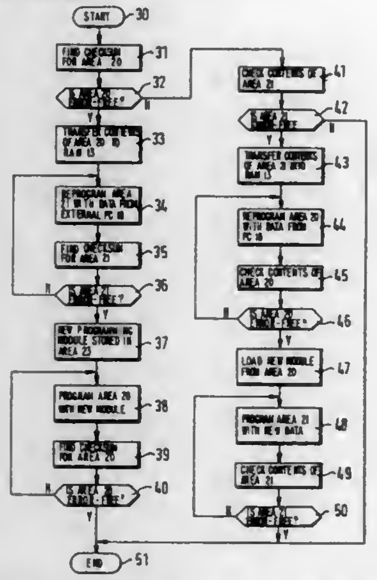
PCT No. PCT/DE94/01040, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/08824, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 10, 1994, Ser. No. 553,685

Claims priority, application Germany, Sep. 24, 1993, 43 32 499.1

Int. Cl.^{6} G06F *11/20*

U.S. Cl. 395—182.03 **9 Claims**



1. A method for completely reprogramming an erasable, nonvolatile memory in a control device, said method comprising the steps of:
a) providing a control device (**10**) containing at least one central unit (**11**), a volatile memory (**13**), an erasable, nonvolatile memory (**12**) and input/output circuits (**15**), wherein said erasable, nonvolatile memory (**12**) comprises at least two separately erasable and programmable areas(**20**, **21**) and at least one first area (**20**) of said at least two separately erasable and programmable areas (**20**, **21**) includes an error-free programming module for programming the erasable, nonvolatile memory (**12**) stored therein;
b) providing an external electronic device (**18**) containing data to be programmed in the erasable, nonvolatile memory (**12**);
c) executing said programming module for programming of the erasable, nonvolatile memory (**12**) provided in step a) under control of the at least one central unit (**11**), thereby receiving said data in the erasable, nonvolatile memory from said external electronic device (**18**);
d) during said programming of the erasable, nonvolatile memory (**12**) in step c), first programming a second area (**21**) of said at least two areas (**20**, **21**) of the erasable, nonvolatile memory (**12**) and thereby programming another programming module into said second area (**21**); and
e) reprogramming said at least one first area (**20**) with said another programming module already stored in said second area (**21**).

5,712,970

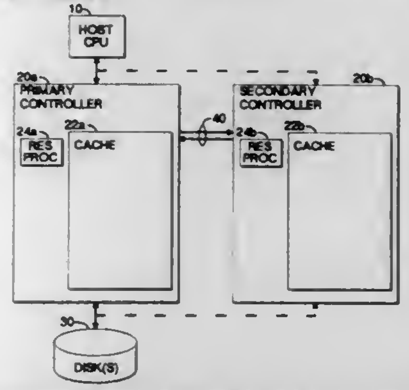
METHOD AND APPARATUS FOR RELIABLY STORING DATA TO BE WRITTEN TO A PERIPHERAL DEVICE SUBSYSTEM USING PLURAL CONTROLLERS

Randolph Arnott, Mount Vernon, N.H., and Timothy Flavin, Framingham, Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Sep. 28, 1995, Ser. No. 535,595

Int. Cl.^{6} G06F *11/16*

U.S. Cl. 395—182.04 **25 Claims**



1. In a computer system including a central processor coupled to first and second redundant peripheral device controllers coupled together by a communications path, each including a cache memory, wherein the cache memory in the second controller contains an array of pointers each capable of pointing to a block of memory in the cache memory of the second controller, and the cache memory in the first controller contains a stack containing a plurality of entries, each stack entry containing data representing a respective one of the pointers in the array of pointers, a method for reliably storing write data comprising the steps of:
receiving write data from the central processor in the first controller;
storing the write data in the cache memory of the first controller;
transmitting a copy of the write data from the first controller to the second controller via the communications path by:
popping the top stack entry off the stack;
appending the pointer representative data contained in the popped stack entry to the copy of the write data; and
transmitting the combination of the pointer representative data and the copy of the write data to the second controller; and
storing the transmitted copy of the write data in the cache memory of the second controller by:
storing the transmitted copy of the write data in a block of memory in the cache memory of the second controller; and
storing a pointer to the block of memory containing the transmitted copy of the write data in the one of the pointers in the array of pointers represented by the appended pointer representative data; and
processing the write data in the first controller.

5,712,971

METHODS AND SYSTEMS FOR RECONSTRUCTING THE STATE OF A COMPUTATION

Craig Stanfill, Waltham; Cliff Lasser, Cambridge, and Robert Lordi, Wayland, all of Mass., assignors to Ab Initio Software Corporation, Concord, Mass.

Flied Dec. 11, 1995, Ser. No. 570,724

Int. Cl.^{6} G06F *11/08*

U.S. Cl. 395—183.1 **12 Claims**

1. A method for executing a computer application on a parallel processing system, where such application does not have preprogrammed checkpointing capability, comprising the steps of:
(a) executing an application in distinct execution phases on a parallel processing system;
(b) controlling processing of each execution phase of the application by issuing commands and replies to such commands;
(c) recording all such commands and replies to such commands;

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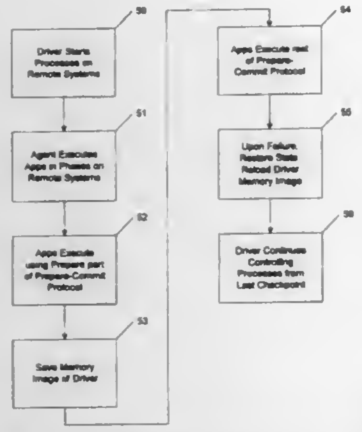
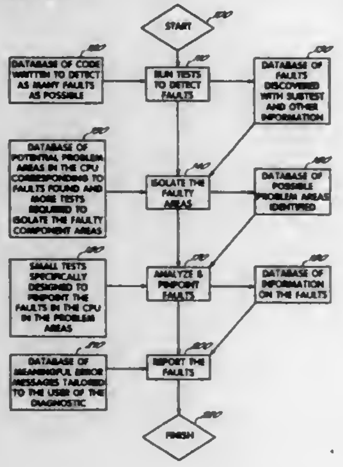

Driver Starts Processes on Remote Systems
50
Agent Executes Apps in Phases on Remote Systems
51
Apps Execute using Prepare part of Prepare-Commit Protocol
52
Save Memory Image of Driver
53
Apps Execute rest of Prepare-Commit Protocol
54
Upon Failure, Restore State Reload Driver Memory Image
55
Driver Continues Controlling Processes from Last Checkpoint
56

(d) saving the end-state of each successfully completed execution phase;
(e) detecting failure of the application in any of such execution phases;
(f) restoring the last saved end-state of the execution phase prior to the execution phase in which failure was detected;
(g) recapitulating all recorded commands and replies to such commands from the beginning of execution of the application up through the last saved end-state of the execution phase prior to the execution phase in which failure was detected;
(h) restarting the application at the beginning of the execution phase in which failure was detected.

5,712,972
IDENTIFICATION OF FAULTS IN DATA PATHS AND FUNCTIONAL UNITS OF A CENTRAL PROCESSING UNIT BY A SYSTEMATIC EXECUTION OF TEST INSTRUCTIONS

Sunil Kakkar, San Jose, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.
Filed Jun. 7, 1995, Ser. No. 483,604
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—183.02 **21 Claims**

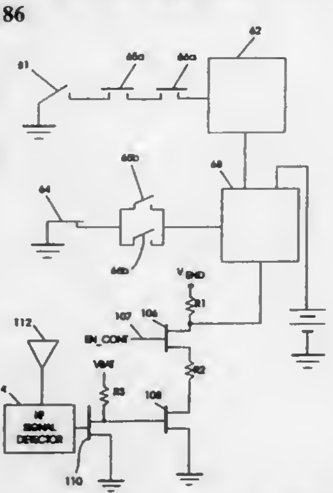

START
DATABASE OF CODE WRITTEN TO DETECT AS MANY FAULTS AS POSSIBLE
RUN TESTS TO DETECT FAULTS
DATABASE OF FAULTS DISCOVERED WITH SUBTEST AND OTHER INFORMATION
DATABASE OF POTENTIAL PROBLEM AREAS IN THE CPU CORRESPONDING TO FAULTS FOUND AND MORE TESTS REQUIRED TO ISOLATE THE FAULTY COMPONENT AREAS
ISOLATE THE FAULTY AREAS
DATABASE OF POSSIBLE PROBLEM AREAS IDENTIFIED
SMALL TESTS SPECIFICALLY DESIGNED TO PINPOINT THE FAULTS IN THE CPU IN THE PROBLEM AREAS
ANALYZE & PINPOINT FAULTS
DATABASE OF INFORMATION ON THE FAULTS
DATABASE OF MEANINGFUL ERROR MESSAGES TAILORED TO THE USER OF THE DIAGNOSTIC
REPORT THE FAULTS
FINISH

1. A diagnostic method for locating faulty functional units and data paths in a central processing unit of a data processing circuit, said central processing unit having signal input and output terminals, said data paths connecting signals from and between said terminals and said functional units, said functional units modifying signals received though said data paths, comprising

providing a first database of instructions, said instructions, when input as signals to terminals of said central processing unit, causing said central processing unit to use every data path and functional unit in said central processing unit,
providing a second database correlating groups of said instructions to functional units and datapaths of said central processing unit which must be operating correctly to avoid an error during said groups of instructions,
providing a third database of test procedures, each test procedure, when input as electrical signals to terminals of said central processing unit, causing the central processing unit to use specific data paths and functional units, and including a test for determining whether a data path or functional unit used by the central processing unit in response to said test procedure is faulty, said third database correlating said test procedures with specific data paths and functional units used in response to said test procedure,
executing, in said central processing unit, each of said instructions in said first database by providing electrical signals corresponding to said instructions to terminals of said central processing unit, and forming a first log of errors identifying data paths and functional units which were found to be faulty during execution of said instructions,
correlating groups of instructions which produced errors identified in said first log to said second database to form a second log of possibly faulty functional units and data paths in said central processing unit,
selecting test procedures from said third database which are correlated to possibly faulty functional units and data paths identified by said second log, and
performing, in said central processing unit, test procedures selected in the preceding step by providing electrical signals corresponding to said test procedures to terminals of said central processing unit, and forming a third log of those functional units and data paths indicated to be faulty by tests performed by said test procedures.

5,712,973
WIRELESS PROXIMITY CONTAINMENT SECURITY

Richard A. Dayan, Wake Forest; Joseph P. McGovern, and Palmer E. Newman, both of Apex, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed May 20, 1996, Ser. No. 650,205
Int. Cl.^{6} H04L *9/00*
U.S. Cl. 395—186 **10 Claims**

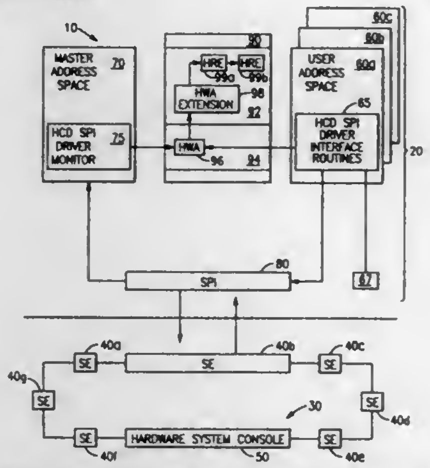


1. A personal computer system having a normal power-up logic sequence to become operative in receiving and retaining data, such system being capable of securing the data retained within the system against access when moved from a security zone defined by a transmitter for radiation having a predefined radiation characteristic, the system comprising:

a detector for radiation which produces an alarm signal upon losing detection of radiation having said predefined characteristic;
security logic cooperating with said power-up logic and responsive to said alarm signal to prevent said system from becoming operative.

5,712,974
METHOD AND APPARATUS FOR CONTROLLING THE CONFIGURATION DEFINITIONS IN A DATA PROCESSING SYSTEM WITH A PLURALITY OF PROCESSORS

Charles W. Gainey, Poughkeepsie, N.Y.; Matthias Gubitz, Boblingen, Germany; Harvey McGee, Hyde Park, N.Y.; Charles E. Shapley, Salt Point, N.Y.; Robert A. Smith, Apalachin, N.Y., and Werner Wicke, Calw, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 28, 1995, Ser. No. 412,386
Claims priority, application European Pat. Off., Mar. 30, 1994, 94105038
Int. Cl.^{6} H01J *13/00;* **G06F** *9/00;9/40;9/44;9/46*
U.S. Cl. 395—200.1 **19 Claims**

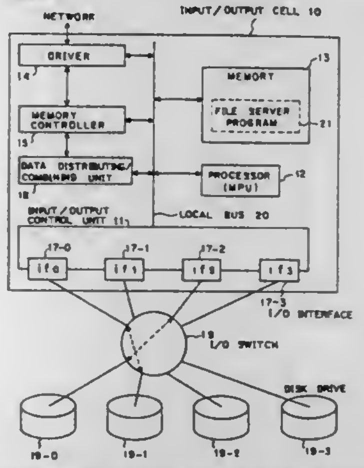


1. Apparatus for controlling configuration definitions in a multiprocessor data processing system comprising a plurality of main processors and a plurality of devices attached to said main processors, comprising:

(a) communications means for communicating between each of said main processors;
(b) a plurality of configuration storage means accessible by said communications means for storing for each of said plurality of main processors one or more sets of configuration definition data, each set of configuration definition data comprising a complete configuration definition of a certain main processor and all devices accessible to said certain main processor; and
(c) a central configuration definition controller (CCDC) means executable by any one of said main processors as a local processor for globally creating and/or modifying through said communications means for each one of said main processors as a remote processor said sets of configuration definition data, said CCDC means further comprising:
    (1) determining means used by said main processors for allowing said local processor to query and for allowing all other main processors to signal their existence to said local processor;
    (2) receiving means operable when modifying configuration definition data for requesting and receiving by said local processor from any one of said main processors as a remote processor a certain one of said sets of configuration definition data of said remote processor;
    (3) manipulating means for creating and/or modifying on said local processor a certain one of said sets of configuration definition data of said remote processor; and
    (4) returning means for transferring said certain one of said sets of configuration definition data to said remote processor.

5,712,975
INPUT/OUTPUT CELL IN PARALLEL COMPUTER AND PARALLEL COMPUTER SYSTEM

Kazuichi Ooe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 31, 1995, Ser. No. 381,396
Claims priority, application Japan, Feb. 24, 1994, 6-026488
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—200.2 **12 Claims**

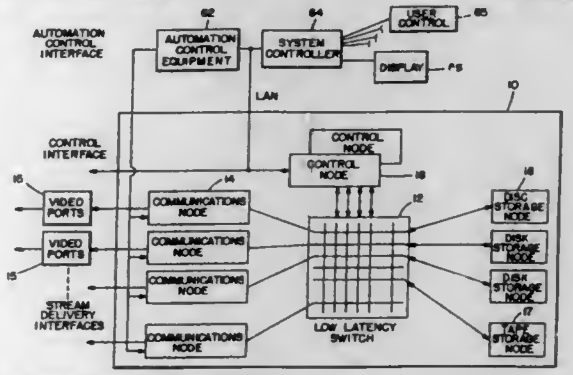


1. An input/output cell operated in a parallel computer system in which normal cells are connected to a network, said input/output cell comprising:

a plurality of input/output interface devices connected to external storage devices;
mode switch means for switching modes between a parallel access mode in which said plurality of input/output interface device are collectively controlled as if said plurality of input/output interface devices were a single interface device and an individual access mode in which each of said plurality of input/output interface devices are individually controlled; and
input/output control means for controlling, using the parallel and individual access modes, access to the external storage devices from the normal cells which are not capable of directly communicating with the external storage devices in the parallel or individual access modes.

5,712,976
VIDEO DATA STREAMER FOR SIMULTANEOUSLY CONVEYING SAME ONE OR DIFFERENT ONES OF DATA BLOCKS STORED IN STORAGE NODE TO EACH OF PLURALITY OF COMMUNICATION NODES

Lorenzo Falcon, Jr., and Ashok Raj Saxena, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 8, 1994, Ser. No. 302,624
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—200.09 **4 Claims**



1. A media streamer, comprising:

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at least one storage node comprising mass storage for storing a digital representation of at least one video presentation, said mass storage being comprised of a plurality of mass storage units, said at least one video presentation requiring a time T to present in its entirety, and stored as a plurality of N data blocks, each data block storing data corresponding to approximately a T/N period of said video presentation;

switch means coupled to said at least one storage node;

a plurality of communication nodes each having at least one input port that is coupled via said switch means to an output of said at least one storage node for receiving and buffering a digital representation in a form of data blocks of a video presentation therefrom, each of said plurality of communication nodes further having a plurality of output ports, individual ones of which transmit an isochronous digital representation as a data stream to a consumer of the digital representation; wherein

said N data blocks of said digital representation are partitioned into X stripes, wherein data blocks 1, X+1, 2*X+1, . . . etc., are associated with a first one of the X stripes, data blocks 2, X+2, 2*X+2, . . . etc., are associated with a second one of the X stripes, etc., and wherein individual ones of said X stripes are each stored on a different one of said plurality of mass storage units; and

control means for operating said switch means in accord with consumer inputs to provide said data blocks to selected ones of said communication nodes, wherein said X stripes are read out in such a manner as to enable a plurality of data streams to simultaneously convey a same one or different ones of said N data blocks to each of a plurality of communication nodes.

5,712,977

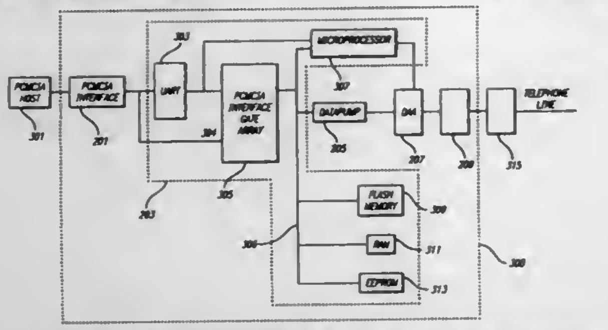
METHOD AND APPARATUS FOR INITIAL COUNTRY SELECTION IN A UNIVERSAL MODEM WITH CABLE

Thomas J. Glad; James T. Schley-May; Gregory S. Gillespie, all of Nevada City; David R. Kissinger, Pike, and William L. Harris, Nevada City, all of Calif., assignors to TDK Systems, Inc., Nevada City, Calif.

Filed Sep. 18, 1995, Ser. No. 529,867

Int. Cl.^{6} H04N *1/32;* G06F *13/14*

U.S. Cl. 395—200.09 **49 Claims**



1. A method for configuring a data communication equipment for initial country selection comprising the steps of:

providing a reconfigurable modem adaptable to a plurality of countries, said modem comprising:
- a memory means for storing tables of country parameters for a plurality of countries;
- a processing means for processing received information;

a communication network interface means disposed between said processing means and said communication network;
- a control means coupled to said memory means, said processing means, and said communication network interface means;

providing a country identifier coupled to said modem, said country identifier comprising a country label that visually displays a country identification code;

entering said country identification code displayed on said country label into a setup routine:

said setup routine causing said control means to access said tables in said memory means, to obtain country parameters according to said country identification code and to load said processing means and said communication network interface means with said country parameters.

5,712,978

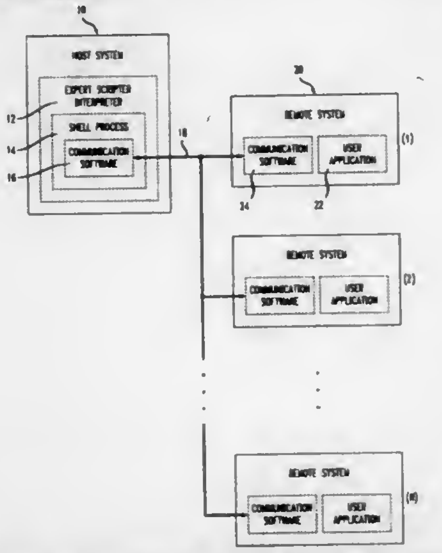
SYSTEM FOR CONTROL OF REMOTE PROCESSORS

Michah Lerner, Brooklyn, N.Y.; Eric Sporel, Butler, and S. Rao Vasireddy, Manalapan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 366,631

Int. Cl.^{6} G06F *11/30*

U.S. Cl. 395—200.11 **16 Claims**



1. A system for controlling an application being executed on at least one remote processor, wherein each remote processor generates remote screen data associated with said application to maintain a screen display, said system comprising:
- a central processor;
- a memory connected to said central processor; and
- a communications link connecting said central processor to said at least one remote processor;

wherein said system stores a plurality of rules in said memory, each said rule comprising a data portion and an action portion;

wherein said central processor receives said remote screen data from said remote processor and stores said remote screen data in said memory, said system executing actions based on said remote screen data in accordance with said rules by comparing said data portion of each of said rules with said remote screen data; and

wherein said actions comprise generating instructions that are transmitted to said remote processor, said instructions controlling said appljcation being executed on said remote processor.

5,712,979

METHOD AND APPARATUS FOR ATTACHING NAVIGATIONAL HISTORY INFORMATION TO UNIVERSAL RESOURCE LOCATOR LINKS ON A WORLD WIDE WEB PAGE

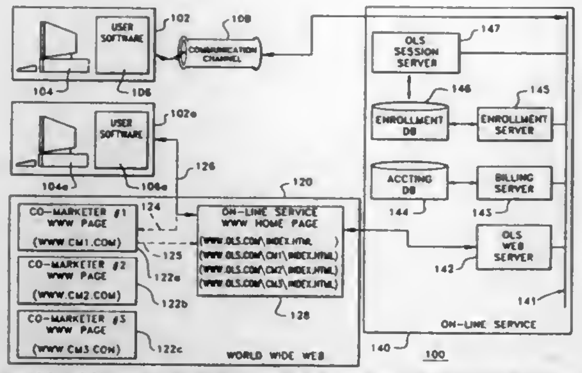
Terry E. Graber, Downingtown; Joshua Kopelman, Malvern; Edwin Howell Watkeys, III, North Wales, and Marvin I. Weinberger, Havertown, all of Pa., assignors to Infonautics Corporation, Wayne, Pa.

Filed Sep. 20, 1995, Ser. No. 531,031

Int. Cl.^{6} G06F *11/30*

U.S. Cl. 395—200.11 **13 Claims**

1. A method for tracking the navigation path of a user operating on a user station, said user having been directed to a second site on a world wide web (WWW) from a first site on said WWW, said first WWW site having a universal resource locator (URL) for uniquely identifying an address of said first WWW site on said WWW, said first WWW site including means for directing said user from said first WWW site to said second WWW site, comprising the steps of:



(A) receiving a URL at said second WWW site when said user is directed from said first WWW site to said WWW second site, said first WWW site being different from said user station, said second WWW site being different from said user station;

(B) capturing, at said second WWW site, information representative of an identity of said first WWW site by identifying a first code in said URL received in step (A);

(C) determining a destination web page for said user;

(D) forming, at said second WWW site, a revised destination web page by inserting a second code representative of said identity of said first WWW site into at least one selected web page link associated with said destination web page; and

(E) transmitting said revised destination web page to said user.

5,712,980

DATA ARRANGEMENT FOR AN APPARATUS CONNECTABLE TO A COMMUNICATION NETWORK, AND PROCESS FOR GENERATING THE DATA ARRANGEMENT

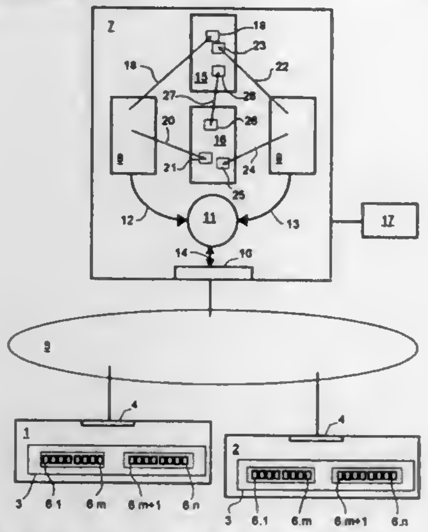
Heinz Beeler, Ebikon; Gerhard Brun, Luzern, and Alfred Moertlseder, Zug, all of Switzerland, assignors to Landis & Gyr Technology Innovation AG, Switzerland

Filed Jun. 6, 1995, Ser. No. 467,102

Claims priority, application European Pat. Off., Aug. 4, 1994, 94112236

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.15 **15 Claims**



1. A data arrangement for an apparatus connectable to a communication network, comprising:

a plurality of data points (**6**.**1**..**6**.n) arranged in the apparatus for storing dynamic process information, said plurality of data points being accessible for reading and/or changing by a station connected to the communication network;

one (**6**.k) of said plurality of data points (**6**.**1**. . . **6**.n) being an object of the apparatus; and

a static characterization included in said station and having static descriptive data of said object, said static characterization being a logically correlated unit, and being accessible for reading by a processor of said station; and

wherein a group (**6**.i.**6**.j) of said plurality of data points of the apparatus accessible over the communication network are further grouped into a new object by the static characterization; and

wherein said static characterization further comprises:

first descriptive data for establishing an address of said object and said new object;

second descriptive data for determining a data type of said object and said new object; and

third descriptive data for establishing a designation of said object and said new object.

5,712,981

NETWORK ANAYSIS METHOD FOR IDENTIFYING GLOBAL AND LOCAL NODE SERVERS AND FOR DETERMINING A RECONFIGURED NETWORK TO PROVIDE IMPROVED TRAFFIC PATTERNS

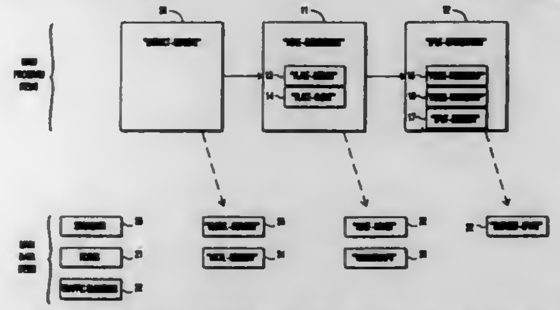
Neil H. McKee, Bristol, England, and Peter Phaal, San Francisco, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 207,369, Mar. 7, 1994, abandoned. This application Jun. 20, 1996, Ser. No. 667,340

Claims priority, application European Pat. Off., Mar. 8, 1993, 93301715

Int. Cl.^{6} H04J *3/02*

U.S. Cl. 395—200.15 **19 Claims**



1. A network analysis method for use in relation to a network of the type comprising a plurality of sub-networks each with a plurality of nodes, the method comprising the steps of:

(1) monitoring the network to collect and store traffic data indicative of linkage between nodes as judged by traffic therebetween, "linkage" meaning a level of interconnectivity between nodes as determined by a quantity of traffic therebetween;

(2) analyzing said traffic data to identify nodes acting as global servers, a global server being a node which communicates with nodes on plural sub-networks but without communicating predominantly with nodes on one sub-network;

(3) accessing said stored traffic data and removing traffic data associated with nodes identified as acting as global servers, and identifying nodes acting as local servers by analyzing stored traffic data remaining after said removing, a local server being a node which is a predominant communicator with nodes on one particular sub-network.

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5,712,982

TDMA POINT-TO-MULTIPOINT TRANSMISSION NETWORK WITH A MULTIFRAME WHICH INCLUDES A SINGLE CONTINUOUS STREAM OF DATA SUBFRAMES AND A SINGLE FREE PERIOD FOR RESPONSE-TIME MEASUREMENTS

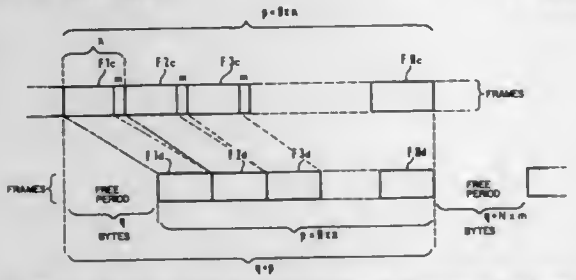
François Marcel, Orsay, France, assignor to Alcatel Cit, Paris, France

Filed Sep. 20, 1995, Ser. No. 531,105

Claims priority, application France, Sep. 23, 1994, 94 11401

Int. Cl.^{6} G06F *13/372;13/376;* **H04L** *5/22*

U.S. Cl. 395—200.17 **8 Claims**



1. Time division multiple access point-to-multipoint transmission network including a central station and a plurality of local stations;

each local station including means for sending return multiframes including a plurality of return frames and a single free period having a duration allowing measurements to be made, each return frame including a plurality of return subframes each having a fixed duration and containing data sent by that local station only and addressed to said central station, return subframes being sent at predetermined times decided on by transmit time measurement means so that subframes sent by all said local stations are received by said central station without overlapping and constitute a return frame;

said central station including means for sending forward multiframes including a plurality of forward frames and a single free period having a duration allowing measurements to be made;

wherein, in said central station and/or at least one local station, said means for sending multiframes include:

means for sampling from a data source a series of data packets, two consecutive packets being separated by a free period, and for inserting each packet into a frame, two consecutive frames being separated by a free period; and

time-shift means for inserting a predetermined number of frames into a multiframe, time-shifting said frames to eliminate the free periods between them and thus to constitute a multiframe including a single continuous stream of time-shifted frames and a single free period.

5,712,983

DIGITAL DEVICE FOR CONNECTING MULTIPLE WORKSTATIONS TO A TOKEN RING LOCAL AREA NETWORK

Gérard Vergnaud, Franconville; Abdelkrim Moulehiawy; Gérard Vuillemin, both of Paris, and Olivier Lemezec, Montrouge, all of France, assignors to Alcatel N.V., Amsterdam

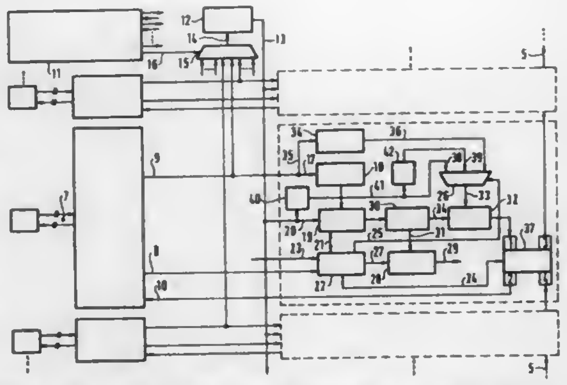
Filed Sep. 28, 1994, Ser. No. 313,793

Claims priority, application France, Sep. 29, 1993, 93 11622

Int. Cl.^{6} G06F *13/00;15/163*

U.S. Cl. 395—200.2 **5 Claims**

1. A digital device for connecting a plurality of workstations to a token ring local area network (**5**) in which digital data signals are coded by a specific method, said device including a token ring interface unit for each station, the device being characterized in that it includes a voltage-controlled oscillator (**12**) which is slaved to the digital data signal send clock from one of the stations of the device selected as a master station under the supervision of a central logic unit (**11**) and which supplies a clock (Hvcxo) to the token ring interface unit, and in that the token ring interface unit of a station comprises:



a switch (**37**) for connecting the station to said token ring (**5**);

a coder (**19**) for transcoding a data signal, sent from the station, under the control of the clock from the oscillator of the device;

a transcoded signal memory (**30**) at the coder output;

logic (**22**) receiving an indication relating to the station send clock via the coder, an insertion request signal (PHD) at the initiative of the station, and an indication (**23**) of the token ring clock frequency from the central logic unit (**11**) to which it sends in return an indication as to the possibility of inserting the station into the token ring (**5**) according to the respective clock frequencies of the station and of the token ring;

a code regenerator (**32**) connected between the output of the memory and an input of the unit switch (**37**) supervised by the logic for transmitting on the token ring the data signal recoded in its original form under the control of the token ring clock when the station is inserted into the token ring by the switch under the control of the logic; and

a clock (**33**, **40**, **42**) deriving the token ring clock from the oscillator clock, to the benefit of the code regenerator.

5,712,984

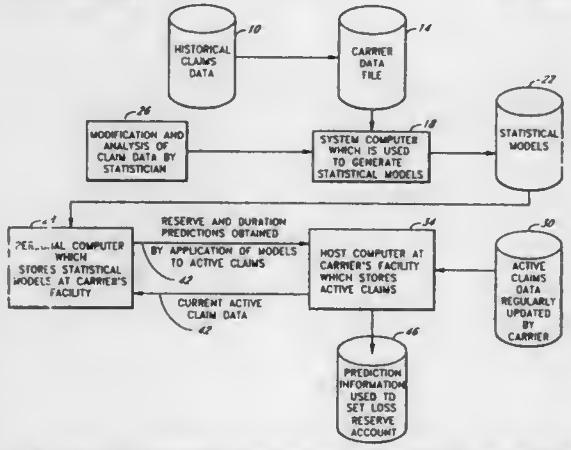
SYSTEM FOR FUNDING FUTURE WORKERS' COMPENSATION LOSSES

Mark S. Hammond, Laguna Niguel; Vincent J. Blanco, Long Beach; James W. Bonk, Fullerton, all of Calif., and Jack Zwanziger, Rochester, N.Y., assignors to Risk Data Corporation, Irvine, Calif.

Continuation of Ser. No. 652,424, Feb. 6, 1991, abandoned. This application May 11, 1993, Ser. No. 59,506

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 395—204 **39 Claims**


HISTORICAL CLAIMS DATA
10
CARRIER DATA FILE
14
22
STATISTICAL MODELS
26
MODIFICATION AND ANALYSIS OF CLAIM DATA BY STATISTICIAN
18
SYSTEM COMPUTER WHICH IS USED TO GENERATE STATISTICAL MODELS
PERSONAL COMPUTER WHICH STORES STATISTICAL MODELS AT CARRIER'S FACILITY
RESERVE AND DURATION PREDICTIONS OBTAINED
BY APPLICATION OF MODELS TO ACTIVE CLAIMS
42
CURRENT ACTIVE CLAIM DATA
42
34
HOST COMPUTER AT CARRIER'S FACILITY WHICH STORES ACTIVE CLAIMS
30
ACTIVE CLAIMS DATA REGULARLY UPDATED BY CARRIER
46
PREDICTION INFORMATION USED TO SET LOSS RESERVE ACCOUNT

1. A method for funding future losses incurred by an insurance carrier on workers' compensation injury claims, comprising the steps of:

obtaining historical workers' compensation claim data;

separating said historical claims data into data subsets wherein each data subset comprises claims of a predefined type and wherein each claim is placed into only one data subset;

generating a statistical model for each of said data subsets wherein each model represents the costs incurred on claims of said predefined type, and wherein the generation of each model further comprises the steps of:

applying statistical analysis techniques to the claims in a subject data subset in order to determine claim characteristics which are significant in affecting the costs incurred on said claims in said subject data subset;

calculating an intercept value which is a base statistical norm for the cost of said claims in said subject data subset; and

calculating an intercept modifier for each significant characteristic wherein said intercept modifier is a value which represents a statistical cost difference between all claims in said subject data subset and those claims in said data subset having said significant characteristic; storing said models on a computer at the insurance carrier's facility;

said computer performing the following steps:

determining said significant characteristics for each of said insurance carrier's active workers' compensation claims;

providing said significant characteristics of each of said insurance carrier's active workers' compensation claims as input characteristics to said models to obtain an individual reserve amount for each particular active claim; and

placing money in a loss reserve account based on said individual reserve amount for each particular active claim.

5,712,985

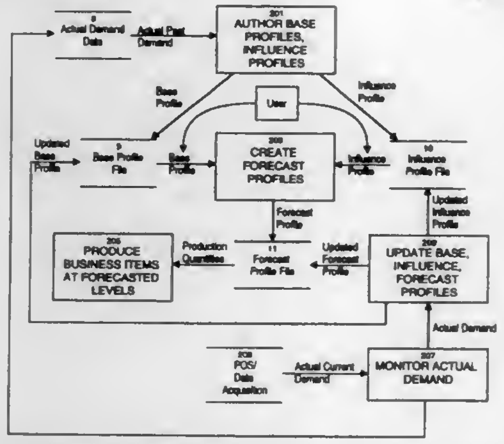
SYSTEM AND METHOD FOR ESTIMATING BUSINESS DEMAND BASED ON BUSINESS INFLUENCES

Michael D. Lee, 3213 Chandra La., Albuquerque, N. Mex. 87124; Randall K. Fields, 333 Main St., P.O. Box 5000, Park City, Utah 84060; Jamie T. Pond, 2016 E. Windham Cir., Salt Lake City, Utah 84109, and Barrire K. Tondevold, 5117 Germania Pl., Murray, Utah 84123

Continuation-in-part of Ser. No. 23,111, Feb. 26, 1993, Pat. No. 4,459,656, which is a continuation-in-part of Ser. No. 808,982, Dec. 17, 1991, which is a continuation of Ser. No. 406,069, Sep. 12, 1989. This application Oct. 13, 1995, Ser. No. 542,847

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 395—207 **48 Claims**



1. A computer implemented production scheduling system for projecting future demand in a plurality of time intervals for at least one business item, s accounting for recurring variations in actual demand for the business item, and for scheduling production of the business item, the system comprising: a memory divided into separate files including a database comprising:

a base profile defining a base demand for the business item in each of a first plurality of time intervals;

at least one influence profile defining a variation of the base demand in each of a second plurality of time intervals;

at least one forecast profile defining in each of a plurality of future time intervals a forecasted demand for the business item as a function of a combination of the base profile and the at least one influence profile;

a data file containing actual current demand for the business item in each of a plurality of past time intervals;

a processor coupled to the memory to receive the base profile, and the at

least one influence profile and to produce therefrom at least one forecast profile forecasting demand for the business item in each of a plurality of future time intervals; the processor further updating the base profile and the at least one influence profile in each of selected past time intervals with a weighted minimum update value in each selected time interval; and

a production schedule apparatus coupled to the processor to receive a forecast profile and to produce therefrom a production schedule for the business item indicating a forecasted demand for the business item in a plurality of future time intervals.

5,712,986

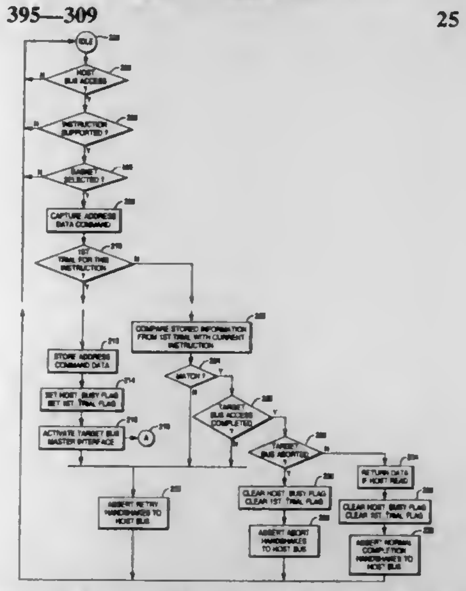
ASYNCHRONOUS PCI-TO-PCI BRIDGE

Tri Tinh Vo, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1995, Ser. No. 580,000

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—309 **25 Claims**


IDLE
HOST BUS ACCESS
INSTRUCTION SUPPORTED ?
TARGET SELECTED ?
CAPTURE ADDRESS DATA COMMAND
STORE ADDRESS COMMAND DATA
COMPARE STORED INFORMATION FROM 1ST TRIAL WITH CURRENT INSTRUCTION
MATCH ?
TARGET BUS ACCESS COMPLETED ?
TARGET BUS ABORTED
ACTIVATE TARGET BUS MASTER INTERFACE
ASSERT RETRY HANDSHAKES TO HOST BUS
CLEAR HOST BUSY FLAG CLEAR 1ST TRIAL FLAG
ASSERT ABORT HANDSHAKES TO HOST BUS
RETURN DATA IF HOST READ
CLEAR HOST BUSY FLAG CLEAR 1ST TRIAL FLAG
ASSERT NORMAL COMPLETION HANDSHAKES TO HOST BUS

1. A method of bridging a first device operating at a first clock frequency with a second device operating at a second clock frequency, comprising the steps of:

(a) receiving a first command message from the first device in a bridge coupled between the first device and the second device, the message comprising a device command;

(b) storing the first command message in the bridge;

(c) transmitting the first command message to the second device;

commanding the first device to re-transmit the first command message;

(e) receiving the re-transmitted command message from the first device in the bridge;

(f) repeating steps (d)–(e) until the stored first command message matches the re-transmitted message; and

(g) repeating steps (d)–(f) until a reply message is received from the second device, the reply message responsive to the first command message; and

(h) transmitting the reply message to the first device.

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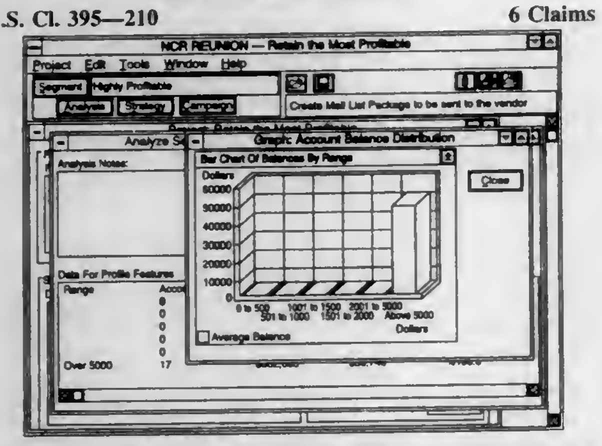
5,712,987
INTERFACE AND ASSOCIATED BANK CUSTOMER DATABASE

Toya Waits, Beavercreek; Alex Sobolev, Dayton; Rick Rusak, Kettering; Eileen Hunter, Dayton, all of Ohio; Janet Fath, Atlanta; Jacqueline Voellinger, Tucker, both of Ga., and Ralph Barletta, Sudbury, Mass., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 3, 1994, Ser. No. 253,459

Int. Cl.^{6} G06F *17/60;17/40*

U.S. Cl. 395—210 **6 Claims**



1. In a bank's relational customer database, containing records of customers, the improvement comprising the following steps:

a) maintaining historical records of customer transactions, including identities of products purchased;

b) providing a graphical interface which allows a user to

  i) select a subset of the database,

  ii) select a type of historical data contained in the subset, and

  iii) view a graphical plot of the selected historical data.

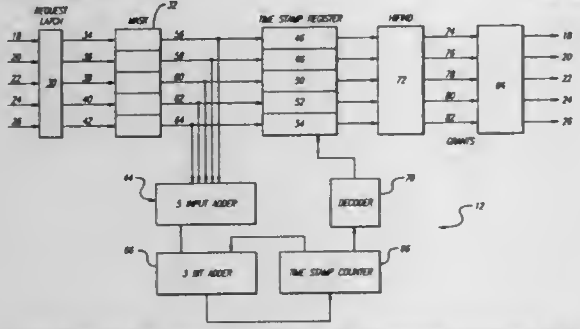
5,712,988
FAST FIRST-COME, FIRST-SERVED TIME STAMP ARBITRATION MECHANISM

Manpreet S. Khalra, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 273,027, Jul. 8, 1994, Pat. No. 5,574,867. This application Aug. 16, 1996, Ser. No. 668,317

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—293 **7 Claims**



1. A method for controlling access to a resource between a first client which generates a first request and a second client which generates a second request, comprising the steps of:

a) providing a first output signal to a first time stamp register in response to the first request, the first output signal operates as an enable signal for the first time stamp register;

b) providing a second output signal to a second time stamp register in response to the second request, the second output signal operates as an enable signal for the second time stamp register;

c) loading a first time stamp output value into the first time stamp; register when the first time stamp register is enabled;

d) loading the first time stamp output value into the second time stamp register when the second time stamp register is enabled; and

e) reading said time stamp registers in accordance with a predetermined hierarchy in order to generate a signal which allow one of the first and second clients access to the resource, wherein the steps (a)–(e) are performed in a single clock cycle.

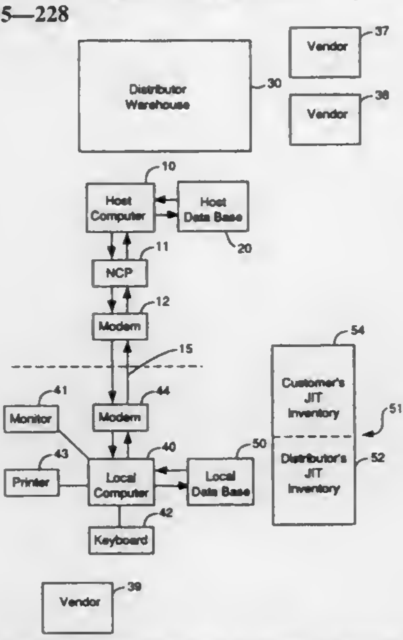
5,712,989
JUST-IN-TIME REQUISITION AND INVENTORY MANAGEMENT SYSTEM

James M. Johnson, Bridgeville, and Douglas A. Momyer, Upper St. Clair, both of Pa., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed Apr. 2, 1993, Ser. No. 42,168

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—228 **38 Claims**



1. A Just-In-Time requisition and inventory management system comprising:

a local computer maintaining a local database including a local inventory record indicating quantities of items on hand at a local warehouse;

a host computer maintaining a host database, said host database including a host inventory record that includes multiple inventory portions, wherein:

  one inventory portion of said host inventory record indicates quantities of items on hand at a central location; and

  another inventory portion of said host inventory record indicates quantities of items on hand at said local warehouse;

means for bi-directionally communicating between said local computer and said host computer to permit the bi-directional exchange of data between said host database and said local database;

means for sourcing requested quantities of items at desired times, including:

  means, provided at said local computer, for generating a requisition order for a requisitioned item;

  means for searching said local database for a local inventory record corresponding to said requisitioned item to determine if a requested quantity of said requisitioned item is available at said local warehouse;

  means for performing the following steps (A), (B) and (C) from said local computer if said requested quantity of said requisitioned item is available at said local warehouse:

    (A) sourcing said requisitioned item from said local warehouse;

    (B) updating said local inventory record to indicate the sourcing of said requisitioned item from said local warehouse; and

    (C) using said bi-directional communication means to similarly update that portion of said host inventory record, present at said host computer, that indicates quantities of items on hand at said local warehouse;

said searching means further comprising means for searching said host database for a host inventory record corresponding to said requisitioned item if said requested quantity of said requisitioned item is not available at said local warehouse;

means for performing the following steps (D), (E), and (F) from said host computer if said requested quantity of said requisitioned item is not available at said local warehouse but is available at said central location:

  (D) using said bi-directional communicating means to transmit data from said host computer to said local computer indicating that said requested quantity of said requisitioned item is available at said central location;

  (E) directing the transfer of said requested quantity of said requisitioned item from said central location to said local warehouse; and

  (F) updating said host database to indicate the transfer of said requested quantity of said requisitioned item from said central location to said local warehouse by subtracting said requested quantity of said requisitioned items from that portion of said host inventory record, present at said host computer, that indicates quantities of items on hand at said central location; and

  (G) using said bi-directional communication means to update said local database, from said host computer, by adding said requested quantity of said requisitioned items to said local inventory record.

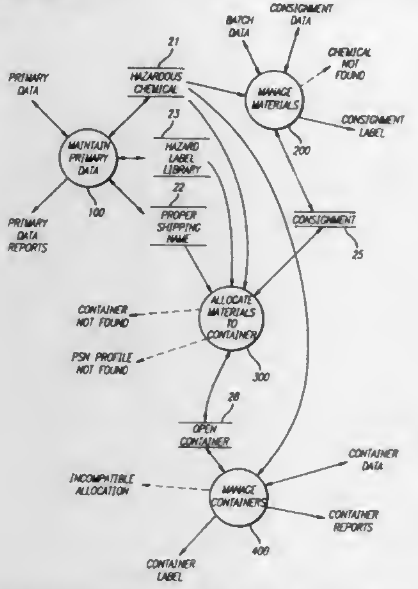
5,712,990
ECONOMICAL AUTOMATED PROCESS FOR AVERTING PHYSICAL DANGERS TO PEOPLE, WILDLIFE OR ENVIRONMENT DUE TO HAZARDOUS WASTE

Don J. Henderson, Danville, Calif., assignor to International Technology Corporation of California, Torrance, Calif.

Filed Oct. 3, 1991, Ser. No. 771,395

Int. Cl.^{6} G06F *15/00;19/00;* **G06G** *7/66;7/64*

U.S. Cl. 395—228 **37 Claims**



30. A process for segregation, shipment and disposal of hazardous waste; said process comprising the steps of:

making relatively very costly professional-level judgments about several hazard parameters of each one of a large number of hazardous waste materials, to establish each of said hazard parameters particularly preformatted for use in the substantially-automatically-classifying and automatically-establishing steps recited hereunder;

said relatively very costly professional-level judgments generally requiring attention of an advance-degreed chemist or like professional scientist;

for each of said large number of hazardous waste materials, collecting in a computerized database said preformatted hazard parameters as established on the basis of said relatively very costly professional-level judgments;

subsequently identifying a large number of specific consignments of particular hazardous waste materials;

shipment or disposal of at least some of said particular materials in said specific consignments being statutorily designated or scientifically recognized, or both, as posing a significant physical danger to people, wildlife or the environment; whereby said relatively very costly professional-level judgments are required to avert said significant physical danger for at least many of said specific consignments;

finding said preformatted hazard parameters in said computerized database for generally each of said large number of specific material consignments, without making new relatively very costly professional-level judgments;

substantially automatically classifying generally each of said consignments on the basis of said found preformatted hazard parameters;

generally each consignment of each material being classified, in the classifying step, substantially consistently with all other consignments of like material and in accordance with professional-level judgments embodied in said database, notwithstanding general absence of new professional-level judgments in said finding step; and

substantially automatically establishing subsequent packaging, routing and handling in accordance with regulatory requirements for generally each of said large number of consignments, on the basis of the classifying step, to generally very inexpensively avert said physical danger.

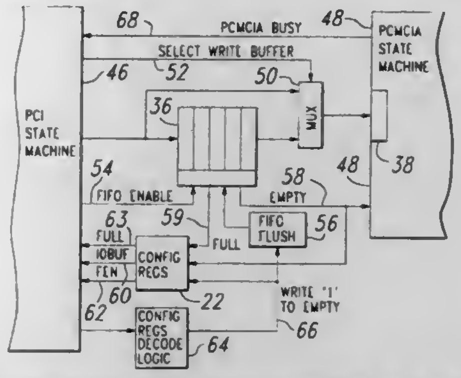
5,712,991
BUFFER MEMORY FOR I/O WRITES PROGRAMMABLE SELECTIVE

Shannon A. Wichman; John Cornish, both of Dallas, and Qadeer A. Qureshi, Round Rock, all of Tex., assignors to Texas Instrument Incorporated, Dallas, Tex.

Filed Jan. 18, 1995, Ser. No. 374,357

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—250 **3 Claims**



1. A peripheral controller device controlling at least a first peripheral device, said controller device including a programmable and selectable buffer memory for utilization with a first type and a second type of write instruction for writing data to first type and a second type, respectively, of memory in a peripheral device attached to said controller device, comprising:

an n deep buffer memory, where n is an integer for buffering said write instructions;

first means for programmably enabling and disabling said buffer;

second means for programmably indicating whether only one of said two types of instructions are to be buffered, or whether both of said instructions are to be buffered; and

third means, responsive to said second means, for examining write instructions provided to said peripheral controller device and for determining if they are of the first type or said second type, and for routing write instructions for the peripheral

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device of said second type to said buffer or for bypassing said buffer memory for immediate writing of data to said peripheral device, depending on the programmed indication in said second means.

5,712,992

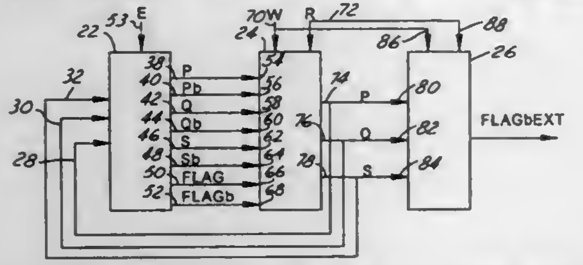
STATE MACHINE DESIGN FOR GENERATING EMPTY AND FULL FLAGS IN AN ASYNCHRONOUS FIFO

Andrew L. Hawkins, and Pidugu L. Narayana, both of Starkville, Miss., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Dec. 6, 1995, Ser. No. 567,893

Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—877 **20 Claims**



11. An apparatus for generating a flag that represents the fullness of a FIFO, said apparatus comprising:

a front end product generator having a set of inputs including a flag input representing a look-ahead full flag for creating a digital word indicating the current state of the FIFO, said front end product generator manipulates said inputs to create a set of outputs representing a current state of the FIFO;

a back end product generator having a set of inputs coupled to the outputs of said front end product generator, said back end product generator manipulates said set of inputs to produce a set of outputs representing a next state of said FIFO; and

an output driver having a set of inputs coupled to the set of outputs of the back end product generator, said output driver manipulates said inputs to produce an output flag that is at one logic state when the FIFO is full and is at another logic state when the FIFO is not full.

5,712,993

SYSTEM FOR CREATING GRAPHICAL USER INTERFACES USING CHANGEABLE MODELS FOR CONSTITUENT PARTS

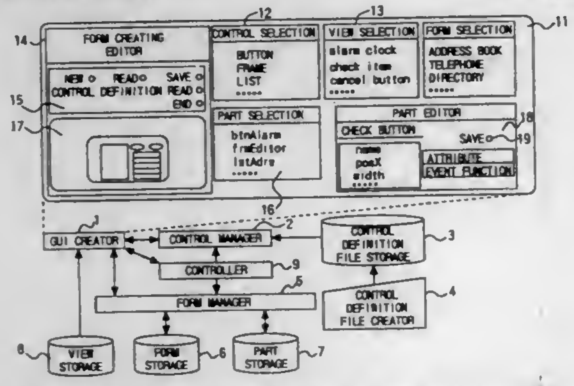
Takehiko Ichikawa, Yamatokooriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 17, 1995, Ser. No. 442,973

Claims priority, application Japan, Jul. 19, 1994, 6-166839

Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—326 **20 Claims**



1. A method for developing a graphical user interface (GUI) for use in an information processing system, said information processing system including the following information sub-units: (1) at least one information processing device; (2) at least one GUI for use in said at least one information processing device; and (3) a plurality of constituent parts for use in said at least one GUI, said constituent parts each including a control which specifies the function of said constituent part and a visual representation of said control, said control being defined in a control definition file which specifies the information processing device in which said GUI being developed is to be used and the function performed by said constituent part in response to user input, said method for developing a GUI comprising the steps of:

(a) retrieving a desired control definition file corresponding to a constituent part to be created;

(b) interpreting said desired control definition file to obtain information on the function of said constituent part to be created and a description of the information processing device in which the GUI being created is to be used;

(c) creating said constituent part from the function and device information obtained by interpreting said control definition file; and (d) repeating steps (a)–(c) for each constituent part of the GUI being developed;

said step (c) utilizing control definition files wherein at least a single control definition file describes different functions respectively adapted for different image processing sub-units.

5,712,994

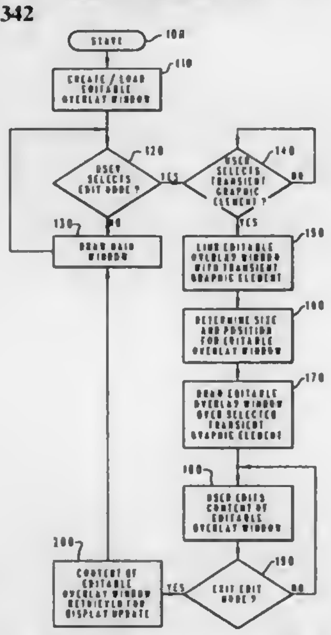
METHOD AND SYSTEM FOR APPARENT DIRECT EDITING OF TRANSIENT GRAPHIC ELEMENTS WITHIN A DATA PROCESSING SYSTEM

Kendall Jay Jefferson, Bedford, and Kendall Allen Lock, Trophy Club, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1992, Ser. No. 928,252

Int. Cl.^{6} G06F *3/14*

U.S. Cl. 395—342 **7 Claims**


START
108
CREATE/LOAD EDITABLE OVERLAY WINDOW
110
USER SELECTS EDIT MODE ?
120
YES
NO
130
DRAW MAIN WINDOW
USER SELECTS TRANSIENT GRAPHIC ELEMENT ?
140
NO
YES
LINK EDITABLE OVERLAY WINDOW WITH TRANSIENT GRAPHIC ELEMENT
150
DETERMINE SIZE AND POSITION FOR EDITABLE OVERLAY WINDOW
160
DRAW EDITABLE OVERLAY WINDOW OVER SELECTED TRANSIENT GRAPHIC ELEMENT
170
180
USER EDITS CONTENT OF EDITABLE OVERLAY WINDOW
EXIT EDIT MODE ?
190
YES
NO
200
CONTENT OF EDITABLE OVERLAY WINDOW RETRIEVED FOR DISPLAY UPDATE

1. A method of apparent direct editing of a graphic element displayed within a main window being provided by an application within a data processing system, said method comprising the data processing system implemented steps of:

creating an editable overlay window, wherein said editable overlay window allows its shape or its contents to be edited;

in response to the selection of a first graphic element displayed within a main window that is a separate and distinct window from said editable overlay window, and wherein the main window contains at least two graphic elements including the first graphic element and a second graphic element, and is being provided by an application within a data processing system, and further wherein said first graphic element is displayed in the main window during multiple periods which are less than the period of display of the main window, sizing and shaping said editable overlay window so that said editable overlay window equals the dimensions of said first graphic element, and overlaying said editable overlay window over said main window so that said editable overlay window is precisely positioned such that said first graphic element is no longer displayed such that portions of said main window including the second graphic element remain displayed;

permitting a user to create and edit information within said editable overlay window, wherein, because the dimensions of said editable overlay window are indistinguishable from said selected first graphic element, it appears from visual observation by a user of the displayed portions of the main window that said first graphic element is being edited directly within said main window when, in fact, information is created and edited by said user in said editable overlay window; and

linking display of said editable overlay window to the display of said first graphic element wherein said editable overlay window is displayed only when said first graphic element is displayed within said main window.

5,712,995

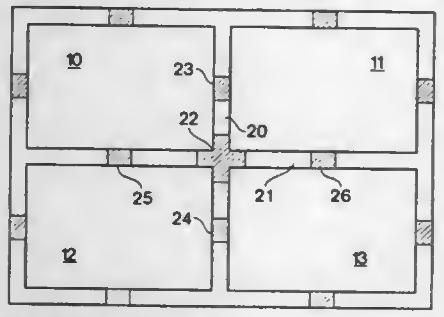
NON-OVERLAPPING TILING APPARATUS AND METHOD FOR MULTIPLE WINDOW DISPLAYS

Robert M. Cohn, Cambridge, Mass., assignor to Galileo Frames, Inc., Cambridge, Mass.

Filed Sep. 20, 1995, Ser. No. 530,644

Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—342 **75 Claims**



1. A tiling system comprising:

a plurality of non-overlapping panes, wherein a pane can be situated adjacent to more than one pane along an edge in a first direction, and wherein a pane can be situated adjacent to more than one pane along an edge in a second direction transverse to the first direction;

a plurality of partitions adjacent said plurality of panes, wherein at least two of the plurality of partitions have a common end;

means for moving one of the partitions having a common end; and

means for simultaneously moving the at least two partitions having a common end.

5,712,996

PROCESS FOR DIVIDING INSTRUCTIONS OF A COMPUTER PROGRAM INTO INSTRUCTION GROUPS FOR PARALLEL PROCESSING

Jörg Schepers, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

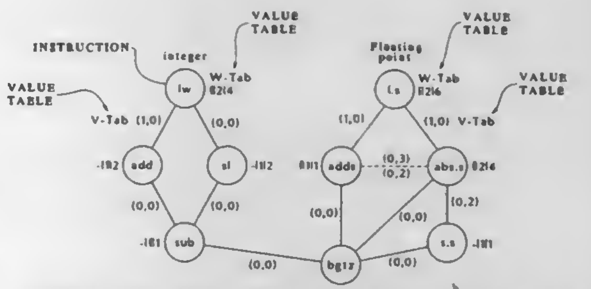
PCT No. PCT/DE94/00221, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/22079, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 1, 1994, Ser. No. 513,976

Claims priority, application Germany, Mar. 15, 1993, 43 08 173.8

Int. Cl.^{6} G06F *9/40*

U.S. Cl. 395—392 **1 Claim**



1. A process for machine generation of secondary processable instruction groups from a program for super-scalar microprocessors,

a) for each instruction of the program setting a blocking position in a value table when, before execution of an instruction directly dependent on data, a delay cycle is to be inserted, inserting a succession number into the value table which indicates how many data-dependent instructions follow directly, entering a distance value which specifies a maximum number of clock cycles up to a last of the data-dependent instructions,

b) specifying in a delay cycle table for each instruction how many delay cycles occur between instructions,

c) classifying each of the instructions into instruction groups as follows,

  aa) initially setting all the instructions as unmarked,

  ab) storing all instructions which have no preceding data-dependent unmarked instruction in a first list,

  ad) selecting instructions from the first list which can be executed after a minimum number of delay cycles, and storing the selected instructions in a second list,

  ae) selecting an instruction in accordance with a heuristic selection process, the heuristic process of selecting an instruction from the second list having the steps of: identifying each instruction in the second list which has a blocking position that is set; when no instructions are identified, selecting from the second list an instruction having a maximum distance value and a maximum succession number; when only one instruction is identified, selecting from the second list an instruction having a maximum distance value and a maximum succession number; when only one instruction is identified, selecting from the second list said identified instruction; when a plurality of instructions are identified, arbitrarily selecting an instruction from said plurality of instructions,

  af) classifying each selected instruction into an instruction group having components such that each selected instruction is assigned to the instruction group having an earliest permissible execution cycle, and in one of the components according to a predetermined sequence.

5,712,997

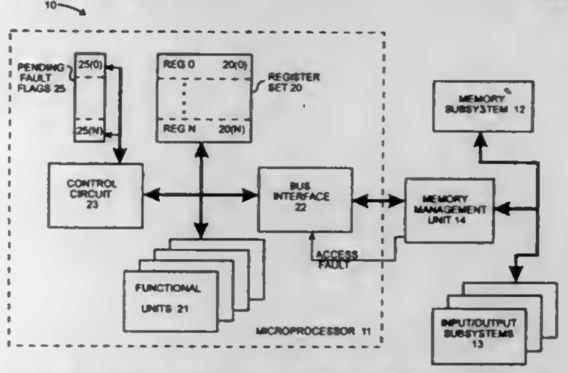
SYSTEM AND METHOD FOR PROCESSING LOAD INSTRUCTION IN ACCORDANCE WITH "NO-FAULT" PROCESSING FACILITY INCLUDING ARRANGEMENT FOR PRESERVING ACCESS FAULT INDICIA

David Dice, Foxboro, Mass., assignor to Sun Microsystems, Inc, Mountain View, Calif.

Filed Jan. 31, 1996, Ser. No. 594,594

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—393 **32 Claims**



1. A microprocessor for connection to an information storage subsystem in a computer system, the microprocessor processing an

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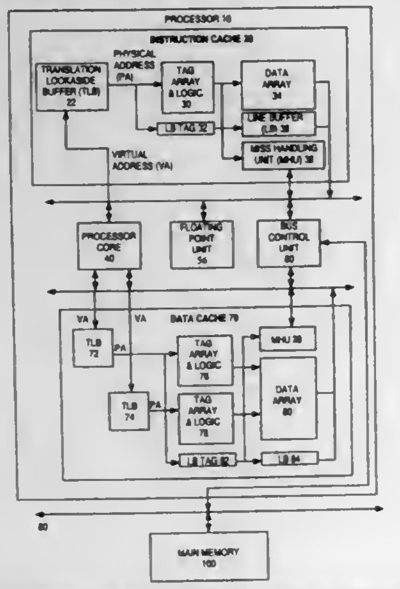
instruction stream comprising instructions of a plurality of instruction types including an information retrieval instruction type, the microprocessor comprising:

- A. a register set comprising a plurality of registers, each register for storing information;
- B. a pending fault flag set comprising a plurality of pending fault flags each associated with one of said registers, each pending fault flag having selected conditions including a pending fault condition and a no pending fault condition;
- C. a functional unit for performing a processing operation in response to information input thereto;
- D. an information retrieval subsystem for initiating an information retrieval operation to retrieve information from said information storage subsystem for storage in one of said registers; and
- E. a control subsystem for:
  - i. in response to an instruction in the instruction stream of the information retrieval type, enabling said information retrieval subsystem to initiate an information retrieval operation, the control subsystem conditioning the pending fault flag associated with said one of said registers to the pending fault condition in response to detection of a fault condition during the information retrieval operation; and
  - ii. in response to an instruction in the instruction stream of another type identifying a selected one of said registers as a source register, enabling information to be transferred from said source register to the functional unit for processing if the pending fault flag associated with said source register is in the no pending fault condition.

5,712,998
FAST FULLY ASSOCIATIVE TRANSLATION LOOKASIDE BUFFER WITH THE ABILITY TO STORE AND MANAGE INFORMATION PERTAINING TO AT LEAST TWO DIFFERENT PAGE SIZES

Eitan E. Rosen, Abrim, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 91,218, Jul. 13, 1993, abandoned.
This application Mar. 19, 1996, Ser. No. 618,331
Int. Cl.⁶ G06F *12/08;13/00*
U.S. Cl. 395—415 **33 Claims**



31. A translation lookaside buffer managing information for a plurality of different page sizes, comprising:

- a tag array having a plurality of tag lines each configured to receive a plurality of input address bits, each tag line comprising:
  - a first plurality of cells storing bits corresponding to a first page address;
  - a second plurality of cells storing bits corresponding an address within the first page address;
  - a third plurality of cells storing bits corresponding to either part of the first page address or part of the address within the first page; and
  - a first control cell coupled to the third plurality of cells, the first control cell storing a bit indicating whether the third plurality of cells store part of the first page address or part of the address within the first page, the first control cell generating a first signal, wherein the first signal is coupled to the third plurality of cells and controls whether each of the third plurality of cells compare their bits to corresponding bits of the input address bits; and
- a data array coupled to the tag array and including a plurality of data lines each corresponding to a tag line in the tag array, wherein each data line comprises:
  - a fourth plurality of cells storing bits corresponding to a second page address;
  - a plurality of multiplexing data cells each configured to receive at least one of the plurality of input address bits, the multiplexing data cells storing bits corresponding to part of the second page address or outputting the at least one of the plurality of input address bits; and
  - a second control cell coupled to the multiplexing data cells, the second control cell storing a bit and generating a second signal coupled to the multiplexing data cells, the second signal controlling whether the multiplexing data cells output part of the second page address or output the at least one of the plurality of input address bits corresponding to an address within the second page;
- wherein each of the third plurality of control cells comprises a content addressable memory cell (CAM) storing the bit corresponding to either part of the first page address or part of the address within the first page; and a logic circuit coupled to the CAM cell and enabled by the first signal to compare the bit stored in the CAM cell with a corresponding bit of the input address when the third plurality of bits store part of the first page address, and disabled by the first signal from comparing the bit stored in the CAM cell with a corresponding bit of the input address when the third plurality of bits store the address within the first page.

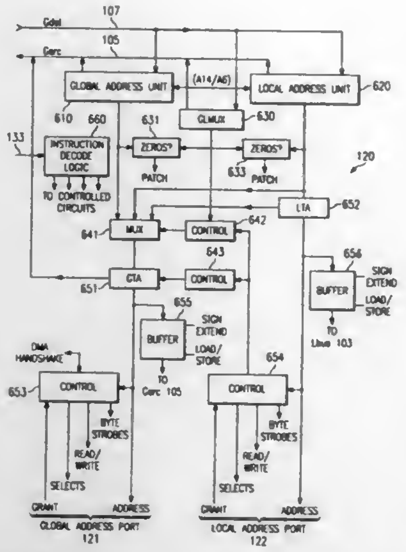
5,712,999
ADDRESS GENERATOR EMPLOYING SELECTIVE MERGE OF TWO INDEPENDENT ADDRESSES

Karl M. Guttag, Missouri City, Tex., and Keith Balmer, Bedford, United Kingdom, assignors to Texas Instruments, Dallas, Tex.

Filed Nov. 30, 1993, Ser. No. 160,114
Int. Cl.⁶ G06F *12/00;15/62*
U.S. Cl. 395—421.01 **65 Claims**

1. A method of data address generation in a programmable data processor responsive to instructions stored at respective instruction addresses comprising the steps of:

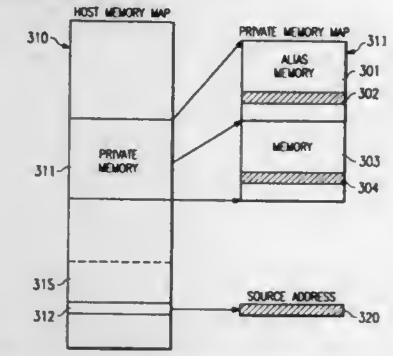
- generating a first N bit data address independent of the instruction address;
- generating a second N bit data address independent of the instruction address;
- generating an N bit multiplex data word in which each bit is independently settable in either a first digital state or a second digital state opposite said first digital state;
- storing said N bit data multiplex word; and
- forming an N bit merged address from said first and second addresses by selecting for each bit of said merged address a corresponding bit from said first address if a corresponding bit of said multiplex word is in said first digital state and selecting a corresponding bit from said second address if said corresponding bit of said multiplex word is in said second digital state.



5,713,000
CIRCUITS SYSTEM AND METHODS FOR TRANSFERRING DATA BETWEEN A HOST DEVICE AND A SLAVE DEVICE IN A SINGLE CYCLE USING ALIAS MEMORY

Michael Kerry Larson, Austin, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jun. 1, 1995, Ser. No. 457,220
Int. Cl.⁶ G06F *13/14*
U.S. Cl. 395—421.1 **29 Claims**



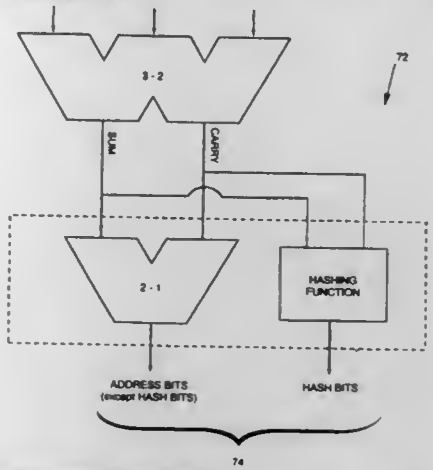
1. In a data processing system, a method for initiating a transfer of data between source and destination devices, said method comprising the steps of:

- determining a source address indicating a source location associated with said source device where said data currently resides within said data processing system;
- determining a destination address indicating said destination device to where said data is to be transferred within said data processing system;
- determining a length of said data to be transferred;
- writing said source address to a location corresponding to an alias destination address, wherein said alias destination address is determined by combining said destination address and said length, and further wherein said length and said source address are provided to said destination device in a single operation;
- retrieving by said destination device said source address from said location corresponding to said alias destination address;
- retrieving by said destination device said tenth from said alias destination address; and
- retrieving by said destination device said data from said source location using said source address and said length.

5,713,001
CIRCUIT FOR CONVERTING ADDRESS OPERANDS SUPPLIED BY A PROGRAM TO HASHED VIRTUAL ADDRESS

Raymond James Eberhard, Endicott, and James Edward Phillips, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 926,723, Aug. 7, 1992, abandoned.
This application Aug. 31, 1995, Ser. No. 521,773
Int. Cl.⁶ G06F *12/10*
U.S. Cl. 395—421.06 **22 Claims**



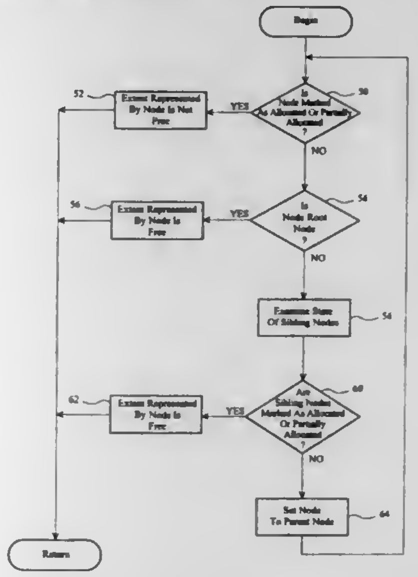
1. A cache system comprising:

- a 3-2 adder coupled to receive and add one or more address components based on a program instruction;
- a 2-1 adder coupled to receive and add an output of said 3-2 adder to yield a multiplicity of bits of an address; and
- logic means for hashing an output of said 3-2 adder substantially in parallel with operation of said 2-1 adder to yield at least one other, hashed bit of said address.

5,713,002
MODIFIED BUDDY SYSTEM FOR MANAGING STORAGE SPACE

Mark Zbikowski, Woodinville, and Robert I. Ferguson, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 86,334, Jun. 30, 1993, Pat. No. 5,490,274. This application Oct. 13, 1995, Ser. No. 542,695
Int. Cl.⁶ G06F *12/02*
U.S. Cl. 395—439 **36 Claims**


Begin
Is Node Marked As Allocated Or Partially Allocated ?
50
YES
52
Extent Represented By Node Is Not Free
NO
Is Node Root Node ?
54
YES
56
Extent Represented By Node Is Free
NO
Examine State Of Sibling Nodes
58
Are Sibling Nodes Marked As Allocated Or Partially Allocated ?
60
YES
62
Extent Represented By Node Is Free
NO
Set Node To Parent Node
64
Return

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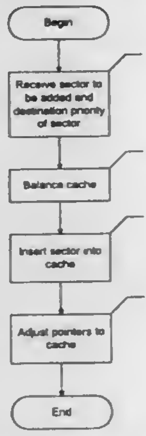
1. In a data processing system having storage with storage space of a given size, a method of managing the storage space, comprising the steps of:
   (a) modeling the storage space as a tree structure having multiple successively decreasing levels of nodes ranging from a top level to a bottom level, wherein each node represents an extent of the storage space and, for each level, nodes within the level represent extents of a like size, each node in each level other than the bottom level is a parent node having links connecting the parent node to child nodes, that are siblings, in a next successive level, the extents represented by the child nodes constitute a complete subdivision of the extent represented by the parent node, the size of the extents represented by the nodes decreases in each successive level and the sum of the sizes of the extents represented by the nodes for each successive level equals the given size of the storage space;
   (b) storing state information about each node in a bitmap that specifies whether the extent represented by the node is known to be at least partially allocated or not; and
   (c) using the bitmap and the tree structure to manage the storage space.

5,713,003
METHOD AND SYSTEM FOR CACHING DATA
Frederick J. DeWitt, Kirkland, and Ronald O. Radko, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 356,077, Dec. 13, 1994, Pat. No. 5,577,224. This application Aug. 29, 1996, Ser. No. 705,517

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—445 **18 Claims**



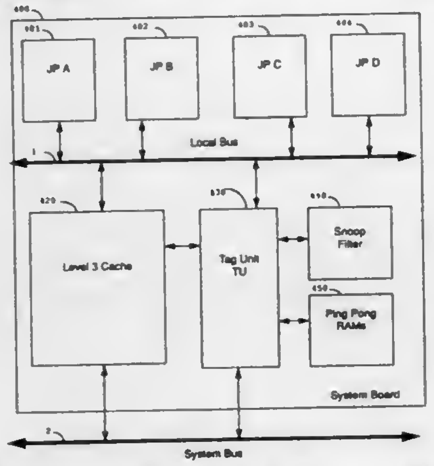
1. A method in a computer system for caching data in a cache memory, the cache memory being organized into a plurality of regions, each region for storing data of a certain type, each region having an allocated size and a priority, the method comprising:
   receiving a request to retrieve data from a storage device;
   retrieving the requested data from the storage device;
   storing the retrieved data in the cache memory with a first priority;
   pre-fetching additional data from the storage device; and
   storing the pre-fetched data in the cache memory with a second priority that is higher than the first priority so that the pre-fetched data will remain in cache memory longer than the retrieved data
   wherein the storing of the data includes determining the type of the data and when the region for the determined type has a current size that is greater than the allocated size, transferring a portion of that region to a region with a lower priority so that the current size of the region for the determined type is balanced to the allocated size of that region.

5,713,004
CACHE CONTROL FOR USE IN A MULTIPROCESSOR TO PREVENT DATA FROM PING-PONGING BETWEEN CACHES
Jeffrey S. Kimmel, Chapel Hill, N.C.; Elizabeth H. Reeves, Westboro, and Peter B. Everdell, Littleton, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 18, 1995, Ser. No. 443,604

Int. Cl.^{6} G06F *12/08*

U.S. Cl. 395—472 **20 Claims**



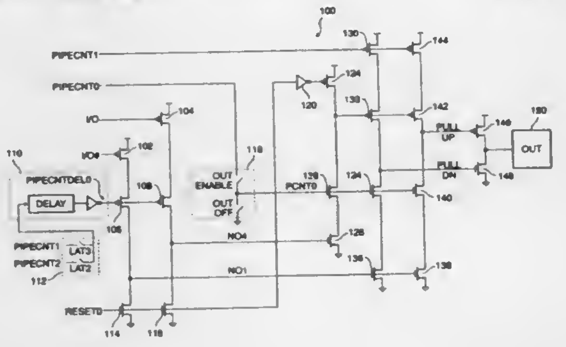
I. A cache memory control system for use with a plurality of Job Processors (JPs), said system comprising:
   (a) a main memory for storing a plurality of instructions and operands at addressable locations;
   (b) a plurality of JPs each having a private cache capable of storing information from said memory each private cache having a plurality of cache lines each of which may be in either an invalid, or at least one valid state;
   (c) a plurality of ping-pong bits one bit associated with each said cache line of each said plurality of JPs;
   (d) a tag unit connected to said plurality of JPs and said plurality of ping-pong bits;
   (e) a system bus connected to said tag unit;
   (f) if said system bus accesses said tag unit and if the ping-pong bit associated with the cache line being accessed by said tag unit is true then the cache line associated with said ping-pong bit will be set to said invalid state.

5,713,005
METHOD AND APPARATUS FOR PIPELINING DATA IN AN INTEGRATED CIRCUIT
Robert J. Proebsting, Los Altos Hills, Calif., assignor to Townsend and Townsend and Crew LLP, San Francisco, Calif.

Filed Feb. 10, 1995, Ser. No. 386,581

Int. Cl.^{6} G06F *9/38*

U.S. Cl. 395—496 **68 Claims**



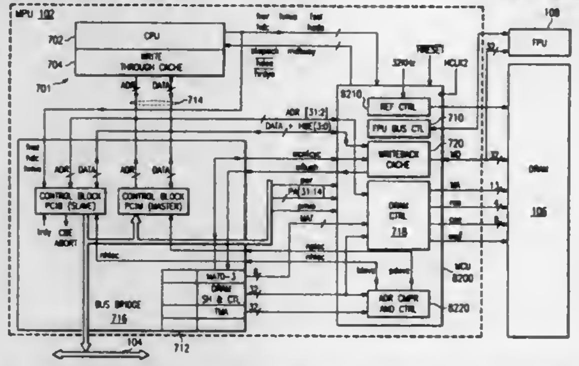
1. An integrated circuit having a data path with an output, comprising:
   a clock input coupled to receive a clock signal;
   a register having a plurality of branches for storing data;
   a steering circuit having an input coupled to a data line that carries data, said steering circuit being coupled to said register and sequentially steering said data into selected ones of said plurality of branches of said register in response to a first signal triggered by said clock signal; and
   a branch selection circuit coupled to said register, said branch selection circuit sequentially coupling data stored in selected branches of said plurality of branches to the output in response to a second signal triggered by said clock signal,
   wherein, a second data starts propagating through the data path after a first data starts propagating through the data path but before said first data reaches the output.

5,713,006
ELECTRONIC DEVICE AND METHOD FOR SELECTIVE ENABLING OF ACCESS TO CONFIGURATION REGISTERS USED BY A MEMORY CONTROLLER
Akio Shigeeda, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 404,702, Mar. 15, 1995. This application Jun. 7, 1995, Ser. No. 478,163

Int. Cl.^{6} G06F *12/14;12/00*

U.S. Cl. 395—497.01 **20 Claims**



1. An electronic device having a first plurality of terminals for external connection to a memory and a second plurality of terminals for external connection to a system bus, comprising:
   a memory controller circuit coupled to said first plurality of terminals;
   configuration registers for storing configuration information for use by said memory controller circuit in performing accesses to memory via said first plurality of terminals;
   a bus bridge circuit coupled to said second plurality of terminals for transferring addresses and data, and comprising:
      a request logic circuit for generating, responsive to at least one of the addresses, a write request signal to said memory controller circuit signaling an impending access to at least one of said configuration registers; and
      an enable circuit for enabling a write access to at least one of said configuration registers responsive to receiving a reply signal;
   wherein said memory controller circuit includes a reply logic circuit for generating the reply signal responsive to the combination of the write request signal from said request logic circuit and a signal in the memory controller indicating the absence of a pending memory operation utilizing current information in at least one of said configuration registers.

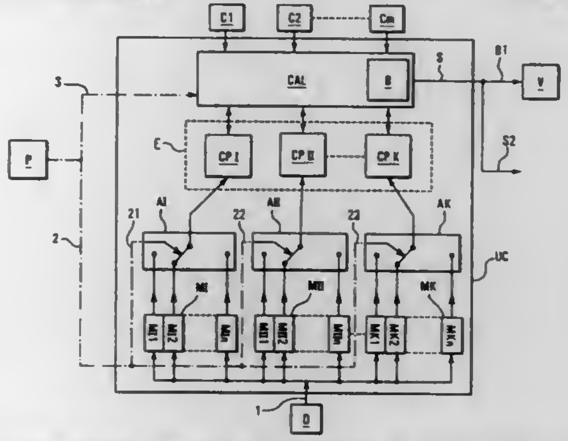
5,713,007
PROCESS AND DEVICE FOR DETECTING OPERATING INCONSISTENCIES IN A SYSTEM WITH MULTIPLE PHASES OF OPERATION
Pierre Lecomte, Aureville, and Laurent Coquin, Toulouse, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 29, 1994, Ser. No. 348,873

Claims priority, application France, Dec. 14, 1993, 93 14978

Int. Cl.^{6} G06F *19/00;* **G05B** *17/00*

U.S. Cl. 395—500 **5 Claims**



1. A process for detecting inconsistencies in the operation of a system with multiple phases of operation, controlled by at least one operator, each of said phases corresponding to a partial domain of the operation and the set of said phases covering the whole of said operation, wherein:
   said system having a current phase of operation, which is determined;
   for said determined phase, reference is made to at least one theoretical model representative of at least one feature of the system, said theoretical model having variables which have effective values;
   the effective value of the variables used in said theoretical model is detected;
   said detected effective values are compared to theoretical data defined in the theoretical model; and
   any incompatibility, which has characteristics, detected during these comparisons is signaled together with the characteristics of said incompatibility.

5,713,008
DETERMINATION OF WORKING SETS BY LOGGING AND SIMULATING FILESYSTEM OPERATIONS
Sam L. Falkner, Colorado Springs, Colo., assignor to Sun Microsystems, Palo Alto, Calif.

Filed Jun. 8, 1995, Ser. No. 486,006

Int. Cl.^{6} G06F *9/455*

U.S. Cl. 395—500 **30 Claims**

1. A computer-implemented method for determining the size of a file cache on a computer, the computer-implemented method comprising the computer-implemented steps of:
   activating a filesystem logging mechanism under computer control to monitor filesystem transactions performed on the computer;
   providing under computer control a file cache for storing at least a portion of at least one computer file and a filesystem log file for storing records of filesystem transactions invoked by the computer;
   performing under computer control a user work cycle during which user work cycle the filesystem logging mechanism monitors under computer control filesystem transactions invoked by the computer and stores records of certain filesystem transactions to the filesystem log file; and

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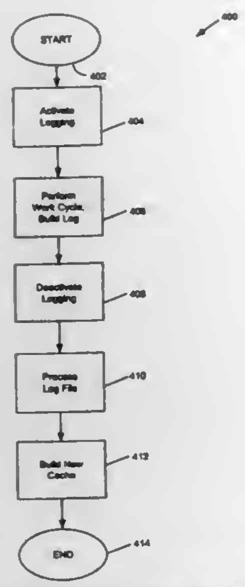


determining under computer control an appropriate size of the file cache based at least in part on the records stored in the filesystem log file.

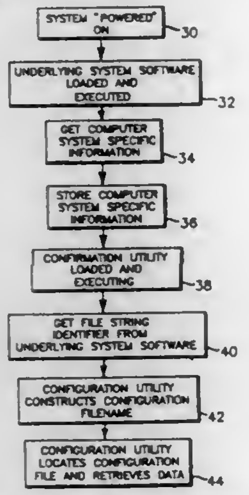
5,713,009
METHOD AND APPARATUS FOR CONFIGURING A COMPUTER SYSTEM

John Anthony DeRosa, Jr.; Benn Lee Schreiber, both of Bellevue, Wash.; Peter Chapman Hayden, Mont Vernon, N.H., and Scott Wade Apgar, Boxboro, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 8, 1995, Ser. No. 525,107

Int. Cl.^{6} G06F *15/177*

U.S. Cl. 395—500 **25 Claims**


SYSTEM "POWERED" ON
30
UNDERLYING SYSTEM SOFTWARE LOADED AND EXECUTED
32
GET COMPUTER SYSTEM SPECIFIC INFORMATION
34
STORE COMPUTER SYSTEM SPECIFIC INFORMATION
36
CONFIRMATION UTILITY LOADED AND EXECUTING
38
GET FILE STRING IDENTIFIER FROM UNDERLYING SYSTEM SOFTWARE
40
CONFIGURATION UTILITY CONSTRUCTS CONFIGURATION FILENAME
42
CONFIGURATION UTILITY LOCATES CONFIGURATION FILE AND RETRIEVES DATA
44

1. An apparatus for configuring a computer system, said apparatus comprising:

A) means for obtaining computer system specific information, said means further including:
   means for producing a file identifier corresponding to a configuration file using one or more input parameter values comprising a portion of said computer system specific information; and

B) a configuration utility, responsive to said means for obtaining computer specific information, for configuring said computer system by performing resource allocation, said means for obtaining computer specific information communicating said file identifier to said configuration utility, said configuration utility further including:
   filename constructing means, responsive to said means for producing a file identifier, for producing a filename using said file identifier and corresponding to a configuration file comprising configuration data used to configure said computer system.

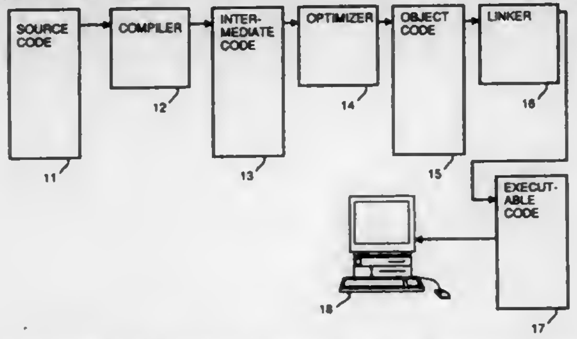
5,713,010
SOURCE LINE TRACKING IN OPTIMIZED CODE

William B. Buzbee, Half Moon Bay, and Michelle A. Ruscetta, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 10, 1995, Ser. No. 387,054

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—507 **21 Claims**



1. A method for compiling source code into optimized object code comprising the steps of:

(a) compiling the source code into object code instructions;

(b) inserting within each object code instructions, logical line markers, each logical line marker identifying a source code line from which originated associated object code instructions which are immediately adjacent to the logical line marker;

(c) inserting actual line markers so that an actual line marker is associated with every object code instruction, the actual line marker identifying a source code line from which originated the object code instruction associated with the actual line marker; and,

(d) optimizing the object code instructions to produce the optimized object code, including the following substeps
   (d.1) moving object code instructions relative to the logical line markers but not moving the logical line markers relative to each other, and
   (d.2) when an object code instruction is moved, moving the actual line marker associated with the moved object code instruction.

5,713,011
SYNCHRONIZED DATA PROCESSING SYSTEM AND IMAGE PROCESSING SYSTEM

Jun Satoh, Musashino; Kazushige Yamagishi, Higashimurayama; Keisuke Nakashima, Hitachi; Koyo Katsura, Hitachioota; Takashi Miyamoto, Tokyo; Mitsuru Watabe, Uridura-machi, and Kenichiroh Ohmura, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

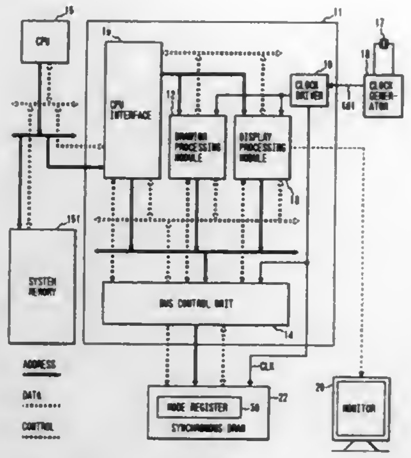
Filed Oct. 3, 1994, Ser. No. 317,130

Claims priority, application Japan, Oct. 15, 1993, 5-258040; Oct. 15, 1993, 5-281865; Aug. 10, 1994, 6-209176

Int. Cl.^{6} G06F *1/06*

U.S. Cl. 395—556 **10 Claims**

1. A data processor formed on a semiconductor chip used with a first memory, the first memory receiving a first clock signal, inputting address data and a control signal and outputting data in synchronism with the first clock signal, the data processor comprising:



a first data processing module receiving a second clock signal, operating in synchronism with the second clock signal, outputting first address data and a first control signal, and inputting data;

a second data processing module receiving a third clock signal, operating in synchronism with the third clock signal, outputting second address data and a second control signal, and inputting data;

bus control means coupled to the first data processing module and to the second data processing module and having:
   means for outputting the control signal in accordance with one of the first control signal and the second control signal and address data in accordance with one of the first address data and the second address data to the first memory in synchronism with a fourth clock signal;
   means for inputting the data from the first memory in synchronism with the fourth clock signal; and,
   means for providing data in accordance with the inputted data to one of the first data processing module and the second data processing module; and,

clock feed means including:
   first clock providing means for providing the second clock signal to the first data processing module;
   second clock providing means for providing the third clock signal to the second data processing module; and,
   third clock providing means for providing the fourth clock signal and the first clock signal to the bus control means and the first memory, the fourth clock signal and the first clock signal being related to one of the second clock signal and the third clock signal.

5,713,012
MICROPROCESSOR

Shigeya Tanaka, Hitachi; Takashi Hotta, Hadano; Shoji Yoshida, Hitachi; Kenji Jin, and Koji Saito, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 667,332, Jun. 20, 1996, abandoned, which is a continuation of Ser. No. 446,277, May 22, 1995, abandoned, which is a continuation of Ser. No. 183,844, Jan. 21, 1994, abandoned. This application Sep. 20, 1996, Ser. No. 717,143

Claims priority, application Japan, Jan. 20, 1993, 5-007795

Int. Cl.^{6} G06F *9/40*

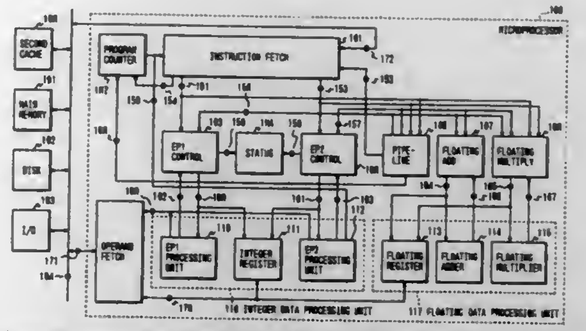
U.S. Cl. 395—580 **14 Claims**

1. A microprocessor comprising:

read means for reading out N, in number, successive instructions;

parallel processing detection means for detecting whether or not said N read-out instructions can be processed in parallel;

N processing units to execute said N read-out instructions parallelly, wherein only the N-th processing unit of said processing units has function logic to execute a branch instruction and an instruction which can not be parallelly executed;



branch instruction detecting means for parallelly detecting a branch instruction or an instruction which can not be parallelly executed (k-th instruction), and which comes first in a sequence of instructions of said N read-out instructions, to determine whether or not said N read-out instructions can be executed; and

a dispatcher for dispatching said N read-out instructions to said N processing units to control a sequence of execution of said N read-out instructions such that said N instructions are parallelly executed using a first through a N-th of said N processing units when said N read-out instructions executed parallelly, and such that said sequence of execution is changed so that the first through a k-th of said read-out instructions are parallelly executed with a (N−k+1)-th through a N-th of said N processing units when either a branch instruction or an instruction which can not be parallelly executed is included in the k-th sequential order of said N read-out instructions.

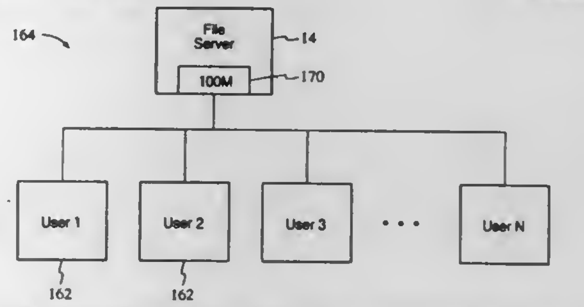
5,713,013
SYSTEM FOR ESTABLISHING AND ENFORCING MAXIMUM SIZE OF DIRECTORY BY PREVENTING THE SIZE OF THE DIRECTORY FROM EXCEEDING THE SET QUOTA SIZE OF THE DIRECTORY

Steven T. Black, Menlo Park, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 25, 1996, Ser. No. 591,747

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—602 **17 Claims**



1. A computer-implemented method for establishing and enforcing a maximum size for a directory, the method comprising the steps of:

(a) setting a quota size for the directory;

(b) in response to a request to write data to the directory, determining if the size of the directory is less than the quota size;

(b1) denying the write request if the size of the directory is greater than the quota size;

(c) if the size of the directory is less than the quota size, determining if the write request will exceed the quota size; and

(d) if the write request will not exceed the quota size, processing the write request, thereby preventing the size of the directory from exceeding the set quota size.

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5,713,014

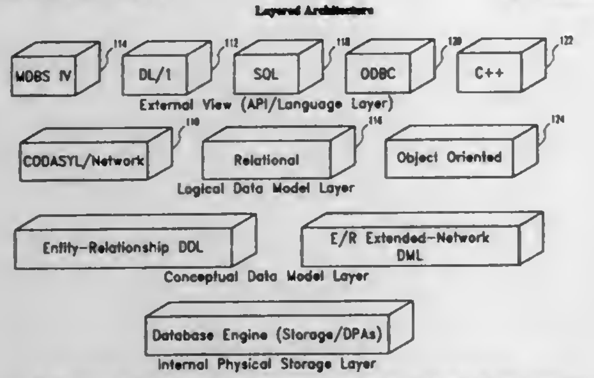
MULTI-MODEL DATABASE MANAGEMENT SYSTEM ENGINE FOR DATABASE HAVING COMPLEX DATA MODELS

Kevin Durflinger, Lafayette; Jon D. Reid, West Lafayette, and Kim M. Logan, Lafayette, all of Ind., assignors to Micro Data Base Systems, Inc., West Lafayette, Ind.

Division of Ser. No. 309,909, Sep. 21, 1994, Pat. No. 5,611,076. This application Dec. 1, 1995, Ser. No. 565,890

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—604 **8 Claims**



1. A computer database management system for storing, retrieving and modifying complex data stored in a database, said system comprising:

a number of application processes, each of said application processes including:
a user accessible external application; and
one of a multiplicity of application program

interfaces for translating complex input data from said external application into a predefined intermediate data format and for translating said predefined intermediate data format into complex output data for said external application;

a first schema coupled to said number of application processes, said first schema translating said predefined intermediate data format into one of a plurality of logical data model formats and for translating said plurality of logical data model formats into said intermediate data format;

a second schema coupled to said first schema, said second schema defining a conceptual data model for translating said plurality of logical data model formats into a conceptual data format and for translating said conceptual data format into one of said logical data model formats; and

a database server including storage means for storing and retrieving the complex data objects in and from the database, said server storing and retrieving the data objects according to said conceptual data format, said storage means including:

a number of files, each of said files occupying a unique location within said storage means;

a number of pages associated with each of said files, said pages being variable in number within each of said files, each of said variable number of pages occupying a unique location within each of said number of files and having an object portion for storing at least one of said database objects and a header portion for storing at least one offset number, each of said offset numbers occupying a unique location within said beader and corresponding to one of said database objects stored on said page;

a database key portion for storing a database key associated with each of said database objects, said database key including a page identification portion for identifying a unique one of said pages containing said database object and an object identification portion for identifying said unique location within said header portion of said unique page containing said offset number corresponding to said database object,

wherein any of said database objects contained on said unique one of said pages within one of said number of files is stored at a location within said unique page determined by adding said offset number corresponding to said database object to the starting location of said unique page.

5,713,015

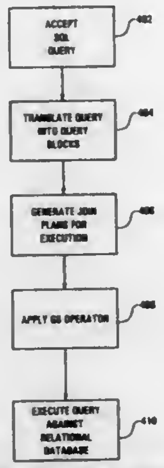
REORDERING OF COMPLEX SQL QUERIES INVOLVING GROUPBYS, JOINS, OUTER JOINS AND FULL OUTER JOINS

Piyush Goel, Monte Serano, and Balakrishna Raghavendra Iyer, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1996, Ser. No. 655,300

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—604 **51 Claims**


ACCEPT SQL QUERY
402
TRANSLATE QUERY INTO QUERY BLOCKS
404
GENERATE JOIN PLANS FOR EXECUTION
406
APPLY GS OPERATOR
408
EXECUTE QUERY AGAINST RELATIONAL DATABASE
410

1. A method of simplifying an SQL query in a computer having a memory, the SQL query being performed by the computer to retrieve data from a relational database stored in a electronic storage device coupled to the computer, the method comprising the steps of:

(a) iteratively eliminating, in the memory of the computer, redundant sub-expressions from the SQL query and modifying expensive binary operations in the SQL query to inexpensive binary operations, so that only simple and complex predicates remain in the SQL query; and

(b) iteratively converting, in the memory of the computer, the complex predicates remaining in the SQL query to simple predicates by application of a generalized selection (GS) operator.

5,713,016

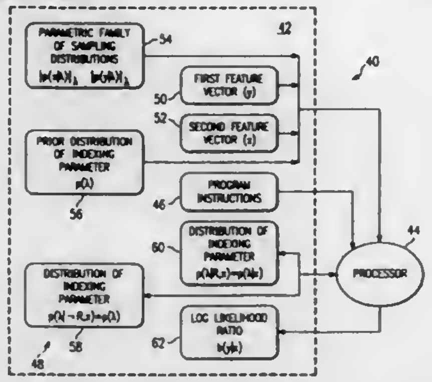
PROCESS AND SYSTEM FOR DETERMINING RELEVANCE

Joe R. Hill, Austin, Tex., assignor to Electronic Data Systems Corporation, Plano, Tex.

Filed Sep. 5, 1995, Ser. No. 523,233

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—605 **22 Claims**


PARAMETRIC FAMILY OF SAMPLING DISTRIBUTIONS
54
42
40
FIRST FEATURE VECTOR (y)
50
SECOND FEATURE VECTOR (z)
52
PRIOR DISTRIBUTION OF INDEXING PARAMETER p(λ)
56
PROGRAM INSTRUCTIONS
46
DISTRIBUTION OF INDEXING PARAMETER
60
44
PROCESSOR
DISTRIBUTION OF INDEXING PARAMETER
LOG LIKELIHOOD RATIO
62
58
48

1. A process for determining relevance between two documents implemented using an electronic system, the process comprising:

providing a first feature vector representing a first document;

providing a second feature vector representing a second document;

providing an indexing parameter;

providing a parametric family of sampling distributions for the first feature vector using the indexing parameter;

providing a parametric family of sampling distributions for the second feature vector using the indexing parameter;

providing a prior distribution of the indexing parameter;

assigning a distribution of the indexing parameter, given the second feature vector and an event that the first document is not relevant to the second document, the value of the prior distribution of the indexing parameter;

assigning a distribution of the indexing parameter, given the second feature vector and an event that the first document is relevant to the second document, the value of the posterior distribution of the indexing parameter given the second feature vector;

generating a log likelihood ratio that the first document is relevant to the second document using the two assigned distributions of the indexing parameter; and

storing the log likelihood ratio as representing relevance between the first document and the second document.

5,713,017

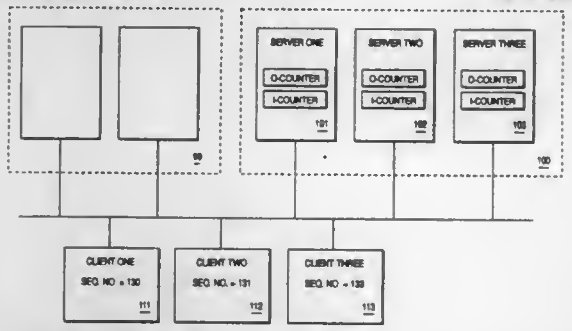
DUAL COUNTER CONSISTENCY CONTROL FOR FAULT TOLERANT NETWORK FILE SERVERS

Dah-Haur David Lin; Shaw-Ben Shi, and Yi-Hsiu Wei, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 484,228

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—608 **18 Claims**



13. A replicated file server comprising:

a network;

a plurality of file servers coupled to the network, each file server having a respective first and second counter, the first counter in a first server for generating sequence numbers which entitle requesting clients to perform update requests, the second counter in the plurality of servers for sequencing update requests from the requesting clients; and

a plurality of clients coupled to the network for making update requests to the plurality of servers.

5,713,018

SYSTEM AND METHOD FOR PROVIDING SAFE SQL-LEVEL ACCESS TO A DATABASE

Patrick P. Chan, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 27, 1995, Ser. No. 534,576

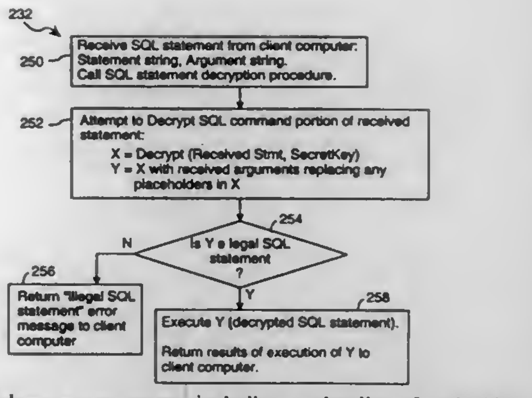
Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—610 **6 Claims**

1. A distributed computer system, comprising:

an information server, the information server including a database management system (DBMS) and a port for receiving and responding to SQL statements;

at least one client computer, coupled by a communication path to the information server; the at least one client computer including database access means for sending SQL statements database queries to the DBMS in the information server;


232
250
Receive SQL statement from client computer: Statement string, Argument string. Call SQL statement decryption procedure.
252
Attempt to Decrypt SQL command portion of received statement:
X = Decrypt (Received Stmt, SecretKey)
Y = X with received arguments replacing any placeholders in X
254
Is Y a legal SQL statement ?
N
Y
256
Return "Illegal SQL statement" error message to client computer
258
Execute Y (decrypted SQL statement).
Return results of execution of Y to client computer.

the database access means including a plurality of embedded constant strings, the plurality of embedded constant strings comprising pre-encrypted representations of a first subset of a predefined full set of SQL commands recognized as legal SQL commands by the DBMS in the information server; each of the SQL statements sent by the database access means to the DBMS in the information server including the pre-encrypted representation of one of the first subset of SQL commands;

wherein the first subset does not contain a predefined set of excluded SQL commands that are contained in the predefined full set; and

the information server including means for processing the received SQL statements, including means for decoding the pre-encrypted representation of a SQL command included in each of the SQL statements sent by the database access means in the at least one client computer, and means for rejecting any received SQL statements that do not include a pre-encrypted representation of a SQL command that can be decoded by the decoding means into a corresponding one of the legal SQL commands using a predefined decoding methodology;

wherein the at least one client computer is unable to generate SQL statements containing representations of any SQL commands not included in the first subset that will be not be rejected by the information server.

5,713,019

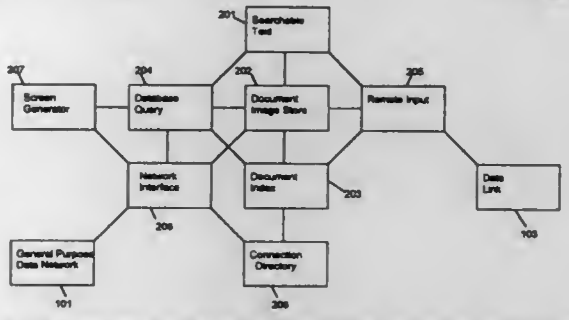
ICONIC ACCESS TO REMOTE ELECTRONIC MONOCHROME RASTER DATA FORMAT DOCUMENT REPOSITORY

Timothy M. Keaten, 3048 E. Clairton Dr., Highlands Ranch, Colo. 80126

Filed Oct. 26, 1995, Ser. No. 548,901

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—610 **11 Claims**



1. An apparatus for storing and retrieving electronic documents, comprising:

(a) a document repository comprising a first programmable computer, a non-volatile storage device accessible by said programmable computer, a storage program executing on said first computer which stores said documents on, and retrieves said documents from said non-volatile storage device;

(b) a plurality of remote access systems, each comprising a second programmable computer and an access and display

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program executing on said second computer for displaying said documents to the user of said remote system;

(c) a general purpose, wide area data network connecting said first computer and said second computer, whereby said documents can be transferred from said storage program to said display program;

(d) means for remote data entry which accepts control and document data from plural facsimile machines connected to said first programmable computer by a data link, wherein said control information specifies where said document data is to be stored within said document repository;

(e) means for transmitting interactive communication between said users over said general purpose data network.

5,713,020

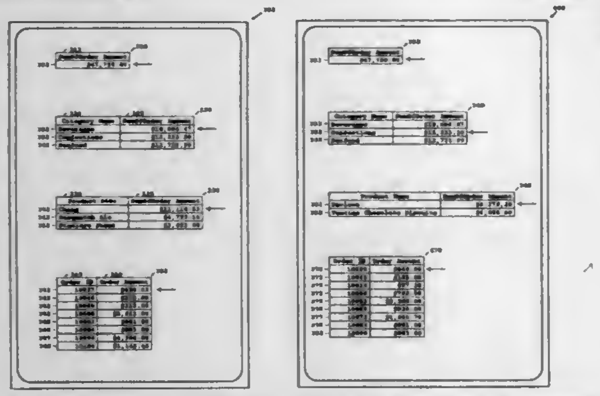
METHOD AND SYSTEM FOR GENERATING DATABASE QUERIES CONTAINING MULTIPLE LEVELS OF AGGREGATION

Allen Reiter, Haifa, Israel; Stephen Charles Hecht, Seattle, Wash.; Matthew Bellew, Seattle, Wash.; Stephen Albert Brandli, Bothell, Wash., and Adam Bosworth, Mercer Island, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Sep. 2, 1993, Ser. No. 116,826

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—613 **11 Claims**



1. A method in a computer system for generating a database query result having an arbitrary number of aggregation levels from a source table comprised of records each having a plurality of grouping fields and an aggregatable value, comprising the steps of:

receiving a query request specifying a plurality of aggregation levels, the aggregation levels being ranked so that every aggregation level is either superior or inferior to every other aggregation level, each aggregation level specifying one of the grouping fields;

for the aggregation level that is superior to all other aggregation levels:

producing a result table in which the aggregatable value is aggregated from all of the records of the source table for each distinct value of the grouping field specified by the aggregation level, and

selecting a distinct value of the grouping field specified by the aggregation level;

for each aggregation level that is inferior to at least one other aggregation level:

producing a result table in which the aggregatable value is aggregated, for each distinct value of the grouping field specified by the aggregation level, from all of the records of the source table having the selected value of the grouping field specified by the aggregation level that is superior to the aggregation level and inferior to the largest number of other aggregation levels, and

selecting a distinct value of the grouping field specified by the aggregation level that occurs in a record of the source table having the selected value of the grouping field specified by the aggregation level that is superior to the aggregation level and inferior to the largest number of other aggregation levels;

selecting a different distinct value of the grouping field specified by one of the aggregation levels; and

for each aggregation level that is inferior to the aggregation level for which a different distinct value of the grouping field is selected:

replacing the existing result table for the aggregation level with a result table in which the aggregatable value is aggregated, for each distinct value of the grouping field specified by the aggregation level, from all of the records of the source table having the selected value of the grouping field specified by the aggregation level that is superior to the aggregation level and inferior to the largest number of other aggregation levels, and

selecting a distinct value of the grouping field specified by the aggregation level that occurs in a record of the source table having the selected value of the grouping field specified by the aggregation level that is superior to the aggregation level and inferior to the largest number of other aggregation levels.

5,713,021

MULTIMEDIA DATA SEARCH SYSTEM THAT SEARCHES FOR A PORTION OF MULTIMEDIA DATA USING OBJECTS CORRESPONDING TO THE PORTION OF MULTIMEDIA DATA

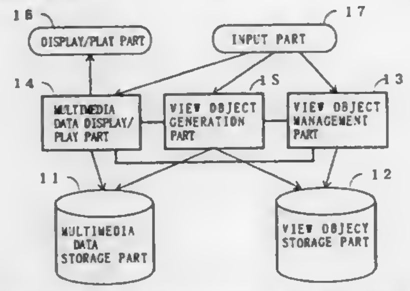
Akiko Kondo; Koki Kato, and Hiroshi Ishikawa, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 14, 1995, Ser. No. 528,041

Claims priority, application Japan, Jun. 28, 1995, 7-161712

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—614 **24 Claims**


16
DISPLAY/PLAY PART
INPUT PART
17
14
15
13
MULTIMEDIA DATA DISPLAY/PLAY PART
VIEW OBJECT GENERATION PART
VIEW OBJECT MANAGEMENT PART
11
12
MULTIMEDIA DATA STORAGE PART
VIEW OBJECT STORAGE PART

1. A multimedia data search system for searching data from a multimedia data base including multimedia data, comprising:

view object storage means for storing view objects describing features of a portion of data cut from sequential data by specifying a time period or a range of space, and data for identifying the portion of data;

view object management means for searching view objects stored in said view object storage means depending on a specification of said features of the portion of data; and

multimedia data display/reproduction means for displaying and reproducing the portion of data corresponding to the view object searched by said view object management means, and multimedia data including the portion of data.

5,713,022

IMAGE DATA SUPPLY SYSTEM FOR SELECTIVELY SUPPLYING A NUMBER OF IMAGE DATA

Hitoshi Yamashita, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

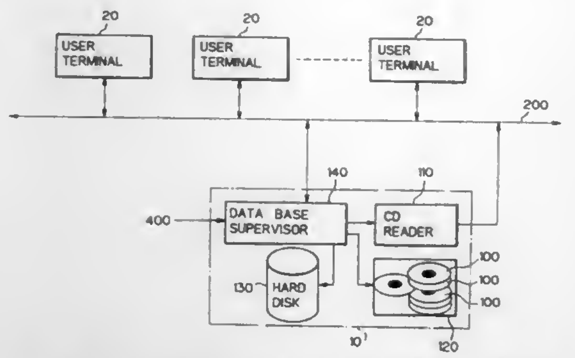
Filed Nov. 20, 1992, Ser. No. 979,244

Claims priority, application Japan, Nov. 22, 1991, 3-355493

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—615 **33 Claims**

1. An image data supply system comprising:



an image data supply device for selecting a desired one of original frames of image data recorded in one of a plurality of recording media and for supplying the selected frame of image data to a terminal unit,

the plurality of recording media each having reduced image data of the original frames of image data recorded thereon, the reduced image data being representative of reduced image frames into which the original frames of image data recorded on the plurality of recording media are reduced; and

a high speed communication network, connecting said image data supply device to the terminal unit, for conveying thereon image data and search information between said image data supply device and the terminal unit,

said image data supply device comprising

search information storing means for storing in a storage medium provided separately from the plurality of recording media the reduced image data and search information of the original frames of image data, the reduced image data stored in said storage medium being the same as the reduced image data recorded in the plurality of recording media,

searching means for searching said storage medium for the reduced image data and the search information associated therewith in response to a request provided over said high speed communication network from the terminal unit to locate one of the plurality of recording media in which an original frame of image data associated with the request is recorded,

medium selecting means for detachably loading therewith the plurality of recording media and, operative in response to said searching means, for selecting one of the plurality of recording media which contains the original frame of image data located by said searching means, and

supplying means, operative in response to said searching means, for reading out the original frame of image data located by said searching means from the recording medium selected by said medium selecting means and for supplying the original frame of image data thus read out to the terminal unit over said high speed communication network.

5,713,023

DATA MANAGEMENT DEVICE PROVIDING INCREASED STORAGE AND RECORD ACCESS EFFICIENCY OF CLUSTERED DATA

Hiroshi Hayata, and Yoshiki Watanabe, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,922

Claims priority, application Japan, Jul. 30, 1994, 6-198031

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—616 **8 Claims**

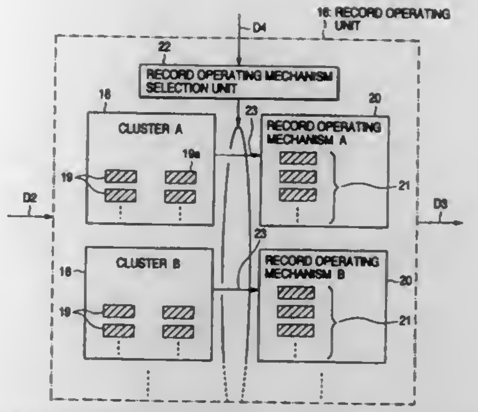
1. A data management device for managing records, each of which is untyped byte data, stored in a storage device, comprising:

a plurality of clusters for managing records, the records having been subjected to a clustering control;

a plurality of record processing means for executing operations on the records;

each of the plurality of clusters have a holding relationship with one of the plurality of record processing means;

selection means for switching the holding relationship from one of the plurality of record processing means to another;


16: RECORD OPERATING UNIT
D4
22
RECORD OPERATING MECHANISM SELECTION UNIT
18
20
23
CLUSTER A
19a
RECORD OPERATING MECHANISM A
19
21
D2
D3
23
18
CLUSTER B
RECORD OPERATING MECHANISM B
20
19
21

each of the plurality of clusters receiving a record operating command for operating on a record included in the cluster and directly transmitting the record operating command to one of the plurality of record processing means which is determined in advance in accordance with the holding relationship; and

the one of the plurality of record processing means which receives the record operating command, executing an operation on the record in response to the record operating command.

5,713,024

COLD BOOT DATA BACKUP SYSTEM

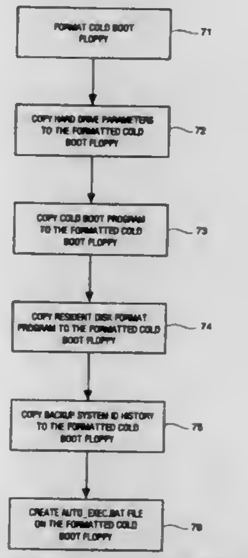
Steven Michael Halladay, Louisville, Colo., assignor to Exabyte Corporation, Boulder, Colo.

Continuation of Ser. No. 258,510, Jun. 10, 1994, abandoned.

This application Nov. 8, 1995, Ser. No. 555,306

Int. Cl.^{6} G06F *11/20*

U.S. Cl. 395—712 **24 Claims**


FORMAT COLD BOOT FLOPPY
71
COPY HARD DRIVE PARAMETERS TO THE FORMATTED COLD BOOT FLOPPY
72
COPY COLD BOOT PROGRAM TO THE FORMATTED COLD BOOT FLOPPY
73
COPY RESIDENT DISK FORMAT PROGRAM TO THE FORMATTED COLD BOOT FLOPPY
74
COPY BACKUP SYSTEM ID HISTORY TO THE FORMATTED COLD BOOT FLOPPY
75
CREATE AUTO_EXEC.BAT FILE ON THE FORMATTED COLD BOOT FLOPPY
76

19. A method of restoring the contents of a computer system hard disk using a set of executable instructions resident on the computer system, the method comprising:

(1) automatically copying on a first storage medium the following:
  (a) parameters of the computer system hard disk;
  (b) a disk cold boot program;
  (c) a resident format command program of the computer system;
  (d) a backup system identification history; and
  (e) an auto_exec.bat file; and then, after booting up of the computer system using the first storage medium, automatically
(2) executing the disk cold boot program, wherein execution of the disk cold boot program causes:
  (a) executing of the resident format command program for formatting the hard disk;

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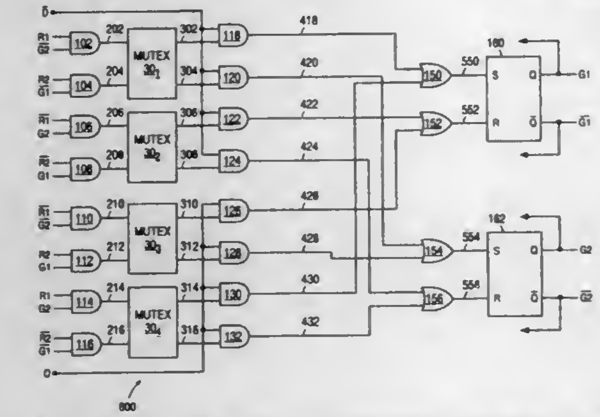
(b) generating a prompt to insert a second storage medium into a second storage medium device; and, once the second storage medium has been inserted,
(c) using directory information read from the second storage medium and the backup system identification history to obtain data reflecting state of the computer system hard disk at a predetermined point in time;
(d) using the data acquired in step (2) (c) to perform a restoration of the hard disk.

5,713,025
ASYNCHRONOUS ARBITER USING MULTIPLE ARBITER ELEMENTS TO ENHANCE SPEED

Charles E. Molnar, Webster Groves, Mo.; Ian W. Jones, Palo Alto, and Ivan E. Sutherland, Santa Monica, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 140,654, Oct. 21, 1993, abandoned, and Ser. No. 140,655, Oct. 21, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 303,247
Int. Cl.^{6} G06F *13/364;13/14*
U.S. Cl. 395—729 **25 Claims**

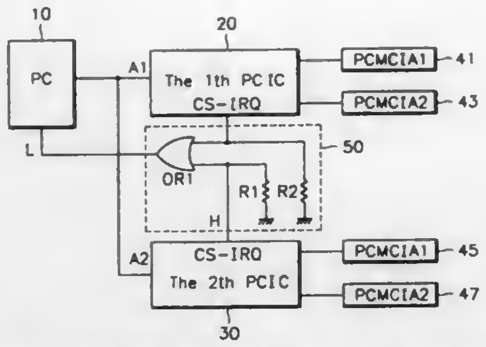


1. An arbiter configured to receive request signals from a plurality of users and to perform a first arbitration and a next arbitration, including:
a plurality of arbiter elements coupled to receive the request signals;
a grant circuit configured to issue a first grant and a next grant in response to output signals from a first arbiter element and a next arbiter element of the plurality of arbiter elements respectively; and
a feedback element configured to feed back the first grant signal from the grant circuit to the plurality of arbiter elements to invoke the next arbiter element, such that the first arbitration and the next arbitration are performed by different arbiter elements, and the next arbitration may begin as soon as the first grant is issued as a result of the first arbitration.

5,713,026
ERROR-PREVENTING SYSTEM HAVING A SIGNAL CORRECTION UNIT

Seung-Kee Shin, and Tae-Wook Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jun. 9, 1995, Ser. No. 490,544
Claims priority, application Rep. of Korea, Jun. 15, 1994, 94-13941
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—733 **4 Claims**

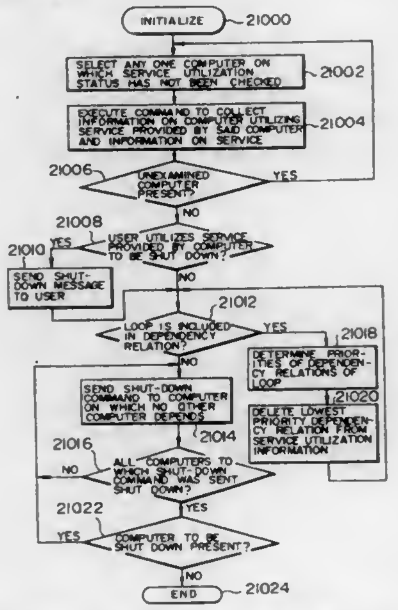
1. An error preventing system for card service interrupt signals in a personal computer using plural card interface controllers, comprising:
at least two PCMCIA (Personal Computer Memory Card International Association) cards;



at least two PCICs (PCMCIA Card interface Controllers), which output respective interrupt signals, each to service at least one said PCMCIA card and thereby operate a personal computer; and
a signal correction unit, which receives as an input the respective interrupt signals outputted from said PCICs and outputs corresponding signals after processing said interrupt signals with logic;
wherein said signal correction unit comprises:
an OR-gate, which, after processing said interrupt signals output from said plural PCICs of logic OR, outputs said corresponding signals; and
a pull-down resistor for stabilizing said interrupt signals.

5,713,027
METHOD AND APPARATUS FOR CONTROLLING THE SHUTDOWN OF COMPUTER SYSTEMS BY USING SERVICE UTILIZATION INFORMATION AND EXAMINING A DEPENDENCY RELATIONSHIP BETWEEN THE COMPUTERS

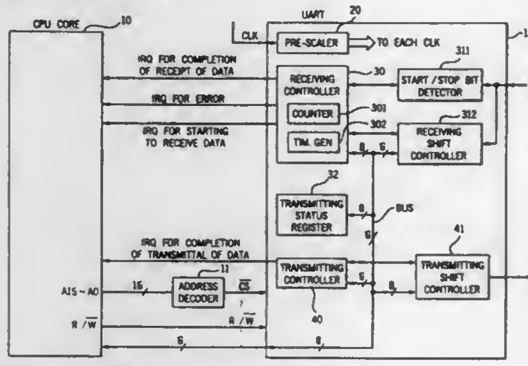
Ken'ichi Soejima, Kawasaki; Hitoshi Ueno, Zama; Narishige Morimoto, Kawasaki, and Masaaki Ohya, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 25, 1995, Ser. No. 450,119
Claims priority, application Japan, May 26, 1994, 6-136512
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—750 **11 Claims**


INITIALIZE
21000
SELECT ANY ONE COMPUTER ON WHICH SERVICE UTILIZATION STATUS HAS NOT BEEN CHECKED
21002
EXECUTE COMMAND TO COLLECT INFORMATION ON COMPUTER UTILIZING SERVICE PROVIDED BY SAID COMPUTER AND INFORMATION ON SERVICE
21004
21006
UNEXAMINED COMPUTER PRESENT?
YES
NO
21008
USER UTILIZES SERVICE PROVIDED BY COMPUTER TO BE SHUT DOWN?
21010
YES
SEND SHUT-DOWN MESSAGE TO USER
NO
21012
LOOP IS INCLUDED IN DEPENDENCY RELATION?
YES
21018
DETERMINE PRIORITIES OF DEPENDENCY RELATIONS OF LOOP
21020
DELETE LOWEST PRIORITY DEPENDENCY RELATION FROM SERVICE UTILIZATION INFORMATION
NO
SEND SHUT-DOWN COMMAND TO COMPUTER ON WHICH NO OTHER COMPUTER DEPENDS
21014
21016
NO
ALL COMPUTERS TO WHICH SHUT-DOWN COMMAND WAS SENT SHUT DOWN?
YES
21022
YES
COMPUTER TO BE SHUT DOWN PRESENT?
NO
END
21024

1. In a computer system including a plurality of computers interconnected through a network in which at least one of said plurality of computers provides at least one service to the others of said plurality of computers, a computer system shut-down method for controlling the shut down of at least one of said plurality of computers in said computer system comprises the steps of:
inputting any identification ID of said service from an input device;
transmitting the input ID to said plurality of computers;
determining whether said service is utilized in each of said computers based on the transmitted service ID;
transmitting the service utilization information on the basis of the determination to said network when each of said computers is determined to utilize the service;
receiving the service utilization information on the network;
outputting the service utilization information to an output device;
collecting information regarding each of said plurality of computers utilizing the service provided by said at least one computer and information regarding the service for each of said plurality of computers in said computer system;
referencing the collected service utilization information, and, if there is a computer which utilizes said service provided by any computer to be shutdown, informing the computer utilizing said service of the shutdown;
determining whether or not there is a dependency relation loop between said plurality of computers, and, if there is a dependency relation loop, suppressing utilization of the service having a predetermined lowest priority dependency relation; and
shutting down a specific one of said plurality of computers on which no other computer depends.

5,713,028
MICRO-PROCESSOR UNIT HAVING UNIVERSAL ASYNCHRONOUS RECEIVER/TRANSMITTER

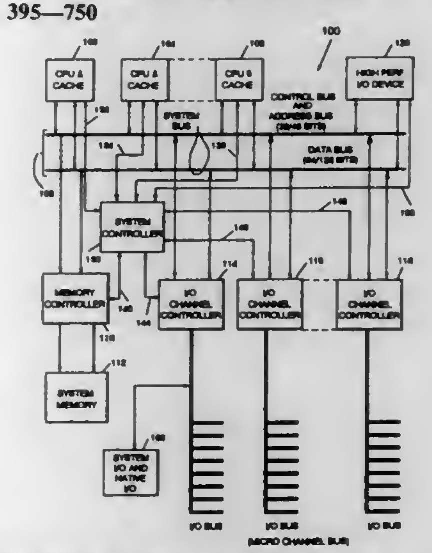
Yutaka Takahashi, and Toshihiro Ibuka, both of Sendai, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 6, 1995, Ser. No. 524,303
Claims priority, application Japan, Jan. 30, 1995, 7-012176
Int. Cl.^{6} G06F *1/32*
U.S. Cl. 395—750 **7 Claims**


CPU CORE
10
UART
20
CLK
PRE-SCALER
TO EACH CLK
12
IRQ FOR COMPLETION OF RECEIPT OF DATA
RECEIVING CONTROLLER
30
311
START / STOP BIT DETECTOR
SERIAL INPUT
IRQ FOR ERROR
COUNTER
301
302
IRQ FOR STARTING TO RECEIVE DATA
TIM. GEN
312
RECEIVING SHIFT CONTROLLER
32
TRANSMITTING STATUS REGISTER
BUS
41
IRQ FOR COMPLETION OF TRANSMITTAL OF DATA
TRANSMITTING CONTROLLER
TRANSMITTING SHIFT CONTROLLER
SERIAL OUTPUT
A15~A0
16
ADDRESS DECODER
11
CS
R / W
40
8

1. A micro-processor unit comprising:
a micro-processor having a core section, which performs an arithmetic operation; and
a universal asynchronous receiver/transmitter section operatively connected to the core section of the micro-processor, having,
first means for receiving an asynchronous serial data signal, which is composed of a start bit, a stop bit and data bits provided between the start and stop bit and for detecting the start bit, and
second means for setting a flag indicating that the asynchronous serial data signal is being received when the start bit is detected by the first means,
the micro-processor detecting the flag being set, and stopping supply of clocks to the core section in a sleep mode.

5,713,029
INFORMATION HANDLING SYSTEM INCLUDING DOZE MODE CONTROL

John Michael Kaiser, and Warren Edward Maule, both of Cedar Park, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 29, 1995, Ser. No. 537,180
Int. Cl.^{6} G06F *1/32;13/36*
U.S. Cl. 395—750 **7 Claims**



1. An information handling system, comprising:
one or more processors having a power reduction mode;
a memory controller, wherein the memory controller includes a control register having a power reduction mode control bit, the memory controller further for issuing a power reduction mode signal when the control bit is set;
a memory system connected to the memory controller;
one or more I/O controllers for controlling communication between one or more I/O devices, the memory system, and the processors;
a system bus, connecting the processors, the memory controller, and the I/O controllers; and
a system controller, controlling operation of each of the processors, the memory controller, and the I/O controllers, the system controller further including an arbiter for controlling address bus grants in response to address bus requests, the arbiter being operable, in response to the power reduction mode signal from the memory controller and a first address bus request, for (i) issuing a wake-up signal to the processors prior to issuing an address bus grant and (ii) no longer issuing the wake-up signal to the processors when there are no additional address bus requests by the time the bus is granted in response to the first address bus request.

5,713,030
THERMAL MANAGEMENT DEVICE AND METHOD FOR A COMPUTER PROCESSOR

David Ross Evoy, Tempe, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Oct. 11, 1995, Ser. No. 540,714
Int. Cl.^{6} G06F *17/40*
U.S. Cl. 395—750 **22 Claims**

1. An active thermal management system comprising:
a packaged computer processor chip adapted for operating at variable frequency;
a separately packaged clock chip having a temperature sensitive circuitry and a clock generator both integrated therein, said temperature sensitive circuitry being operative to produce a clock control signal dependent upon a temperature sensed by said temperature sensitive circuitry, said clock generator being connected with said temperature sensitive circuitry for receiving said clock control signal therefrom, said clock generator being operative to produce a clock signal dependent upon said clock control signal from said temperature sensitive circuitry, said computer processor chip being connected with said clock

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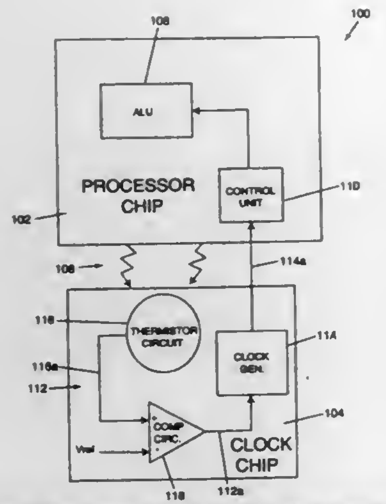


generator for receiving said clock signal therefrom for controlling the frequency of operation of the computer processor, said packaged clock chip being positioned adjacent to said packaged computer processor chip, but not in physical contact with said packaged computer processor chip, such that said packaged clock chip is thermally influenced by at least a portion of a heat energy generated by said packaged computer processor chip; and

a thermal coupling positioned between said computer processor chip and said clock chip said thermal coupling being capable of transferring at least a portion of said heat energy to said temperature sensitive circuitry of said clock chip so as to thermally influence said clock chip.

5,713,031
HYPERMEDIA DATABASE SYSTEM

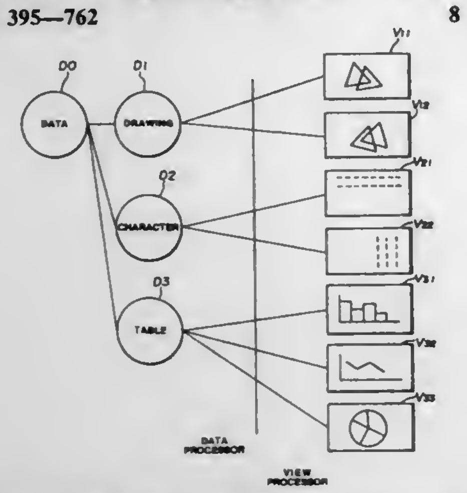
Shinya Saito, Kawasaki, Japan, assignor to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 279,269, Jul. 22, 1994, abandoned, which is a continuation of Ser. No. 724,704, Jul. 2, 1991, abandoned. This application Mar. 26, 1996, Ser. No. 622,256

Claims priority, application Japan, Jul. 5, 1990, 2-178051

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—762 **8 Claims**



1. A hypermedia system comprising:

memory means for storing a hypermedia database having been constructed by associating a plurality of data of different types with each other by means of a link;

display means for displaying views of different types; and

control means including a data processing means, a view processing means separate from the data processing means and window control means, for processing the hypermedia database stored in the memory means and for controlling the views displayed on the display means,

wherein the data processing means includes a first data processing section for processing data of a first type, the addition or deletion of said first data processing section being possible without regard to view type, said data processing means identifying, in response to an inquiry from the memory means or the view processing means, the type of data processed and transferring said processed data to a corresponding second data processing section where the data is processed according to data type and

wherein the view processing means includes at least a first view processing section for processing a first type of view, the addition or deletion of said first view being possible without regard to data type, said view processing means identifying, in response to an inquiry from the view processing means or the window control means, the type of view processed and transferring the processed view to a corresponding second view processing section where the view is processed according to view type and

wherein the window control means controls a window of the display means for displaying the view processed by the view processing means, said window control means detecting user input on the window a informing the view processing means of the detected user input.

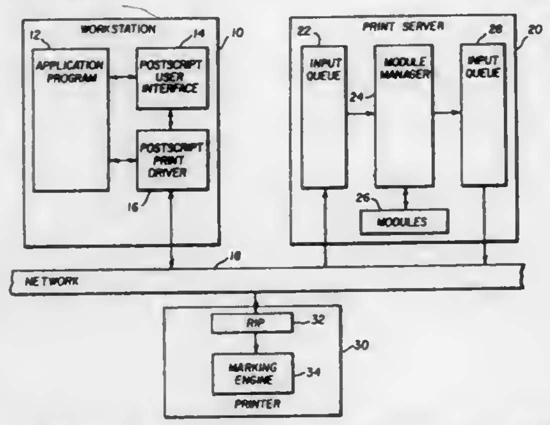
5,713,032
COMPOUND DOCUMENT PROCESSING SYSTEM

Marc Douglas Spencer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 3, 1996, Ser. No. 582,571

Int. Cl.^{6} G06F *9/40*

U.S. Cl. 395—777 **34 Claims**



2. A method of processing a compound document, comprising the steps of:

a) generating a data file including commands and comments describing a compound document;

b) embedding document manipulation commands in comments in the data file; and

c) manipulating the data file in response to the document manipulation commands embedded in the comments.

5,713,033
ELECTRONIC EQUIPMENT DISPLAYING TRANSLATED CHARACTERS MATCHING PARTIAL CHARACTER INPUT WITH SUBSEQUENT ERASURE OF NON-MATCHING TRANSLATIONS

Ichiro Sado, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

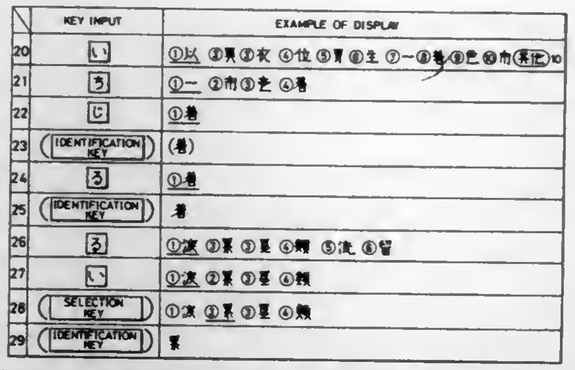
Continuation of Ser. No. 735,673, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 522,506, May 10, 1990, abandoned, which is a continuation of Ser. No. 289,522, Dec. 27, 1988, abandoned, which is a continuation of Ser. No. 54,054, May 26, 1987, abandoned, which is a continuation of Ser. No. 596,413, Apr. 3, 1984, abandoned. This application Jan. 3, 1994, Ser. No. 176,505

Claims priority, application Japan, Apr. 6, 1983, 58-59311

Int. Cl.^{6} B41J *5/30*

U.S. Cl. 395—796 **9 Claims**

1. Electronic equipment comprising:


KEY INPUT
EXAMPLE OF DISPLAY
20
21
22
23
IDENTIFICATION KEY
24
25
IDENTIFICATION KEY
26
27
28
SELECTION KEY
29
IDENTIFICATION KEY

input means for inputting a plurality of characters including a first character, a second character following the first character, and following characters following the second character;

determination means for determining whether or not a character input by said input means is a first character;

storage means, for storing information;

retrieval means for retrieving information from said storage means on the basis of a first character input by said input means;

memory means for storing the information retrieved by said retrieval means;

deleting means, in response to the determination of a second character by said determination means, for deleting unnecessary information among the retrieved information stored in said memory means for each input of the second character and the following characters from the characters input by said input means, the quantity of retrieved information stored in said memory means being decreased for each operation of said deleting means; and

control means for controlling display means to display the retrieved information stored in said memory means or the retrieved information from which unnecessary information has been deleted, each time an additional character following a previous character is input.

5,713,034
CAE SYSTEM FOR PREPARING TRANSMISSION NETWORK AND ANALYZING LOAD IN MECHANICAL SYSTEM

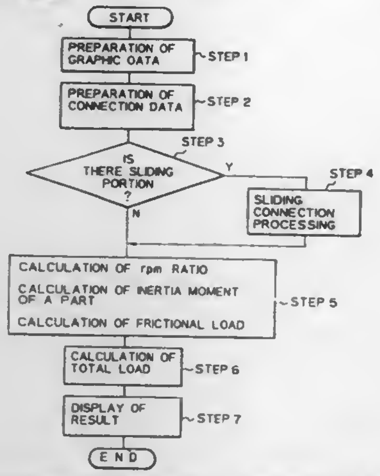
Naoki Kunimine; Masakatsu Fukai; Noboru Kimura, and Toshiyuki Kanou, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 738,000

Claims priority, application Japan, Aug. 7, 1990, 2-207674; Nov. 2, 1990, 2-298154

Int. Cl.^{6} G06F *17/50*

U.S. Cl. 395—800 **21 Claims**


START
PREPARATION OF GRAPHIC DATA
STEP 1
PREPARATION OF CONNECTION DATA
STEP 2
STEP 3
IS THERE SLIDING PORTION ?
Y
N
STEP 4
SLIDING CONNECTION PROCESSING
CALCULATION OF rpm RATIO
CALCULATION OF INERTIA MOMENT OF A PART
CALCULATION OF FRICTIONAL LOAD
STEP 5
CALCULATION OF TOTAL LOAD
STEP 6
DISPLAY OF RESULT
STEP 7
END

1. A CAE system for preparing a transmission network for a mechanical system having components, comprising:

means for providing graphic data for the components of the mechanical system, the graphic data including position data for each component and form data for each component, the form data for a component specifying the physical configuration of the respective component;

graphic data memory portion means for storing the graphic data;

connection of components retrieving and processing portion means for fetching the graphic data for the mechanical system from the graphic data memory portion means and for preparing connection data from the fetched graphic data, the connection data providing information about how the components are connected to form the mechanical system; and

connection data memory portion means for storing the connection data therein.

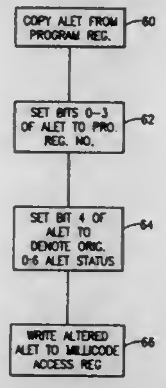
5,713,035
LINKING PROGRAM ACCESS REGISTER NUMBER WITH MILLICODE OPERAND ACCESS

Mark Steven Farrell, Pleasant Valley; Barry Watson Krumm, Poughkeepsie; John Stephen Liptay, Rhinebeck; Charles Franklin Webb, and Steven QiHong Ying, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,164

Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—800 **8 Claims**


COPY ALET FROM PROGRAM REG.
60
SET BITS 0–3 OF ALET TO PRO. REG. NO.
62
SET BIT 4 OF ALET TO DENOTE ORIG. 0-6 ALET STATUS
64
WRITE ALTERED ALET TO MILLICODE ACCESS REG
66

1. In a pipelined computer processor, which executes a relatively simple instruction set in a hardware controlled execution unit and executes a relatively complex instruction set in a milli-mode architected state with a millicode sequence of simple instructions in said hardware controlled execution unit, a milli-mode method for correlating an identifying number of a program access register with data transferred from the program access register to a millicode access register, comprising the steps of:

reading an access list entry token stored in said program access register;

modifying a field of said access list entry token to include said identifying number of said program access register; and

storing said access list entry token modified in said modifying step in said millicode access register.

5,713,036
PROGRAMMABLE LOGIC CONTROLLER HAVING PROGRAM FOR DESIGNATING ADDRESSES OF MEMORY TO WHICH DATA INDICATING OPERATING STATUSES OF MACHINE ARC TO BE STORED

Masao Kamiguchi, Kawaguchiko-machi; Noriaki Neko, and Masanobu Takemoto, both of Oshino-mura, all of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

Filed May 23, 1995, Ser. No. 447,694

Claims priority, application Japan, May 26, 1994, 6-134924

Int. Cl.^{6} G06F *15/76*

U.S. Cl. 395—800 **6 Claims**

1. A programmable logic controller for sequence-controlling an industrial machine, comprising:

a processor executing a non-editable system program and an editable user program;

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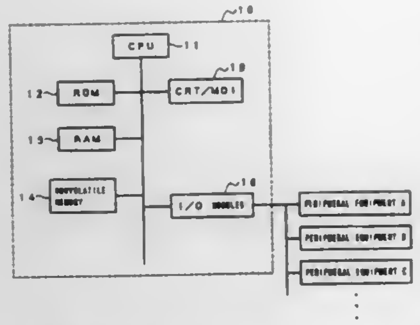


a memory storing a first data group to be used in executing the system program and a second data group to be used in executing the user program in respective predetermined addresses, the respective data of the first data group being assigned to a specific addresses of said memory;

an address storage unit storing a designated relationship between the respective addresses of said memory in which the second data group is to be stored, and the addresses of said memory which are assigned to respective data of the first data group, wherein said processor transfers necessary signals for executing said user program through said address storage unit; and

an I/O module group for transferring signals to and from peripheral equipment, the system program including a program designating the addresses of said memory to which data indicating various operating statuses of the industrial machine are to be stored, and the addresses to which signals transferred between each input and output terminal of said I/O module group and the peripheral equipment are to be stored.

5,713,037

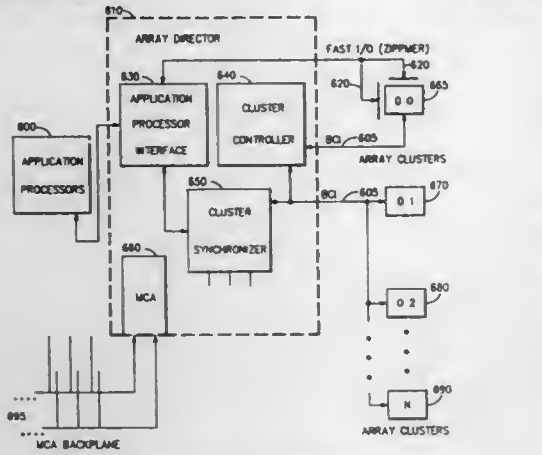
SLIDE BUS COMMUNICATION FUNCTIONS FOR SIMD/MIMD ARRAY PROCESSOR

Paul Amba Wilkinson, Apalachin; James Warren Dieffenderfer, Owego; Peter Michael Kogge, Endicott, and Nicholas Jerome Schoonover, Tioga Center, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 233,210, Apr. 26, 1994, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned, and Ser. No. 798,788, Nov. 27, 1991, Pat. No. 5,475,856. This application Jun. 7, 1995, Ser. No. 480,891

Int. Cl.^{6} G06F *15/80*

U.S. Cl. 395—800 **10 Claims**



1. An array processing system, comprising:

a plurality of processing elements interconnected as an array processor, each having a processor and a memory coupled to said processor, and wherein each of the processing elements selectively and automatically executes an independent instruction stream on an independent multiple data stream, thereby providing for an MIND mode;

a control processor that dispatches a series of single instructions to the plurality of processing elements, each of the single instructions operative to command the respective processing elements to execute respective multiple independent instruction streams on multiple independent data streams located one per processing element, each successive instruction of said single instructions being dispatched by said control processor in response to all of said processing elements accessing an instruction immediately preceding said each successive instruction;

wherein a first one of said processing elements which has completed execution of a multiple instruction stream in response to an instruction of said single instructions accesses and begins executing an immediately subsequent instruction of said single instructions after all other processing elements have read said instruction and before all other processing elements complete execution of respective multiple instruction streams in response to said instruction, whereby the processing elements execute the series of single instructions independently of a fixed time relationship between or among the processing elements with respect to accessing a subsequent single instruction before all processing elements have completed executing multiple instructions in response to a single instruction immediately precedent to said subsequent single instruction; and wherein is provided a slide bus for multiple processing element communication in a single communication cycle, said multiple processing element communication including communication between two processing elements via at least one intervening processing element.

5,713,038

MICROPROCESSOR HAVING REGISTER FILE

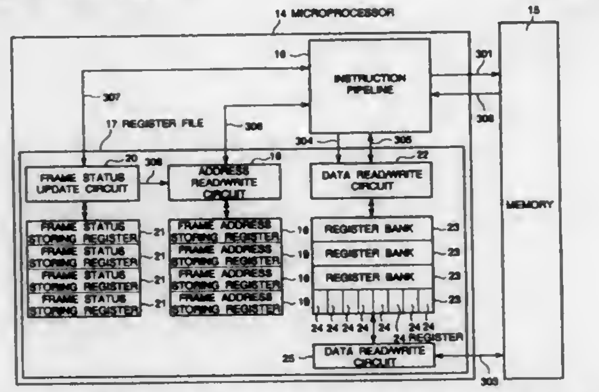
Masato Motomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,928

Claims priority, application Japan, Aug. 12, 1994, 6-190447

Int. Cl.^{6} G06F *18/78*

U.S. Cl. 395—800 **8 Claims**



1. A microprocessor including at least a register file and an instruction pipeline and so configured that a data load/store processing is performed between the register file and an external memory, the register file comprising:

a plurality of register banks each composed of the same number of registers:

a plurality of frame address storing registers of the same number as that of said plurality of register banks;

a first data read/write means connected to said instruction pipeline through a register designating bus means and a first data transfer bus means and also coupled to said plurality of register banks;

an address read/write means connected to said instruction pipeline through an address transfer bus means and coupled to said plurality of frame address storing registers; and

a second data read/write means coupled to said plurality of register banks and connected to said memory through a second data transfer bus means further including:

a plurality of frame status storing registers of the same number as that of said plurality of register banks; and

a frame status update means connected to said instruction pipeline through a frame status transfer line means and coupled to said plurality of frame status storing registers.

5,713,039

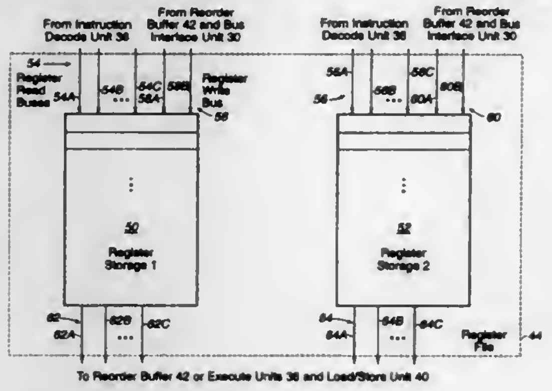
REGISTER FILE HAVING MULTIPLE REGISTER STORAGES FOR STORING DATA FROM MULTIPLE DATA STREAMS

Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 5, 1995, Ser. No. 567,665

Int. Cl.^{6} G06F *9/34;12/00*

U.S. Cl. 395—800 **13 Claims**



1. A register file comprising:

a first register storage having a first read port, wherein said first register storage comprises a first plurality of storage locations, wherein each of said first plurality of storage locations corresponds to one of a first plurality of registers, and wherein any one of said first plurality of storage locations is accessible via a first indication asserted upon said first read port; and

a second register storage having a second read port, wherein said second register storage comprises a second plurality of storage locations, wherein each of said second plurality of storage locations corresponds to one of a second plurality of registers, and wherein any one of said second plurality of storage locations is accessible via a second indication asserted upon said second read port;

wherein said first plurality of storage locations comprising said first register storage are inaccessible via said second read port, and wherein said second plurality of storage locations comprising said second register storage are inaccessible via said first read port;

wherein said first register storage and said second register storage may be accessed concurrently via said first read port and said second read port respectively; and

wherein said first plurality of registers and said second plurality of registers comprise an architected register set.

5,713,040

MONITOR-MODE CONTROL CIRCUIT AND METHOD THEREOF

Ji Young Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

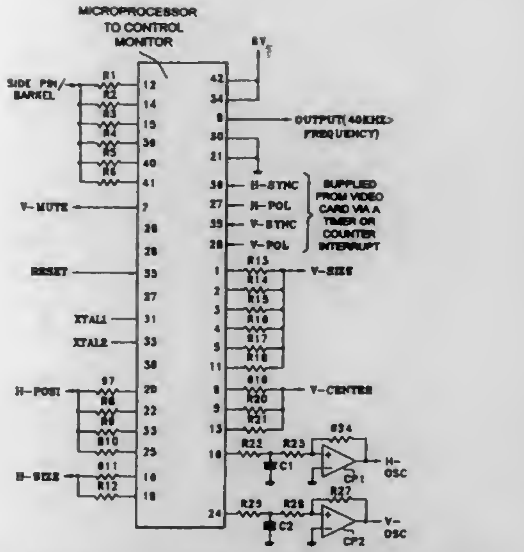
Continuation of Ser. No. 252,661, Jun. 1, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 639,432

Claims priority, application Rep. of Korea, Dec. 4, 1993, 93-26485

Int. Cl.^{6} G09G *5/00*

U.S. Cl. 395—800 **1 Claim**

1. A monitor-control method comprising the steps of:



detecting horizontal and vertical sync frequencies and polarities of horizontal and vertical sync signals input from a video card;

determining, in a microprocessor, a video mode of said video card, using the detected horizontal and vertical sync frequencies and polarities;

producing an oscillating voltage in accordance with corresponding horizontal and vertical sync frequencies by pulse width modulation in which said horizontal and vertical sync frequencies are divided into predetermined levels;

outputting a high or low signal, simultaneously while outputting said oscillating voltage, by selecting a respective one of a plurality of ports of a picture control terminal of said microprocessor in accordance with the determined video mode, thereby adjusting a voltage of a signal supplied to said picture control terminal, and

connecting resistors to said ports in parallel to each said picture control terminal associated with a respective plurality of said ports to adjust said voltage supplied to each said picture control terminal depending on the selected one of said ports associated therewith and its associated resistor.

5,713,041

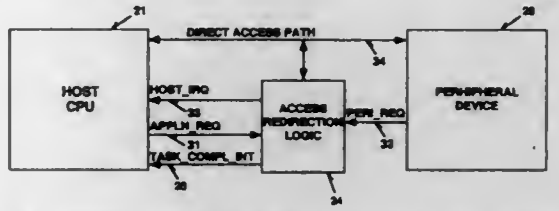
COMPUTER SYSTEM HAVING A HOST CPU AND A LOGIC FOR INTEGRATING PERIPHERAL CONTROL FUNCTIONS INTO THE HOST CPU

Chengwu Chen, Rancho Cordova, and Michael A. Gley, Sacramento, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 260,109, Jun. 15, 1994, abandoned. This application Jul. 8, 1996, Ser. No. 675,421

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—800 **12 Claims**



1. A computer system including a bus and a CPU connected thereto, said system comprising:

at least one peripheral device without a dedicated microcontroller, said peripheral device coupled to said bus for performing peripheral operations of the computer system;

system memory connected to said bus for storing peripheral device routines for performing said peripheral operations, an

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operating system and applications software, said operating system and said applications software being peripheral controller-oriented;

access redirection logic coupled to said bus and to said peripheral device and having logic for receiving requests for peripheral device operation from said peripheral controller-oriented applications software executed by said CPU and upon receipt thereof generating a CPU interrupt request signal to said CPU that causes said CPU to execute said peripheral device routines, memory storing results of said execution of said peripheral device routines, and logic for supplying the contents of said memory to said CPU.

5,713,042

DOCUMENT PROCESSING APPARATUS FOR CONTROLLING CURSOR MOVEMENT AND A METHOD FOR PROCESSNG A DOCUMENT IN AN APPARATUS OPERABLE IN A PLURALITY OF EDITING MODES

Tsutomu Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

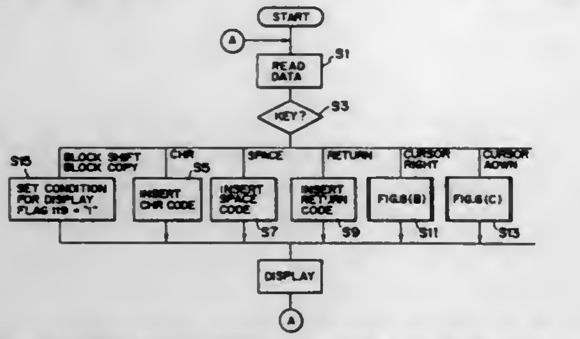
Continuation of Ser. No. 743,025, Aug. 9, 1991, abandoned.

This application Oct. 31, 1994, Ser. No. 332,452

Claims priority, application Japan, Aug. 14, 1990, 2-214643

Int. Cl.^{6} G06F *17/21*

U.S. Cl. 395—802 **22 Claims**



1. A document editing method for editing a document in one of a plurality of editing modes, wherein in at least one of the plurality of editing modes, a cursor can be moved in response to a cursor movement instruction given by a cursor movement key, within a first area in which data has been input, said method comprising the steps of:

determining whether a specific editing mode other than the at least one of the plurality of editing modes is selected, wherein the cursor is allowed in the specific editing mode to be moved to a second area in which data has not been input; and

in response to a determination in said determining step that the specific editing mode is selected and in response to an instruction, given by the cursor movement key without using other keys, for moving the cursor to a position within the second area, moving the cursor to that position and automatically inputting at least one space code in the second area.

5,713,043

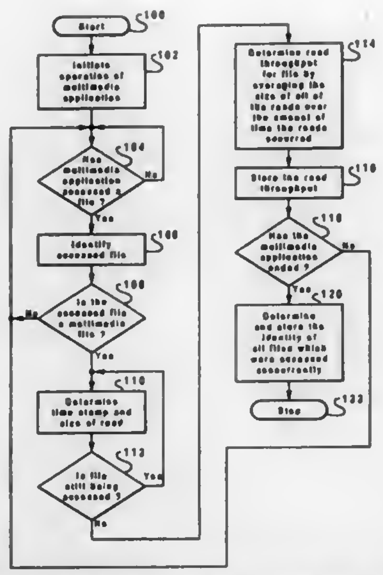
METHOD AND SYSTEM IN A DATA PROCESSING SYSTEM FOR EFFICIENT DETERMINATION OF QUALITY OF SERVICE PARAMETERS

Mark John Baugher, and Alan Palmer Stephens, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 1995, Ser. No. 368,451

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—806 **12 Claims**


Start
100
Initiate operation of multimedia application
102
Has multimedia application accessed a file ?
104
No
Yes
Identify accessed file
106
Is the accessed file a multimedia file ?
108
No
Yes
Determine time stamp and size of read
110
Is file still being accessed ?
112
Yes
No
Determine read throughput for file by averaging the size of all of the reads over the amount of time the reads occurred
114
Store the read throughput
116
Has the multimedia application ended ?
118
No
Yes
120
Determine and store the identity of all files which were accessed concurrently
Stop
122

7. A data processing system for efficiently determining quality of service parameters for a plurality of multimedia files accessed during operation of a specified multimedia application, said data processing system including a storage device, comprising:

means for initiating operation of said specified multimedia application;

means for identifying each of said plurality of multimedia files accessed by said specified multimedia application, wherein said specified multimedia application reads data stored in each of said plurality of multimedia files;

means for analyzing each read performed by said specified multimedia application while said specified multimedia application is accessing each of said plurality of multimedia files; and

means for automatically determining quality of service parameters for each of said plurality of multimedia files utilizing said analysis of each read performed by said specified multimedia application.

5,713,044

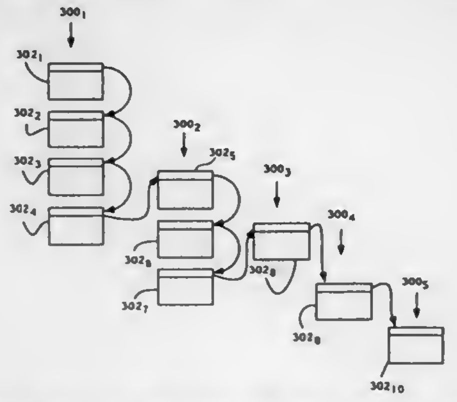
SYSTEM FOR CREATING NEW GROUP OF CHAIN DESCRIPTORS BY UPDATING LINK VALUE OF LAST DESCRIPTOR OF GROUP AND REREADING LINK VALUE OF THE UPDATING DESCRIPTOR

Byron Gillespie, Phoenix; Elliot Garbus, Scottsdale, both of Ariz., and William Futral, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1995, Ser. No. 575,663

Int. Cl.^{6} G06F *15/02*

U.S. Cl. 395—842 **14 Claims**



1. In a computer system having a processor and a direct memory access (DMA) controller wherein the processor creates groups of chain descriptors each identifying portions of data to be processed by the DMA controller and wherein each of the chain descriptors includes a link value identifying a next chain descriptor within the group, if any, an improvement comprising:

updating means within the processor for updating the link value of a last chain descriptor of a group of chain descriptors upon the creation of a subsequent group of chain descriptors, said link value being updated to identify a first chain descriptor of said subsequent group of chain descriptors;

storing means within the DMA controller for storing an update condition value identifying whether the processor has updated the link value of the last chain descriptor of a group of chain descriptors; and

examining means within the DMA controller for examining the update condition value and for rereading the link value of the current chain descriptor if the update condition value has been set and for not reading the link value otherwise.

5,713,045

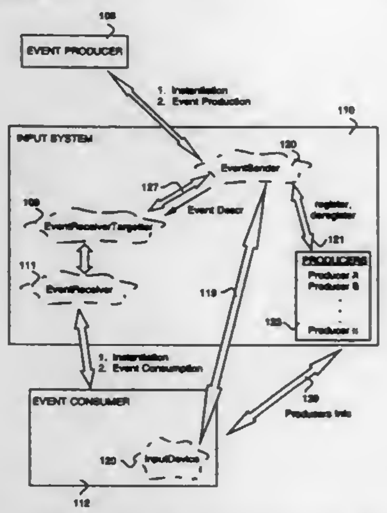
SYSTEM FOR PROCESSING USER EVENTS WITH INPUT DEVICE ENTITY ASSOCIATED WITH EVENT PRODUCER WHICH FURTHER LINKS COMMUNICATION FROM EVENT CONSUMER TO THE EVENT PRODUCER

Eric M. Berdahl, San Jose, Calif., assignor to Object Technology Licensing Corporation, Cupertino, Calif.

Filed Jun. 29, 1995, Ser. No. 496,740

Int. Cl.^{6} G06F *9/00*

U.S. Cl. 395—893 **24 Claims**



1. A system for processing user input events in a computer system having at least one event producer and at least one event consumer, wherein objects of an input framework are used for communication between and event producer and an event consumer, comprising:

an event entity creator for receiving a user input event from an event producer, creating, in response to receiving said user input event, an event entity which conveys information regarding said user input event, and sending said event entity to an event transfer entity;

an event transfer entity for receiving an event entity and transferring the event entity to a receiver entity based on said event entity; and

an input device entity associated with an event producer for creating one or more events within an event consumer in response to said event producer, wherein the input device entity further links communication from the event consumer to the event producer.

5,713,046

LENS-FITTED PHOTOGRAPHIC FILM UNIT

Nobuyuki Kameyama, and Hirofumi Katsura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

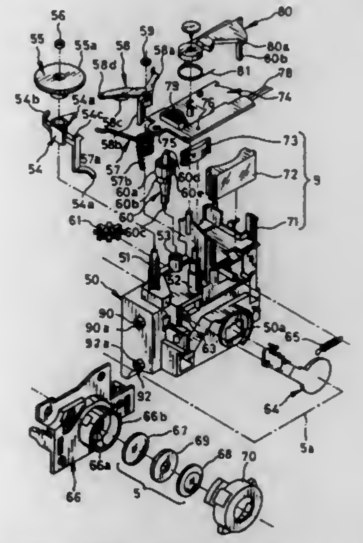
Continuation of Ser. No. 317,580, Oct. 4, 1994, abandoned.

This application Sep. 9, 1996, Ser. No. 708,783

Claims priority, application Japan, Oct. 7, 1993, 5-251941; Oct. 7, 1993, 5-251942

Int. Cl.^{6} G03B *17/02;1/00*

U.S. Cl. 396—6 **18 Claims**



1. In a lens-fitted photographic film unit having a preloaded photographic film and a photograph-taking unit on which a taking lens and finder lens elements of an optical viewfinder are mounted, said photograph-taking unit comprising:

a sprocket wheel rotatable in engagement with perforations of said photographic film;

a shutter mechanism including a shutter cocking cam rotated by said sprocket wheel, a shutter actuating lever moved by said shutter cocking cam from an initial position to a cocked position against a force of a spring, and a shutter blade actuated by said shutter actuating lever to expose said photographic film through said taking lens while said shutter actuating lever returns to said initial position under the force of said spring;

a frame counter dial having teeth formed around the periphery thereof and frame number markings on a top surface thereof for indicating the exposed or unexposed number of available picture frames;

a one-tooth gear engaged with said teeth of said frame counter dial and rotated by said sprocket wheel so as to advance said frame counter dial one unit per one rotation of said one-tooth gear, said one-tooth gear being formed integrally with said shutter cocking cam into a cam unit;

an axle for pivotally mounting said shutter actuating lever and said frame counter dial;

a plate removably secured to a top side of a finder lens frame for holding said finder lens elements; and

supporting portions formed in an area of said plate, for supporting said axle and said cam unit at their upper portions so as to maintain proper engagement between said one-tooth gear and said teeth of said frame counter dial;

wherein said supporting portions comprise a hole in which an upper tip of said axle is fitted, and an arched wall contacting an upper peripheral surface of said cam unit so as to support said cam unit for rotation of said cam unit, said hole and said arched wall being formed in a bottom side of said plate in an area which extends beyond said top side of said finder lens elements.

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5,713,047
EYE FUNDUS PHOTOGRAPHING APPARATUS

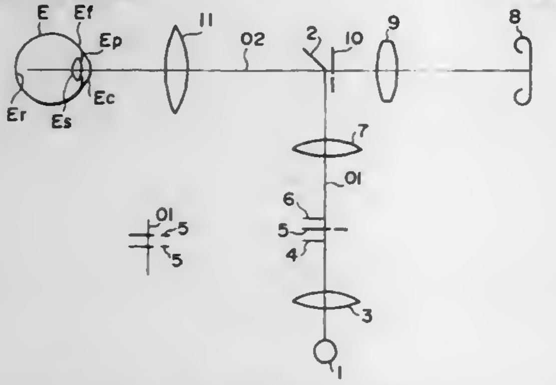
Yoshimi Kobayakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 70,238, Jun. 2, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 352,443

Claims priority, application Japan, Jun. 8, 1992, 4-173826; Aug. 25, 1992, 4-250693

Int. Cl.⁶ G03B *29/00;* **A61B** *3/14*

U.S. Cl. 396—18 **22 Claims**



1. An eye fundus imaging apparatus comprising:

an illumination system for illuminating an eye fundus of an eye being examined using an illumination light beam, said illumination system having an illumination diaphragm at a position substantially conjugate to a pupil of the eye and having at least one aperture at a position corresponding to at least one area of the eye pupil;

an imaging system for imaging the eye fundus using an imaging light beam from the eye fundus illuminated by said illumination system, said imaging system having an imaging diaphragm at a position substantially conjugate to the eye pupil and said imaging diaphragm having at least one aperture at a position corresponding to at least one different area of the eye pupil than the at least one area, the at least one area and the at least one different area being arranged so that the at least one area and the at least one different area are spaced from each other in one direction, wherein one of two perpendicular axes passes through both the at least one area and the at least one different area and the other of the two perpendicular axes passes through only one of the at least one area and the at least one different area; and

at least one light shielding member arranged at one of (i) a vicinity of one of said illumination diaphragm and said imaging diaphragm and (ii) a vicinity of a conjugate position of one of said illumination diaphragm and said imaging diaphragm, said at least one light shielding member being provided at a position to separate the illumination light beam and the imaging light beam at a front portion of the eye.

5,713,048
WATERPROOF AND/OR WATER-RESISTANT CAMERA

Masahiro Hayakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1995, Ser. No. 446,508

Claims priority, application Japan, May 24, 1994, 6-110038; Jun. 30, 1994, 6-007795; Jul. 14, 1994, 6-008457; Jul. 14, 1994, 6-008458

Int. Cl.⁶ G03B *17/08*

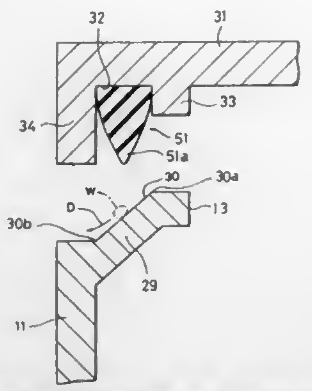
U.S. Cl. 396—25 **17 Claims**

1. A waterproof and/or water-resistant camera, comprising:

a camera body including an opening;

an openable cover connected to said camera body for opening and closing said opening;

an elastic sealing member provided on said cover and surrounding said opening; and



a contacting surface formed on said camera body around said opening, said contacting surface comprising a contact portion providing a sloped surface formed such that an inner end of said sloped surface is closer to said cover than an outer end of said sloped surface, said elastic sealing member coming into pressing contact with said sloped surface when said cover is closed, wherein drops of water on said sloped surface will flow away from said opening when the camera is opened with said cover facing upwardly.

5,713,049
CAMERA-SHAKE DISPLAY DEVICE

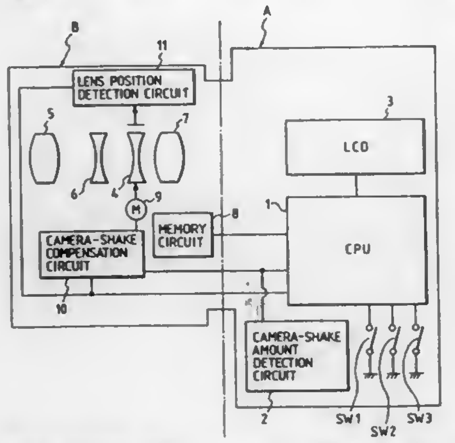
Sueyuki Ohishi, Tokyo; Susumu Sato, Chiba; Hideya Inoue, Yokohama, and Akira Katayama, Koganei, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 432,255, May 1, 1995, Pat. No. 5,537,185, which is a continuation of Ser. No. 159,944, Dec. 1, 1993, abandoned, which is a continuation of Ser. No. 43,767, Apr. 6, 1993, abandoned. This application May 25, 1995, Ser. No. 451,051

Claims priority, application Japan, Apr. 9, 1992, 4-88777

Int. Cl.⁶ G03B *15/05*

U.S. Cl. 396—55 **3 Claims**


B
11
A
LENS POSITION DETECTION CIRCUIT
3
5
6
7
LCD
M
4
8
9
CAMERA-SHAKE COMPENSATION CIRCUIT
MEMORY CIRCUIT
CPU
10
CAMERA-SHAKE AMOUNT DETECTION CIRCUIT
2
SW1
SW2
SW3

1. A photographing lens which is a part of camera system including a camera and the photographing lens detachably mounted on the camera, the camera system having a camera-shake detector to detect a camera-shake amount indicating a displacement of the camera system and to generate a signal representing the camera-shake amount, the photographing lens comprising:

a signal generator to generate a signal indicating whether said photographing lens has a compensation optical system to compensate camera-shake in accordance with the signal from said camera-shake detector,

said camera system being constructed to determine whether said photographing lens mounted on the camera is a camera-shake compensation lens based only on the signal from said signal generator, and to display, independently of occurrence of camera-shake, an indication which indicates whether said photographing lens is a camera-shake compensation lens.

5,713,050
METHOD AND APPARATUS FOR CHECKING BATTERY IN CAMERA

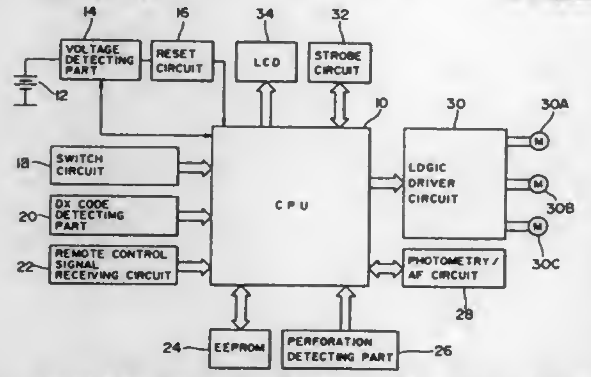
Katsuji Ozawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed May 1, 1996, Ser. No. 640,716

Claims priority, application Japan, May 1, 1995, 7-107308

Int. Cl.⁶ G03B *17/00;7/26*

U.S. Cl. 396—56 **12 Claims**



7. An apparatus for checking a battery in a camera which can selectively operate in a remote control ready mode wherein a remote control signal receiving circuit is activated to receive a remote control signal and capture an image in response thereto, and which has an auto-power off function for automatically stopping a supply of electricity from the battery if the camera is left in its remote control ready mode for more than a predetermined waiting time without recording an image, comprising:

battery residual charge detection means for measuring a residual charge of the battery when the remote control ready mode is selected;

comparison means for comparing said measured residual charge to a maximum required amount of electricity for a remote-controlled image capture equal to the sum of an amount of electricity that will be consumed by the camera operating in the remote control ready mode during said predetermined waiting time and an amount of electricity required to capture the image, to determine whether the battery has enough charge to operate the camera in its remote control ready mode for at least the predetermined waiting time of the auto-power off function and capture the image; and

remote control mode setting means connected to the comparison means for placing the camera in the remote control ready mode only if said measured residual charge is greater than said maximum required amount of electricity.

5,713,051
LENS SHUTTER CAMERA INCLUDING ZOOM LENS

Keisuke Haraguchi; Shinsuke Kohmoto; Takeo Kobayashi; Shigeru Koudoh; Hideki Ohkubo, and Norio Numako, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

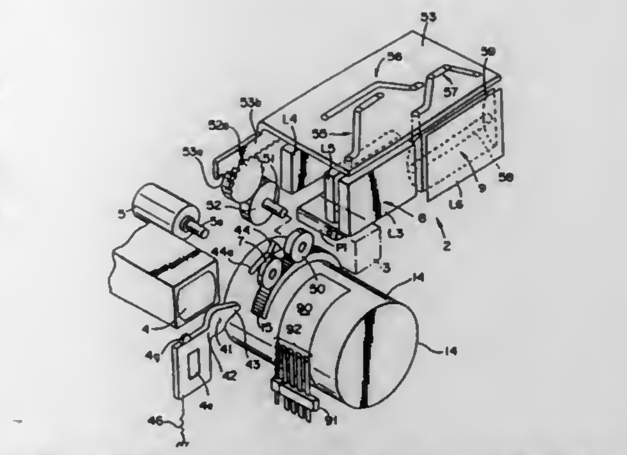
Continuation of Ser. No. 462,687, Jun. 5, 1995, which is a continuation of Ser. No. 222,697, Mar. 10, 1994, Pat. No. 5,465,131, which is a division of Ser. No. 924,631, Aug. 4, 1992, Pat. No. 5,321,462, which is a continuation of Ser. No. 480,214, Feb. 14, 1990, Pat. No. 5,157,429, which is a division of Ser. No. 144,030, Jan. 7, 1988, Pat. No. 4,944,030. This application May 7, 1996, Ser. No. 646,114

Claims priority, application Japan, May 12, 1986, 61-108278; May 12, 1986, 61-108279; May 28, 1986, 61-80861; May 28, 1986, 61-80862; Jun. 2, 1986, 61-83932; Jun. 2, 1986, 67-127496; Jun. 21, 1986, 61-145470; Jun. 26, 1986, 61-150995; Aug. 15, 1986, 61-125045; Aug. 22, 1986, 61-196911; Aug. 29, 1986, 61-132658; Aug. 29, 1986, 61-132659; Aug. 29, 1986, 61-132660; Aug. 29, 1986, 61-132661

Int. Cl.⁶ G03B *5/00;13/04;13/12;9/08*

U.S. Cl. 396—84 **20 Claims**

1. A zoom lens shutter camera having a finder optical assembly and an image forming optical assembly with different optical axes, said image forming optical assembly including a zoom lens, said camera including a system for moving said finder optical assembly



in association with zooming movement of said zoom lens in order to vary the field of view through said finder optical assembly in accordance with changes in position of said zoom lens, said zoom lens comprising a first lens group and a second lens group, said camera further comprising a shutter block mounted around at least one of said first lens group and said second lens group, said shutter block being drivably connected to a movable driving ring, wherein movement of said driving ring moves said shutter block axially along said image forming optical axis and effects zooming movement of said zoom lens.

5,713,052
CAMERA SYSTEM AND PHOTOGRAPHING LENS THEREOF

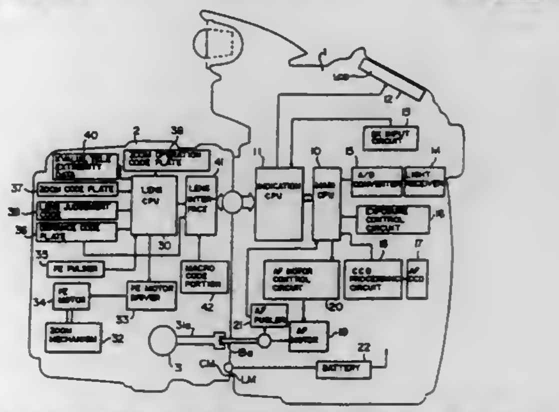
Masahiro Kawasaki; Hiroyuki Takahashi, and Shigeru Iwamoto, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 368,958, Jan. 5, 1995, Pat. No. 5,505,535, which is a continuation of Ser. No. 115,795, Sep. 3, 1993, Pat. No. 5,416,555, which is a continuation of Ser. No. 691,976, Apr. 26, 1991, abandoned. This application Sep. 18, 1995, Ser. No. 529,576

Claims priority, application Japan, Apr. 26, 1990, 2-110766; May 8, 1990, 2-117930

Int. Cl.⁶ G03B *3/00;13/22*

U.S. Cl. 396—91 **19 Claims**



1. A photography lens attachable to a camera body, said camera body including means for interfacing with the photography lens when the photography lens is attached to the camera body, said photography lens comprising:

a shift register that stores data related to said photography lens, said data stored in said shift register comprising:
  specific initial value lens data; and
  data other than specific initial value lens data;

means for transmitting said data stored in said shift register to the camera body in response to a clock pulse issued by the camera body;

first means for loading said specific initial value lens data in said shift register in response to a predetermined signal issued by the camera body;

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means for calculating said data other than specific initial value lens data in response to a clock pulse issued by said photography lens; and

second means for loading said data other than specific initial value lens data in said shift register in response to said clock pulse issued by said photography lens after said specific initial value lens data is loaded in said shift register by said first loading means, the interfacing means of the camera body receiving data transmitted by said transmitting means of said photography lens, a data loading operation by said second loading means and a calculation operation by said calculating means being performed non-synchronously with a data transmitting operation by said transmitting means in response to the clock pulse issued by the camera body.

5,713,053

TTL EXPOSURE CONTROL APPARATUS IN AN INTERCHANGEABLE LENS CAMERA

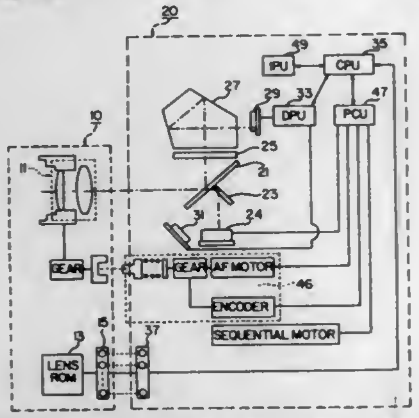
Isamu Hirai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 624,119

Claims priority, application Japan, Mar. 31, 1995, 7-076307

Int. Cl.^{6} G03B *7/08;7/20*

U.S. Cl. 396—92 **16 Claims**



1. A TTL exposure control apparatus having a camera body to which different interchangeable lenses can be detachably attached, at least one of said interchangeable lenses comprising an interchangeable wide-angle lens having an image surface illuminance ratio beyond a range of applicability of a cos^4 law and having predetermined image distortion, said wide-angle lens having a memory that stores an exposure correction value corresponding to the predetermined image distortion of said wide-angle lens,

said camera body comprising a photometering device which measures photometering data using light transmitted through the interchangeable lens; and

a photometering data correcting system that corrects the measurements by the photometering device in accordance with the exposure correction value read from the memory when said interchangeable wide-angle lens having predetermined image distortion is attached to the camera body.

5,713,054

FILM CONTAINER HANDLING APPARATUS

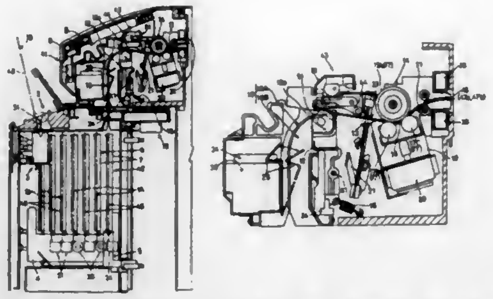
Yasunobu Shimamura, and Youji Nishimoto, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama-Ken, Japan

Filed Nov. 15, 1996, Ser. No. 751,169

Claims priority, application Japan, Nov. 21, 1995, 7-302804

Int. Cl.^{6} G03D *3/08*

U.S. Cl. 396—612 **13 Claims**



1. A film container handling apparatus for handling a film container including a film entrance/exit opening which is selectable between a first condition providing an opening and a second condition providing a larger opening, the apparatus comprising:

a holding portion for holding the film container;

opening means for switching over the film entrance/exit opening of the film container as held at the holding portion from the first condition to the second condition; and

discharging means for discharging the film container from the film holding portion after the film has been removed from the film container under the second condition.

5,713,055

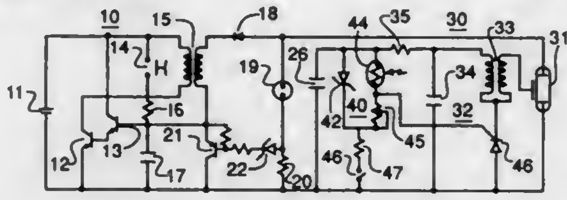
AMBIENT LIGHT SENSITIVE AUTOMATIC FLASH CONTROL CIRCUIT

Joel S. Lawther; Norbert Koenig, both of Rochester; David R. Dowe, Holley, and Douglas W. Constable, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1996, Ser. No. 756,315

Int. Cl.^{6} G03B *15/03*

U.S. Cl. 396—165 **11 Claims**



1. A camera flash control circuit for a flash circuit having a flash capacitor and a flash illumination device, the flash control circuit comprising an ambient light sensing circuit for controlling operation of the flash circuit to suppress initiation of flash illumination in response to sensed high scene ambient light levels for which flash illumination is unnecessary, the light sensing circuit being coupled to said flash capacitor and being energized solely from said flash capacitor.

5,713,056

FILM FEEDING APPARATUS OF CAMERA

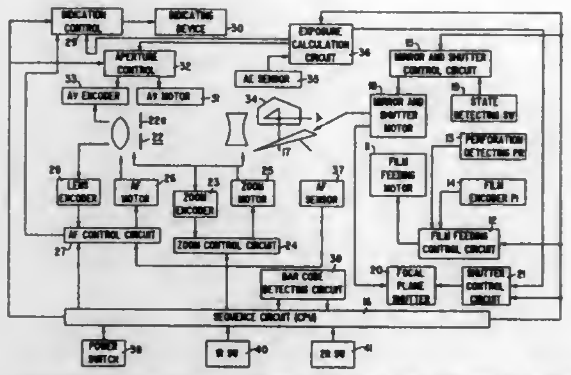
Yasuo Asakura, Hachioji; Shinya Takahashi, Kodaira; Akira Inoue, Nagano-ken, and Tatsuo Takanashi, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 28, 1996, Ser. No. 654,041

Claims priority, application Japan, Jun. 1, 1995, 7-134878; Jul. 13, 1995, 7-177039

Int. Cl.^{6} G03B *19/02*

U.S. Cl. 396—396 **31 Claims**



1. A film feeding apparatus of a camera into which a film cartridge containing a film and having a film feeding function can be loaded, the film feeding apparatus comprising:

film feeding means for feeding the film;

feeding amount detecting means for outputting a signal corresponding to a feeding amount of the film fed by the film feeding means;

first control means for controlling the film feeding means to feed the film in a first direction by a predetermined amount in response to the output signal of the film feeding amount detecting means when the camera is switched to a nonoperative state or when the camera has not been operated for a predetermined time; and

second control means responsive to the camera being switched to an operative state or to an input of an operation command, for controlling the film feeding means to feed the film in a second direction opposite to the first direction of the film feeding controlled by the first control means,

whereby a deformed portion of the film caused by the film cartridge does not affect the flatness of the film at the time of photographing.

5,713,057

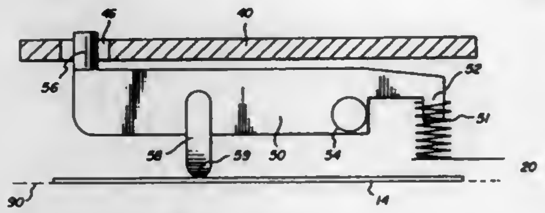
CAMERA WITH MEANS FOR PREVENTING A CARTRIDGE LIGHT LOCK FROM MOVING FROM AN OPEN TO A CLOSED POSITION WHEN A FILMSTRIP PROTRUDES OUT OF THE CARTRIDGE

Patricia Lynn Williams, Rochester, and Robert Louis Kuhn, Jr., Rush, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 6, 1995, Ser. No. 568,214

Int. Cl.^{6} G03B *17/02;17/26*

U.S. Cl. 396—513 **9 Claims**



1. A camera, comprising:

a chamber for receiving a cartridge, the cartridge having a light lock movable between an open position allowing a filmstrip to exit the cartridge and a closed position sealing the cartridge in a light-tight manner;

a mechanism for moving the light lock between open and closed positions;

said mechanism for moving including a light lock drive for engaging and moving the light lock between the open and closed positions, a drive member for engaging and moving said light lock drive to move the light lock, and a manually operable actuator for engaging and moving said drive member;

a mechanism, actuateable by movement of the filmstrip from the cartridge, for preventing said mechanism for moving from moving the light lock of the cartridge from the open position to the closed position when the filmstrip protrudes out of the cartridge; and

said mechanism for preventing including a lock member which is contacted by the filmstrip during movement of the filmstrip from the cartridge to move a portion of said lock member into an aperture in said drive member to limit movement of said drive member.

5,713,058

PROCESSING OF PHOTOGRAPHIC MATERIALS

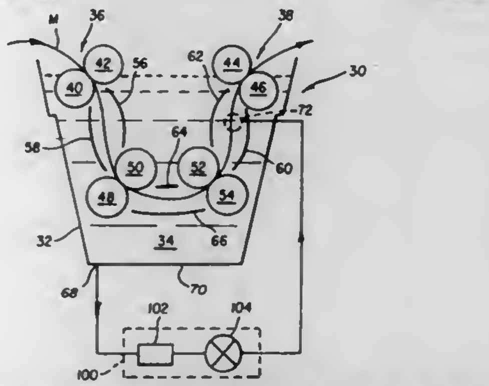
Christopher Barrie Rider, New Malden, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1996, Ser. No. 642,731

Claims priority, application United Kingdom, May 4, 1995, 9509117

Int. Cl.^{6} G03D *3/02*

U.S. Cl. 396—626 **3 Claims**



1. A method for processing photographic materials in an apparatus having at least two processing stages, said at least one processing stage comprising a processing tank having a processing path extending therethrough and an external filtration system connected thereto, the filtration system being connected between an outlet port and an inlet port provided in the processing tank, the inlet port being located at a position for directing processing solution within the last half of the processing path of a photographic material within the processing tank and at a direction which is generally transversed to the direction of movement and generally coplanar with respect to the photosensitive material being processed.

5,713,059

PAPER JAM DETECTOR FOR ELECTROPHOTOGRAPHIC PRINTER

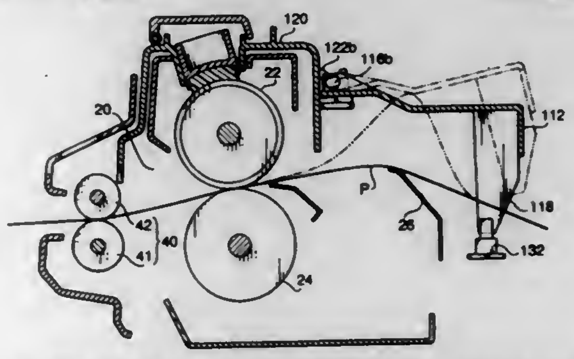
Yutaka Ishikawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1996, Ser. No. 620,350

Claims priority, application Japan, Mar. 25, 1995, 7-091459

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—18 **33 Claims**



1. A jam detector for a sheet transport path of a continuous form electrophotographic printer, said jam detector comprising:

a detection member extending along the sheet transport path in a direction of sheet transport, said detection member positioned to be pushed away from the sheet transport path by buckling of the continuous form at substantially any position along said detection member; and

a movement sensor for sensing movement of said detection member.

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5,713,060
IMAGE FORMING APPARATUS CAPABLE OF DISCHARGING REMAINING SHEETS

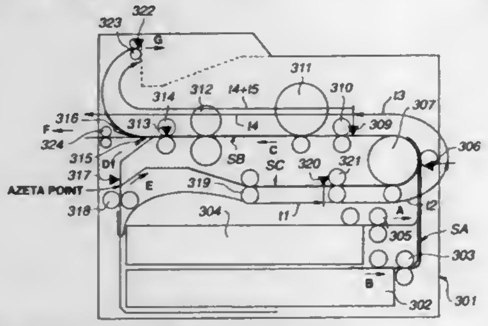
Kaoru Sato, Minami-ashigara; Tatsuto Tachibana, and Masayoshi Takahashi, both of Numazi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1996, Ser. No. 671,857

Claims priority, application Japan, Jul. 3, 1995, 7-189773; Jul. 7, 1995, 7-172123; Nov. 1, 1995, 7-285324

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—20 **7 Claims**



1. An image forming apparatus comprising:
image forming means for forming an image on a sheet;
first conveying means for conveying a sheet along a first conveying path toward said image forming means;
second conveying means for conveying a sheet along a second conveying path toward said image forming means;
first detection means for detecting a sheet remaining in the first conveying path;
second detection means for detecting a sheet remaining in the second conveying path; and
control means for discharging the sheets in the first and second conveying paths from said image forming apparatus by simultaneously driving said first and second conveying means whether or not the sheets in the first and second conveying paths are conveyed superposed in said image forming means, in accordance with the detection of the remaining sheets by said first and second detection means, before said image forming means starts image formation.

5,713,061
IMAGE FORMING APPARATUS HAVING PAGE DESIGNATION MEANS

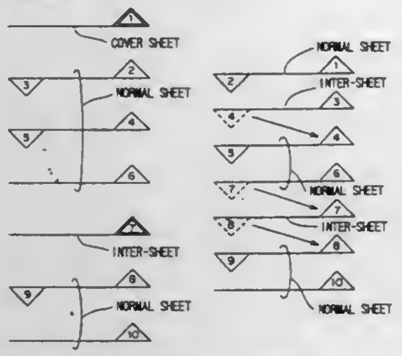
Yoshiki Yoshioka, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1996, Ser. No. 588,612

Claims priority, application Japan, Mar. 6, 1995, 7-045984

Int. Cl.^{6} G03G *15/04*

U.S. Cl. 399—38 **15 Claims**



1. An image forming apparatus comprising:
image formation means for forming images on both sides of a recording sheet;
page designation means for designating a page selected from a plurality of pages, each page carrying an image to be formed;
control means for controlling the image formation means to prohibit image formation on one side of a recording sheet carrying an image of the page designated by the page designation means on the other side thereof; and
means for prohibiting image formation on one side of a recording sheet carrying an image of a page just before the page designated by the page designation means on the other side thereof.

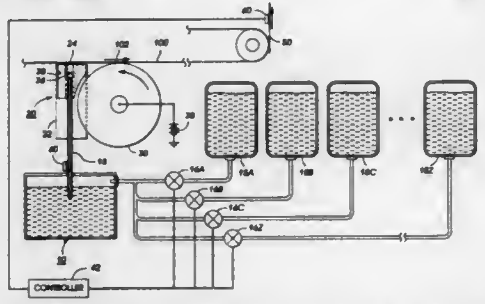
5,713,062
COLOR MIXING AND CONTROL SYSTEM FOR USE IN AN ELECTROSTATOGRAPHIC PRINTING MACHINE

Nancy B. Goodman, Webster, and Thomas A. Henderson, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 26, 1996, Ser. No. 721,420

Int. Cl.^{6} G03G *15/10*

U.S. Cl. 399—49 **15 Claims**



15. A system for systematically dispensing to an operative developing material supply reservoir a selected amount of developing material concentrate from at least a selected one of a plurality of developing material supply dispensers in order to provide a selected amount of developing material of a selected color component to said operative developing material supply reservoir so as to produce a specified color, comprising:
a color sensing device for measuring a color value in an image formed with said operative developing material supply reservoir;
a control system coupled to said color sensing device for selectively actuating said systematic dispensing system in response to the measured color of the test image, said control system including
 means for comparing the measured color value in the image the specified color;
 means for providing a formulation representing relative concentrations of each color component necessary to produce a color output print of the specified color; and
 means, responsive to said comparing means and said formulation providing means, for determining selected amounts of selected color components for modifying the operative developing material supply reservoir necessary to provide the specified color as an output.

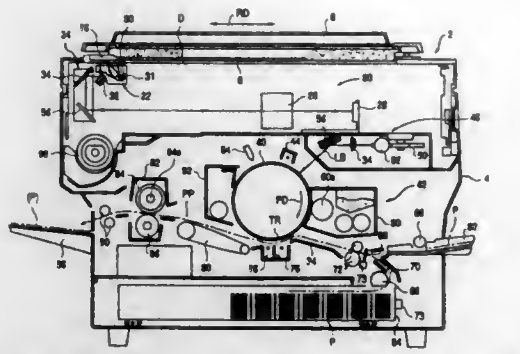
5,713,063
ELECTROSTATIC IMAGE TRANSFER DEVICE HAVING A TWO LEVEL TRANSFER VOLTAGE FOR IMPROVING IMAGE QUALITY AT LEADING AND TRAILING EDGE REGIONS

Michiteru Oono, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 283,898, Aug. 3, 1994, Pat. No. 5,541,718. This application Apr. 23, 1996, Ser. No. 636,669

Int. Cl.^{6} G03G *15/16*

U.S. Cl. 399—66 **13 Claims**



1. An image-transfer device for transferring an image from an image-bearing member to a sheet-like material, comprising:
means, responsive to a transfer voltage and spacedly positioned from the image-bearing member, for charging the sheet-like material in a predetermined polarity so that the image on the image-bearing member is transferred onto the sheet-like material;
means for transporting the sheet-like material through a transfer region between the charging means and the image-bearing member, the transporting means including a guide member for guiding the sheet-like material, the guide member having a first edge portion arranged at an upstream side of the transfer region and a second edge portion arranged at a downstream side of the transfer region so as to form an opening at the transfer region and between the first edge portion and the second edge portion;
means for selectively applying one of a first transfer voltage and a second transfer voltage to the charging means, the second transfer voltage having a lower absolute value than the first transfer voltage, wherein the first transfer voltage is a voltage level effective for transferring the image from the image-bearing member to the sheet-like material which is in contact with the image-bearing member, and the second transfer voltage is a voltage level effective for transferring the image to the sheet-like material which is not in contact with the image-bearing member; and
means for setting the applying means to apply the first transfer voltage when the sheet-like material is guided by both the first edge portion and the second edge portion, and setting the applying means to apply the second transfer voltage when only one of the first edge portion and the second edge portion guides the sheet-like material, so that a transfer performance level remains good irrespective of a part of the sheet-like material.

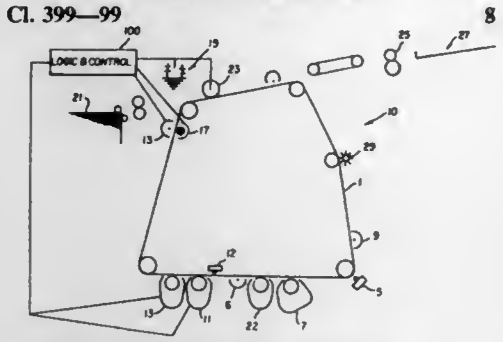
5,713,064
METHOD AND APPARATUS FOR FORMING TONER IMAGES WITH TWO DISTINCT TONERS

W. Charles Kasiske, Penfield; Edward M. Eck, Leroy, and Garold F. Fritz, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1996, Ser. No. 583,731

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—99 **8 Claims**



7. An image forming apparatus comprising:
means for forming a two color toner image made up of two toner images of different color and opposite polarities, said means including a first toning station and a second toning station, said first toning station containing toner of a first polarity and said second toning station containing toner of a second polarity, said second toning station being positioned to apply toner to an electrostatic image on the image member after formation of a first toner image by the first toning station, where there is a tendency to scavenge toner applied by the first toning station into the second toning station;
means for treating the two color toner image to make the toner substantially of one polarity; and
transfer means for transferring the two color toner image to a receiving sheet with presence of an electric field urging transfer of toner of said one polarity;
said apparatus being characterized by means for passing the image member through the second toning station with presence of an electric field urging deposit on the image member of toner of the first polarity present in the second toning station,
means for disabling the transfer means to permit such deposited toner of the first polarity to pass through the transfer means on the image member; and
means for cleaning such toner of the first polarity off the image member.

5,713,065

Patent Not Issued For This Number

5,713,066
IMAGE FORMING APPARATUS FEATURING AN ELECTRIC FIELD REGULATING MEMBER PROVIDED ON AN OPPOSING SURFACE OF A CONDUCTIVE SUBSTRATE

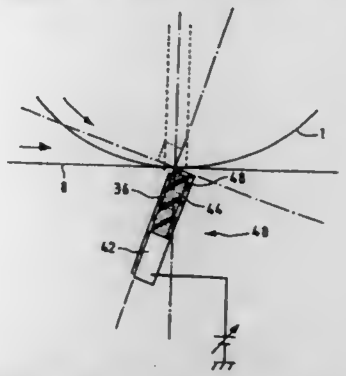
Rie Takekoshi, and Nobuhiko Takekoshi, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1996, Ser. No. 648,859

Claims priority, application Japan, May 19, 1995, 7-145720

Int. Cl.^{6} G03G *15/00;15/16*

U.S. Cl. 399—121 **34 Claims**



1. An image forming apparatus comprising:
an image bearing member;
a recording material bearing member for bearing and conveying a recording material to a transfer position; and
a transfer charge member for transferring an image from said image bearing member onto a recording material borne on said recording material bearing member, said transfer charge member having a plate-shaped conductive substrate and being contacted with a surface of said recording material bearing member opposite to a surface thereof for bearing the recording material at the transfer position,
the conductive substrate having an opposing surface spaced apart from and being opposed to said recording material bearing member, downstream of a contact position between said recording material bearing member and said transfer charge member in a convey direction of the recording material at the transfer position, and

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said transfer charge member having an electric field regulating member provided on the opposing surface of conductive substrate for regulating a transfer electric field generated by the conductive substrate.

5,713,067

CHARGING MEMBER, PROCESS CARTRIDGE USING THE SAME AND ELECTROPHOTOGRAPHIC APPARATUS

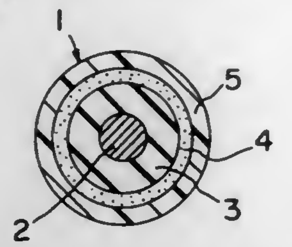
Kiyoshi Mizoe; Yuzi Ishihara, both of Kawasaki; Eiji Funabashi, Kanagawaken, and Tsunenori Ashibe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1995, Ser. No. 575,701

Claims priority, application Japan, Dec. 22, 1994, 6-320690

Int. Cl.^{6} G03G *15/02*

U.S. Cl. 399—176 **19 Claims**



1. A charging roller, which is disposed in contact with a charge-receiving member and is supplied with a voltage to charge the charge-receiving member, said charging roller comprising:

a electroconductive support;

an elastic layer disposed on said electroconductive support; and

a coating layer disposed on said elastic layer,

said coating layer being a surface layer and having a tensile modulus of above 2000 kgf/cm^2 to at most 30000 kgf/cm^2.

5,713,068

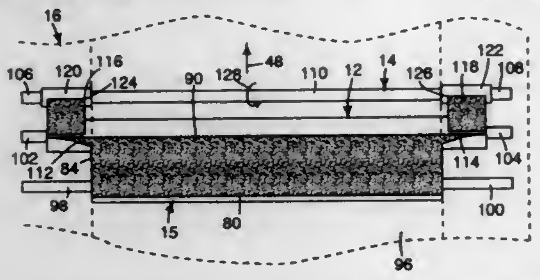
APPARATUS AND METHOD FOR REMOVING DEVELOPER LIQUID FROM AN IMAGING SUBSTRATE

Brian P. Teschendorf; Joseph T. Brophy; W. Blake Kolb, and Alberto Goenaga, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 536,136, Sep. 29, 1995, abandoned. This application Mar. 4, 1997, Ser. No. 811,662

Int. Cl.^{6} G03G *15/10*

U.S. Cl. 399—249 **44 Claims**



1. A squeegee apparatus for removing excess developer liquid from an imaging substrate, the squeegee apparatus comprising:

a first developer liquid removal mechanism including a squeegee roller, and means for loading the squeegee roller against the imaging substrate, the squeegee roller removing the excess developer liquid from the imaging substrate at an upstream side of the squeegee roller relative to a direction of movement of the imaging substrate, wherein a portion of the excess developer liquid passes to a downstream side of the squeegee roller, the portion of the excess developer liquid being transferred from the squeegee roller to the imaging substrate; and

a second developer liquid removal mechanism for removing from the imaging substrate the portion of the excess developer liquid transferred from the squeegee roller, wherein the second developer liquid removal mechanism includes a first sub-mechanism positioned to remove from the imaging substrate the portion of the excess developer liquid transferred from the squeegee roller at a first end of the squeegee roller, and a second sub-mechanism positioned to remove from the imaging substrate the portion of the excess developer liquid transferred from the squeegee roller at a second end of the squeegee roller.

5,713,069

INDUCTION HEAT FIXING APPARATUS WITH PREHEATING GUIDE

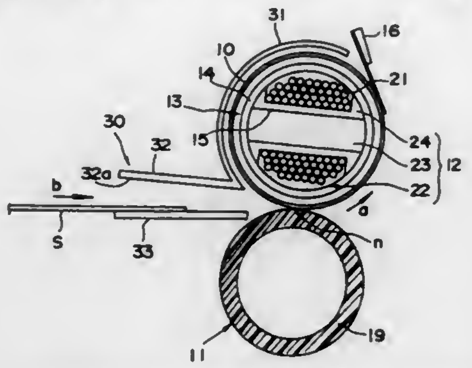
Takeshi Kato, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 27, 1996, Ser. No. 753,613

Claims priority, application Japan, Nov. 30, 1995, 7-312846

Int. Cl.^{6} G03G *15/20*

U.S. Cl. 399—330 **20 Claims**



1. An induction heat fixing apparatus for heating a transporting medium comprising:

means for generating an induction heat by using an induction current;

a pressure member disposed in pressing contact with the induction heat generating means at a contact portion; and

a preheating member positioned at upstream side of the contact portion with respect to the transporting direction of the medium, said preheating member heated by the induction current generated by the induction heat generating means.

5,713,070

IMAGE FORMING APPARATUS WHICH PREVENTS LOSS OF THE ORIGINAL IMAGE

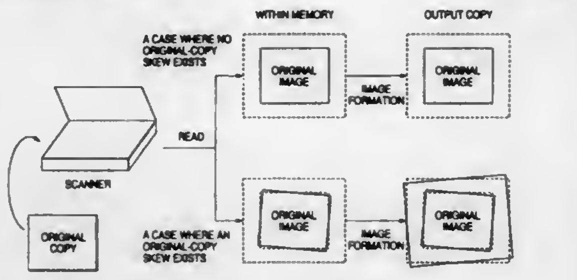
Hiroshi Ohkubo, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,085

Claims priority, application Japan, Apr. 14, 1995, 7-113631; Apr. 2, 1996, 8-106278

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—363 **5 Claims**



1. An image forming apparatus, comprising:

original-copy reading means for producing image data corresponding to an original image;

original-copy size detecting means for detecting a size of an original copy according to the image data;

copying paper selecting means for selecting a transfer paper, which is greater in size than the original-copy, based on a combination of the original-copy size detected by said original-copy detecting means and a copying paper skew quantity;

copying paper supply means for supplying the copying paper selected by said copying paper selecting means; and

image-write-position control means for controlling an image-write timing according to the copying paper fed from said copying paper supply means.

5,713,071

MULTI-FUNCTIONAL ELECTROGRAPHIC PRINTER DEVICE

Gerhard Hausmann, Olching, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

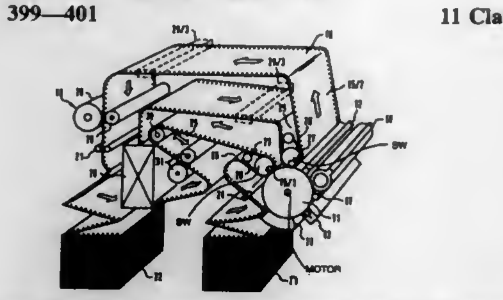
PCT No. PCT/DE95/00602, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO96/14605, PCT Pub. Date May 17, 1996

PCT Filed May 8, 1995, Ser. No. 624,461

Claims priority, application Germany, Nov. 4, 1994, P4439393.8

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—401 **11 Claims**



1. A multi-functional electrographic printer device for printing web-shaped recording media, comprising

a motor-driven intermediate carrier with a means for generating toner images on said motor-driven intermediate carrier;

a first transfer printing station with controllable transfer printing means for transferring toner images onto the recording medium

a second transfer printing station following said first transfer printing station in a conveying direction of said motor-driven intermediate carrier, with controllable transfer printing means for transferring toner images onto the recording medium in a transfer printing mode;

a recording medium transport channel arranged between said first and said second transfer printing station, having at least one added buffer storages that are operable to store the recording media dependent on printer mode, as well as a turn-over means for turning over the recording medium; and a fixing station following said second transfer printing station in the conveying direction.

5,713,072

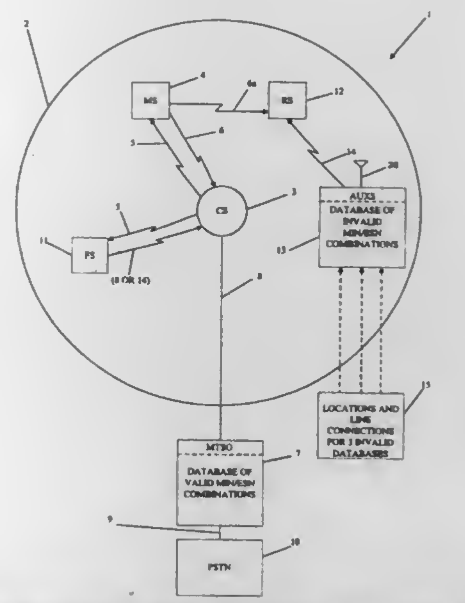
CELLULAR FRAUD DETERRENT SYSTEM

Charles Marth, 2400 Northwest 100th Ave., Coral Springs, Fla. 33065; Kenneth D. Wruk, 1153 Johnson Apt. No. 3015, Buffalo Grove, Ill. 60089; Kurt T. Lemke, 393 W. Hamilton Dr., Palatine, Ill. 60067, and Zhu Shenzhong, 1320 S. Elmhurst Rd. Apt. 304, Mt. Prospect, Ill. 60056

Filed Sep. 12, 1995, Ser. No. 526,899

Int. Cl.^{6} H04Q *7/00;9/00*

U.S. Cl. 455—33.1 **32 Claims**


1
2
4
MS
6a
RS
12
6
5
14
20
3
CS
5
AUXS
DATABASE OF INVALID MIN/ESN COMBINATIONS
11
FS
(8 OR 14)
13
8
15
LOCATIONS AND LINE CONNECTIONS FOR 3 INVALID DATABASES
MTSO
DATABASE OF VALID MIN/ESN COMBINATIONS
7
9
PSTN
10

1. A method of deterring fraudulent cloning by a reader station of valid call-origination message parameters assigned to authorized mobile radiotelephone stations operating within an area of a cellular radiotelephone system in which valid call-origination messages containing valid parameters are initiated between the mobile stations and a fixed cell-site radiotransceiver station for the area, and in which an auxiliary fraud-deterrent transmitter station transmits invalid call-origination messages containing invalid parameters within the area, comprising the steps of:

(a) establishing in the cellular radiotelephone system a database of a plurality of valid call-origination message parameters assigned to the authorized mobile stations;

(b) transmitting on a cellular channel frequency from an authorized mobile station operating in the area to the fixed cell-site station a valid call-origination message containing valid parameters;

(c) verifying in the cellular radiotelephone system that a valid call-origination message containing valid parameters has been transmitted by the mobile station; and

(d) transmitting from the auxiliary fraud-deterrent station on the same cellular channel frequency invalid call-origination messages containing invalid parameters, not verifiable in the radiotelephone system, whereby the reader station receives on the same frequency both the valid and invalid call-origination messages as a commingled series.

5,713,073

LOCATION UPDATING IN A MOBILE COMMUNICATION SYSTEM

Markus Warsta, Kerava, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

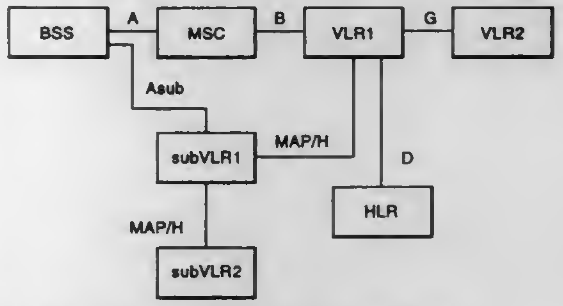
PCT No. PCT/FI95/00449, § 371 Date Apr. 23, 1996, § 102(e) Date Apr. 23, 1996, PCT Pub. No. WO96/07277, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 23, 1995, Ser. No. 632,468

Claims priority, application Finland, Aug. 23, 1994, 943873

Int. Cl.^{6} H04B *1/00;7/00*

U.S. Cl. 455—56.1 **15 Claims**



14. A mobile communication system, comprising:

a plurality of mobile stations;

a plurality of base stations;

a plurality of base station controllers;

a plurality of mobile exchanges;

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a plurality of visitor location registers for respective service areas which are divided into location areas; each of said visitor location registers maintaining subscriber and location data of mobile subscribers visiting its respective service area;

a plurality of mobile stations arranged to perform a location updating when moving from any one location area into another location area, of said location areas,

at least one sub-location register for a particular sub-area in the service area of at least one said visitor location register; said sub-location register being connected to a said base station controller via a first interface and to said visitor location register via a second interface;

said sub-location register being arranged to forward a first location updating of a said mobile station, made upon arriving into said sub-area, to the visitor location register of the service area of which said sub-area belongs, in order to update location data in the respective visitor location register and to copy at least some subscriber data from the respective visitor location register to said sub-location register; and

said sub-location register being arranged to independently handle the location updatings of the respective mobile station within said sub-area subsequent to said first location updating, in such a manner that the location of the respective mobile station is updated only in said sub-location register.

5,713,074
MOBILE RADIO POWER CONTROL DEVICE USING THE COMPARISON OF RETRANSMITTED DATA

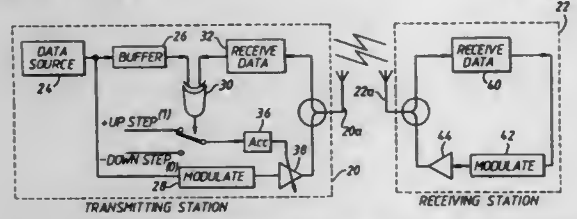
Anthony Peter Hulbert, Shirley, England, assignor to Roke Manor Research Limited, Hampshire, England

Filed Aug. 11, 1995, Ser. No. 514,006

Claims priority, application United Kingdom, Aug. 11, 1994, 9416202

Int. Cl.^{6} H04B *7/00*

U.S. Cl. 455—69 **4 Claims**



1. A power controller apparatus for use in a mobile radio system comprising:

first and second stations, said first station transmitting data to and receiving data from said second station and said second station receiving data from and transmitting data to said first station;

said first station comprising:

a data source;

a means connected to said data source for modulating data to be emitted by said data source;

a means for transmitting data emitted by said data source, having a transmitting power; and

a control means for controlling said transmitting power of the transmitting means dependent on data which is transmitted from said first station to said second station, and retransmitted back to said first station, said control means comprising a comparison means having a first input which receives the data from said data source and a second input connected to the data retransmitted from said second station, and wherein said comparison means generates an output signal for controlling a switching means which is arranged to provide an input signal to an accumulator, the accumulator having an output which is connected to a means for adjusting the transmission power of the first station.

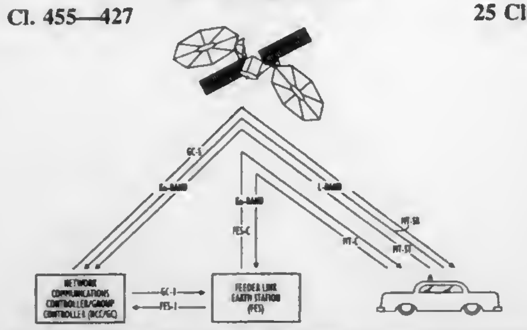
5,713,075
NETWORK ENGINEERING/SYSTEMS ENGINEERING SYSTEM FOR MOBILE SATELLITE COMMUNICATION SYSTEM

Michael E. Threadgill, and ShihChao Lin, both of Reston, Va., assignors to AMSC Subsidiary Corporation, Reston, Va.

Filed Feb. 15, 1996, Ser. No. 601,749

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—427 **25 Claims**


GC-S
Ku-BAND
Ku-BAND
L-BAND
FES-C
MT-C
MT-SR
MT-ST
NETWORK COMMUNICATIONS CONTROLLER/GROUP CONTROLLER (NCC/GC)
GC-I
FES-I
FEEDER LINK EARTH STATION (FES)

1. In a mobile satellite system including a satellite communication switching office having a satellite antenna for receiving/transmitting a satellite message via a satellite from/to a vehicle using a mobile communication system, a satellite interface system, a central controller receiving/transmitting the satellite message from/to the satellite communication switching office issued from the vehicle via the satellite and the satellite interface system, the mobile satellite system, responsively connected to said mobile communication system, the mobile satellite system comprising:

a network operations controller (NOC) managing and controlling the resources of the mobile satellite system and performing administrative functions associated with the management of the mobile satellite system;

a feederlink earth station (FES) managing communications links between mobile earth terminals (METs), a public switched telephone network (PSTN), and private networks once a communication channel is established with a MET, and performing call completion and service feature management via signaling over the communication channel;

a network control center (NCC), operatively connected to said FES and said NOC, said NCC managing real time allocation of communication channels between the METs and said FES, and available communication channels are held in circuit pools managed by at least one Group Controller (GC) within said NCC, said NCC communicating with said NOC via a satellite network Internetwork, said NCC communicating with said FES via Ku-to-Ku band interstation signaling channels or terrestrial links, and said NCC communicating with the METs via Ku-to-L band signaling channels; and

a network engineering/systems engineering (NE/SE) system operatively connected to said NOC, said NE/SE system performing the following processes:

comparing expected traffic loads with capability and availability of space and ground resources in the mobile satellite system;

formulating tactical plans to maximize available resources of the satellite;

producing frequency plans for different geographical regions and defining circuit pools for different groups of users of the METs;

configuring the mobile satellite system including logical resources and physical components generating logical and physical configurations, the logical and physical configurations designed to expand the mobile satellite system capacity for increases in traffic demand, while also supporting new features and services of the mobile satellite system;

configuring communication paths to external organizations operatively connected to the mobile satellite system; and

tracking logistics of network additions to the mobile satellite system via generation of work orders, including collecting and reporting traffic and performance data for long term planning.

DESIGN

GRANTED January 27, 1998

ERRATA

For CLASS	See PATENT NO.
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DESIGNS

JANUARY 27, 1998

389,635

PRESSED COFFEE TABLET

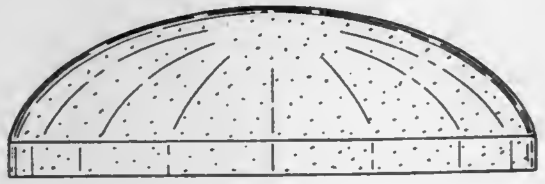
Nicholas Charles Henderson, Bremen, Germany, assignor to Kraft Foods, Inc., Northfield, Ill.

Filed Apr. 18, 1997, Ser. No. 69,935

Term of patent 14 years

LOC (6) Cl. 01 - *01*

U.S. Cl. D1—199



389,636

SWEATBAND

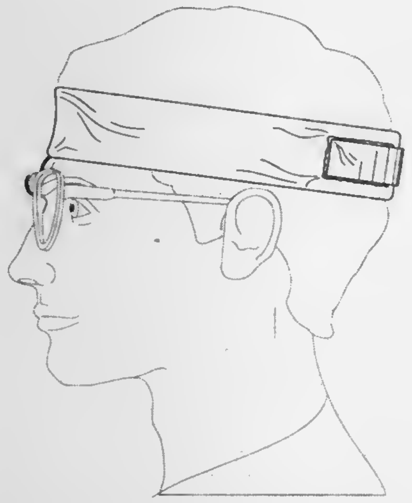
Jeffery Lynn Davis, Sr., Rte. #7, Box 416D, Lenoir, N.C. 28645

Filed Mar. 3, 1997, Ser. No. 67,460

Term of patent 14 years

LOC (6) Cl. 02 - *07*

U.S. Cl. D2—894



389,637

PORTION OF A SHOE UPPER

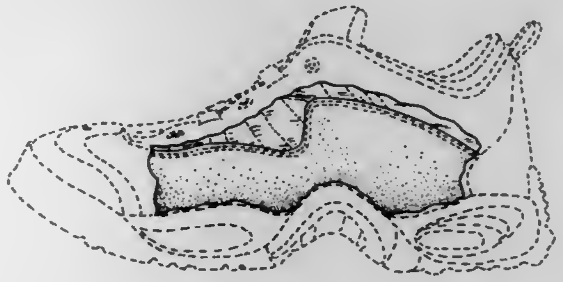
Carl Blakeslee, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Aug. 15, 1997, Ser. No. 65,744

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972



389,638

FAN

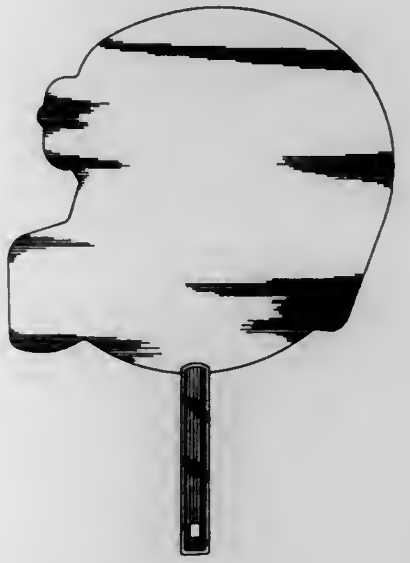
Kaoru Kubota, Osaka, Japan, assignor to QB Club, Inc., Osaka, Japan

Filed Nov. 19, 1996, Ser. No. 62,611

Term of patent 14 years

LOC (6) Cl. 03 - *04*

U.S. Cl. D3—1



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INSULIN CARRYING CASE

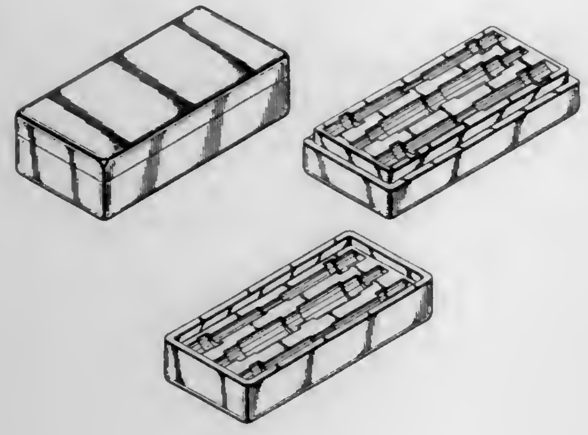
Robert N. Priebe, Bloomington, Minn., assignor to Apothecary Products, Inc., Burnsville, Minn.

Filed Jan. 30, 1997, Ser. No. 65,619

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—203



389,640

KEY RING HOLDER

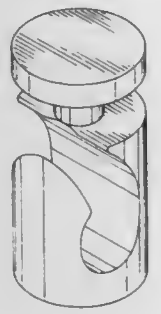
Sumner MacDonald, 44 Ballou Blvd., Bristol, R.I. 02809

Filed Mar. 18, 1996, Ser. No. 51,805

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—207



389,641

CASE FOR PORTABLE COMMUNICATION EQUIPMENT

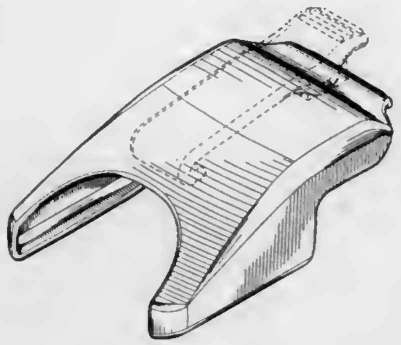
David John McCutcheon, Wheeling; John Francis Hannon, Gurnee; Scott Michael Kouri, Chicago, and Albert Leo Nagele, Wilmette, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1996, Ser. No. 60,187

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—218



389,642

EXERCISE AND YOGA MAT SHOULDER BAG

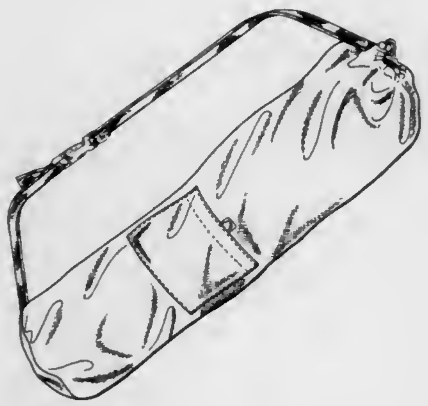
Nancy Lee Nadel, 1249 Franklin St., Apt. D., Santa Monica, Calif. 90404

Filed Aug. 4, 1995, Ser. No. 42,228

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—254



389,643

BACKPACK ARCHERY BOW CASE

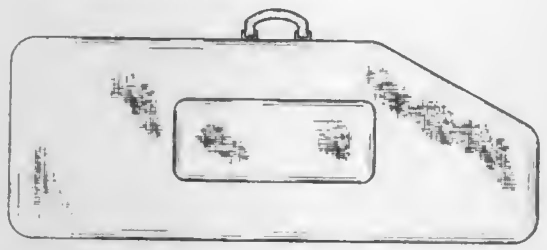
Scott Leonard Stratton, 1624 Tamarack La., Columbia Falls, Mont. 59912

Filed Dec. 30, 1996, Ser. No. 64,339

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—254



389,644

GOLF TOWEL HOLDER

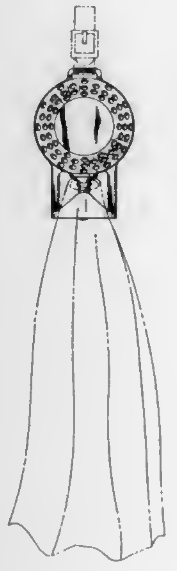
James J. Marziale, and Lawrence P. Cabot, Jr., both of The Woodlands, Tex., assignors to JM & LC Marketing Concepts, Inc., The Woodlands, Tex.

Filed Aug. 9, 1996, Ser. No. 58,270

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—255



389,645

COMBINED MEDITATION PILLOW SET AND CARRIER THEREFOR

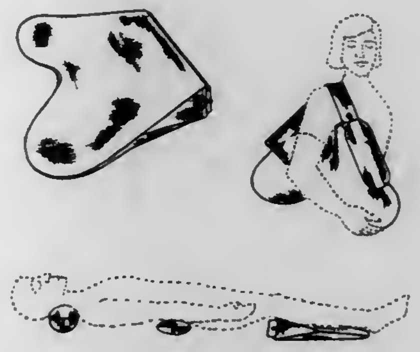
T. Savitri Ermini, 12120 Woodland Ave., NE., Albuquerque, N. Mex. 87112

Filed Nov. 1, 1994, Ser. No. 30,554

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D3—276



389,646

STORAGE BIN

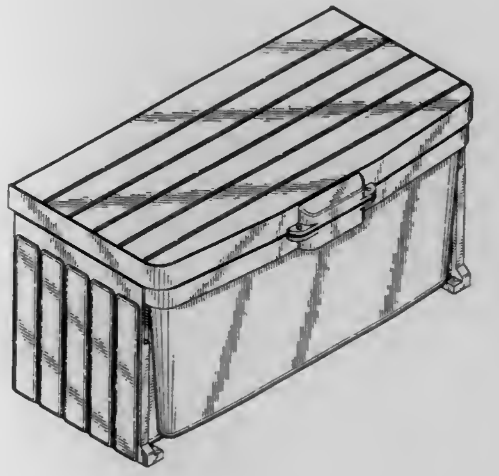
James K. Sankey, Hudson; Craig Sauders, Rocky River; Jesse P. Carlson, Cleveland, and Jeffrey M. Kalman, Cleveland Heights, all of Ohio, assignors to Alpha Enterprises, North Canton, Ohio

Filed Jan. 6, 1997, Ser. No. 64,586

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—294



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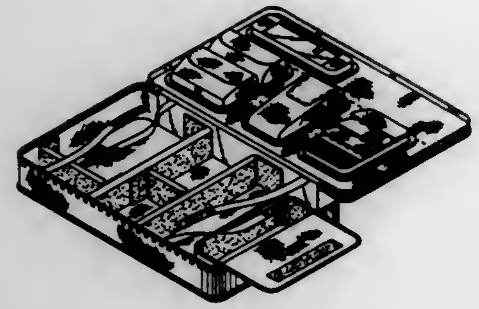
TRAVEL CASE

Kenneth E. White, Long Grove, Ill., assignor to Travel Caddy/ Champion, Inc., Chicago, Ill.
Filed Jun. 14, 1996, Ser. No. 55,851
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—301

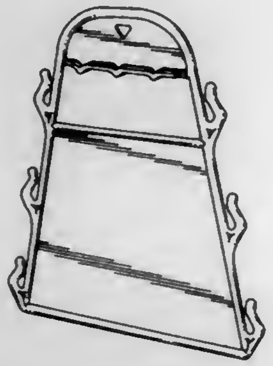


389,648

BAG CARRIER

Ann Marie Gilcrease, 1531 S. Highway 121, #232, Lewisville, Tex. 75067
Filed Sep. 27, 1996, Ser. No. 60,414
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—315

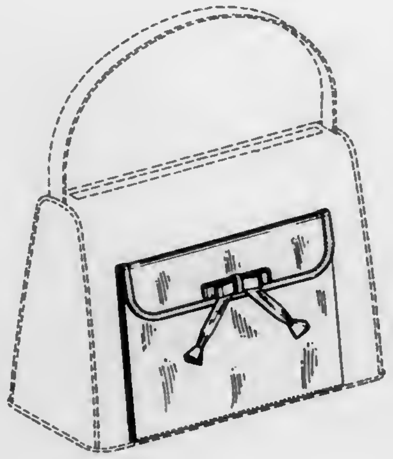


389,649

DIAPER BAG POCKET

Judith A. Miller, and Christopher J. Miller, both of 619 Kitlou Ct., Holland, Ohio 43528
Filed Nov. 12, 1996, Ser. No. 62,243
Term of patent 14 years
LOC (6) Cl. 03 - *99*

U.S. Cl. D3—319

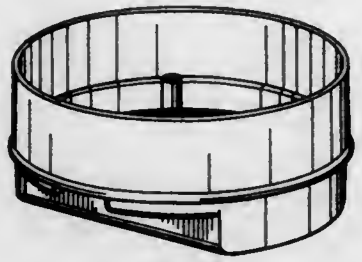


389,650

BOTTOM FOR A GOLF BAG

Yong Su Rhee, 138-26 Yun Hui 2nd Dong, Seo Dae Moon-Ku, Seoul, Rep. of Korea, 120-112
Filed Aug. 12, 1996, Ser. No. 58,389
Term of patent 14 years
LOC (6) Cl. 03 - *99*

U.S. Cl. D3—320

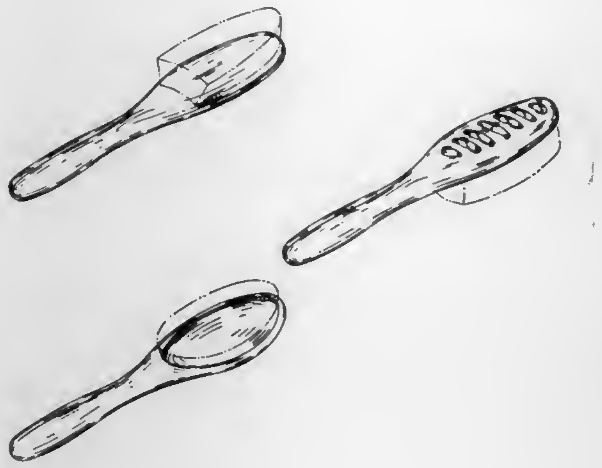


389,651

HAIR BRUSH

Eric P. Chan, and Jeffrey F. Miller, both of New York, N.Y., assignors to Goody Products, Inc., Peach Tree City, Ga.
Filed Apr. 3, 1996, Ser. No. 52,559
Term of patent 14 years
LOC (6) Cl. 04 - *02*

U.S. Cl. D4—138

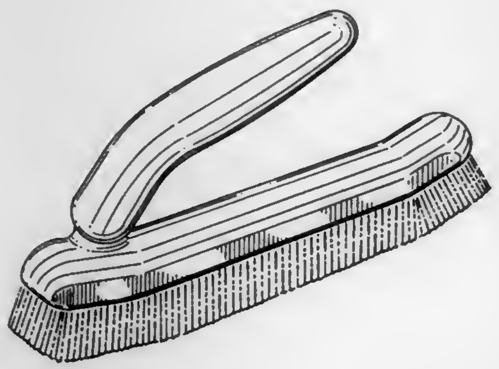


389,652

SCRUB BRUSH HANDLE

Enzo Berti, Dolo/Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Sep. 27, 1996, Ser. No. 60,397
Term of patent 14 years
LOC (6) Cl. 04 - *01*

U.S. Cl. D4—138

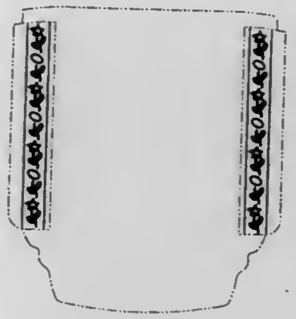


389,653

PAIR OF SEAMS FOR DISPOSABLE ARTICLE

Karin L. Toerner, Cincinnati, and Dion A. Ruff, Milford, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 17, 1997, Ser. No. 65,425
Term of patent 14 years
LOC (6) Cl. 05 - *04*

U.S. Cl. D5—66

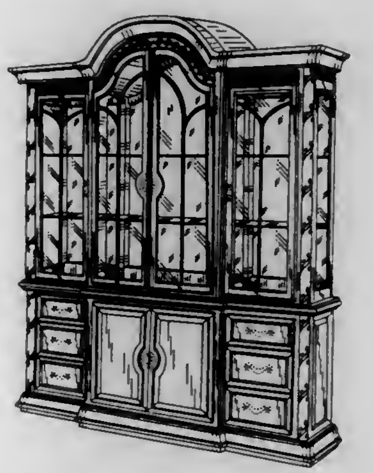


389,654

CHINA CABINET

Guy A. Walters, III, and Charles C. Cain, both of High Point, N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 17, 1996, Ser. No. 61,211
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—438



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389,655

DRESSER

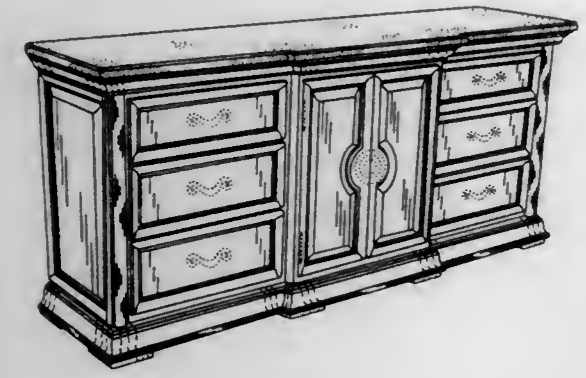
Guy A. Walters, III, and Charles C. Cain, both of Guilford, N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.

Filed Nov. 27, 1996, Ser. No. 63,113

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—445



389,656

FLOOR DISPLAY STAND

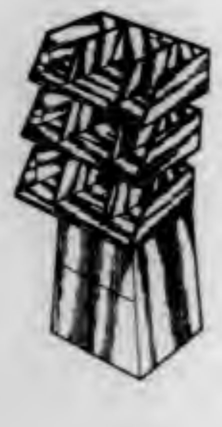
Wilton M. Connor, 1133 Queens Rd., Charlotte, N.C. 28207; Gregory R. Buchanan, 1710 Reservation Rd., Rock Hill, S.C. 29730, and Daniel E. Hagood, 805 Ramah Church Rd., Clover, S.C. 29710

Filed Aug. 30, 1996, Ser. No. 59,026

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—473



389,657

DISPLAY STAND

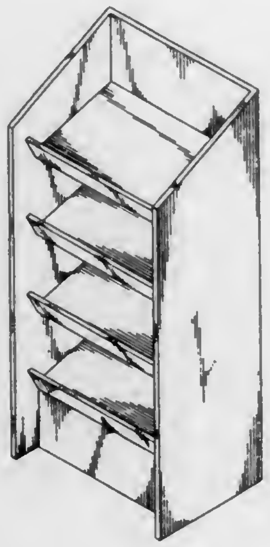
Andrew Sigal, E. Greenwich, R.I., and Joseph Ciccanesi, Andover, Mass., assignors to Tourtellot and Co., Inc., Providence, R.I.

Filed Jan. 28, 1997, Ser. No. 65,403

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D6—473



389,658

CONTAINER FOR DISPLAY AND STORAGE OF COMPUTER DISKETTES

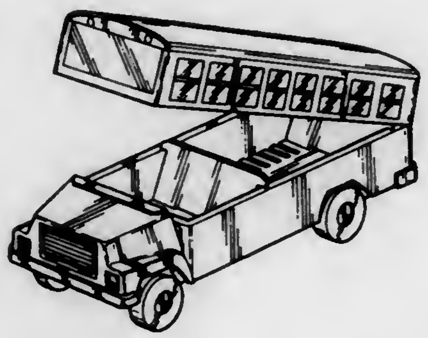
Charles E. Holt, 6632 Beech Daly, Taylor, Mich. 48180

Filed Oct. 12, 1995, Ser. No. 45,201

Term of patent 14 years

LOC (6) Cl. 14 - *99*

U.S. Cl. D6—632



389,659

CHAIR

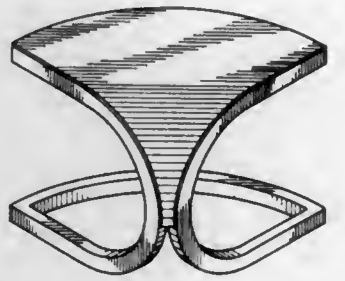
Robert D. Hummel, 10203 Aqua Azul Ct., Austin, Tex. 78733

Filed Nov. 4, 1996, Ser. No. 62,389

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—349



389,660

SOAP SADDLE

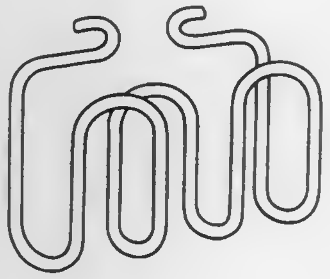
Ann Jouett, 4006 Esters, Irving, Tex. 75038

Filed Feb. 26, 1997, Ser. No. 67,017

Term of patent 14 years

LOC (6) Cl. 06 - *54*

U.S. Cl. D6—537



389,661

RECLINER LOUNGER WITH MOVABLE ARMRESTS

Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France

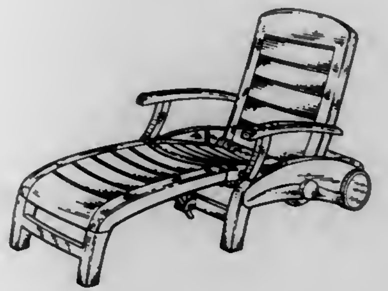
Filed Jul. 24, 1996, Ser. No. 57,400

Claims priority, application WIPO, Jan. 26, 1996, DM037723

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—361



389,662

COMBUSTION WICKER AND WROUGHT IRON CHAIR

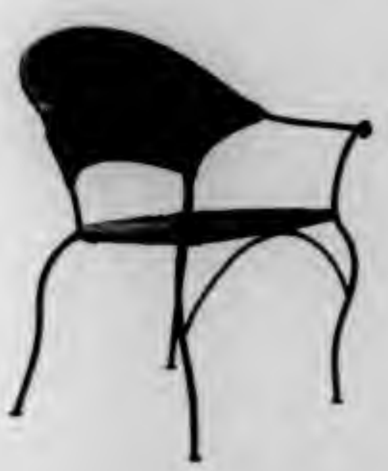
Larry Schwartz, Franklin Lakes, N.J., assignor to Sun Isle Casual Furniture, LLC, Franklin Lakes, N.J.

Filed Jan. 16, 1997, Ser. No. 64,965

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—369



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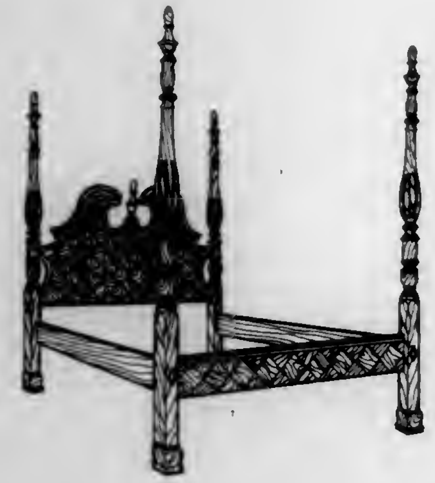
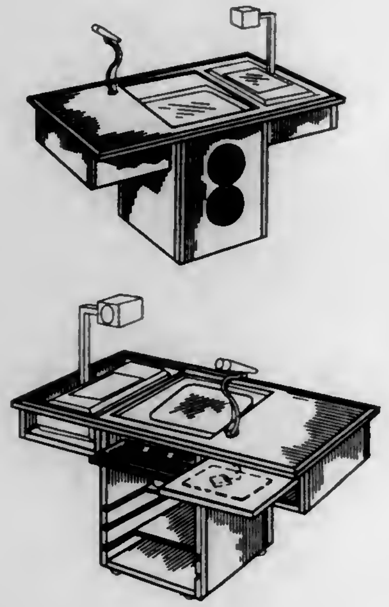
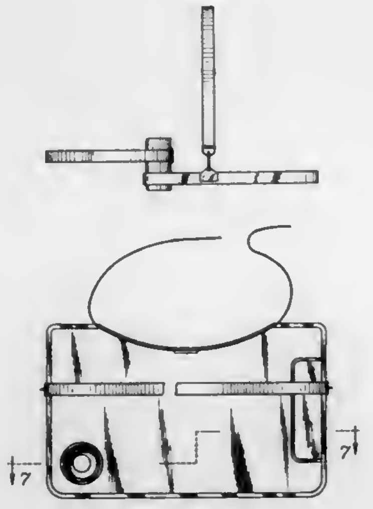
389,663
BED
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Sep. 26, 1996, Ser. No. 60,354
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—393



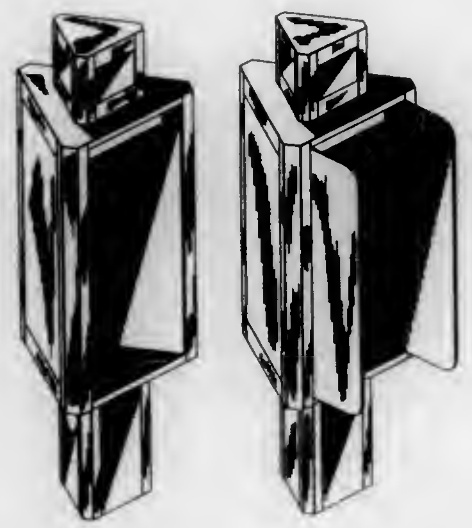
389,664
DESTOP PODIUM AND COMPUTER STATION
Stan J. Kotkosky, 16422 Gentry La., Huntington Beach, Calif. 92647
Filed Jun. 16, 1995, Ser. No. 40,387
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—397



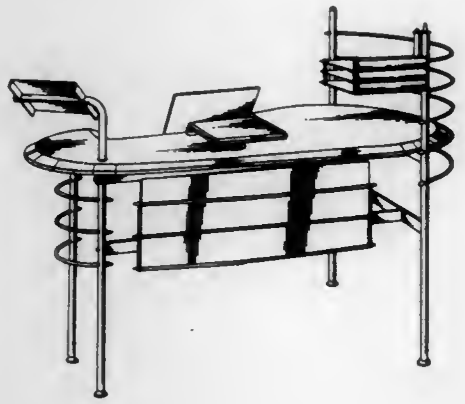
389,665
PORTABLE PICNIC TRAY DEVICE
Jeff Ackerman, P.O. Box 353, Quilcene, Wash. 98376
Filed Dec. 23, 1996, Ser. No. 64,111
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—406



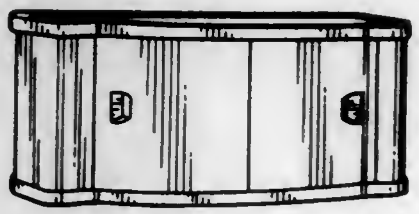
389,666
TELEPHONE BOOTH
Jacques Caya, 209 St. Félix, Drummondville, Quebec, Canada, J2C 1N3
Filed Nov. 22, 1996, Ser. No. 62,714
Claims priority, application Canada, Oct. 10, 1996, 1996-2342
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—421



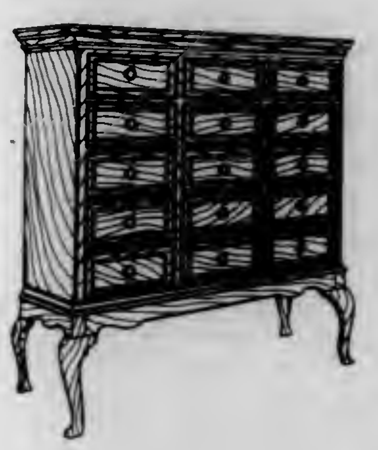
389,667
DESK UNIT
Edward Moore, c/o 215 Grand Pré, L'Acadie, Quebec, Canada, J2Y 1J6
Filed Dec. 23, 1996, Ser. No. 64,175
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—426



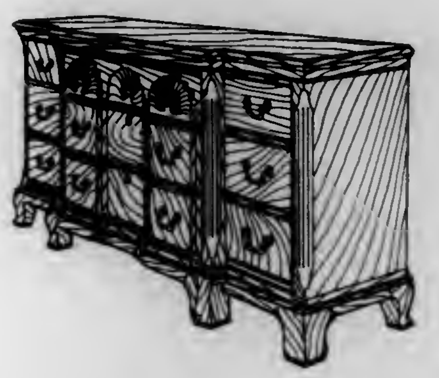
389,668
CABINET
John Robert Newkirk, Bonita Springs, Fla., and Paul Henry Winter, Wilmington, Del., assignors to Zenith Products Corporation, New Castle, Del.
Filed Aug. 29, 1996, Ser. No. 58,942
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—441



389,669
CHEST
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Sep. 26, 1996, Ser. No. 60,331
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—445



389,670
DRESSER
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Sep. 26, 1996, Ser. No. 60,334
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—445



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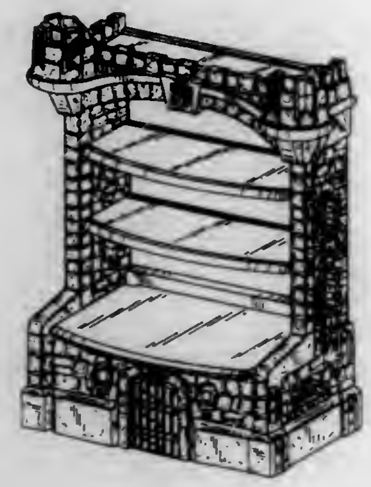
389,671
CASTLE SHAPED BOOKCASE

Jay M. Bro, Plano; Gerald M. Lee, Irving, and Richard P. Machos, Coppell, all of Tex., assignors to Today's Kids, Inc., Booneville, Ark.

Filed Feb. 8, 1996, Ser. No. 50,107
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—450

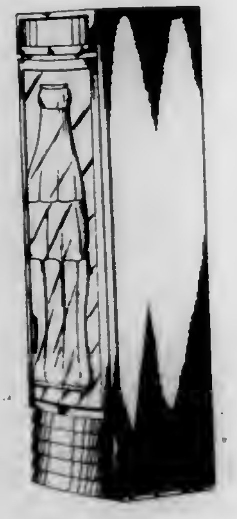


389,672
DISPLAY CABINET

Leonard F. Antao, Lawrenceville; Don Scott Summerville, Snellville, and Tran Q. Minh, Stockbridge, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 23, 1996, Ser. No. 50,699
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—472

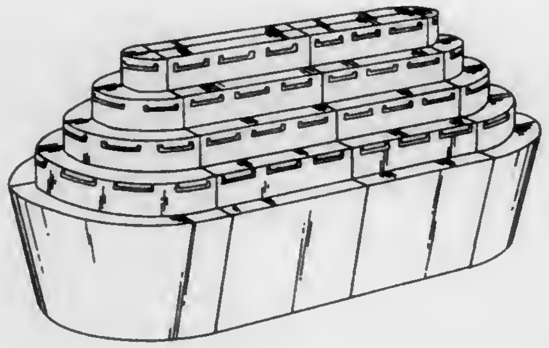


389,673
MODULAR CANDY BIN DISPLAY SHELF

Thomas C. Mulvihill, 59 River Ave., Monmouth Beach, N.J. 07750

Filed Mar. 21, 1997, Ser. No. 68,525
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—474

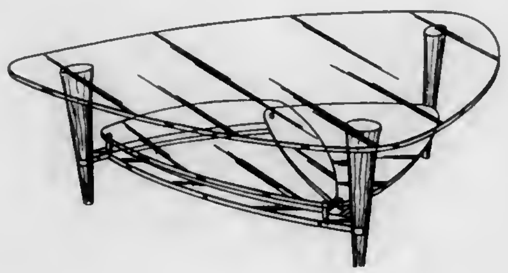


389,674
TRIANGLE COCKTAIL TABLE

Carl A. Muller, Altadena, Calif., assignor to Elite Manufacturing Corporation, Gardena, Calif.

Filed Dec. 18, 1996, Ser. No. 63,885
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—4

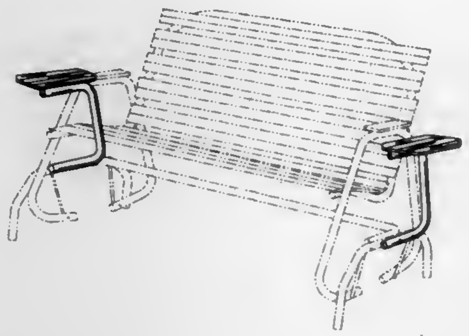


389,675
PAIR OF SIDE TABLES FOR A GLIDER

Ronald C. Noll, 20749 University Blvd., Shaker Heights, Ohio 44122

Filed May 16, 1996, Ser. No. 54,593
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—487

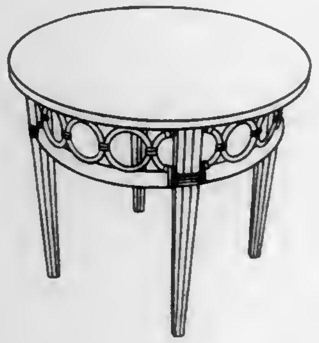


389,676
TABLE

Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Francisco, Calif.

Filed Mar. 11, 1996, Ser. No. 51,421
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—488

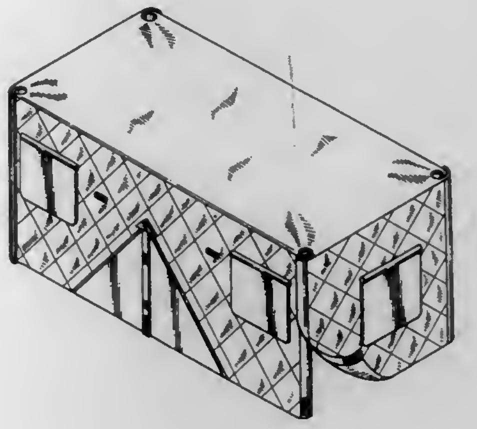


389,677
CHILDREN'S BED TENT

Melanie A. Hebner, and Jerry D. Hebner, both of 20185 Adams Acres Rd., Robertsdale, Ala. 36567

Filed Dec. 24, 1996, Ser. No. 64,215
Term of patent 14 years
LOC (6) Cl. 06 - *99*

U.S. Cl. D6—491

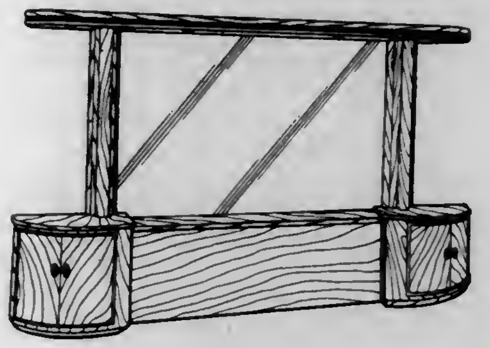


389,678
HEADBOARD UNIT

H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.

Filed Oct. 18, 1996, Ser. No. 61,269
Term of patent 14 years
LOC (6) Cl. 06 - *05*

U.S. Cl. D6—505



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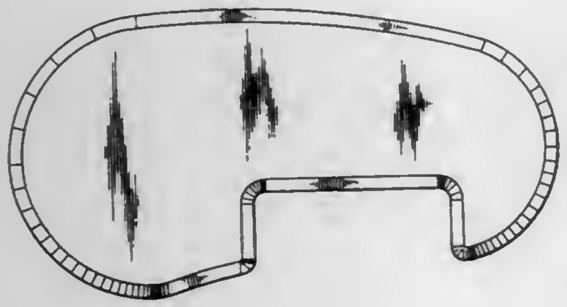
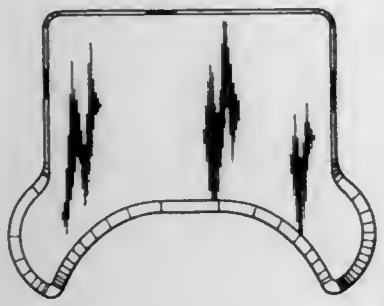
389,679
TABLE TOP

Edward Moore, c/o 215 Grand Pré, L'Acadie, Quebec, Canada, J2Y 1J6
Filed Dec. 23, 1996, Ser. No. 64,173
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—511



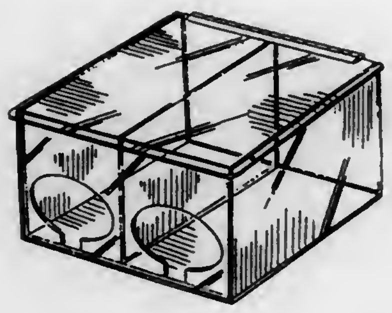
389,680
TABLE TOP

Edward Moore, c/o 215 Grand Pré, L'Acadie, Quebec, Canada, J2Y 1J6
Filed Dec. 23, 1996, Ser. No. 64,174
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—511



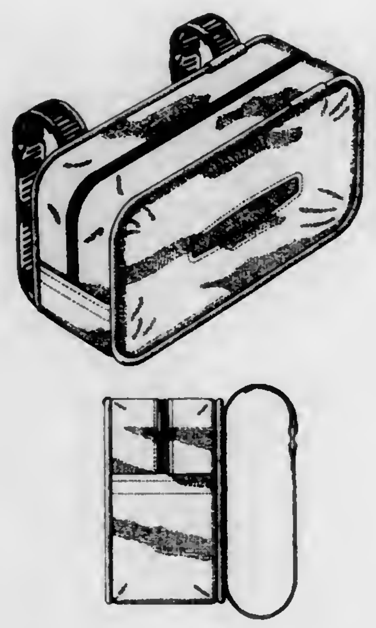
389,681
ARTICLE DISPENSER

James Mullin, P.O. Box 801660, Santa Clarita, Calif. 91380
Filed Sep. 5, 1995, Ser. No. 43,437
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D6—515



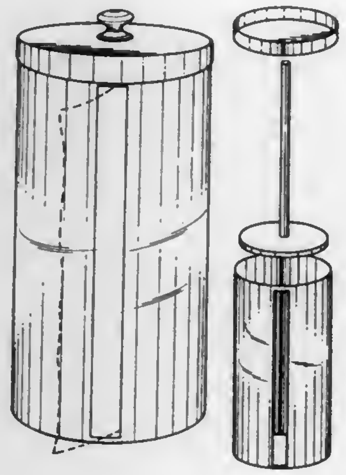
389,682
TISSUE BOX HOLDER

Alexis Gene, 3583 Copernicus Drive, Mississauga, Ontario, Canada, L5B 3L3
Filed Dec. 16, 1996, Ser. No. 61,992
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—518



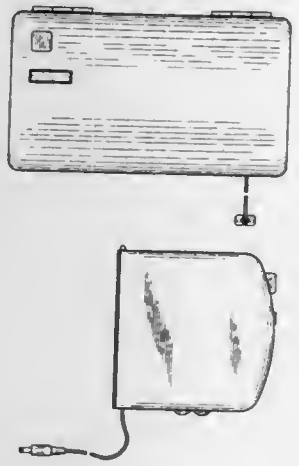
389,683
TOWEL HOLDER

Jorge G. Herrera, 1412 W. Hays, #2C, Boise, Id. 83702
Filed Jun. 2, 1996, Ser. No. 56,591
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—522



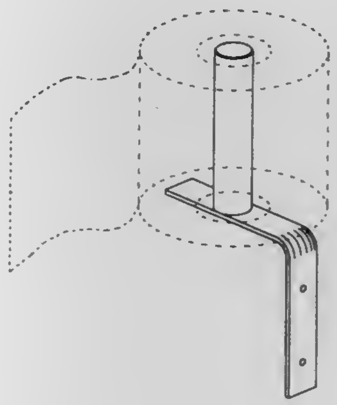
389,684
AUTOMATED PAPER TOWEL DISPENSER SYSTEM

Burleigh Dixon, Jr., 6121 Greens Corner Rd., Galway, N.Y. 12074
Filed Nov. 29, 1996, Ser. No. 63,157
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—522



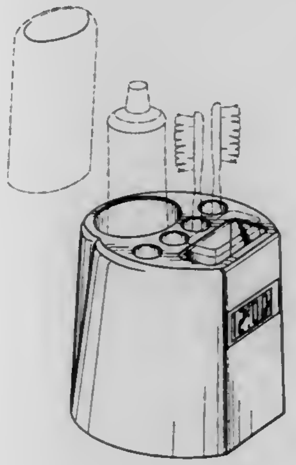
389,685
TOILET PAPER HOLDER

Solomon Marroquin, 1211 Ash St., Mission, Tex. 78572, assignor to Solomon Marroquin, Mission, Tex.
Filed Dec. 9, 1996, Ser. No. 63,466
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—523



389,686
TOOTHBRUSH HOLDER

Christine L. Drage, 980 E. Simpson, Salt Lake City, Utah 84106
Filed Feb. 21, 1997, Ser. No. 67,214
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D6—528



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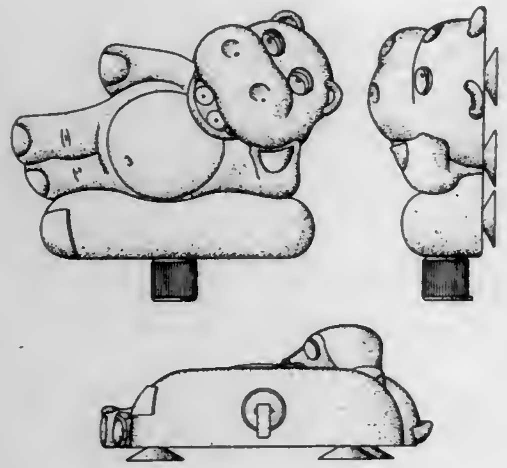
LIQUID DISPENSER

Gail B. Frankel, Dallas, Tex., assignor to Kel-Gar, Inc., Dallas, Tex.

Filed Oct. 25, 1996, Ser. No. 61,523
Term of patent 14 years
LOC (6) Cl. 07 - *07*

U.S. Cl. D6—545



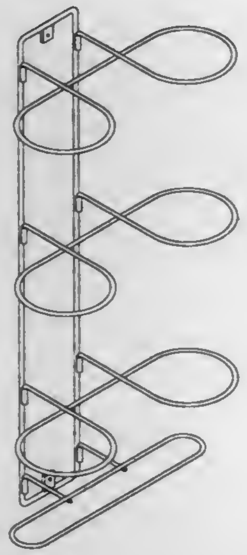
389,688

SPORTSBALL WALL RACK

Tobi A. Iacono, 7310 Graves Rd., Cincinnati, Ohio 45243

Filed Nov. 12, 1996, Ser. No. 62,272
Term of patent 14 years
LOC (6) Cl. 08 - *08*

U.S. Cl. D6—552



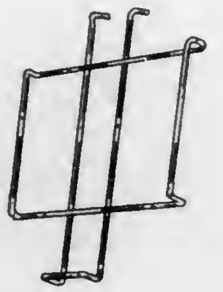
389,689

CERAMIC TITLE SAMPLE DISPLAY HOLDER

Robert J. Ballack, 2113 First Ave., Allenwood, N.J. 08720

Filed Feb. 18, 1997, Ser. No. 66,580
Term of patent 14 years
LOC (6) Cl. 08 - *08*

U.S. Cl. D6—566



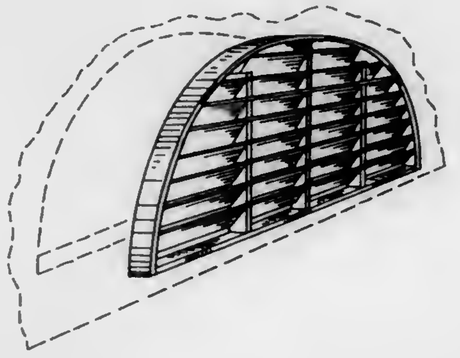
389,690

ARCHED WINDOW BLIND

Terry Denson, Tallahassee, Fla., assignor to Skanda Industries, Tallahassee, Fla.

Filed Apr. 8, 1996, Ser. No. 52,574
Term of patent 14 years
LOC (6) Cl. 06 - *10*

U.S. Cl. D6—575



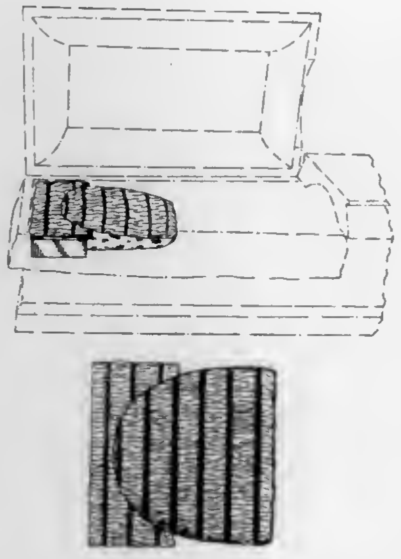
389,691

PILLOW AND MEMORABILIA TRAYS FOR BURIAL CASKET

Dale G. Benedict, Marysville, and Frank R. Wilgus, Powell, both of Ohio, assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Mar. 4, 1996, Ser. No. 51,091
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



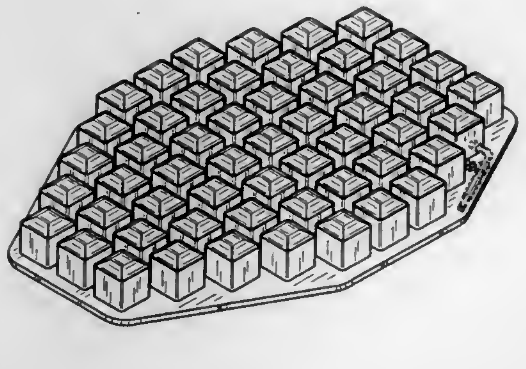
389,692

CELLULAR SEAT CUSHION

Robert H. Graebe, 7 Persimmon Ridge Dr., Belleville, Ill. 62223, and Stephen E. Faist, Swansea, Ill., assignors to Robert H. Graebe, Belleville, Ill.

Filed Jan. 2, 1997, Ser. No. 64,492
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



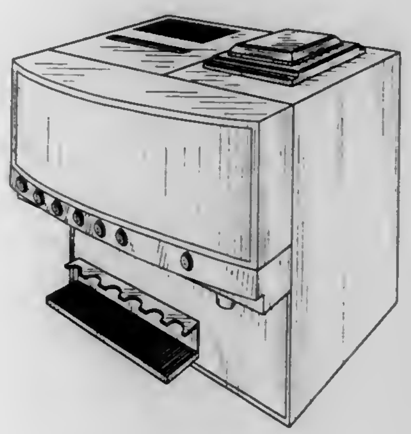
389,693

BEVERAGE DISPENSER

John T. Hawkins, Jr., Adkins; Ernest Matthew Chavana, Jr., San Antonio; Darwin L. Strohmeyer, Spring Branch; Nicholas C. Mohat, San Antonio, all of Tex.; Vernon L. Mauldin, Lilburn, and Michael J. Riley, Alpharetta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Sep. 9, 1996, Ser. No. 53,676
Term of patent 14 years
LOC (6) Cl. 07 - *01*

U.S. Cl. D7—308



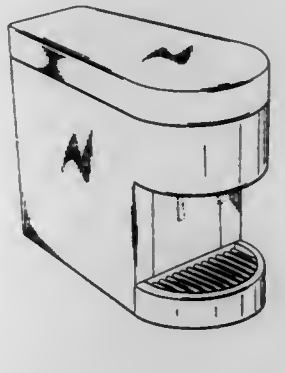
389,694

BEVERAGE DISPENSER

William David Vinson, Peachtree City, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jan. 27, 1997, Ser. No. 65,356
Term of patent 14 years
LOC (6) Cl. 07 - *01*

U.S. Cl. D7—308



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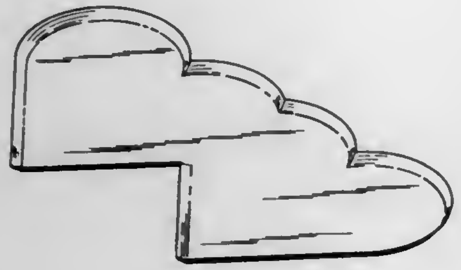
PIZZA PAN

Mansoor I. Nabina, 12 Clearwater Mall, Clearwater, Fla. 34624
Filed Mar. 17, 1997, Ser. No. 68,024
Term of patent 14 years
LOC (6) Cl. 07 - *02*

U.S. Cl. D7—354

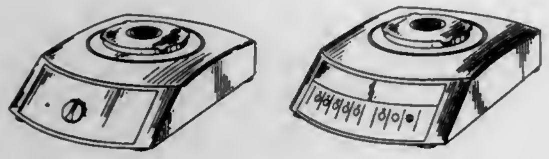


389,696

ELECTROMOTIVE KITCHEN APPLIANCE BASE

Rolf Fell, Günzburg, Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Munich, Germany
Filed Jun. 18, 1996, Ser. No. 53,529
Term of patent 14 years
LOC (6) Cl. 31 - *00*

U.S. Cl. D7—386

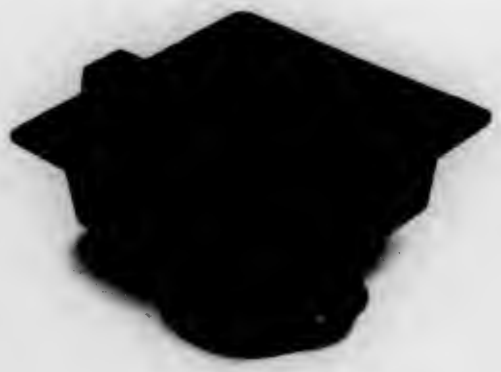


389,697

FILTER CONTAINER

Gerard Clement Smit, Utrechtsestraatweg 26, Amerongen, 3958 PB, Netherlands
Filed Jan. 5, 1996, Ser. No. 48,606
Term of patent 14 years
LOC (6) Cl. 07 - *99*

U.S. Cl. D7—400

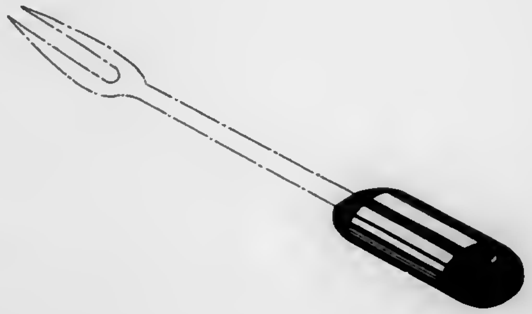


389,698

HANDLE FOR KITCHEN TOOLS AND GADGETS

Milton L. Cohen, Hewlett Bay Park; Jeff Siegel, Great Neck, and Adam Krent, Brooklyn, all of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Aug. 5, 1996, Ser. No. 57,955
Term of patent 14 years
LOC (6) Cl. 07 - *99*

U.S. Cl. D7—401.2

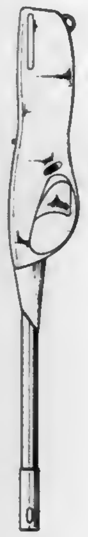


389,699

IGNITER

Huang-Hsi Hsu, 8F., No. 14, Lane 252, Chungshan N. Rd., Sec. 6, Taipei, Taiwan
Filed Mar. 25, 1997, Ser. No. 68,600
Term of patent 14 years
LOC (6) Cl. 07 - *99*

U.S. Cl. D7—416

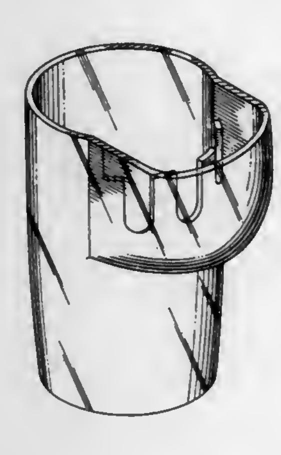


389,700

DRINKING GLASS

Everett D. Bingham, 2122 -½ Vallejo St., Los Angeles, Calif. 90031
Filed Feb. 27, 1997, Ser. No. 67,341
Term of patent 14 years
LOC (6) Cl. 07 - *01*

U.S. Cl. D7—509

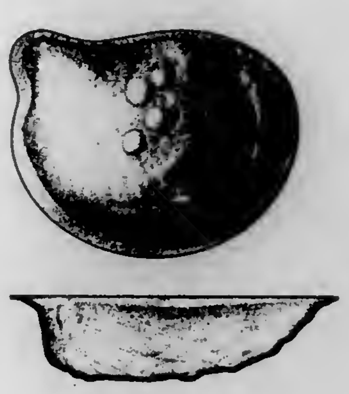


389,701

OYSTER-LIKE SEAFOOD SERVING DISH

Edward Cooley, 73 Ocean Breeze, Hilton Head, S.C. 29928
Filed Mar. 14, 1996, Ser. No. 51,590
Term of patent 14 years
LOC (6) Cl. 07 - *01*

U.S. Cl. D7—564

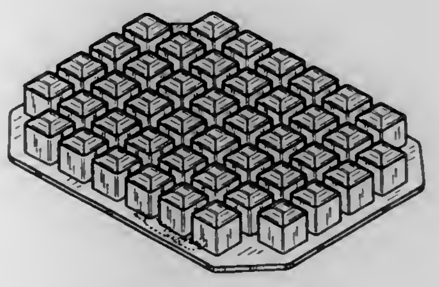


389,702

CELLULAR SEAT CUSHION

Robert H. Graebe, 7 Persimmon Ridge Dr., Belleville, Ill. 62223, and Stephen E. Faist, Swansea, Ill., assignors to Robert H. Graebe, Belleville, Ill.
Continuation-in-part of Ser. No. 64,492, Jan. 2, 1997. This application Feb. 27, 1997, Ser. No. 67,448
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



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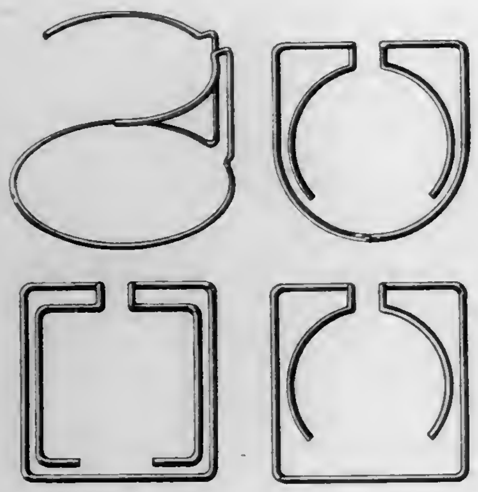
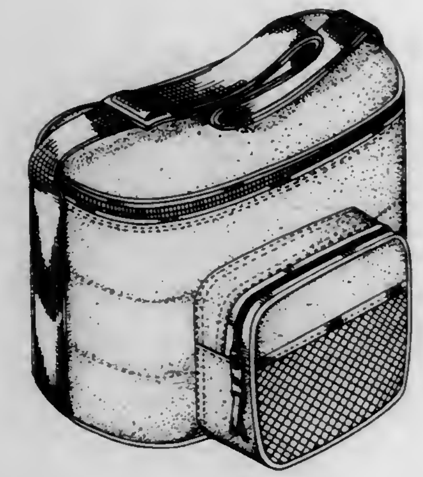
389,703
LID HOLDER

William A. Marts, P.O. Box 546, Aberdeen, N.C. 28315
Filed Mar. 7, 1997, Ser. No. 67,536
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—601



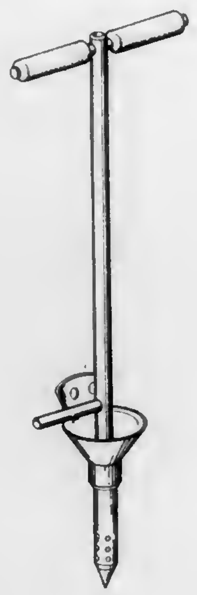
389,704
HIP HUGGABLE COOLER

Sundi Jodon Yousko; Douglas L. Stucky, both of Wichita, and Gregory May, Derby, all of Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Dec. 23, 1996, Ser. No. 64,109
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—607



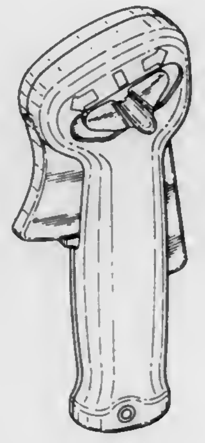
389,705
GROUND ENGAGING FERTILIZER DELIVERY TUBE

Shawn J. Puett, 4040 Earney Rd., Woodstock, Ga. 30188
Filed Sep. 20, 1996, Ser. No. 60,064
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



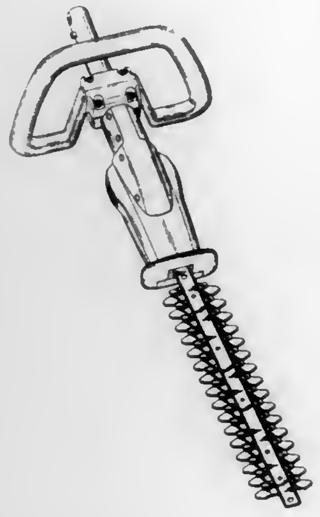
389,706
CONTROL HANDLE

Jürgen Häberlein, Murrhardt, and Michael Tinius, Elchingen, both of Germany, assignors to Andreas Stihl, Waiblingen, Germany
Filed Dec. 15, 1995, Ser. No. 47,939
Claims priority, application Germany, Jun. 15, 1995, M 95 04 794.8
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8



389,707
HEDGE TRIMMER ATTACHMENT

Taku Ohi, Chandler; Kenneth M. Brazell, Phoenix, and Naoki Kikuchi, Chandler, all of Ariz., assignors to Ryobi North America, Easley, S.C.
Filed Jul. 26, 1996, Ser. No. 57,516
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8

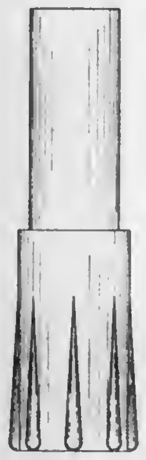


389,708

Patent Not Issued For This Number

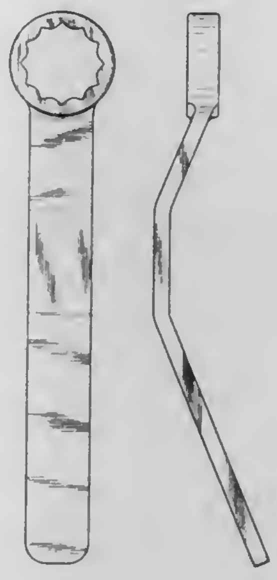
389,709
BROKEN GLOBE SOCKET REMOVER

Peter J. Cirincione, 574 N. 19th St., San Jose, Calif. 95112
Filed Feb. 21, 1997, Ser. No. 66,797
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—14



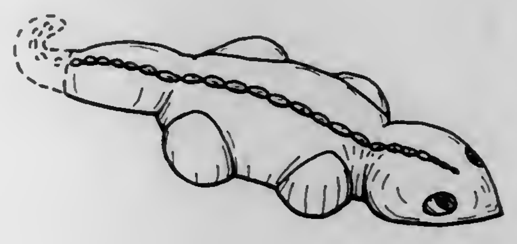
389,710
OXYGEN SENSOR WRENCH

Anthony L. Baber, 15334 Woodruff Pl., #2, Bellflower, Calif. 90706
Filed Jan. 15, 1997, Ser. No. 64,939
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—28



389,711
LIZARD BOTTLE OPENER/CAN PIERCE

Louis F. Henry, and Bruce Ancona, both of New York, N.Y., assignors to B. Via International Housewares, Inc., Englewood Cliffs, N.J.
Filed Oct. 25, 1996, Ser. No. 61,565
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D8—38



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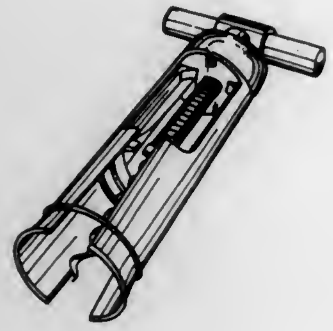
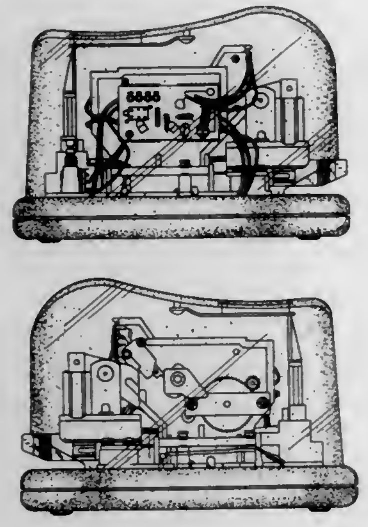
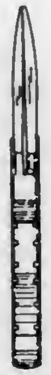
389,712
CORKSCREW
Friedrich Wilhelm Usbeck, Marburg, Germany, assignor to Monopolwerk Usbeck & Sohne GmbH & Co., Marburg/Lahn, Germany
Filed Feb. 12, 1997, Ser. No. 66,092
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D8—42



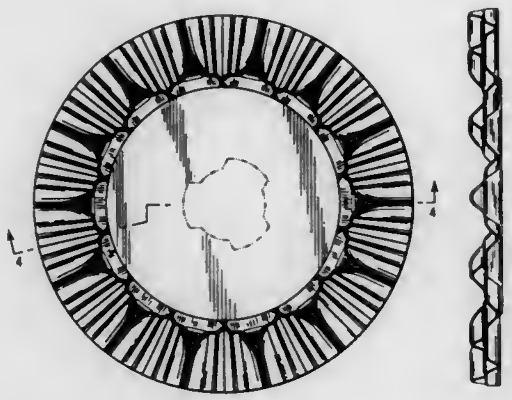
389,713
TRANSPARENT STAPLER
Michael Warren Cochrane, Buffalo Grove; Andrew Kist, Palatine; Guy Anthony Turnbull, Barrington; James Randall Weeden, Jr., Mount Prospect, and Jonathan M. Swirsley, Deerfield, all of Ill., assignors to Acco USA, Inc., Wheeling, Ill.
Filed Feb. 9, 1996, Ser. No. 50,159
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D8—50



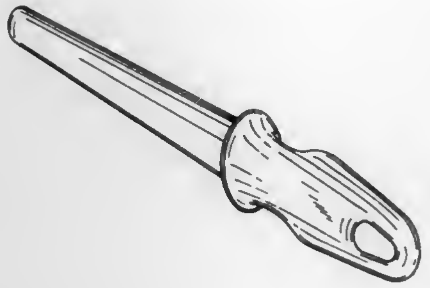
389,714
CUTTING SHEARS
Mark Snyker, Oakdale, Minn., and Cory Boudreau, Marshfield, Wis., assignors to Harris Corporation, Melbourne, Fla.
Filed Aug. 27, 1996, Ser. No. 58,898
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—57



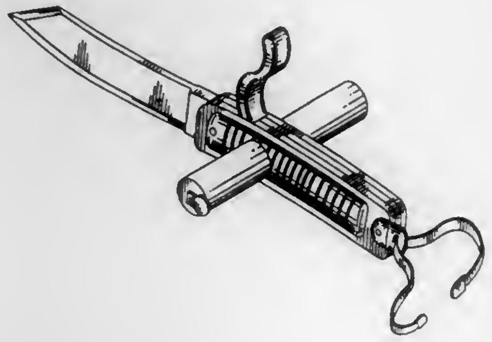
389,715
CIRCULAR CUTTING BLADE
David J. Dustin, Schofield, and Lloyd W. Brandenburg, Jr., Wausau, both of Wis., assignors to Fiskars Inc., Madison, Wis.
Filed Jul. 19, 1995, Ser. No. 41,597
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—70



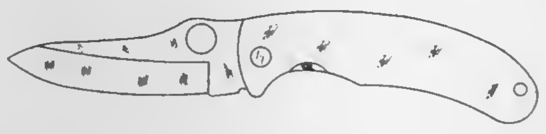
389,716
KNIFE AND TOOL SHARPENER
Milton L. Cohen, Hewlett Bay Park; Jeff Siegel, Great Neck, and Adam Krent, Brooklyn, all of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Aug. 5, 1996, Ser. No. 57,954
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—93



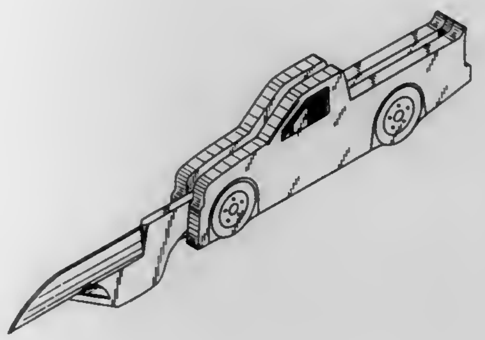
389,717
SELECTIVELY FOLDED KNIFE
Carroll C. Burnett, Suite 301, 1101 New Hampshire Ave., NW., Washington, D.C. 20037
Filed Nov. 16, 1995, Ser. No. 46,500
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—99



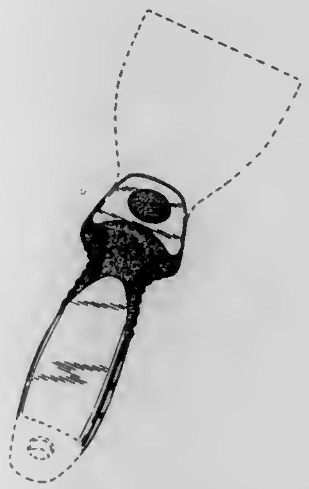
389,718
KNIFE
Timothy B. Wegner, Puyallup, Wash., assignor to Spyderco, Inc., Golden, Colo.
Filed Oct. 24, 1996, Ser. No. 61,459
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—99



389,719
POCKET KNIFE
Douglas R. O'Hara, 8129 Savannah Hills Dr., Ooltewah, Tenn. 37363, and Paul Steven Williams, 129 Blue Springs Ln., Cleveland, Tenn. 37311
Filed Jan. 10, 1997, Ser. No. 64,749
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—100



389,720
TOOL HANDLE
Jim Francis Warner, New York, N.Y.; Richard Meyer, Bridgewater, and Richard Del Sesto, Califon, both of N.J., assignors to Red Devil, Inc., Union, N.J.
Filed Aug. 8, 1996, Ser. No. 58,143
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—107



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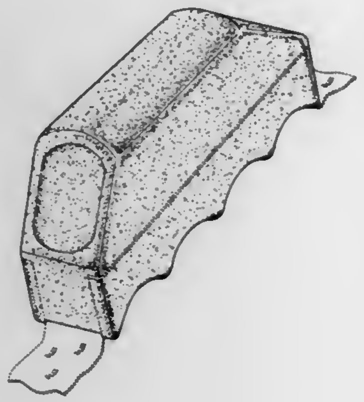
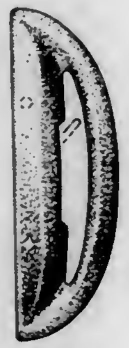
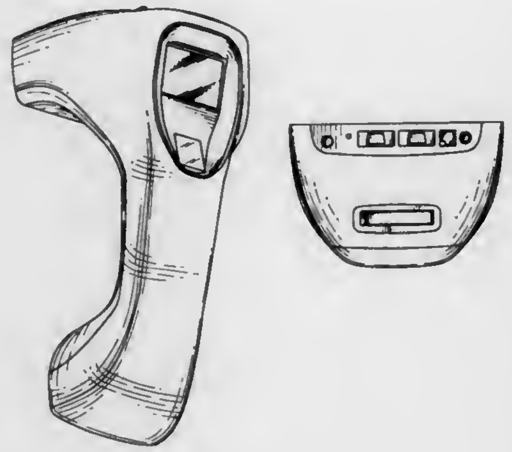
389,721
HANDLE
Marc Zemel, Old Bethpage, N.Y., assignor to Mr. Bar-B-Q-, Inc., Old Bethpage, N.Y.
Filed Jan. 24, 1997, Ser. No. 65,358
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—300



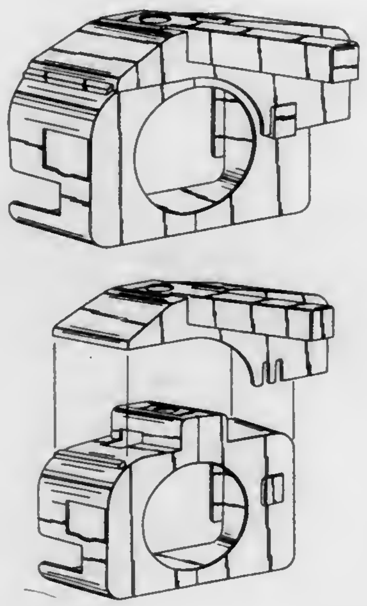
389,722
PATIO DOOR HANDLE
Marcia K. Blom, Albert Lea, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.
Filed Jul. 11, 1995, Ser. No. 41,277
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—319



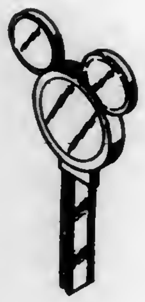
389,723
HANDLE GRIP
Raymond C. Godard, Fullerton; Gilbert Cardwell, Laguna Beach; Philip J. Remedios, Seal Beach; Douglas F. Walker, Long Beach; Daniel J. Driscoll, Laguna Niguel, and Eliseo R. Ranalli, Irvine, all of Calif., assignors to Printrak International, Inc., Anaheim, Calif.
Filed Jan. 7, 1997, Ser. No. 65,435
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—320



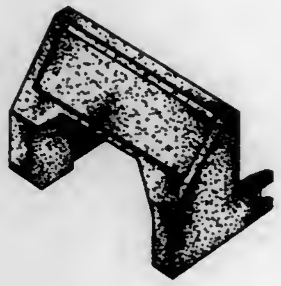
389,724
STEERING COLUMN LOCK
Hugh J. Webster, 27000 Richmond Rd., Solon, Ohio 44139
Filed Sep. 16, 1996, Ser. No. 59,750
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—333



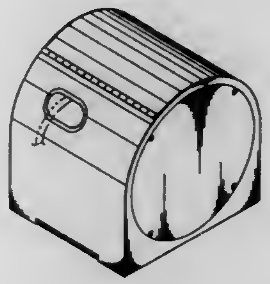
389,725
KEY
Yu-Hwei Huang, No. 8, Lane 42, Sec. 2, Nan-Kan Road, Lou-Choo Hsiang, Taoyuan Hsien, Taiwan
Filed Sep. 6, 1996, Ser. No. 59,318
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—348



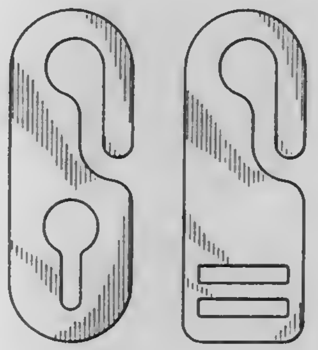
389,726
DISPLAY UNIT FOR AN ICON SYMBOL FOR USE WITH A TELEPHONE MODULAR CONNECTOR
Jaime Ray Arnett, Fishers, and W. John Denkmann, Cicero, both of Ind., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Oct. 11, 1994, Ser. No. 29,611
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D8—353



389,727
LINE CADDY
George E. Austin, 5332 Hyada Blvd., NE., Tacoma, Wash. 98422, and James R. Dougal, 840 NW. 180th St., Seattle, Wash. 98177
Filed Sep. 9, 1996, Ser. No. 59,386
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—358



389,728
TIEDOWN HOOK
Donald Boyd Fitzwater, 701 N. 8th St., Beatrice, Nebr. 68310
Filed May 1, 1996, Ser. No. 53,907
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—367



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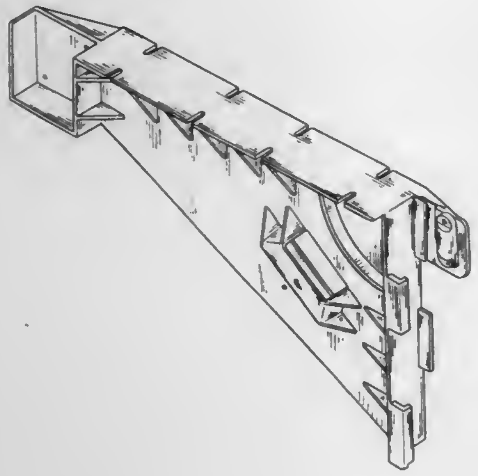
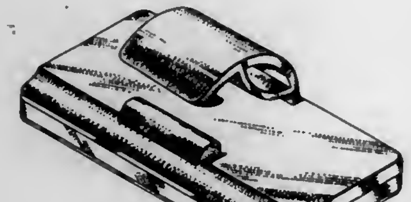
389,729
SCAFFOLD BRACKET

Patrick E. Boeshart, P.O. Box 774, Sioux City, Iowa 51102
Filed Mar. 11, 1997, Ser. No. 67,791
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—380



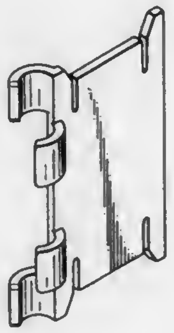
389,730
CLIP

Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan
Filed Sep. 17, 1996, Ser. No. 59,878
Claims priority, application Japan, Jul. 4, 1996, 8-19772
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—395



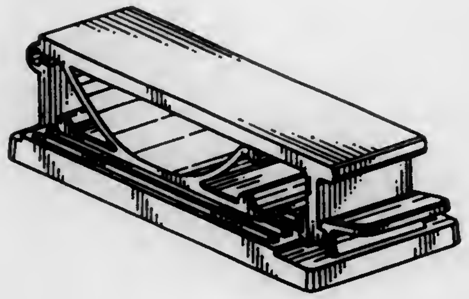
389,731
WINDOW BLIND CORD HOLDER

John C. Forbis, 9227 115th Ave. NE., Lake Stevens, Wash. 98528
Continuation-in-part of Ser. No. 46,025, Nov. 6, 1995, Pat. No. Des. 378,053. This application Feb. 18, 1997, Ser. No. 66,636
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—395



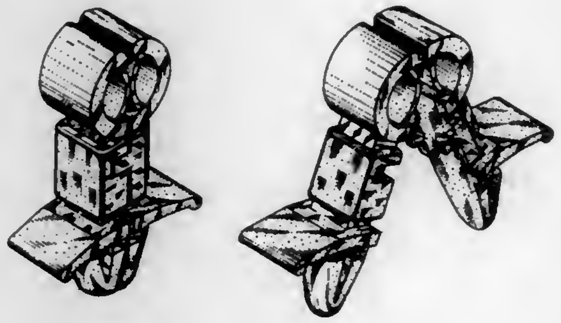
389,732
FLAT CABLE CLIP

Thomas P. Weishaar, Homewood, Ill., assignor to Panduit Corp., Tinley Park, Ill.
Filed Oct. 3, 1996, Ser. No. 60,679
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—396



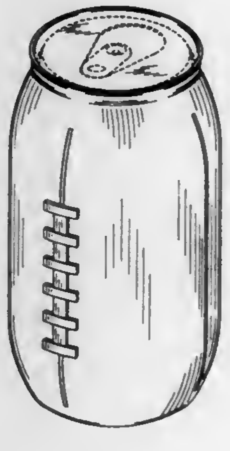
389,733
CLAMP

Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan
Filed Nov. 19, 1996, Ser. No. 62,612
Claims priority, application Japan, Sep. 18, 1996, 8-27622
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—396



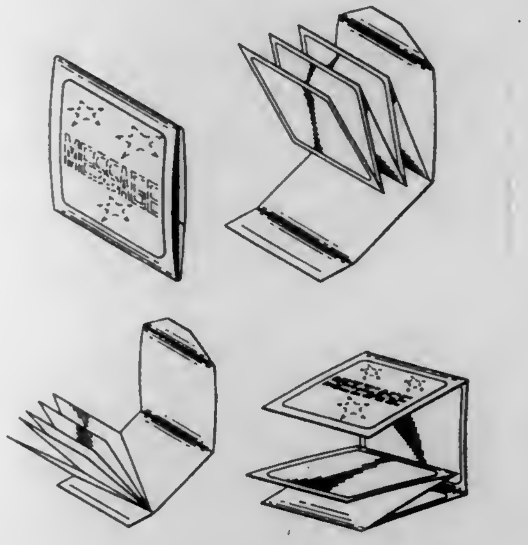
389,734
BEVERAGE CAN WITH ROUNDED PROFILE AND FOOTBALL SURFACE ORNAMENTATION

Robert H. Schultz, and William A. Sedgeley, both of Golden, Colo., assignors to Coors Brewing Company, Golden, Colo.
Filed May 20, 1997, Ser. No. 70,975
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—307



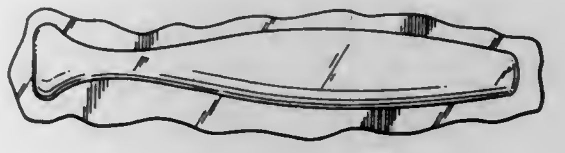
389,735
PROMOTIONAL PACKAGING ASSEMBLY FOR LABELS

Leo P. Carroll, III, 9 Lakeview Dr., Shelburne, Vt. 05482
Filed Feb. 8, 1996, Ser. No. 50,112
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—346



389,736
COMBINED PACKAGE AND MOLD FOR FISHING BAIT

Ronald Kliegl, Spirit Lake, Iowa, assignor to Berkley, Inc., Spirit Lake, Iowa
Filed Aug. 13, 1996, Ser. No. 58,626
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—418



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389,737
DISPLAY PACKAGE FOR COMPACT DISCS

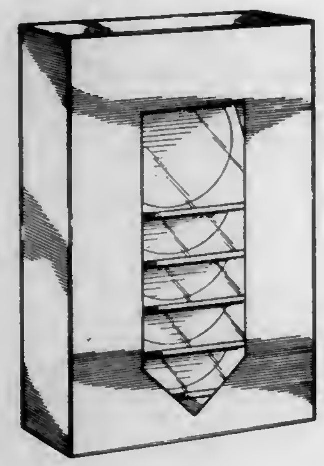
Robert Bader, Ontario, Canada, assignor to Aztech New Media Corp., Canada

Filed Nov. 6, 1996, Ser. No. 62,042

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—418



389,738
CONTAINER

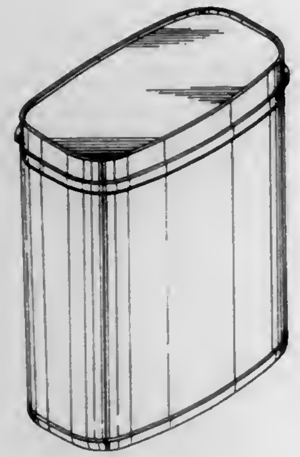
Thomas E. Hlobil, Fox River Grove; Leslie K. Kaffko, Crystal Lake; Frederick G. Kudert, Niles, and Richard P. Nightingale, Woodstock, all of Ill., assignors to Silgan Containers Corporation, Woodland Hills, Calif.

Filed Apr. 23, 1997, Ser. No. 69,991

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—432



389,739
CAN CARRIER

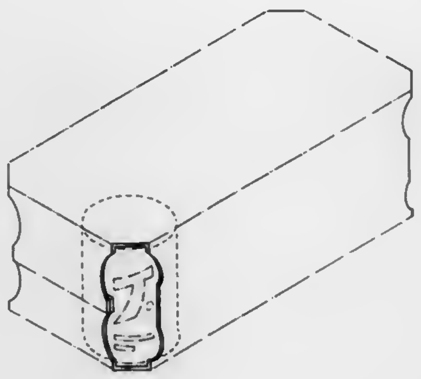
Jean-Michel Auclair, Chateauroux, France, assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 4, 1997, Ser. No. 66,156

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—433



389,740
BOTTLE CAP

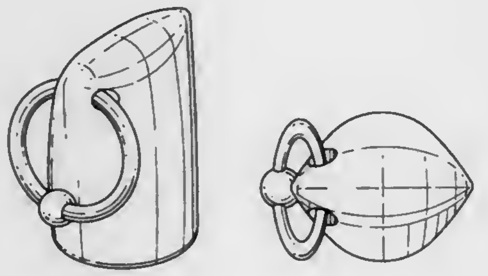
James Robert Toleman, San Francisco, Calif., assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Mar. 6, 1997, Ser. No. 67,394

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—443



389,741
COFFEE CREAMER CONTAINER

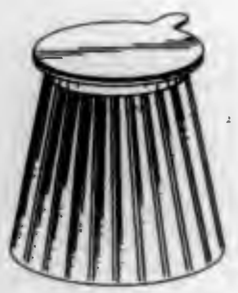
Theodore John Barrie, II, 11763 Dorothy La., Warren, Mich. 48093

Filed Feb. 3, 1997, Ser. No. 66,048

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—429



389,742
BOTTLE

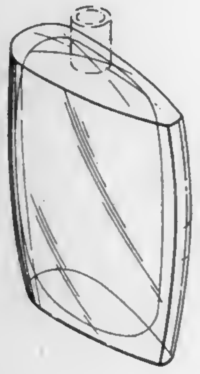
James Robert Toleman, San Francisco, Calif., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 6, 1997, Ser. No. 67,395

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—523



389,743
KIDNEY-SHAPED BOTTLE

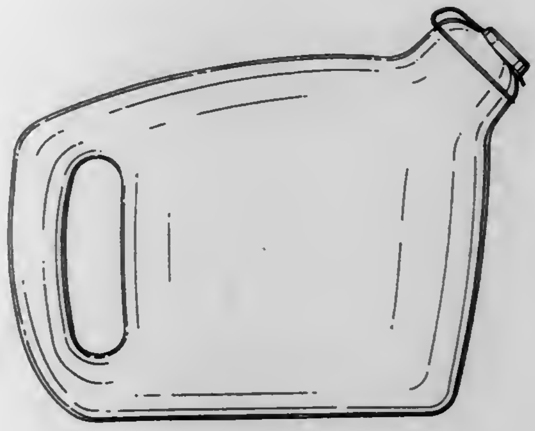
Kevin Rausch, Wooster, Ohio, assignor to Rubbermaid Specialty Products, Inc., Wooster, Ohio

Filed Dec. 13, 1996, Ser. No. 63,745

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—527



389,744
COMBINED CONTAINER AND CAP

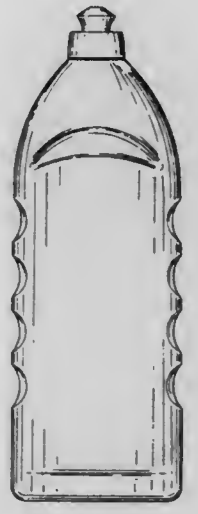
Nicholas Noe, Brooklyn, and Adam Sherman, Larchmont, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 5, 1996, Ser. No. 51,191

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—542



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389,745
COMBINED CLOCK AND COMPASS

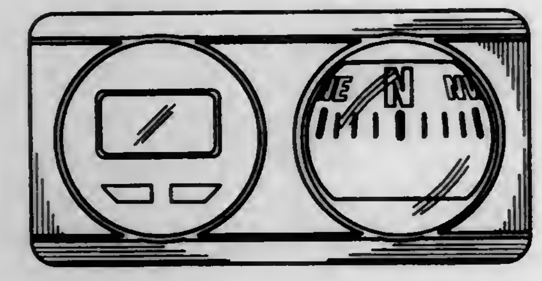
Thomas R. Steinhagen, West Des Moines; Charles A. Haas, Des Moines, and John E. Schenken, West Des Moines, all of Iowa, assignors to Cobbs Manufacturing Company, Des Moines, Iowa

Filed Jul. 29, 1996, Ser. No. 57,618

Term of patent 14 years

LOC (6) Cl. 10 - *01*

U.S. Cl. D10—4



389,746
CASING FOR A WATCH

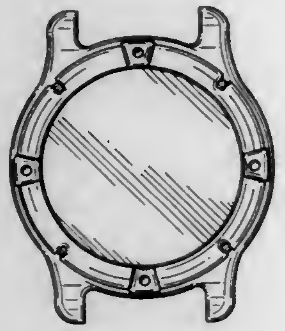
Gabriel N. Roales, Cebu, Poland, and David Quinlan, Marion, Conn., assignors to Timex Corporation, Middlebury, Conn.

Filed Jul. 2, 1996, Ser. No. 56,550

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



389,747
HANDHELD TIMEPIECE

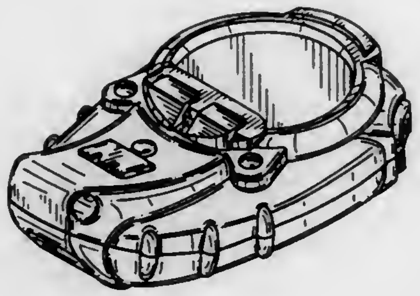
Galileo P. Ramos, Lapu-lapu, Philippines, and David Quinlan, Marion, Conn., assignors to Timex Corp., Middlebury, Conn.

Filed Jul. 29, 1996, Ser. No. 57,623

Term of patent 14 years

LOC (6) Cl. 10 - *03*

U.S. Cl. D10—30



389,748
CASING FOR A WATCH

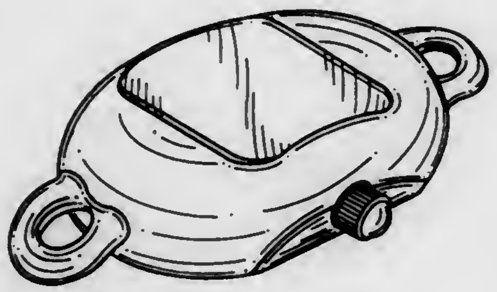
Amelia Kennedy, Woodbury, Conn., assignor to Timex Corp., Middlebury, Conn.

Filed Feb. 25, 1997, Ser. No. 66,976

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



389,749
CASING FOR A WATCH

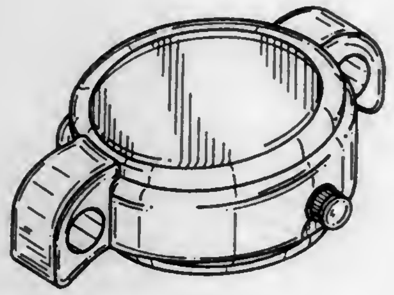
Nimfa Barz Toribio, Cebu, Philippines, assignor to Timex Corp., Middlebury, Conn.

Filed Feb. 25, 1997, Ser. No. 66,977

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



389,750
BEZEL AND CASING FOR A WATCH

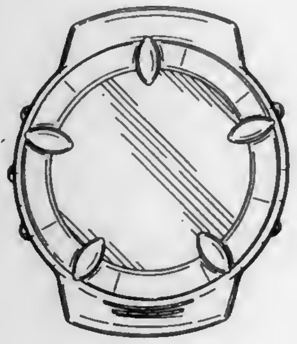
John T. Houlihan, Southbury, Conn., assignor to Timex Corp., Middlebury, Conn.

Filed May 1, 1997, Ser. No. 70,157

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



389,751
WRISTWATCH

Severin S. Wunderman, South Laguna, Calif., assignor to Severin Montres AG (Severin Montres SA) (Severin Montres Ltd.), Lengnau, Switzerland

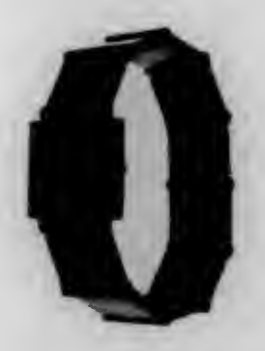
Filed Sep. 30, 1996, Ser. No. 60,517

Claims priority, application WIPO, Jul. 1, 1996, DMA/003370

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32



389,752
CASING FOR A DIGITAL WATCH

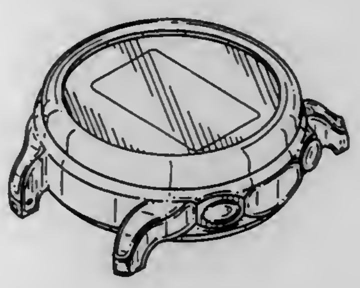
Judith Reichel Riley, Goshen, Conn., assignor to Timex Corp., Middlebury, Conn.

Filed Mar. 14, 1997, Ser. No. 68,840

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



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389,753

SOCKET WITH A TIMER

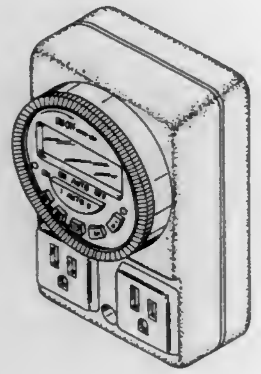
David Wan, Hsin-Tein, Taiwan, assignor to Frontier Technology Co., Ltd., Taipei Hsein, Taiwan

Filed Feb. 4, 1997, Ser. No. 66,083

Term of patent 14 years

LOC (6) Cl. 10 - *03*

U.S. Cl. D10—40



389,754

SWIMMING POOL THERMOMETER

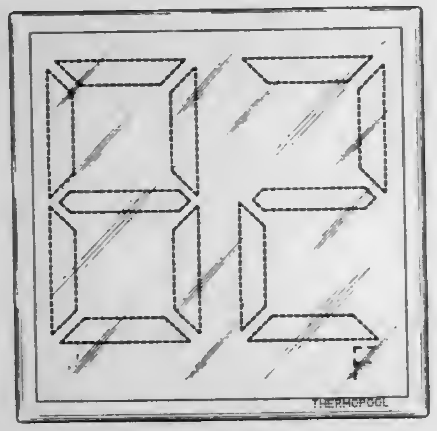
Alejandro Enrique Marcos Skubala, P.O. Box 4771,, Fort Lauderdale, Fla. 33338

Filed Jun. 20, 1995, Ser. No. 40,502

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—57



389,755

INCLINOMETER

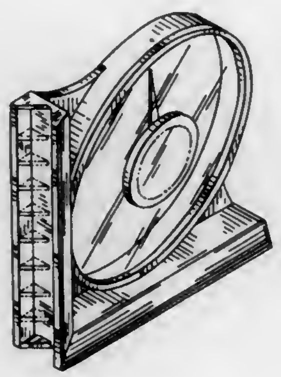
Richard J. Gruetzmacher, Colgate, Wis., assignor to Johnson Level & Tool Mfg. Co., Inc., Mequon, Wis.

Filed Feb. 25, 1997, Ser. No. 67,126

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—65



389,756

INCLINOMETER

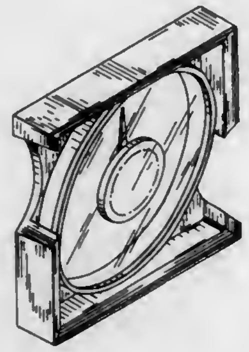
Richard J. Gruetzmacher, Colgate, Wis., assignor to Johnson Level & Tool Mfg. Co., Inc., Mequon, Wis.

Filed Feb. 25, 1997, Ser. No. 67,127

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—65



389,757

RADAR DISPLAY UNIT

Shinichiro Nishimura, Tokyo; Shigeru Namaizawa, Koganei; Toshiro Taki, Hachioji, and Tatsuya Ikeda, Tokyo, all of Japan, assignors to Japan Radio Co., Ltd., Tokyo, Japan

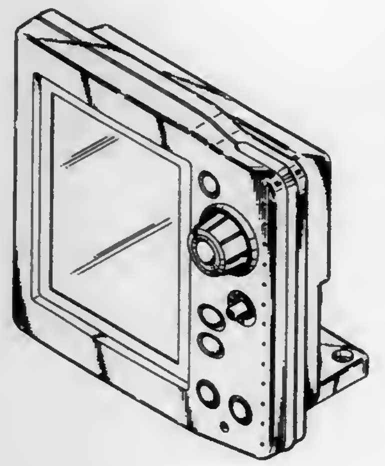
Filed Mar. 14, 1997, Ser. No. 68,002

Claims priority, application Japan, Sep. 25, 1996, 8-28515

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—65



389,758

LASER LEVEL

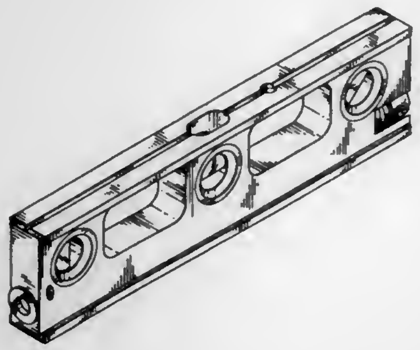
Armand Motamed, Marina Del Rey, Calif., assignor to Lasers for Construction, Inc., Hawthorne, Calif.

Filed Nov. 27, 1996, Ser. No. 63,107

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—69



389,759

TEST INSTRUMENT FOR LOCAL AREA NETWORKS

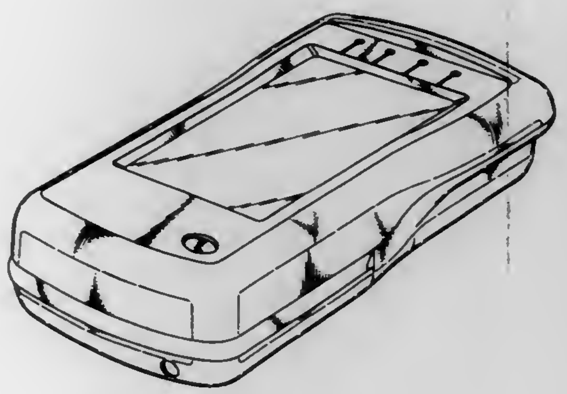
Harry B. Taylor, Lafayette; Jeff T. Samson, Boulder, both of Colo., and Indle G. King, Mercer Island, Wash., assignors to Fluke Corporation, Everett, Wash.

Filed Dec. 9, 1996, Ser. No. 63,464

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—78



389,760

ELECTRICAL DISTRIBUTION POWER METER DEVICE HAVING AN INTERFACE FOR TELECOMMUNICATIONS SIGNALS

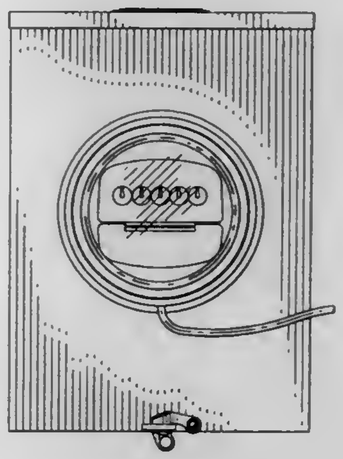
Paul D. Mumm, Kansas City, and Mitchel S. Krysa, Lee's Summit, both of Mo., assignors to Utilicorp Holdings Inc., Kansas City, Mo.

Filed Mar. 25, 1997, Ser. No. 68,275

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—100



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389,761

CARTRIDGE CAP

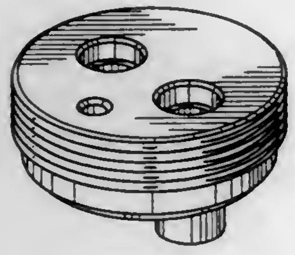
Glenn E. Thomas, Louisville, Ky., assignor to Chromatography Research Supplies, Inc., Addison, Ill.

Filed Nov. 12, 1996, Ser. No. 62,297

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—103



389,762

SECURITY SYSTEM CONTROL PANEL

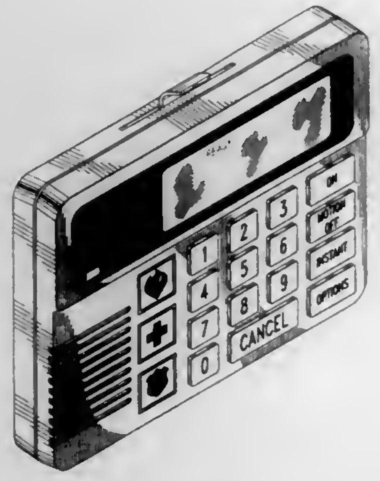
David Yorkey, The Colony, Tex., assignor to Brinks Home Security, Inc., Carrollton, Tex.

Filed Aug. 4, 1995, Ser. No. 43,442

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—104



389,763

CAR ALARM CONTROL UNIT

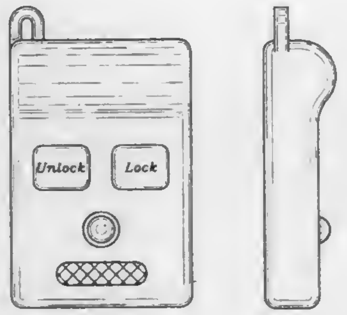
John T. Merritt, III, 402 Ashton St., Holloway, Ohio 43985

Filed May 2, 1997, Ser. No. 70,216

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—106



389,764

COMBINED TRANSMITTER AND RECEIVER FOR LOCATING PROPERTY BOUNDARIES

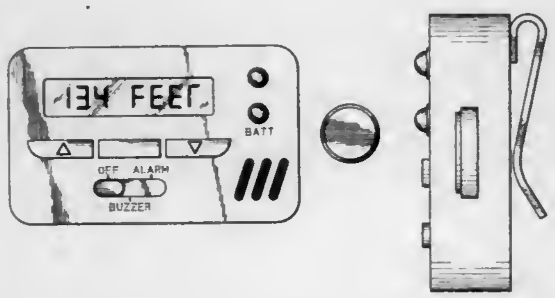
Roland Howard, 6173 Mauritania Ave., Oakland, Calif. 94605

Filed May 2, 1997, Ser. No. 70,231

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—106



389,765

AUDIBLE SIGNAL FOR ALARM UNITS

Yoshio Imahori, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka-ken, Japan

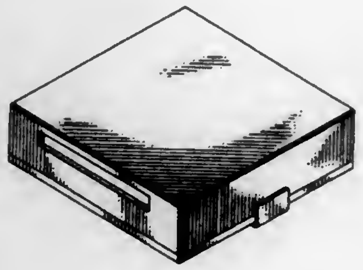
Filed Mar. 26, 1997, Ser. No. 69,299

Claims priority, application Japan, Sep. 27, 1996, 8-028951

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—116



389,766

BEZEL RING FOR A WATCH

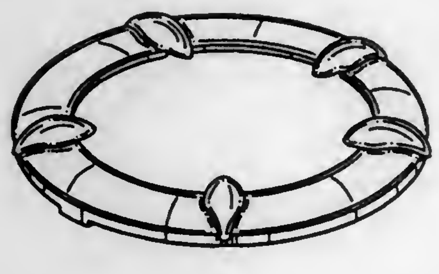
John T. Houlihan, Southbury, Conn., assignor to Timex Corp., Middlebury, Conn.

Filed May 1, 1997, Ser. No. 70,159

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—122



389,767

WATCH FACE

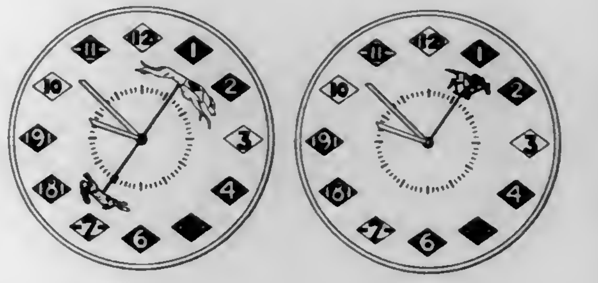
Daniel DeNufrio, 211 Pleasant St., Tewksbury, Mass. 01876

Filed Feb. 27, 1996, Ser. No. 50,826

Term of patent 14 years

LOC (6) Cl. 10 - *07*

U.S. Cl. D10—126



389,768

BEZEL RING FOR A WATCH

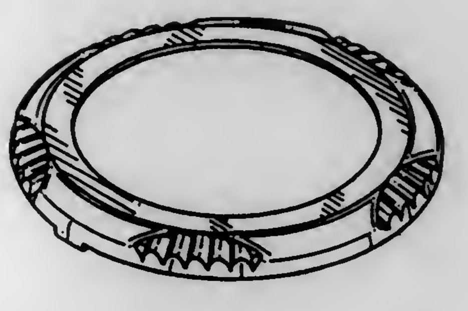
Aurelie E. Krauss, Danbury, Conn., assignor to Timex Corp., Middlebury, Conn.

Filed May 1, 1997, Ser. No. 70,160

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—128



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389,769
TWO STONE DIAGONAL RIBBON NECKLACE PENDANT

Jerry Morrison, Austin, Tex., assignor to Commemorative Brands, Inc., Austin, Tex.

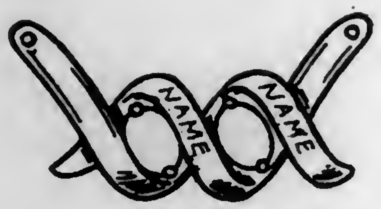
Filed Jul. 23, 1996, Ser. No. 57,360

The portion of the term of this patent subsequent to Oct. 14, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—16



389,770
FOUR STONE DIAGONAL RIBBON NECKLACE PENDANT

Jerry Morrison, Austin, Tex., assignor to Commemorative Brands, Inc., Austin, Tex.

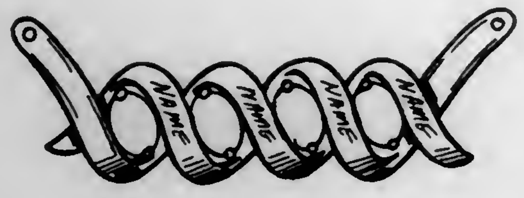
Filed Jul. 23, 1996, Ser. No. 57,364

The portion of the term of this patent subsequent to Oct. 14, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—16



389,771
ROPE CHAIN PENDANT

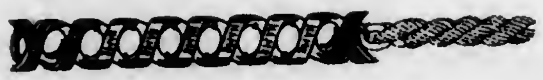
Jerry Morrison, Austin, Tex., assignor to Commemorative Brands, Inc., Austin, Tex.

Filed Jul. 23, 1996, Ser. No. 57,370

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—16



389,772
PENDANT

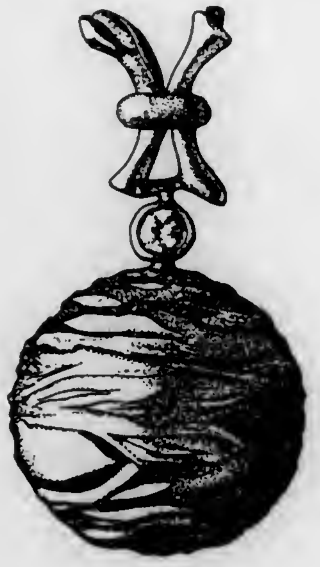
Leon Wolf Sas, 44, rue Raymond Losserand, 75014 Paris, France

Filed May 2, 1994, Ser. No. 22,223

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—81



389,773
CONTAINER FOR GROWING AND DISPLAYING PLANTS

Edwin Geoffrey Surtees Robinson, 7 High Warden, Hexham, Northumberland NE46 4SR, England

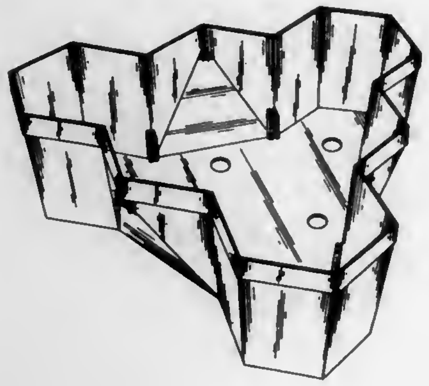
Filed Sep. 23, 1996, Ser. No. 60,110

Claims priority, application United Kingdom, Apr. 10, 1996, 2055419

Term of patent 14 years

LOC (6) Cl. 11 - *02*

U.S. Cl. D11—143



389,774
FINGER RING

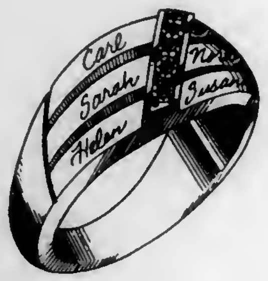
Jerry Morrison, Austin, Tex., assignor to Commemorative Brands, Inc,, Austin, Tex.

Filed Jul. 23, 1996, Ser. No. 57,358

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—34



389,775
EARRING

Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy

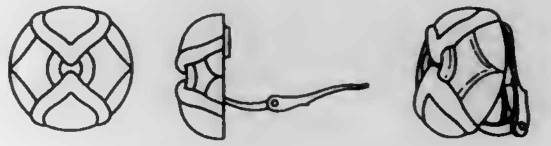
Filed May 30, 1996, Ser. No. 55,057

Claims priority, application WIPO, Nov. 30, 1995, DM/035100

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—43



389,776
EARRING CLIP

Robert A. Montaquila, North Providence, R.I., assignor to Aro-Sac, Inc., North Providence, R.I.

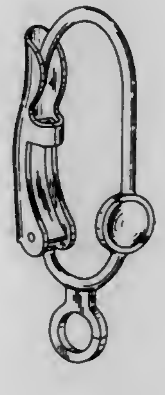
Filed Jun. 7, 1996, Ser. No. 55,607

The portion of the term of this patent subsequent to Nov. 11, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—88



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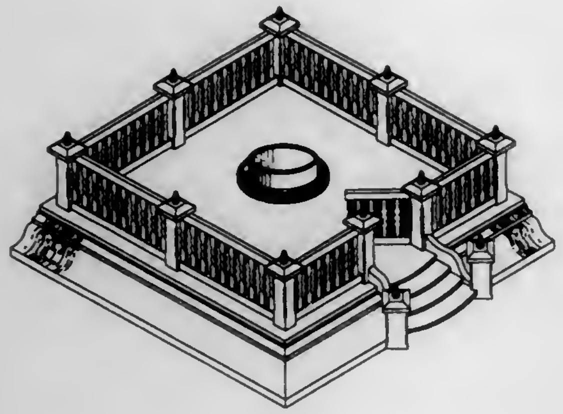
389,777
ENCLOSED CHRISTMAS TREE STAND AND PLATFORM

Frederick Joseph Altieri, 420 Huntington St., Shelton, Conn. 06484

Filed Apr. 7, 1997, Ser. No. 68,910
Term of patent 14 years
LOC (6) Cl. 11 - *05*

U.S. Cl. D11—130.1

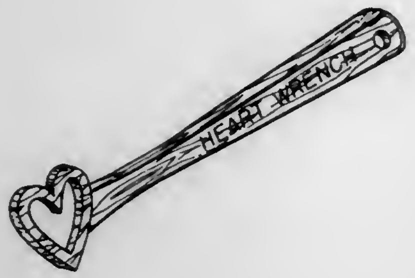


389,778
NOVELTY HEART WRENCH

William W. Cloud, 3100 Tee La., Knoxville, Tenn. 37918

Filed Dec. 4, 1996, Ser. No. 63,286
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—157

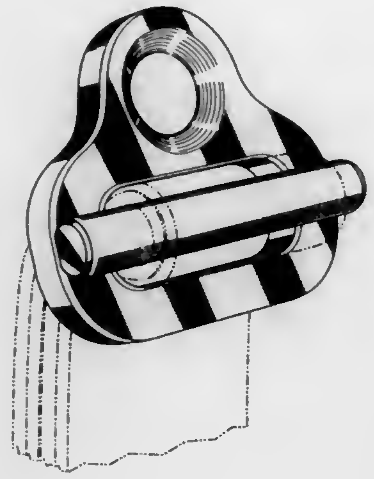


389,779
BUCKLE ASSEMBLY FOR STRAP SHORTENING

Rodney Poynter, 927 Park Ave., Newport, Ky. 41071

Filed Dec. 13, 1996, Ser. No. 63,697
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D11—218



389,780
SNOWMOBILE

Akihiro Komatsu, and Kazuhiko Yokoyama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1996, Ser. No. 56,304
Claims priority, application Japan, Dec. 26, 1995, 7-39148
Term of patent 14 years
LOC (6) Cl. 12 - *14*

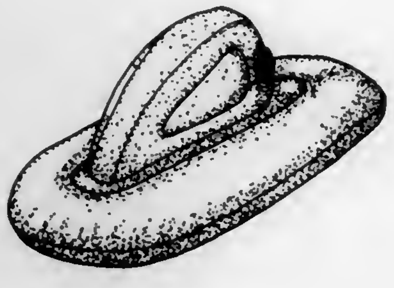
U.S. Cl. D12—7

389,781
INFLATABLE SNOW VEHICLE

LeRoy L. Peterson, Omaha, Nebr., assignor to Sportsstuff Inc., Nebr.

Filed Feb. 26, 1997, Ser. No. 67,140
Term of patent 14 years
LOC (6) Cl. 12 - *14*

U.S. Cl. D12—11

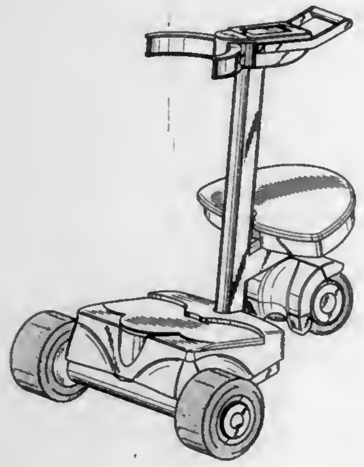


389,782
ROBOTIC GOLF BAG CARRYING CART

William Scott, Palo Alto, and Bruce Schena, Menlo Park, both of Calif., assignors to GolfPro International, Inc., Santa Clara, Calif.

Filed Jul. 19, 1995, Ser. No. 41,607
Term of patent 14 years
LOC (6) Cl. 12 - *02*

U.S. Cl. D12—16

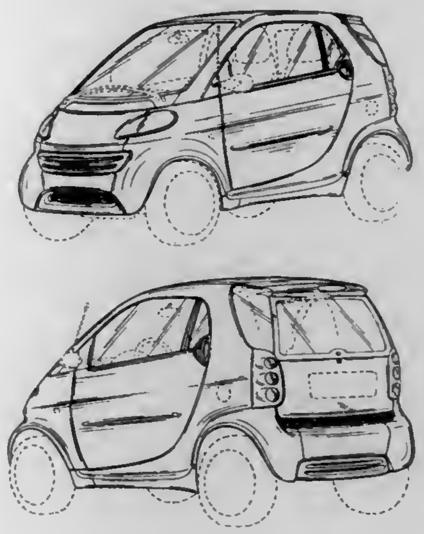


389,783
AUTOMOBILE BODY

Johann Tomforde, Sindelfingen; Jens Manske, Weil der Stadt; Volker Leutz, Herrenberg, and Martin Kahl, Stuttgart, all of Germany, assignors to MC Micro Compact Car Aktiengesellschaft, Biel, Switzerland

Filed Feb. 7, 1997, Ser. No. 66,483
Term of patent 14 years
LOC (6) Cl. 12 - *08*

U.S. Cl. D12—91

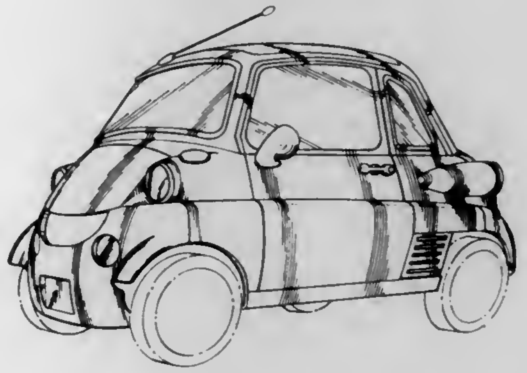


389,784
AUTOMOBILE BODY

Gou Ishikawa, 985-1432 Oaza Kono Tado-cho, Kuwana-gun, Mie-ken, Japan

Filed Jul. 12, 1996, Ser. No. 56,956
Term of patent 14 years
LOC (6) Cl. 12 - *08*

U.S. Cl. D12—92



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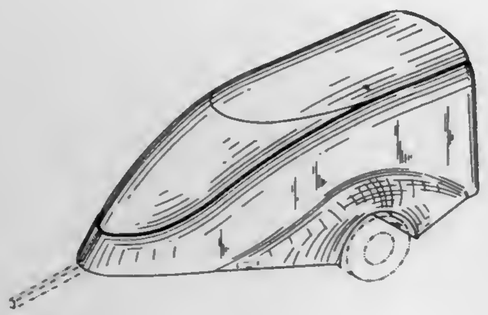
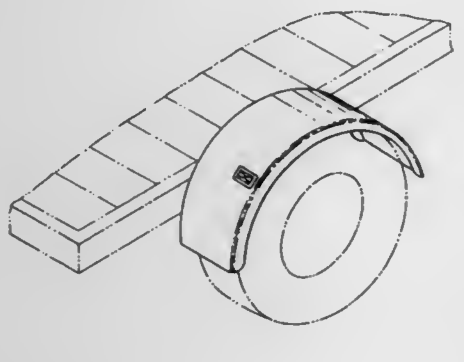
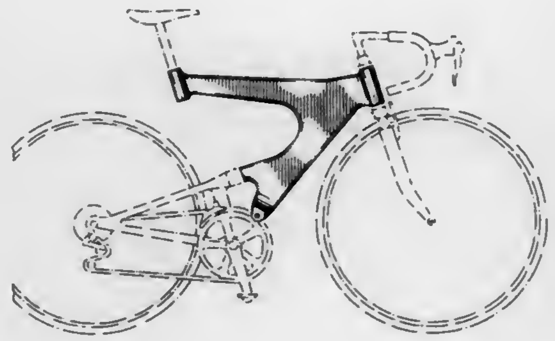
389,785
TRAILER BODY
John W. Guzak, Midlothian, Va., assignor to Excalibur Automobile Corporation, Milwaukee, Wis.
Filed Feb. 25, 1997, Ser. No. 66,885
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—102



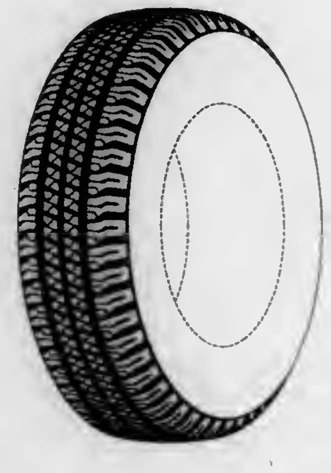
389,786
TRAILER FENDER WITH LIGHTS
John R. McCullum, Mount Pleasant, and Jerry Clay, Sr., Fort Worth, both of Tex., assignors to Best Fender Products, Inc., Mount Pleasant, Tex.
Filed Dec. 16, 1996, Ser. No. 63,755
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—106



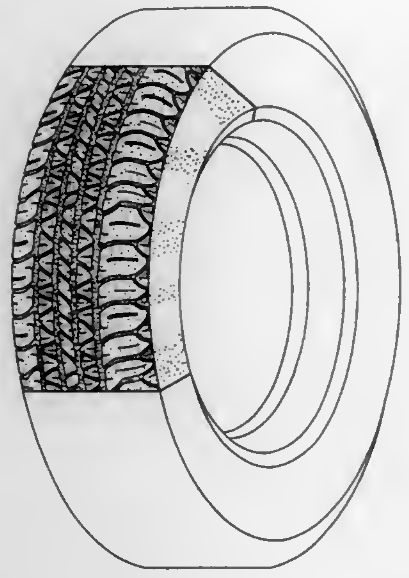
389,787
ROAD BICYCLE FRAME WITH UNIFIED REAR TRIANGLE
Michael L. Zeigle, 2877 Horseshoe Dr.; Andre Terzaghi, 651 Schiller St. Apt. 205, and Weston M. Wilcox, 2030 Miller Rd., all of Sun Prairie, Wis. 53590
Filed Jul. 29, 1996, Ser. No. 57,634
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



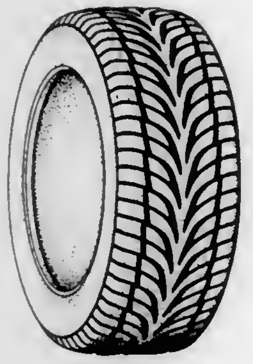
389,788
TIRE TREAD
Richard Louis Galante, Akron; Terrell Dean Windham, Hartville; Colleen Anne Nowacki, and Jay Kevin Lawrence, both of Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 15, 1996, Ser. No. 50,362
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



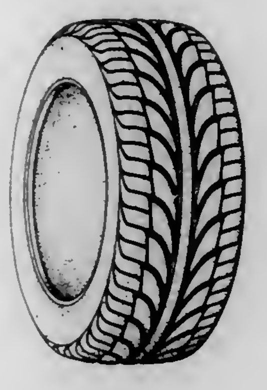
389,789
TIRE
Mark D. Slingluff, North Canton, and Brian H. Buckham, Copley, both of Ohio, assignors to Continental General Tire, Inc., Akron, Ohio
Filed Nov. 20, 1995, Ser. No. 46,905
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



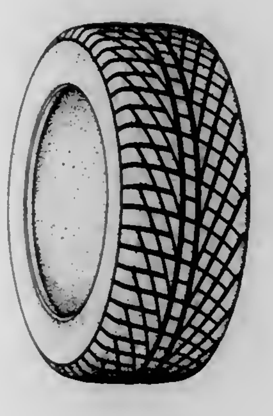
389,790
AUTOMOBILE TIRE
Yasuo Himuro, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 23, 1996, Ser. No. 64,132
Claims priority, application Japan, Jun. 25, 1996, 8-18748
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



389,791
AUTOMOBILE TIRE
Yasuo Himuro, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 23, 1996, Ser. No. 64,176
Claims priority, application Japan, Jun. 25, 1996, 8-18745
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



389,792
AUTOMOBILE TIRE
Yasuo Himuro, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 23, 1996, Ser. No. 64,178
Claims priority, application Japan, Jun. 25, 1996, 8-18750
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



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389,793

AUTOMOBILE TIRE

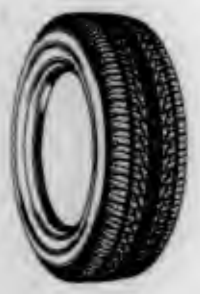
Takehiko Murata, Izumi-Ohtsu, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Japan

Filed Dec. 30, 1996, Ser. No. 64,400

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



389,794

FENDERTIP TRIM

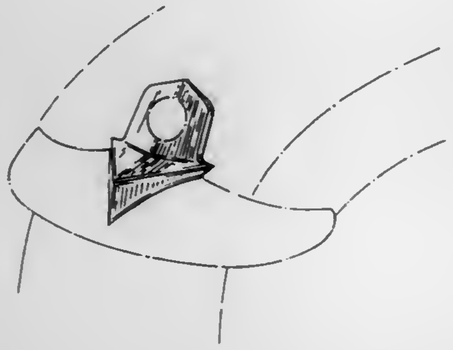
William G. Davidson, Delafield, Wis., assignor to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Jul. 26, 1996, Ser. No. 57,541

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—186



389,795

VEHICLE WHEEL FRONT FACE

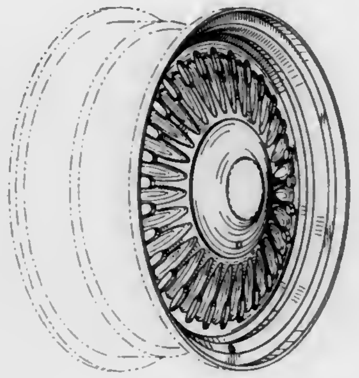
Boyd Coddington, Stanton, Calif., assignor to American Racing Equipment, Inc., Rancho Dominguez, Calif.

Filed Mar. 29, 1996, Ser. No. 52,436

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



389,796

JACK WHEEL HOLDER

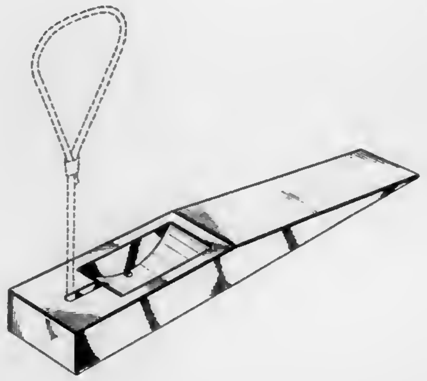
Donald G. Olson, 1441 W. Latoka Dr. Southwest, Alexandria, Minn. 56308

Filed Jan. 19, 1996, Ser. No. 49,171

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—217



389,797

DOCK FLOAT CASE

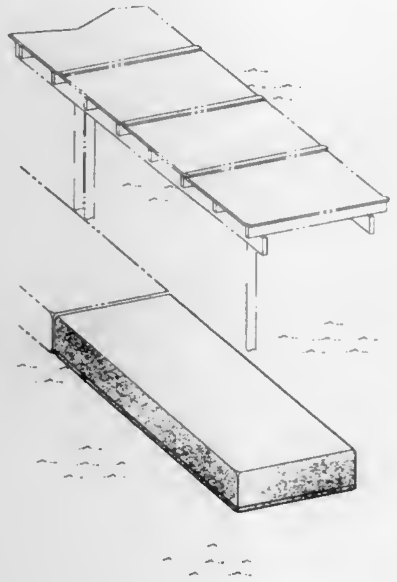
Hugo K. Dietlin, P.O. Box 324, Gainesville, Ga. 30503-0324

Filed Jan. 5, 1993, Ser. No. 4,837

Term of patent 14 years

LOC (6) Cl. 12 - *06*

U.S. Cl. D12—316



389,798

DASHBOARD AND CENTER CONSOLE OF A MOTOR VEHICLE

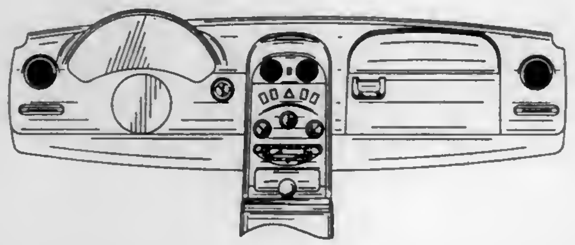
Michael Ma, Rosemead; Richard Plavetich, Laguna Beach; Gerhard Steinle, Newport Beach, and Benjamin Dimson, Santa Ana, all of Calif., assignors to Mercedes-Benz AG, Germany

Continuation of Ser. No. 55,220, May 31, 1996. This application Sep. 25, 1996, Ser. No. 60,235

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—192



389,799

FOUR PORT CHARGER

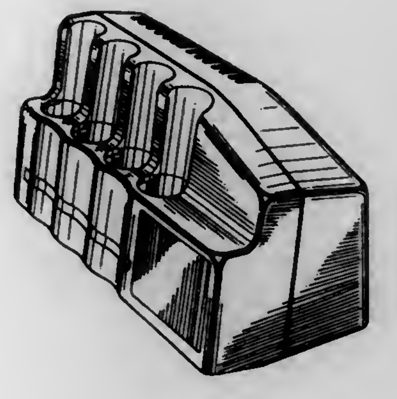
Robert I. Somers, Reisterstown, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 11, 1995, Ser. No. 42,567

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—107



389,800

ENVIRONMENTALLY SEALED ELECTRICAL TERMINAL WITH HOOK-UP WIRE MANAGEMENT

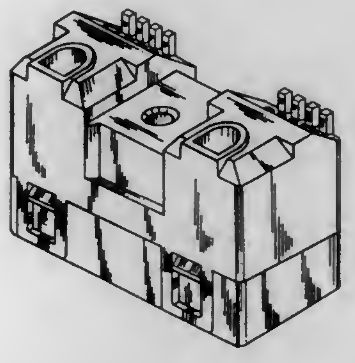
Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Continuation-in-part of Ser. No. 9,574, Jun. 18, 1993. This application May 25, 1995, Ser. No. 39,246

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—147



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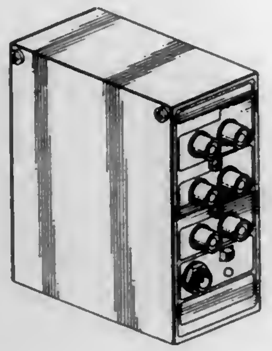
389,801
SURFACE MOUNT MODULAR

Richard T. Foye, Fullerton, Calif., assignor to Multiplex Technology, Inc., Brea, Calif.

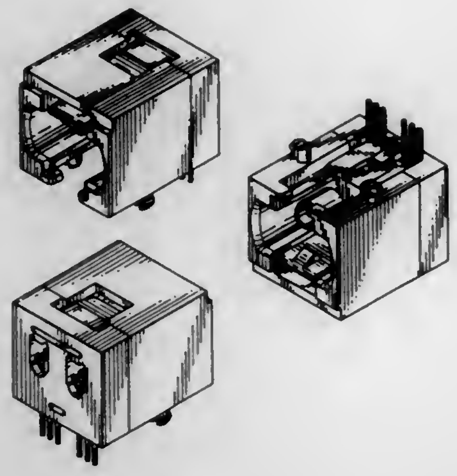
Filed Apr. 10, 1996, Ser. No. 52,882
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



389,802
FIBER OPTIC TRANSCEIVER MODULE

Christopher D. Vernon, Lisle, Ill., assignor to Panduit Corp, Tinley Park, Ill.

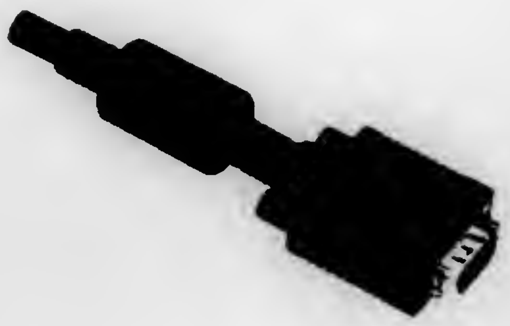
Filed Apr. 8, 1996, Ser. No. 52,916
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



389,803
ELECTRIC CONNECTOR

Atsushi Nishio, and Masaru Onuki, both of Ibaraki, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

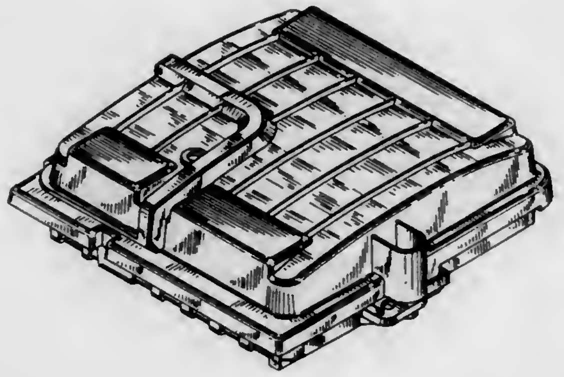
Filed Sep. 18, 1996, Ser. No. 59,937
Claims priority, application Japan, Apr. 2, 1996, 8-9394
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—147



389,804
ENCLOSURE FOR TERMINATING TELEVISION SERVICE AND/OR TELEPHONE SERVICE AND/OR DATA SERVICE AT THE CUSTOMER'S PREMISES

Avraham Tuvy, Oakhurst, and Michael P. DiLonardo, Toms River, both of N.J., assignors to Antec Corp., Rolling Meadow, Ill.

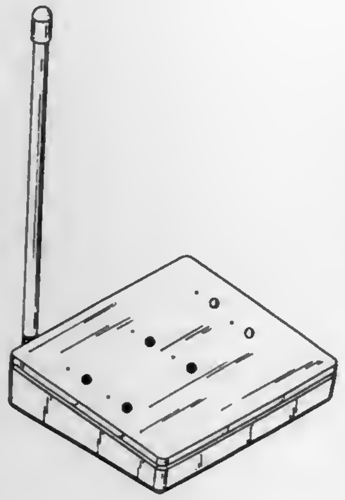
Filed Sep. 30, 1996, Ser. No. 60,538
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—152



389,805
REPEATER FOR A RADIO FREQUENCY CONTROLLED LIGHTING CONTROL SYSTEM

Noel Mayo, Philadelphia; James E. Swain, Bethlehem, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

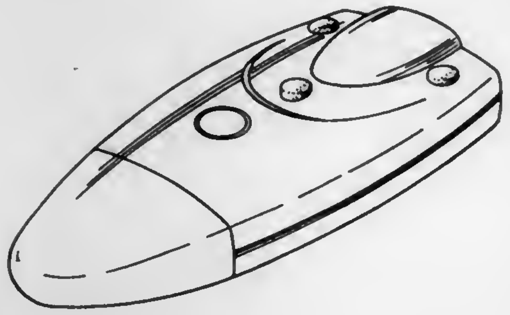
Filed Feb. 7, 1996, Ser. No. 50,035
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—164



389,806
REMOTE CONTROL UNIT FOR HEARING AID

Henrik Nielsen, Roskilde, Denmark, assignor to GN Danavox A/S, Taastrup, Denmark

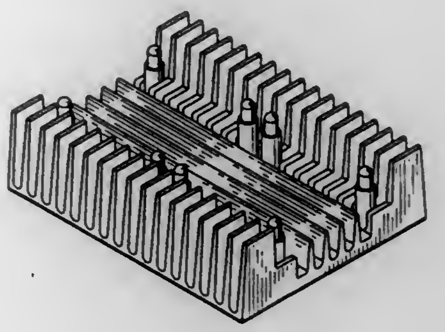
Filed Sep. 19, 1996, Ser. No. 60,007
Claims priority, application Denmark, Apr. 17, 1996, MA-0379-1996
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—168



389,807
COOLING DEVICE

Douglas A. Dodson, 5995 Avenida Encinas, Carlsbad, Calif. 92008

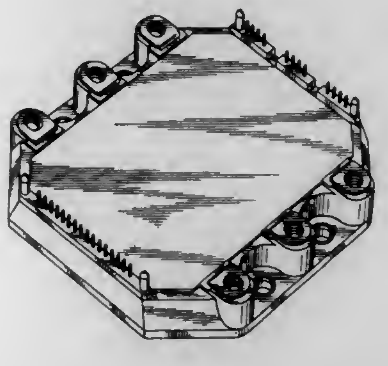
Filed Dec. 30, 1996, Ser. No. 64,341
The portion of the term of this patent subsequent to Nov. 19, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—179



389,808
HYBRID INTEGRATED CIRCUIT FOR ELECTRIC POWER CONTROL

Toshifusa Yamada, and Shin Soyano, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jul. 9, 1996, Ser. No. 56,800
Claims priority, application Japan, Jan. 9, 1996, 8-259
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—182



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389,809
ELECTRONICS CABINET

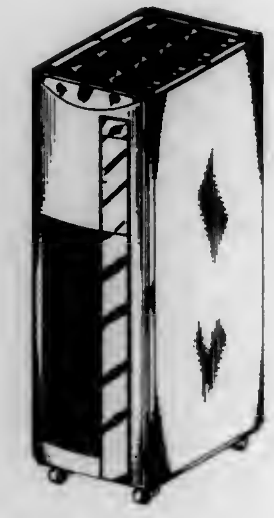
Paul T. Tirrell, Uxbridge, Mass., assignor to EMC Corporation, Hopkinton, Mass.

Filed Sep. 26, 1996, Ser. No. 60,320

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—184



389,810
MEMORY DEVICE

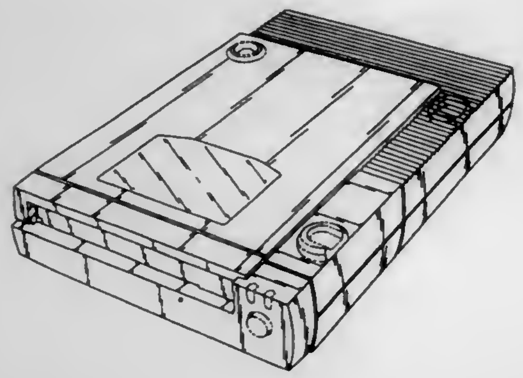
Nichols Brawne, Columbus, Ohio; George Meyer, Ogden, and Michael D. Johnson, Kaysville, both of Utah, assignors to Iomega Corporation, Roy, Utah

Filed Jan. 29, 1996, Ser. No. 49,703

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



389,811
SYSTEM PROCESSOR UNIT FOR PERSONAL COMPUTERS

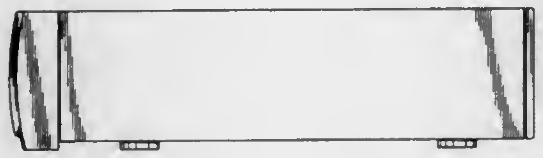
Gil Y. Wong; Max Yoshimoto, both of Palo Alto; Yves Behar, San Francisco, and Peter Lee, San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 28, 1996, Ser. No. 56,452

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



389,812
PERSONAL COMPUTER

Hiroyuki Yoda, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

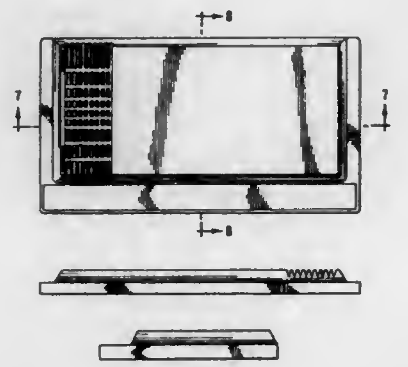
Filed Sep. 23, 1996, Ser. No. 60,161

Claims priority, application Japan, Mar. 26, 1996, 8-8263

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



389,813
SALES BUSINESS TERMINAL UNIT

Hirotada Itoh, Kawasaki, Japan, assignor to Nitsuko Corporation, Kanagawa, Japan

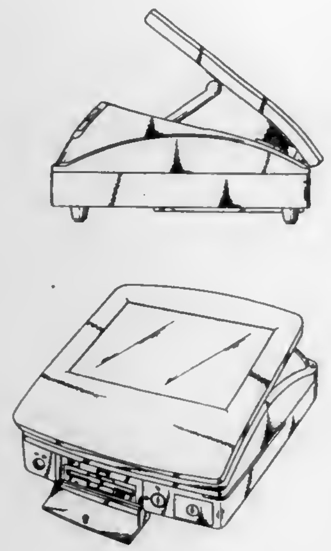
Filed Aug. 5, 1996, Ser. No. 57,937

Claims priority, application Japan, Jun. 21, 1996, 8-18244

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—105



389,814
IC CARD READER/WRITER

Masaaki Iwamoto; Hiroharu Hirata, and Kazunari Sugita, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

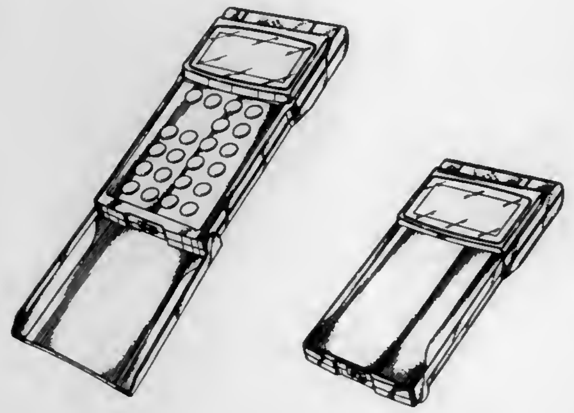
Filed Mar. 10, 1997, Ser. No. 67,528

Claims priority, application Japan, Oct. 28, 1996, 8-32013

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—105



389,815
PORTABLE COMPUTER

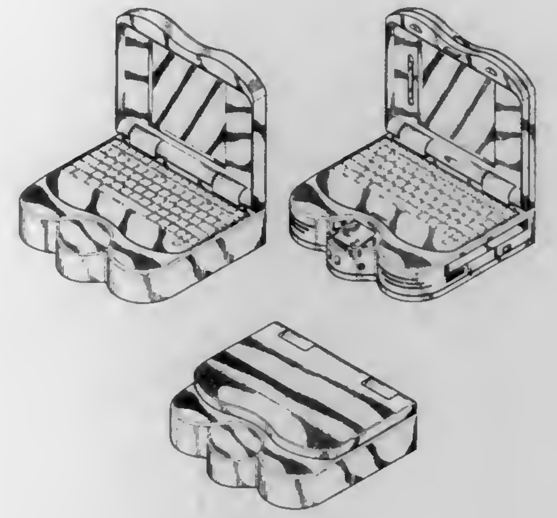
Todd J. Schnatzmeyer, Dallas, Tex., assignor to Future Technologies, Inc., Dallas, Tex.

Filed Aug. 28, 1996, Ser. No. 58,924

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—106



389,816
PORTABLE COMPUTER

Toshio Horiki, and Yutaka Kohno, both of Osaka, Japan, assignors to Matsusbita Electric Industrial Co., Ltd., Osaka, Japan

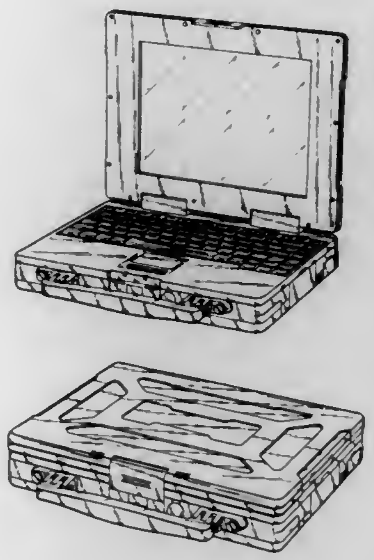
Filed Jan. 6, 1997, Ser. No. 64,567

Claims priority, application Japan, Aug. 8, 1996, 8-23987

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—106



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389,817
FINGERPRINT DISTINCTION READER

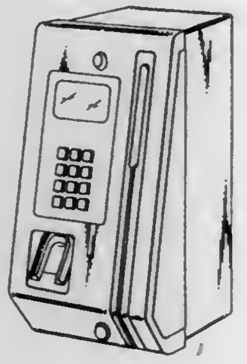
Hitoshi Umetsu, Kawasaki, Japan, assignor to Fujitsu Denso, Ltd., Kanagawa-Ken, Japan

Filed Jun. 4, 1996, Ser. No. 55,461

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—107



389,818
FLEXIBLE DUST COVER

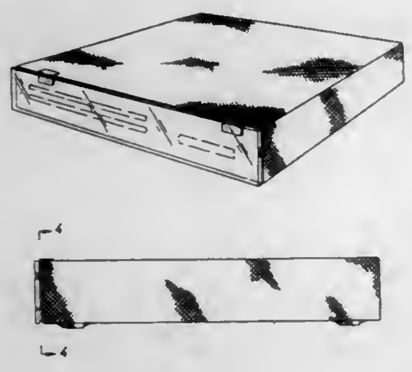
Fredrick C. Smith, P.O. Box 1604, Bellaire, Tex. 77402-1604

Filed Jan. 24, 1996, Ser. No. 49,360

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



389,819
DOCKING STATION FOR A PORTABLE COMPUTER

Kazuhiko Yamazaki, Hiratsuka, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

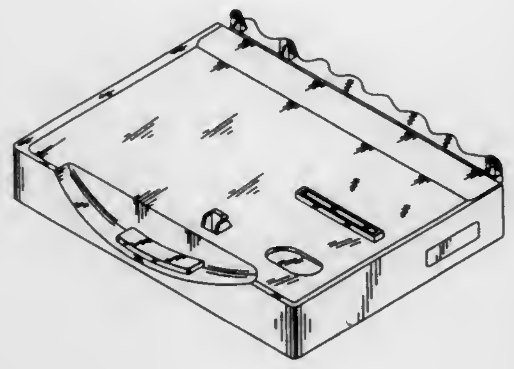
Filed Mar. 13, 1996, Ser. No. 51,576

Claims priority, application Japan, Sep. 13, 1995, 7-27092

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—107



389,820
COMPUTER MOUSE

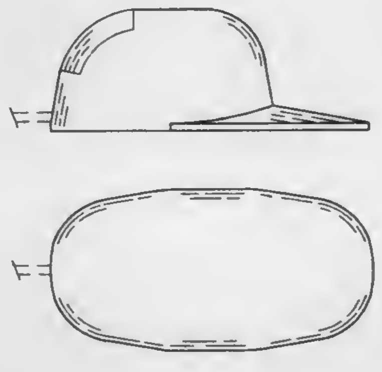
John Martella, 593 Staffordshire, Jacksonville, Fla. 32225

Filed Dec. 2, 1996, Ser. No. 63,189

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



389,821
COMPUTER MOUSE

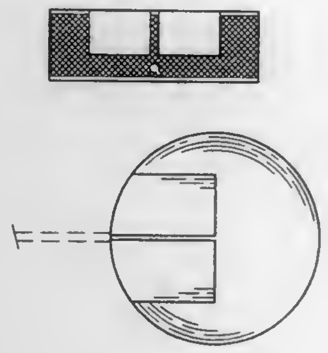
John Martella, 593 Staffordshire, Jacksonville, Fla. 32225

Filed Dec. 2, 1996, Ser. No. 63,190

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



389,822
ADJUSTABLE KEYBOARD

Masahiko Kawauchi, San Jose; Shigetoshi Amano, Sunnyvale; J. Scott Petermann, San Jose, and Thomas Overthun, San Francisco, all of Calif., assignors to Alps Electric (USA), Inc., San Jose, Calif.

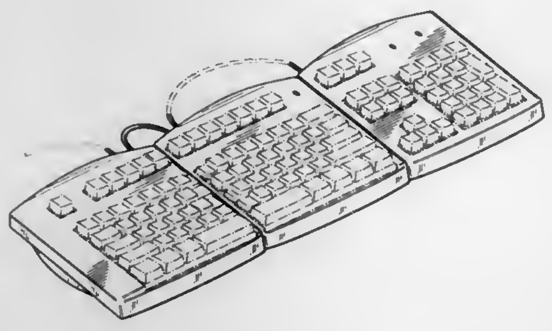
Filed Aug. 7, 1996, Ser. No. 58,080

The portion of the term of this patent subsequent to Nov. 11, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—115



389,823
PERSONAL COMPUTER KEYBOARD ASSEMBLY

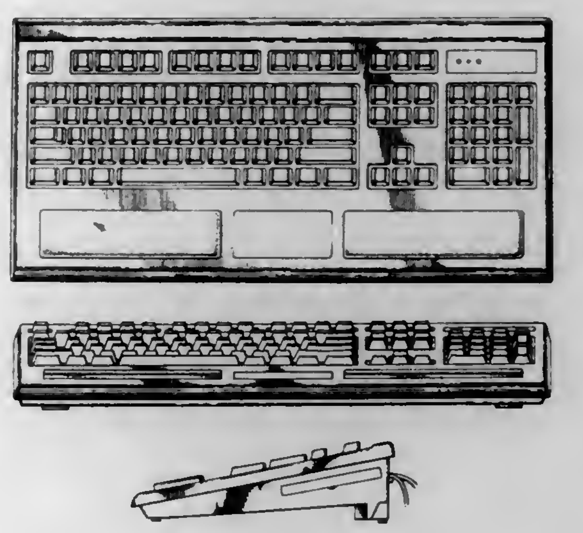
Howard Schneider, P.O box 908 1 Promenade Circle, Thornhill (Ontario), Canada, L4J 8G7

Filed Dec. 23, 1996, Ser. No. 64,138

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—115



389,824
MIXER-AMPLIFIER TOWER FOR INCORPORATION IN A SOUND SYSTEM

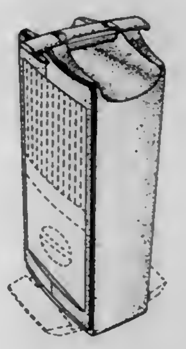
Steve Woolley, Burbank, Calif.; Peter Harries, Limton, England, and Roger F. Cox, Chino Hills, Calif., assignors to Fender Musical Instruments Corporation, Scottsdale, Ark.

Filed Nov. 22, 1996, Ser. No. 62,731

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—124



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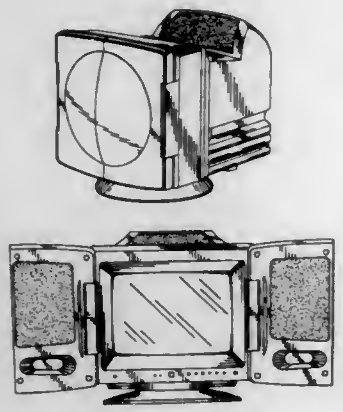
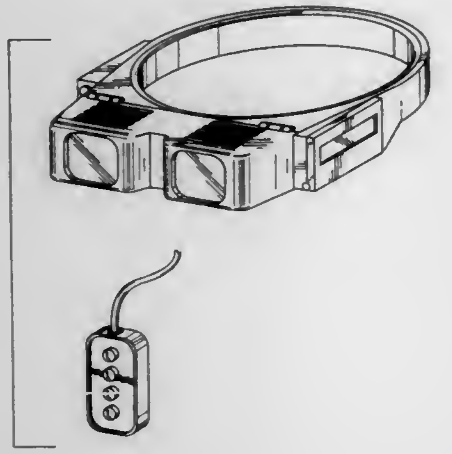
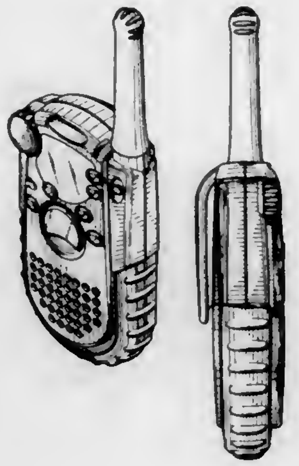
389,825
TELEVISION RECEIVER HAVING HINGED DOORS
Seon Soo Shin, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 15, 1996, Ser. No. 62,486
Claims priority, application Rep. of Korea, May 16, 1996, 969564
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—132



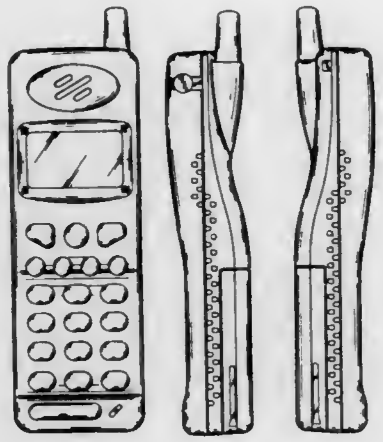
389,826
COMBINED VIDEOCASSETTE RECORDER AND REMOTE CONTROL
Ron Cousins, 302 Greenleaf, Highland Village, Tex. 75067
Filed Oct. 8, 1996, Ser. No. 60,822
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—135



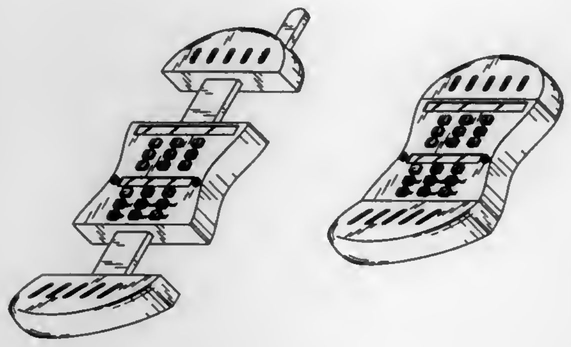
389,827
TWO WAY PORTABLE COMMUNICATION DEVICE
Glen A. Oross, Sunrise; Michael J. Page, Aventura, and Frank M. Tyneski, Fort Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 1, 1996, Ser. No. 60,564
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



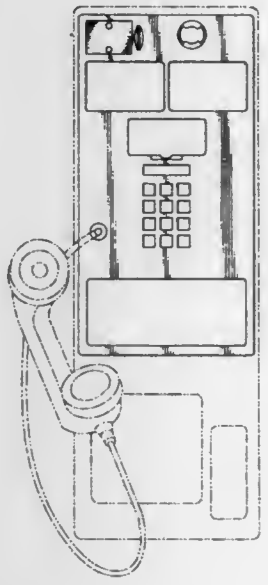
389,828
PORTABLE TELEPHONE
Shuichi Kutsuzawa, Samukawa, Japan, assignor to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan
Filed Feb. 21, 1997, Ser. No. 66,851
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



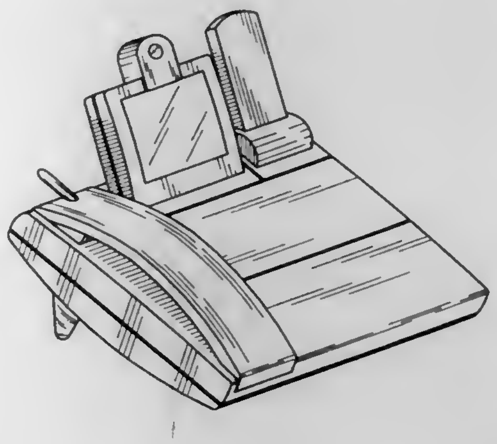
389,829
PORTABLE PHONE
Billy Earl Showers, 761 S. Kilbourn, Chicago, Ill. 60624
Filed May 29, 1997, Ser. No. 71,442
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



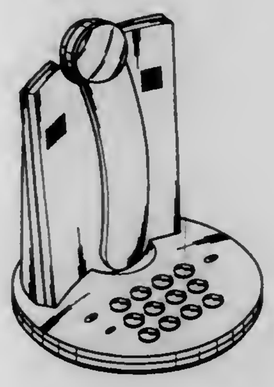
389,830
FACE PANEL FOR A COIN TELEPHONE BOX
James R. DeArkland, 8119 Buena Fortuna, Carpinteria, Calif. 93013
Filed Sep. 20, 1996, Ser. No. 60,077
The portion of the term of this patent subsequent to Sep. 23, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—146



389,831
MULTIMEDIA PHONE SYSTEM
Peter H. Müller, Los Gatos, Calif., assignor to Mobile Computing Systems Corporation, Burlingame, Calif.
Filed Apr. 4, 1997, Ser. No. 68,902
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



389,832
TELEPHONE
Yuon-Ul Chong, Incheon, Rep. of Korea, assignor to Daewoo Telecom Ltd., Seoul, Rep. of Korea
Filed Aug. 28, 1996, Ser. No. 63,243
Claims priority, application Rep. of Korea, Mar. 11, 1996, 96-4127
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—150



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389,833
TELEPHONE

Tjeerd Dijkstra, Leiderdorp, Netherlands, assignor to Pollyflame International B.V., Netherlands

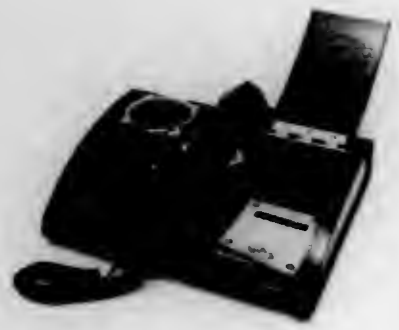
Filed Jul. 5, 1996, Ser. No. 56,678

Claims priority, application Hague Agreement, Jan. 5, 1996, DM/035145

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—151



389,834
CLOCK RADIO

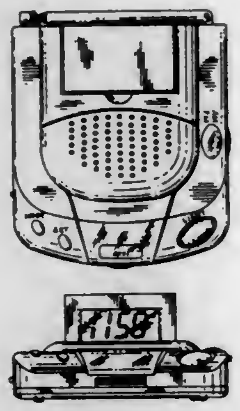
Selvam Selvaraj, Hong Kong, Hong Kong, assignor to Hanig & Company, Mount Prospect, Ill.

Filed Jan. 30, 1997, Ser. No. 65,589

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—171



389,835
SOUND SYSTEM FOR BICYCLE

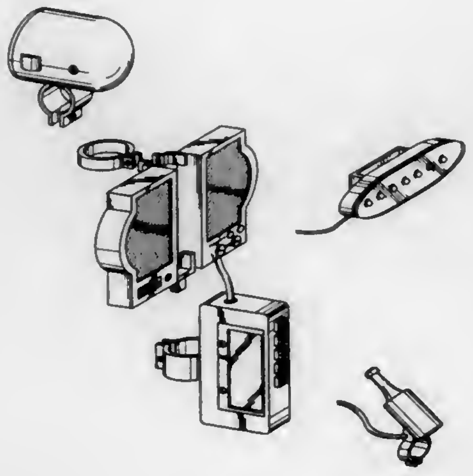
Dwight Tyson, 3121 Middletown Rd., Apt. 6N, Bronx, N.Y. 10461

Filed Mar. 22, 1996, Ser. No. 52,071

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—172



389,836
COMBINED DISPLAY AND BUTTON FOR PORTABLE COMMUNICATION RECEIVER

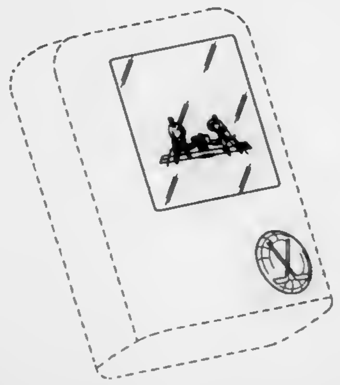
Craig Allen Lee, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1996, Ser. No. 64,164

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—191



389,837
CONTROL FACE PLATE FOR A RADIO

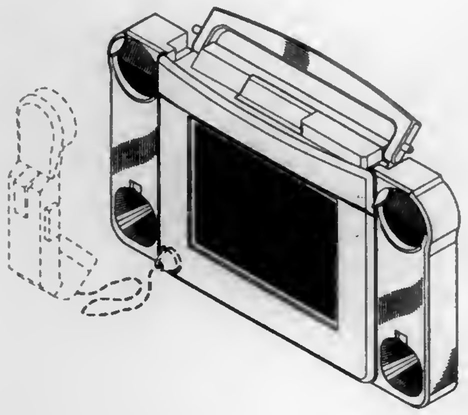
Mark David Summers, Phoenix, Ariz.; Albert Leo Nagele, Wilmette; Leonio Soren, Lincolnwood, both of Ill., and Richard Daniel Spring, Cedar Rapids, Iowa, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1996, Ser. No. 64,037

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—194



389,838
HANDHELD REMOTE CONTROL DEVICE

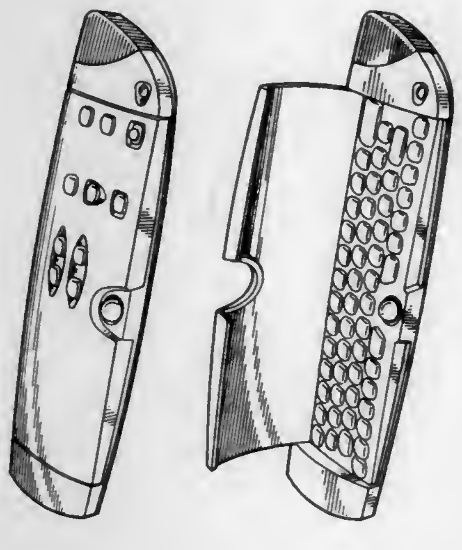
Robert D. Brunner, Los Gatos, and James R. Toleman, San Francisco, both of Calif., assignors to DIBA, Inc., Menlo Park, Calif.

Filed Dec. 12, 1996, Ser. No. 63,679

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—218



389,839
DIRECTIONAL MICROPHONE

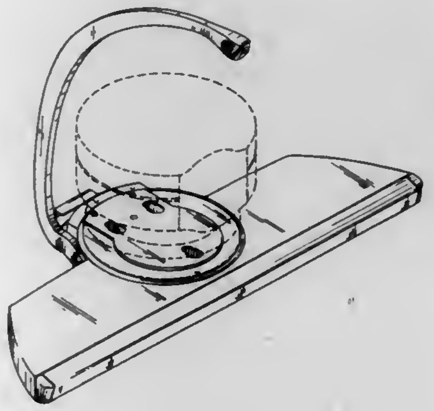
Edward C. Woodman, Newburyport; Steven L. Potts, Andover; Adam Reed, Concord; Russell Siggelkoe, Bedford, and Hong Wang, Westford, all of Mass., assignors to PictureTel Corporation, Andover, Mass.

Filed Jan. 8, 1997, Ser. No. 64,655

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—227



389,840
HOUSING FOR ELECTRONIC COMPONENTS

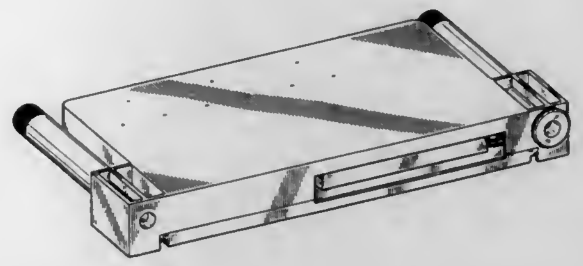
Russell L. Tucker, San Ramon; Mark S. McCall, Santa Rosa, and Bernabe R. Lovina, Benecia, all of Calif., assignors to Next Level Communications, Rohnert Park, Calif.

Filed Apr. 30, 1996, Ser. No. 53,819

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—240



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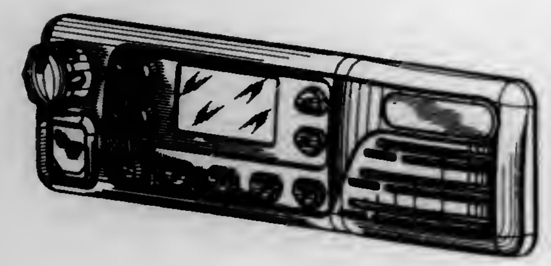
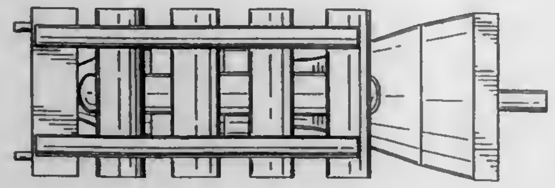
389,841
CONTROL HEAD FOR A MOBILE RADIO

Masaru Tokiyama, Coral Springs, and Glen A. Oross, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 4, 1996, Ser. No. 51,156
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—258



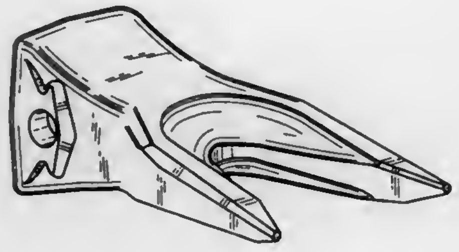
389,842
POWER UNIT

Rolf Kvamsdal, Oslo, and Magnar Forde, Hundhamarn, both of Norway, assignors to Kvaerner AS, Oslo, Norway
Filed Nov. 2, 1995, Ser. No. 45,919
Claims priority, application Norway, May 2, 1995, 95 0338
Term of patent 14 years
LOC (6) Cl. 15 - *01*
U.S. Cl. D15—1



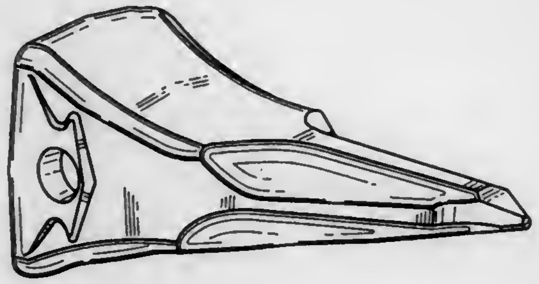
389,843
DIGGER TOOTH

Jorge Pallas Moreno, Premia de Mar, Spain, assignor to Metalogenia, S.A., Premia de Mar, Spain
Filed Jun. 14, 1996, Ser. No. 55,898
Claims priority, application Spain, Dec. 14, 1995, 136,465
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—29



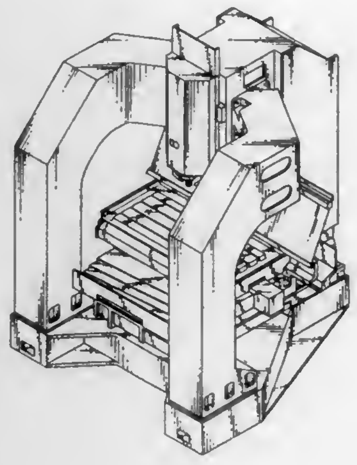
389,844
DIGGER TOOTH

Jorge Pallas Moreno, Premia De Mar, Spain, assignor to Metalogenia, S.A., Premia De Mar, Spain
Filed Jun. 14, 1996, Ser. No. 55,899
Claims priority, application Spain, Dec. 14, 1995, 136,465
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—29



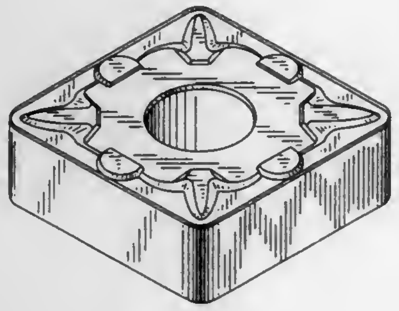
389,845
MILLING MACHINE

Masaru Nakamura, 20-6, Igarashinakajima 4-chome, Niigatashi, Niigata-ken, and Tamotu Fujino, Niigata, both of Japan, assignors to Masaru Nakamura, Tokyo, and Toshiba Kikai Kabushiki Kaisha, Niigata-ken, both of Japan
Filed Jan. 16, 1997, Ser. No. 65,011
Claims priority, application Japan, Jul. 19, 1996, 8-21949
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—131



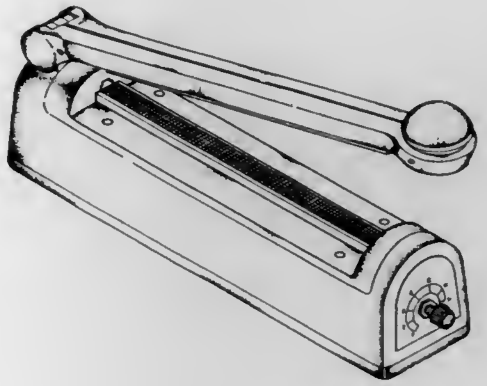
389,846
CUTTING INSERT

Sture Murén, Gävle, and Jörgen Wiman, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden
Filed Sep. 27, 1996, Ser. No. 60,381
Claims priority, application Sweden, Mar. 28, 1996, 96-0714
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—139



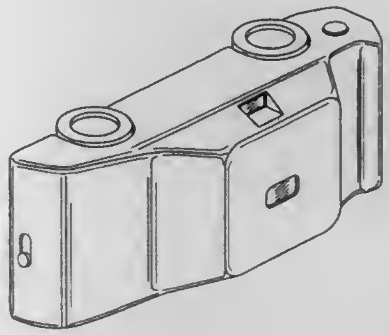
389,847
SEALING MACHINE

Mao-Sen Huang, No. 242-2, Tung Lan St., Tung Shih Jenn, Taichung Hsien, Taiwan
Filed Jul. 24, 1995, Ser. No. 41,788
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—146



389,848
VEHICULAR SHAPED CAMERA

Robert S. James, 207 Norton St., Yaupon Beach, N.C. 28465
Filed Jul. 25, 1996, Ser. No. 57,474
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—201



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389,849

CAMERA

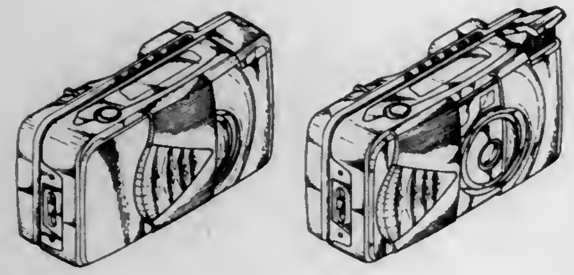
Joo Bok Kim, Seoul, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Jan. 3, 1997, Ser. No. 64,522

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—209



389,850

MULTIMEDIA PROJECTOR

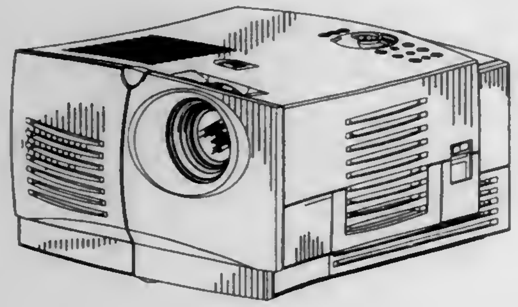
Philip A. Frank, Lake Oswego, Oreg., assignor to In Focus Systems, Inc., Wilsonville, Oreg.

Filed Mar. 25, 1996, Ser. No. 52,111

Term of patent 14 years

LOC (6) Cl. 16 - *02*

U.S. Cl. D16—225



389,851

FILM PACK HOLDER

Mariko Noda, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

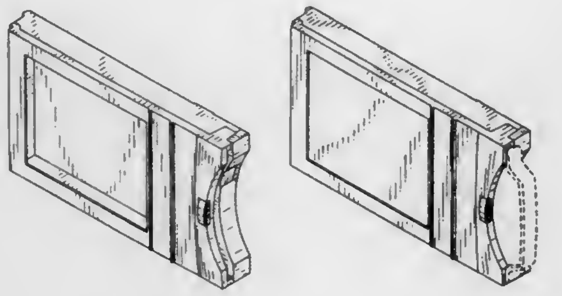
Filed Jul. 19, 1996, Ser. No. 57,203

Claims priority, application Japan, Jan. 22, 1996, 8-1245

Term of patent 14 years

LOC (6) Cl. 16 - *02*

U.S. Cl. D16—236



389,852

SUNGLASS

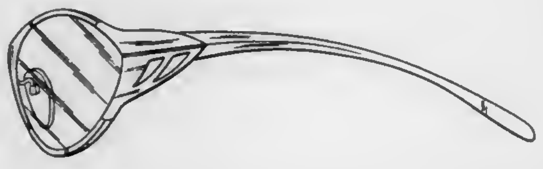
Jerome Jacques Marie Mage, Carlsbad, Calif., assignor to Spy Optic, Inc., Carlsbad, Calif.

Filed Oct. 28, 1996, Ser. No. 61,625

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—321



389,853

EYEGLASS SIDEBAR PROTECTOR

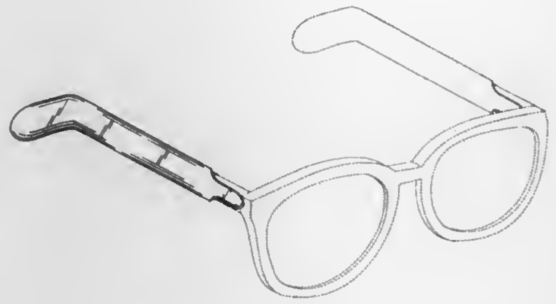
Betty Jean Kosakowski, 15 Absecon Rd., Parsippany, N.J. 07054

Filed Feb. 18, 1997, Ser. No. 66,667

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—330



389,854

AUXILIARY NOSE PIECE FOR EYEGLASSES

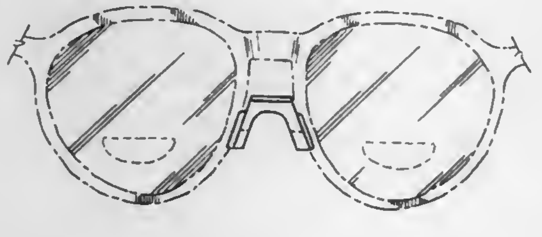
John A. Nason, 53 Midland Crescent, Nepean, Ontario, Canada, K2H 8N2

Filed Feb. 17, 1994, Ser. No. 18,886

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—333



389,855

HEART-SHAPED MUSICAL INSTRUMENT

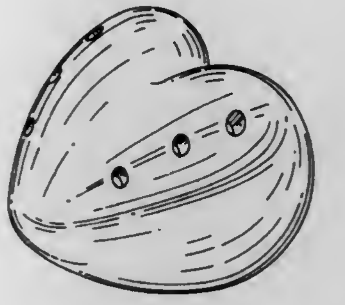
Richard L. Druz, 6446 Rodgerton Dr., Los Angeles, Calif. 90068

Filed Apr. 25, 1996, Ser. No. 53,611

Term of patent 14 years

LOC (6) Cl. 17 - *02*

U.S. Cl. D17—10



389,856

PLECTRUM

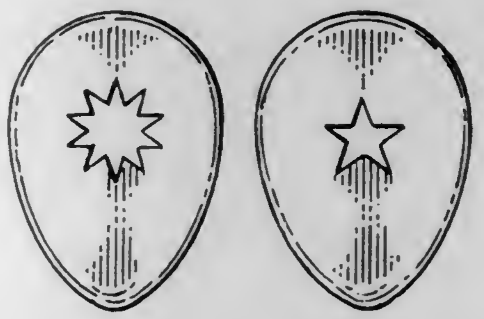
Phillip Everly, 10414 Camarillo St., North Hollywood, Calif. 91602

Filed Apr. 29, 1996, Ser. No. 53,729

Term of patent 14 years

LOC (6) Cl. 17 - *03*

U.S. Cl. D17—20



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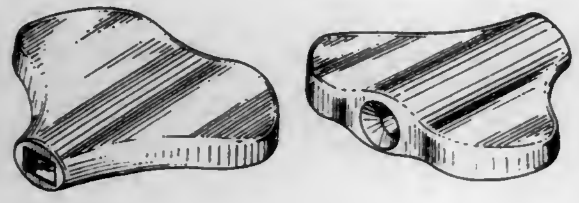
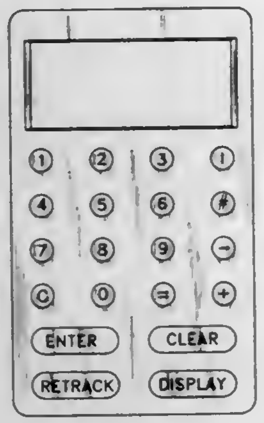
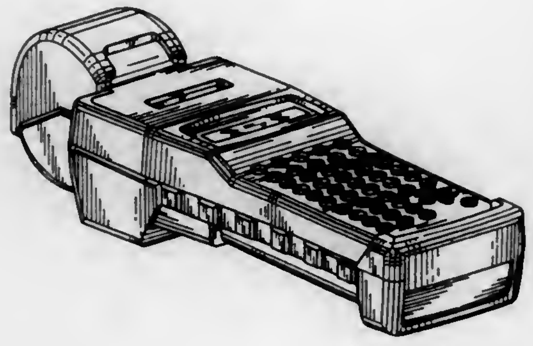
389,857
KNOB OF A PEG USED WITH A STRINGED INSTRUMENT
Takao Goto, Gunma-ken, Japan, assignor to Gotoh Gut Yugen Kaisha, Isezaki, Japan
Filed Jul. 29, 1996, Ser. No. 57,577
Claims priority, application Japan, Jan. 29, 1996, 8-1590
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—20



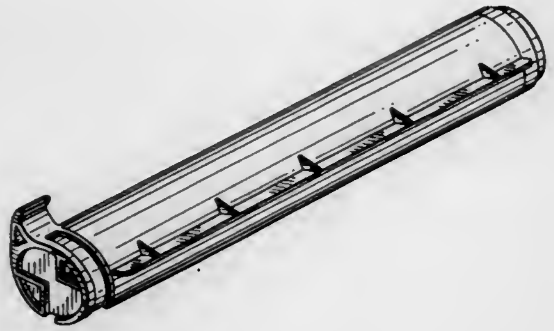
389,858
LOTTERY DATA BANK
Wanda Crooks, 40 Washington St., Apt. 9F, East Orange, N.J. 07017; Audrey A. Thompson, 320 Vreeland Ave., Paterson, N.J. 07513, and Mohammed A. Malik, 112 Sheridan Ave., Clifton, N.J. 07011
Filed Feb. 21, 1997, Ser. No. 67,208
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—7



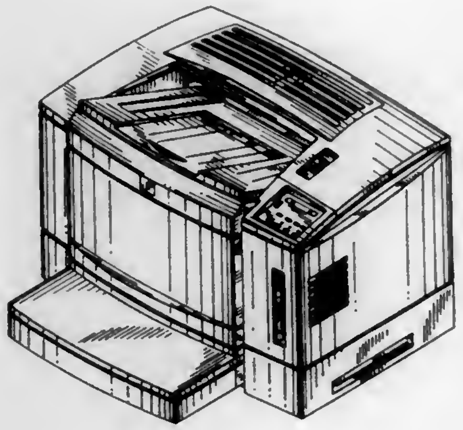
389,859
HAND-HELD PRINTER
Michael Thuma, Des Plaines, and Paul J. Doczy, Chicago, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Feb. 5, 1997, Ser. No. 66,366
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—14



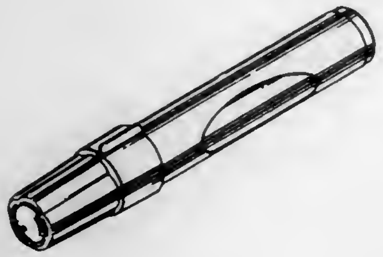
389,860
TONER CARTRIDGE
Shigeki Nakajima; Yukio Ota, and Yoshiharu Momiyama, all of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan
Filed Mar. 5, 1996, Ser. No. 51,218
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—43



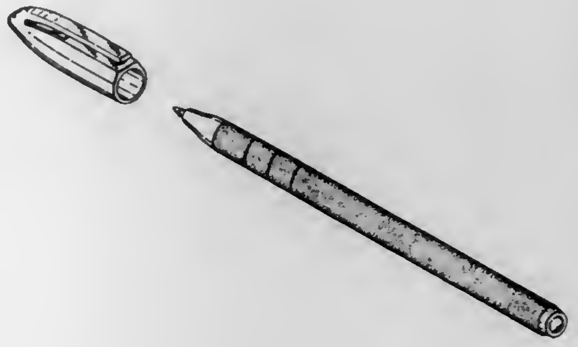
389,861
LASER PRINTER
Masahiko Kobayashi, and Kenichi Kimura, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Sep. 4, 1996, Ser. No. 59,162
Claims priority, application Japan, Mar. 26, 1996, 8-8262
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—55



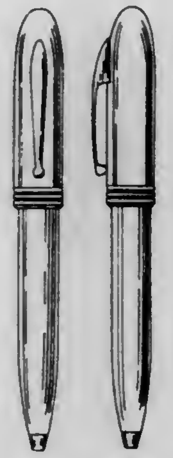
389,862
FELT PEN
Reiko Imagawa, Nagoya, Japan, assignor to Shachihata Inc., Nagoya, Japan
Filed Mar. 10, 1997, Ser. No. 67,731
Claims priority, application Japan, Sep. 11, 1996, 8-27239
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—43



389,863
PEN
Jonathan Nguyen, Sharon, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Aug. 16, 1996, Ser. No. 58,504
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—48



389,864
PEN
Owen Jones, Burlington, and Stephen M. Hohl, Donnellson, both of Iowa, assignors to Sheaffer Holdings (Delaware) Inc., Fort Madison, Iowa
Filed Nov. 21, 1996, Ser. No. 62,683
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—48



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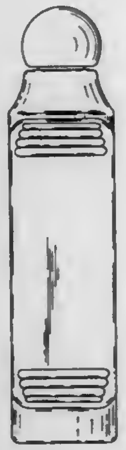
389,865

BINGO CARD INK MARKER BOTTLE

Clarence J. Venne, Langhorne, and Richard A. Venne, Sr., Bensalem, both of Pa., assignors to Clarence J. Venne, Inc., Levittown, Pa.

Filed Sep. 28, 1995, Ser. No. 44,671
Term of patent 14 years
LOC (6) Cl. 19 - *06*

U.S. Cl. D19—48

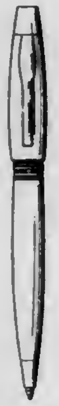


389,866

BALLPOINT PEN

Maria Boix Gacia, Ganduxer, 43, 08021, Barcelona, Spain
Filed Jun. 6, 1996, Ser. No. 55,509
Term of patent 14 years
LOC (6) Cl. 19 - *06*

U.S. Cl. D19—51



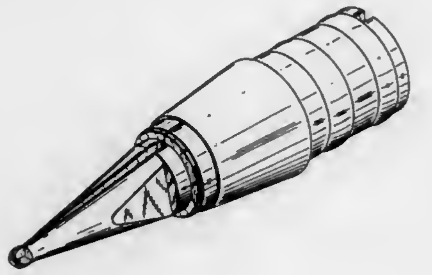
389,867

WRITING TIP

Teruo Togawa, Tokyo, Japan, assignor to Swan Pen Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1996, Ser. No. 63,372
Claims priority, application Japan, Sep. 27, 1996, 8-29030
Term of patent 14 years
LOC (6) Cl. 19 - *06*

U.S. Cl. D19—55



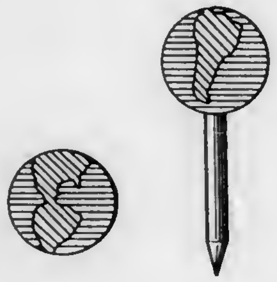
389,868

MAP PIN

Scott W. Voorhees, 1308 Devil's Reach Rd., Suite 302, Woodbridge, Va. 22191

Filed May 26, 1994, Ser. No. 23,513
Term of patent 14 years
LOC (6) Cl. 19 - *02*

U.S. Cl. D19—65



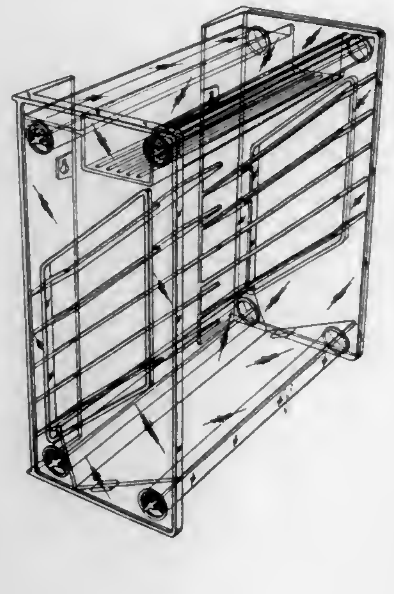
389,869

FILE FOLDER ORGANIZER RACK

David M. Stravitz, 16 Park Ave., Suite 14A, New York, N.Y. 10016

Filed Nov. 4, 1996, Ser. No. 62,426
Term of patent 14 years
LOC (6) Cl. 19 - *02*

U.S. Cl. D19—75



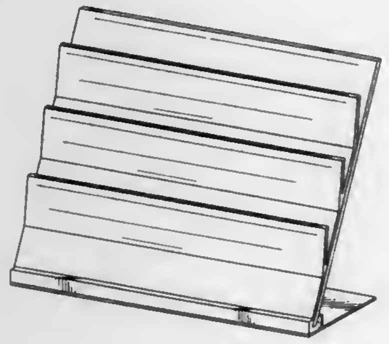
389,870

CARD DISPLAY RACK

Doris Hart, and Raymond Hart, both of R.R. 1, Box 1380, Willcox, Ariz. 85643

Filed May 24, 1996, Ser. No. 54,910
Term of patent 14 years
LOC (6) Cl. 19 - *02*

U.S. Cl. D19—90



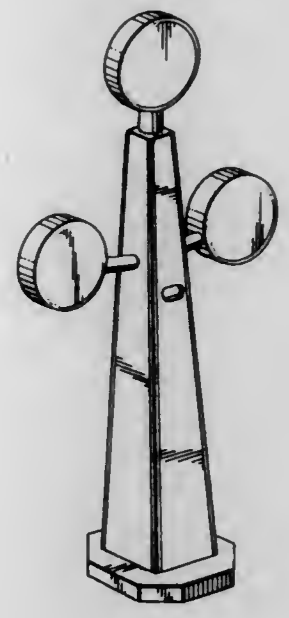
389,871

SAFETY SIGN

Scot Young, West Midlands, Great Britain, assignor to Scot Young Research, Inc., St. Joseph, Mo.

Filed Jul. 30, 1996, Ser. No. 57,677
Term of patent 14 years
LOC (6) Cl. 20 - *02*

U.S. Cl. D20—41

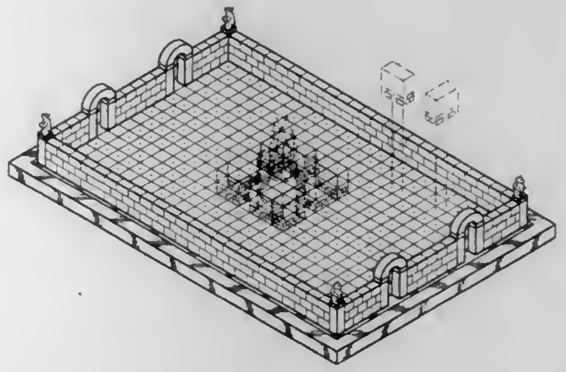


389,872

GAME BOARD

Bradford Rhea, P.O. Box 74, Merino, Colo. 80741
Filed Dec. 4, 1995, Ser. No. 47,400
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—16



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389,873
CHESS SET

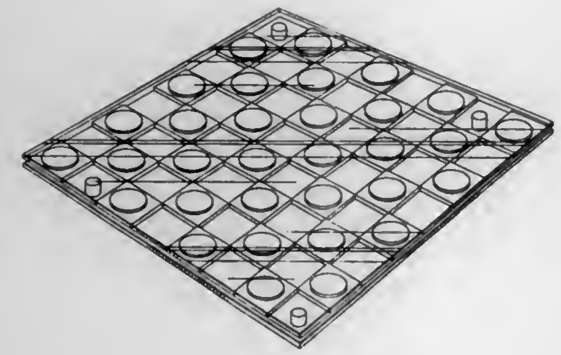
Robert C. Peterson, 737 E. Bunny Ave., Santa Maria, Calif. 93454

Filed Nov. 24, 1995, Ser. No. 47,014

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—24



389,874
GAME PIECE

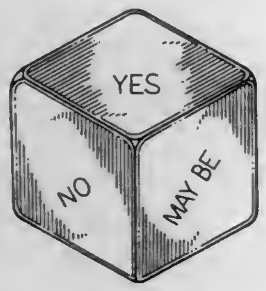
Vahik Kazangian, 1676 Sheridan Rd., Glendale, Calif. 91206

Filed Sep. 9, 1996, Ser. No. 59,382

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—41



389,875
INFLATABLE JUMPING TOY

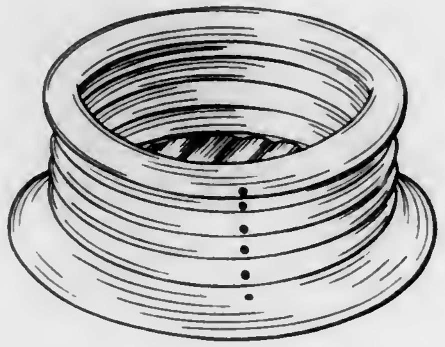
Hua Hsiang Lin, Kowloon; Yaw-Yuan Hsu; Yu-Fu Hsiao, both of Taijiang Qu, all of Hong Kong, and Richard A. Saputo, Long Beach, Calif., assignors to Intex Recreation Corp., Long Beach, Calif.

Filed Jun. 28, 1996, Ser. No. 58,317

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—59



389,876
TOY MUSICAL KEYBOARD

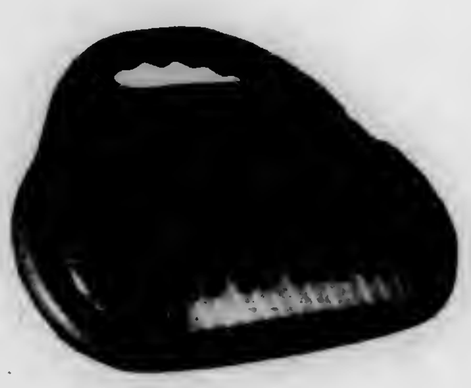
Pak Keung Leung, Kowloon, Hong Kong, assignor to The Little Tikes Company, Hudson, Ohio

Filed Jan. 2, 1997, Ser. No. 64,455

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—64



389,877
WAGON

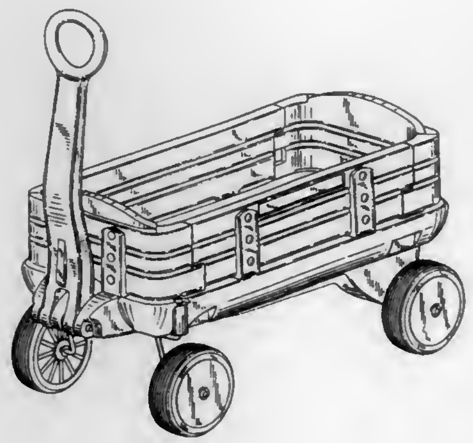
Antonio J. Pasin, Chicago, Ill., assignor to Radio Flyer, Inc., Chicago, Ill.

Filed Sep. 3, 1996, Ser. No. 59,065

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—71



389,878
INDOOR BOOMERANG

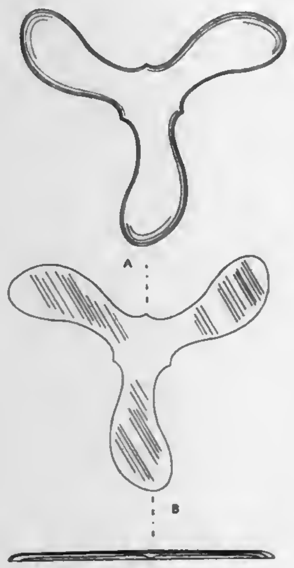
Joseph C. Tylor, 60 Effra Court, Brixton Hill, London, United Kingdom, SW2 1RB

Filed Dec. 2, 1996, Ser. No. 63,205

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—82



389,879
FRONT SURFACE FOR A JIGSAW PUZZLE

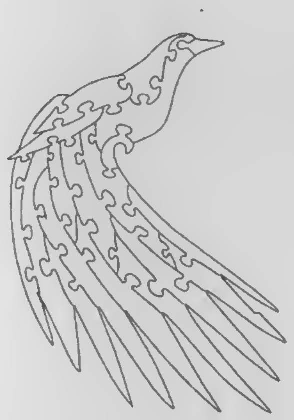
Suzanne Simpson, Greenwich, Conn., and Ofer Nissim, Pound Ridge, N.Y., assignors to Knox Security Engineering Corporation, Stamford, Conn.

Filed Dec. 19, 1995, Ser. No. 50,554

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—104



389,880
FRONT SURFACE FOR A JIGSAW PUZZLE

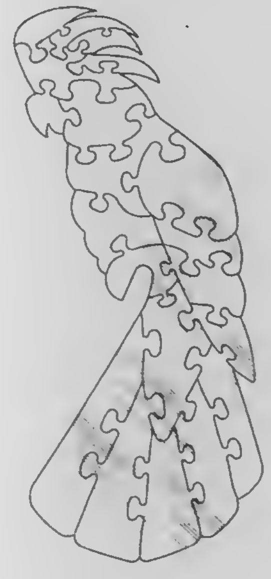
Suzanne Simpson, Greenwich; Trisha Sutherlan, Fairfield, both of Conn., and Ofer Nissim, Pound Ridge, N.Y., assignors to Knox Security Engineering Corporation, Stamford, Conn.

Filed Dec. 19, 1995, Ser. No. 50,557

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—104



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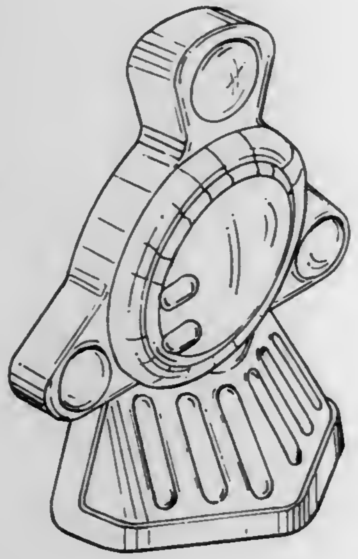
Patent Not Issued For This Number

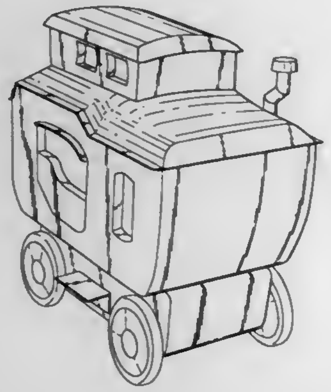
389,882
TOY LOCOMOTIVE FRONT

Soo Dong Kim, 3641 Nelson Pl., Fullerton, Calif. 92631
Filed Sep. 13, 1996, Ser. No. 59,603
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—129



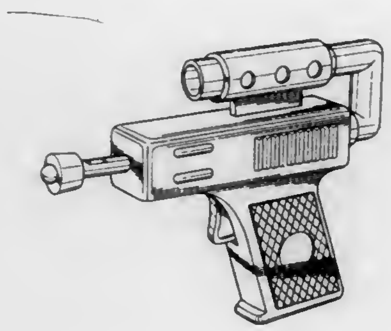
389,883
CABOOSE

Richard Schultz, 3945 Harvard Ct., Livermore, Calif. 94550
Filed Oct. 8, 1996, Ser. No. 60,835
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—129



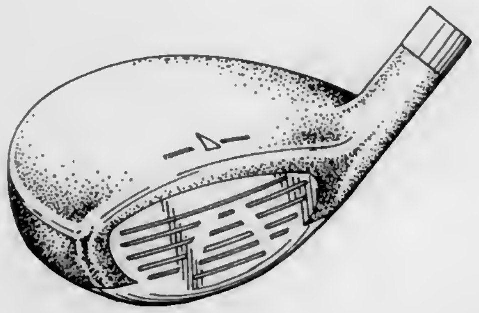
389,884
TOY GUN

Ka-Shiu Luk, Fo Tan, Hong Kong, assignor to Heep Tung Manufactory Limited, Hong Kong
Filed Mar. 26, 1997, Ser. No. 68,512
Claims priority, application United Kingdom, Jan. 13, 1997, 2062345
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—147



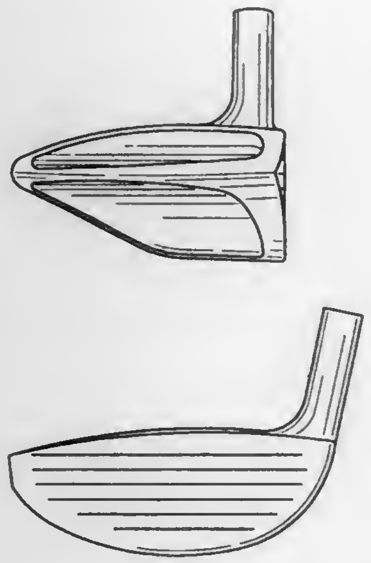
389,885
GOLF CLUB DRIVER HEAD

Steve Mahaffey, Hampden, and Tom Greene, Monson, both of Mass., assignors to Lisco, Inc., Tampa, Fla.
Filed Jan. 25, 1996, Ser. No. 49,431
The portion of the term of this patent subsequent to Dec. 30, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



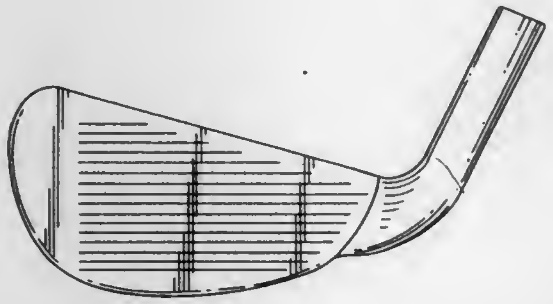
389,886
GOLF CLUB HEAD

Stephen Kulchar, 4284 Arrowhead Trail, Copley, Ohio 44321, and Gregory P. Leysock, 4394 Kenneth Trail, Stow, Ohio 44224
Filed Jan. 31, 1996, Ser. No. 49,788
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



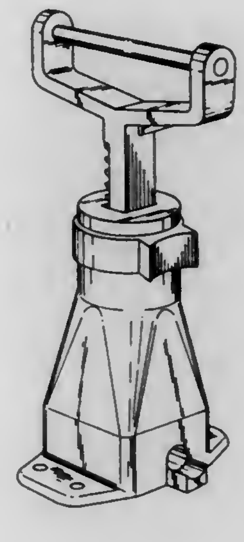
389,887
IRON TYPE GOLF CLUB HEAD

Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238
Filed Feb. 7, 1997, Ser. No. 66,475
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



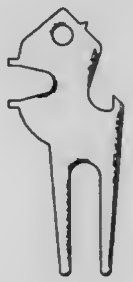
389,888
CROSS-COUNTRY SKI VICE

Richard K. Weissenborn, 3017-6th Street SW., Calgary, Alberta, Canada, T2S 2M1
Filed Mar. 29, 1996, Ser. No. 53,846
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—230



389,889
GOLF TOOL

Raymond C. Cullen, III, 11 Adin Dr., Shrewsburg, Mass. 01545
Filed Aug. 2, 1996, Ser. No. 57,879
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



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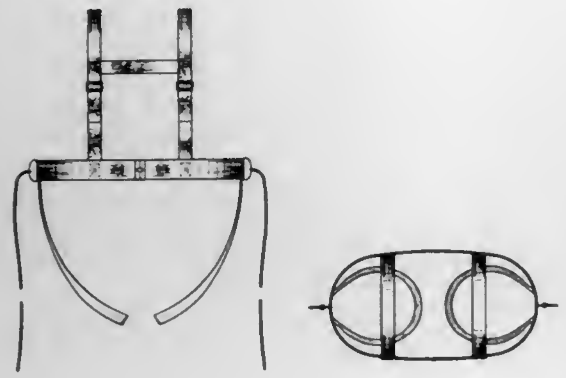
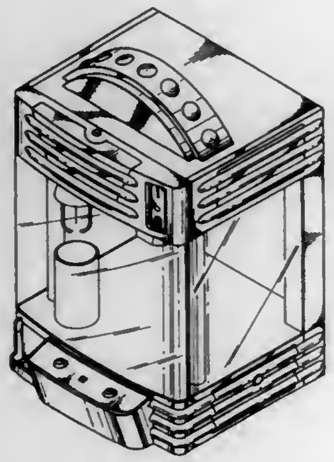
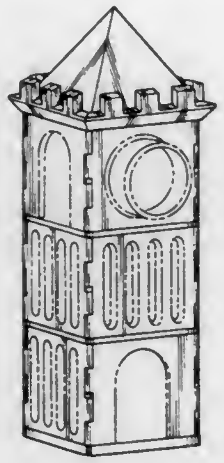
389,890
POOL HARNESS APPARATUS
Jack Diodato, 700 Victory Blvd. #9F, Staten Island, N.Y. 10301
Filed Nov. 29, 1996, Ser. No. 63,153
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D21—238



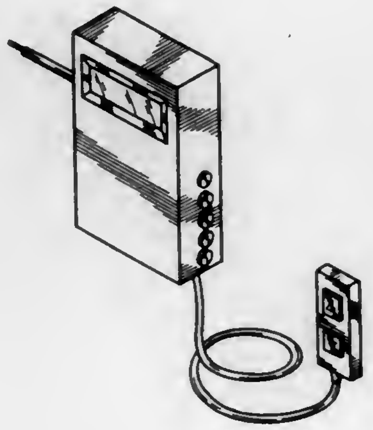
389,891
COIN-OPERATED GAME MACHINE FOR RETRIEVING PRIZES
Eikichi Kawasaki, Suita, Japan, assignor to SNK Corporation, Osaka, Japan
Filed May 7, 1996, Ser. No. 54,117
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



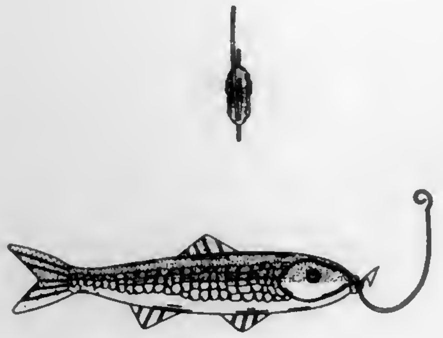
389,892
CASTLE CLIMBING STRUCTURE
Gary B. Van Wagenen, San Marino, Calif., assignor to Little Tikes Commercial Play Systems (Omni) Inc., City of Industry, Calif.
Filed Feb. 3, 1997, Ser. No. 66,051
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—245



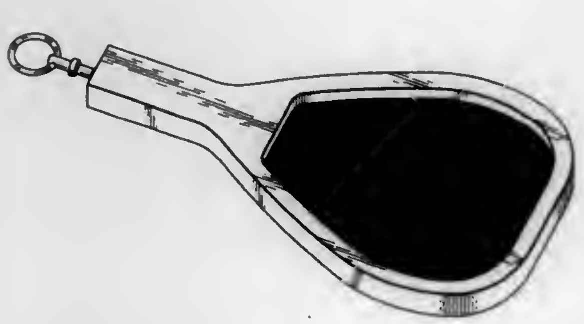
389,893
DIGITAL-AIM ELECTRONIC ARCHERY SIGHT
Darrin R. Alleman, 3309 4th Ave., Vienna, W. Va. 26105-1617
Filed Apr. 28, 1995, Ser. No. 38,163
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—107



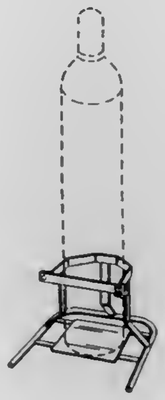
389,894
FISHING LURE
Wayne F. Hockmeyer, The Forks, Me.; Kenneth Daubert, Silver Spring, Fla., and Joseph F. Renosky, Indiana, Pa., assignors to Banjo Buddies, Inc., Burlington, Wis.
Filed Sep. 9, 1996, Ser. No. 59,350
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—133



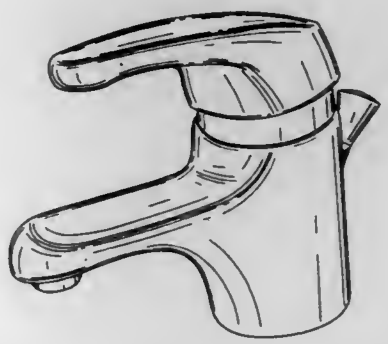
389,895
FLY FISHERMAN'S INSECT SKIMMER
Michael J. Belleville, 78 W.-900 South, Victor, Id. 83455
Filed Mar. 17, 1997, Ser. No. 68,026
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—134



389,896
CYLINDER STAND
Frank S. Salvucci, Sr., 2300 Haggin Oaks Blvd., Bakersfield, Calif. 93311, assignor to Frank S. Salvucci, Sr., Delano, Calif.
Filed Oct. 15, 1996, Ser. No. 61,603
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—206



389,897
FAUCET
Wilfried A. Delker, Bridgewater, N.J., assignor to American Standard, Inc., Piscataway, N.J.
Filed Oct. 2, 1996, Ser. No. 60,620
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



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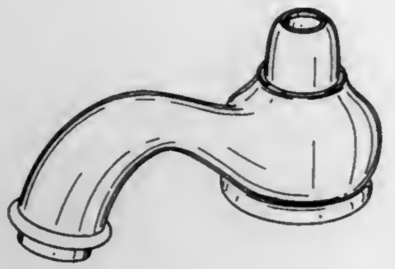
389,898
SPOUT BODY

Wilfred Delker, Bridgewater, and Luan Nguyen, Morristown, both of N.J., assignors to American Standard, Inc., Piscataway, N.J.

Filed Apr. 11, 1997, Ser. No. 69,134
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—255

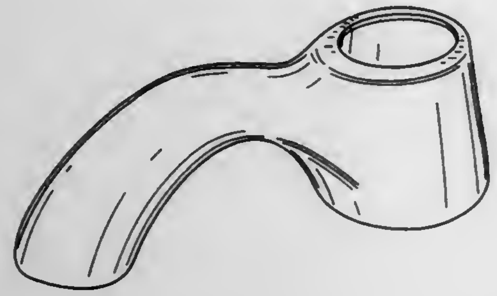


389,899
SPOUT BODY

Luan Nguyen, Morristown, and Tom Hart, North Brunswick, both of N.J., assignors to American Standard, Inc., Piscataway, N.J.

Filed Apr. 11, 1997, Ser. No. 69,138
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—255

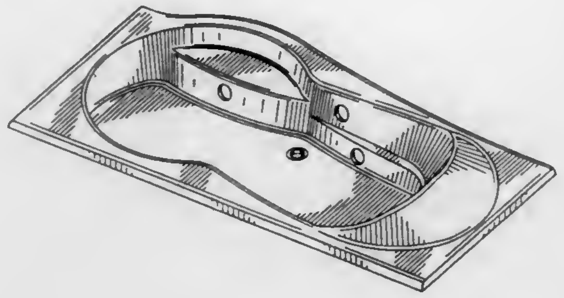


389,900
WHIRLPOOL BATH

Remo Jacuzzi, Little Rock, Ark., assignor to Jason International, Inc., North Little Rock, Ark.

Continuation of Ser. No. 51,823, Mar. 19, 1996, abandoned.
This application Sep. 11, 1996, Ser. No. 59,445
Term of patent 14 years
LOC (6) Cl. 23 - *02*

U.S. Cl. D23—277

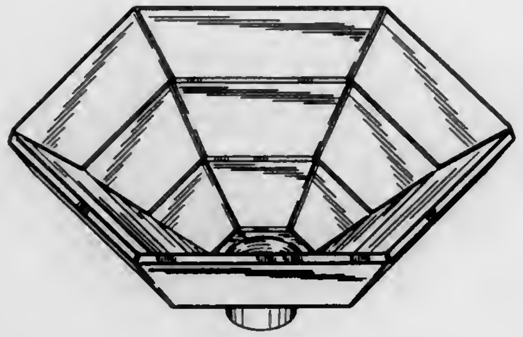


389,901
LAVATORY

Herbert V. Kohler, Jr., Kohler; Mary J. Reid, Sheboygan; Theresa J. Millard, and James M. Neiman, both of Sheboygan Falls, all of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Jan. 24, 1996, Ser. No. 49,415
Term of patent 14 years
LOC (6) Cl. 23 - *02*

U.S. Cl. D23—284

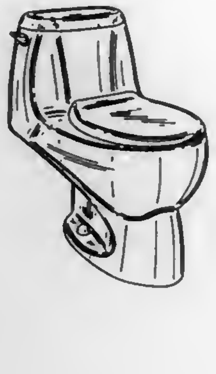


389,902
TOILET

Sherry L. Jones, Pataskala, and Sean Svendsen, Columbus, both of Ohio, assignors to American Standard, Inc., Piscataway, N.J.

Filed Nov. 22, 1996, Ser. No. 63,033
Term of patent 14 years
LOC (6) Cl. 23 - *02*

U.S. Cl. D23—301

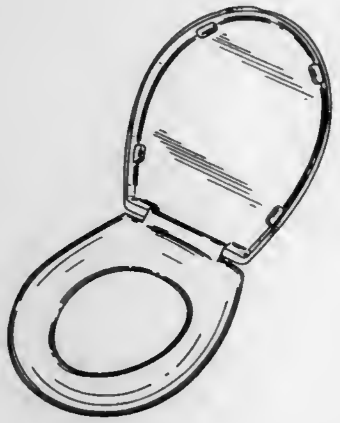


389,903
TOILET SEAT AND COVER

Sherry L. Jones, Pataskala, and Sean Svendsen, Columbus, both of Ohio, assignors to American Standard, Inc., Piscataway, N.J.

Filed Nov. 22, 1996, Ser. No. 63,034
Term of patent 14 years
LOC (6) Cl. 23 - *02*

U.S. Cl. D23—311

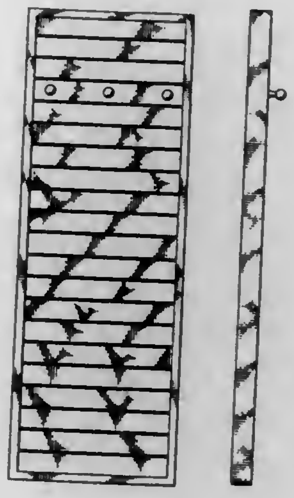


389,904
PANEL RADIATOR

Wesley A. Owens, Kittery, Me., assignor to Runtal Holding Company SA, Glarus, Switzerland

Filed Nov. 21, 1996, Ser. No. 63,009
Term of patent 14 years
LOC (6) Cl. 23 - *03*

U.S. Cl. D23—330

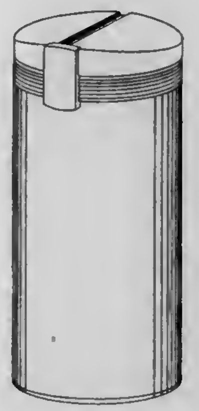


389,905
WATER HEATER

Edgar B. Montague, III, Charlotte; Robin E. Smith, Mooresville, and Christopher F. Yonge, Charlotte, all of N.C., assignors to AOS Holding Company, Wilmington, Del.

Filed Apr. 17, 1996, Ser. No. 53,208
Term of patent 14 years
LOC (6) Cl. 23 - *03*

U.S. Cl. D23—332



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AIR FRESHENER WITH A BOW TIE

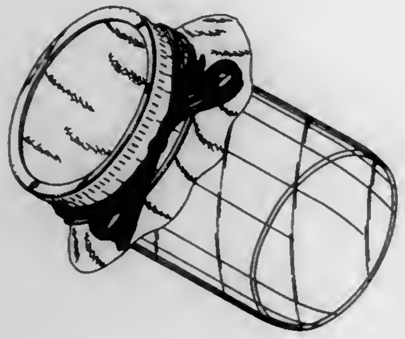
Cornelius J. Goeren, New Albany; Anne Peffer-Pitt, Columbus; Elizabeth Baude Johnson, Hilliard, and Carolyn R. Townsend, Westerville, all of Ohio, assignors to Bath & Body Works, Inc., Columbus, Ohio

Filed Oct. 13, 1995, Ser. No. 45,245

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—367



389,907

DUCT FOR A TOILET BOWL VENTILATION SYSTEM

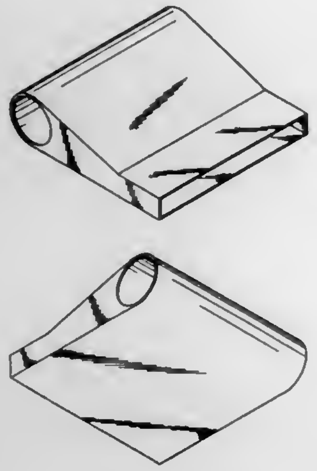
Jerry F. Willis, 10918 Francoise, Houston, Tex. 77042

Filed Mar. 12, 1996, Ser. No. 51,509

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—393



389,908

COMBINED CEILING FAN MOTOR HOUSING AND LIGHT

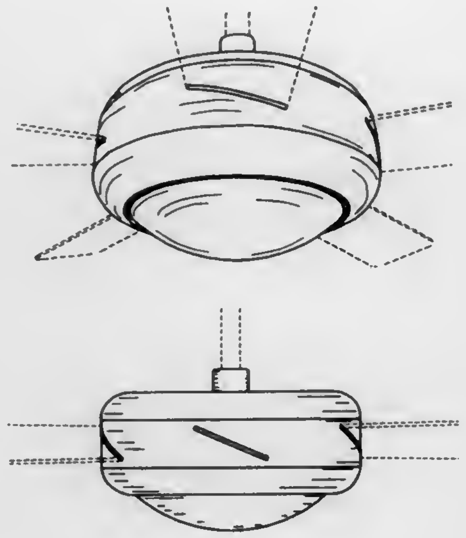
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209

Filed Jan. 11, 1996, Ser. No. 48,879

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—411



389,909

SOFTGEL CAPSULE

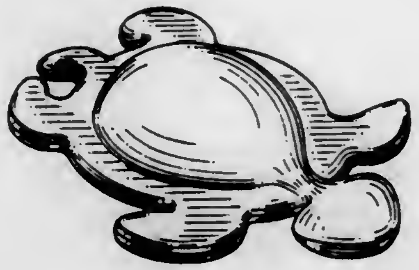
David G. Williams, Palm Harbor, Fla., assignor to R. P. Scherer Corporation, Troy, Mich.

Filed Jun. 27, 1995, Ser. No. 40,811

Term of patent 14 years

LOC (6) Cl. 28 - *01*

U.S. Cl. D24—104



389,910

RESPIRATOR FIT TEST HOOD

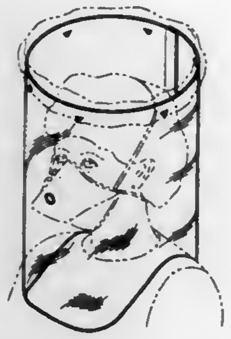
Kevin K. Brunson, Spring Hill, Tenn., and Marc E. Pinney, Grapevine, Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed May 30, 1996, Ser. No. 55,071

Term of patent 14 years

LOC (6) Cl. 29 - *02*

U.S. Cl. D24—110.3



389,911

ANCHOR PAD

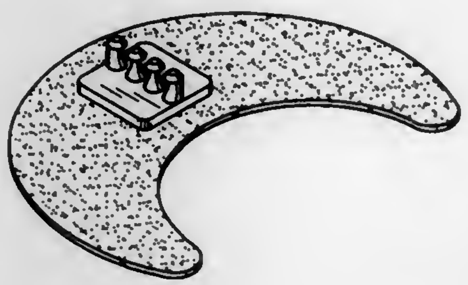
Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.

Division of Ser. No. 36,141, Mar. 14, 1995, Pat. No. Des. 375,355. This application Jul. 26, 1996, Ser. No. 57,545

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—128



389,912

HANDPIECE FOR LASER FIBER OPTIC DELIVERY SYSTEM

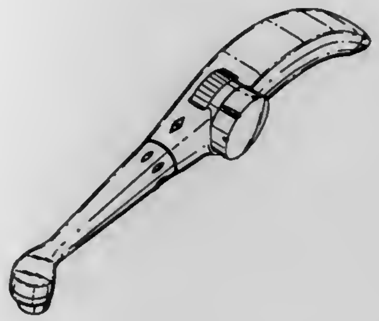
Rick Emerson, San Jose; Kenneth G. Olson, Los Gatos; Stuart D. Harman, San Jose, and Steven A. Daniel, Fremont, all of Calif., assignors to Eclipse Surgical Technologies, Inc., Sunnyvale, Calif.

Filed Nov. 27, 1996, Ser. No. 63,125

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—133



389,913

COMBINED LAP AROSCOPIC TOOL HOLDER AND POSITIONER

John R. Bookwalter, Brattleboro, Vt., and David T. Adler, Manhasset, N.Y., assignors to Flexbar Machine Corp., Islandia, N.Y.

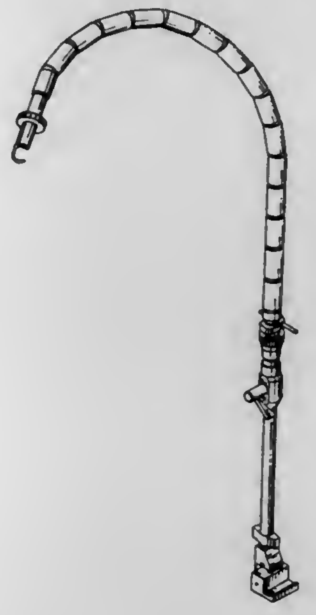
Continuation of Ser. No. 31,600, Nov. 29, 1994, abandoned, which is a continuation of Ser. No. 930,911, Aug. 17, 1992, abandoned. This application May 30, 1996, Ser. No. 55,052

The portion of the term of this patent subsequent to Jan. 13, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—138



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Patent Not Issued For This Number

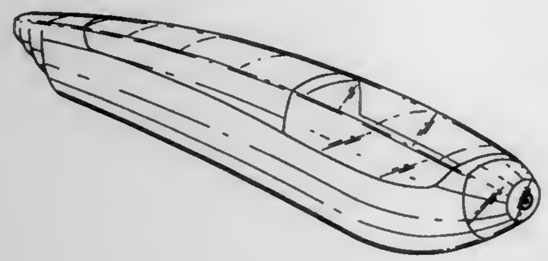
389,915

IN-LINE DEVICE FOR DRUG DELIVERY AND/OR LASER FIBER OPTIC DELIVERY SYSTEM

Rick Emerson, San Jose; Kenneth G. Olson, Los Gatos, and Steven A. Daniel, Fremont, all of Calif., assignors to Eclipse Surgical Technologies, Inc., Sunnyvale, Calif.

Filed Nov. 27, 1996, Ser. No. 63,102
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—144



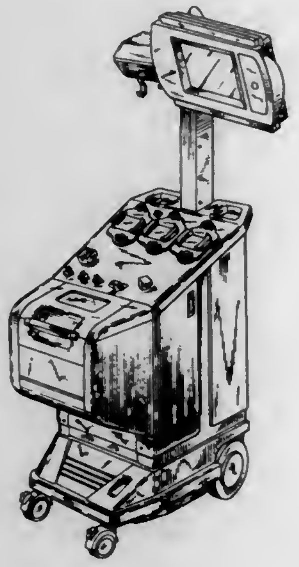
389,916

BLOOD PROCESSING DEVICE

Paul M. DiPerna, Long Grove; Michael J. Scola, Roselie; Russell W. Wade, Antioch; Richard L. West, Lake Villa; Timothy J. Patno, Mundelein; William H. Cork, Lake Bluff, all of Ill., and Leif Huff, Somerville, Mass., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jan. 22, 1996, Ser. No. 49,263
Term of patent 14 years
LOC (6) Cl. 24 - *01*

U.S. Cl. D24—169



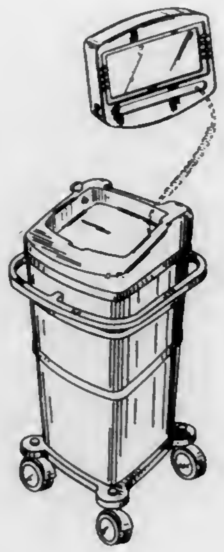
389,917

HOUSING FOR A SURGICAL TABLE SURFACE CONTROLLER

David W. Hornback, Brookville; Michael E. Poehner, and Michael W. Hamilton, both of West Harrison, all of Ind., assignors to Hill-Rom, Inc., Batesville, Ind.

Filed Aug. 2, 1996, Ser. No. 57,870
Term of patent 14 years
LOC (6) Cl. 24 - *01*

U.S. Cl. D24—186



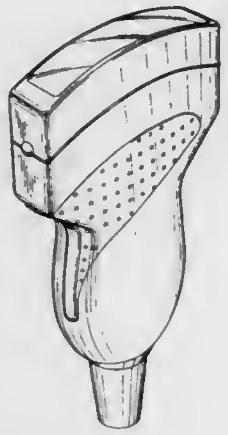
389,918

ULTRASONIC PROBE

Atsushi Ninomiya, Oume; Isamu Takekoshi, Tokyo; Kumiko Kasai, Hachiouji, and Takashi Kobayashi, Koshigaya, all of Japan, assignors to Hitachi Medical Coporation, Tokyo, Japan

Filed Oct. 15, 1996, Ser. No. 61,037
Claims priority, application Japan, Apr. 12, 1996, 8-10301
Term of patent 14 years
LOC (6) Cl. 24 - *01*

U.S. Cl. D24—186



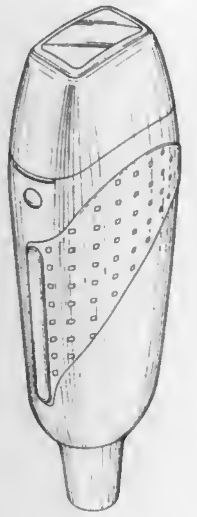
389,919

ULTRASONIC PROBE

Atsushi Ninomiya, Oume; Isamu Takekoshi, Tokyo; Kumiko Kasai, Hachiouji, and Takashi Kobayashi, Koshigaya, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Oct. 15, 1996, Ser. No. 61,038
Claims priority, application Japan, Apr. 12, 1996, 8-10303
Term of patent 14 years
LOC (6) Cl. 24 - *01*

U.S. Cl. D24—186



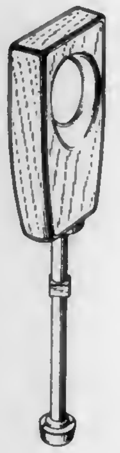
389,920

HAND-HELD MASSAGER

Joseph L. Kennon, 10210 NW. 57th Ter., Kansas City, Mo. 64152

Filed Jun. 7, 1996, Ser. No. 55,591
Term of patent 14 years
LOC (6) Cl. 24 - *04*

U.S. Cl. D24—214



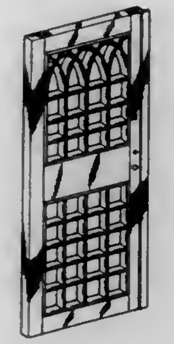
389,921

STAINLESS STEEL DOOR

Ming-Kun Lee, 2/F., No. 13, Hsing-Nan St., Nan-Kang Dist., Taipei City, Taiwan

Filed Apr. 15, 1997, Ser. No. 69,631
Term of patent 14 years
LOC (6) Cl. 25 - *02*

U.S. Cl. D25—53



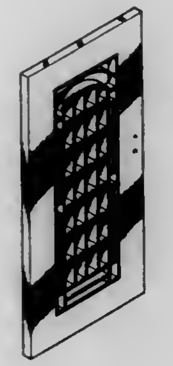
389,922

STAINLESS STEEL DOOR

Ming-Kun Lee, 2/F., No. 13, Hsing-Nan St., Nan-Kang Dist., Taipei City, Taiwan

Filed Apr. 15, 1997, Ser. No. 69,644
Term of patent 14 years
LOC (6) Cl. 25 - *02*

U.S. Cl. D25—53



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389,923

SWIM LADDER FOR A DOCK

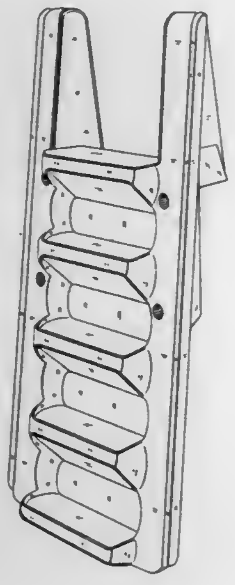
Jeffrey M. Hillman, La Crescent, and Clifton D. Vierus, Minnesota City, both of Minn., assignors to EZ Dock, Inc., Winona, Minn.

Filed Aug. 15, 1996, Ser. No. 58,447

Term of patent 14 years

LOC (6) Cl. 25 - *04*

U.S. Cl. D25—64



389,924

DOORLITE

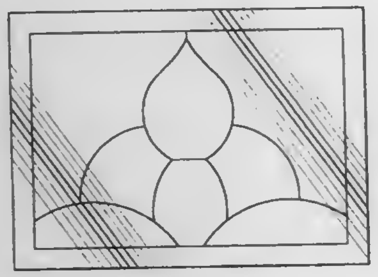
Jeffery D. Lint, Columbus; David L. Williams, Orient, and Stephen J. Sparer, Loveland, all of Ohio, assignors to American Architectural Products, Inc., Cleveland, Ohio

Division of Ser. No. 43,954, Sep. 14, 1995. This application Feb. 13, 1997, Ser. No. 66,669

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—103



389,925

DOORLITE

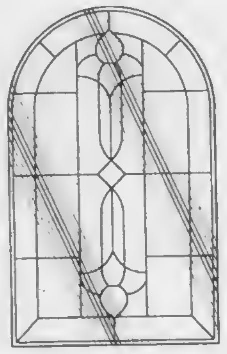
Jeffery D. Lint, Columbus; David L. Williams, Orient, and Stephen J. Sparer, Loveland, all of Ohio, assignors to American Architectural Products, Inc., Cleveland, Ohio

Division of Ser. No. 43,891, Sep. 14, 1995. This application Feb. 13, 1997, Ser. No. 66,692

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—103



389,926

PAVING ELEMENT

Gunter Barth, Butzengrabenweg 16, 77830 Buhlertal, and Michael Schmitz, 1M Elchert 7, 77815 Buhl, both of Germany

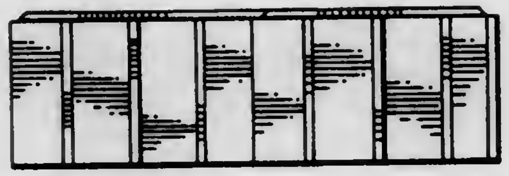
Filed Mar. 20, 1995, Ser. No. 36,440

Claims priority, application Hague Agreement, Sep. 19, 1994, DM/030723; Nov. 29, 1994, DM/031407

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—113



389,927

WINDOW FRAME MEMBER

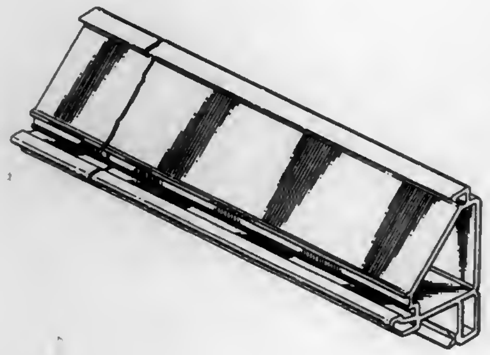
Marcel Daoust, Orangeville, Canada, assignor to Performance Fabrication Systems International Inc., Woodbridge, Canada

Filed Jan. 7, 1997, Ser. No. 64,635

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—124



389,928

AROMATHERAPY CHUNK CANDLE

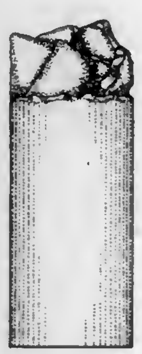
Mercedes Ganon, 13420 Magnolia Blvd., Sherman Oaks, Calif. 91423, assignor to Mercedes Ganon, Sherman Oaks, Calif.

Filed Dec. 30, 1996, Ser. No. 64,335

Term of patent 14 years

LOC (6) Cl. 26 - *04*

U.S. Cl. D26—6



389,929

AUXILIARY AUTOMOBILE BRAKE LIGHT

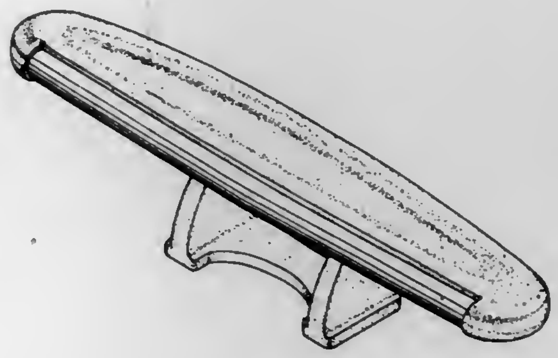
Jung-Kun Liu, 5th Floor, 13 Lane 36, Industrial Zone 1st Road, Hsitun, Taichung City, Taiwan

Filed Jan. 15, 1997, Ser. No. 64,950

Term of patent 14 years

LOC (6) Cl. 26 - *06*

U.S. Cl. D26—28



389,930

LANTERN

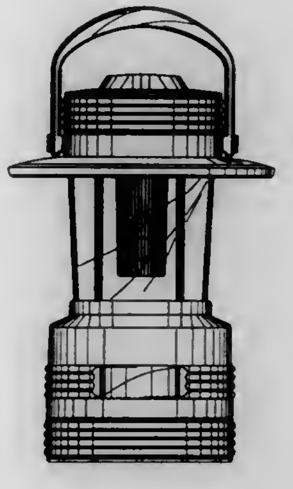
Ying-Hoi Lo, Tsuen Wan, Hong Kong, assignor to Lomak Industrial Co., Ltd., Hong Kong, Hong Kong

Filed Sep. 13, 1996, Ser. No. 59,562

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—37



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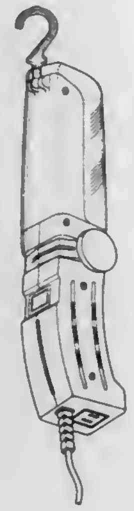
389,931
UTILITY LIGHT
James D. Kovacik, Brecksville; Paul S. Blanch, Broadview Heights, and Stanley E. Grzywna, Elyria, all of Ohio, assignors to Alert Safety Lite Products Co., Inc., Bedford Heights, Ohio

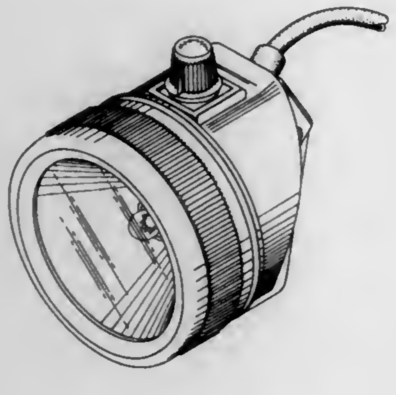
Filed Feb. 26, 1997, Ser. No. 67,136
Term of patent 14 years
LOC (6) Cl. 26 - *02*

U.S. Cl. D26—37



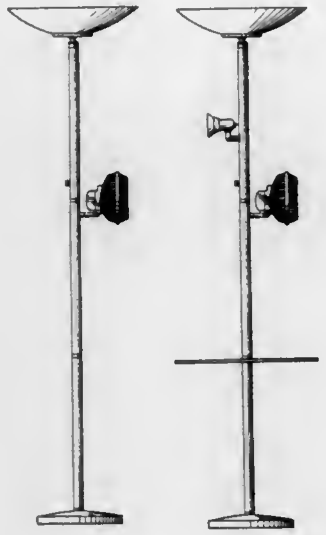
389,932
HEADGEAR MOUNTABLE LIGHT
Henry J. Mariani, 11 Hickory Dr., Little Rock, Ak. 72212
Filed Apr. 14, 1997, Ser. No. 69,412
Term of patent 14 years
LOC (6) Cl. 26 - *02*

U.S. Cl. D26—39



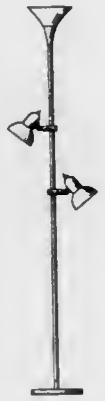
389,933
COMBINATION FLOOR LAMP AND ACCESSORIES
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Dec. 9, 1996, Ser. No. 63,438
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—59



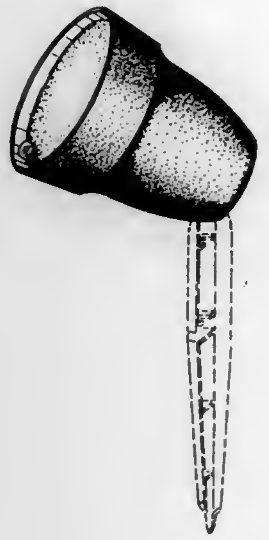
389,934
MULTIPURPOSE TREE LAMP
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 90266
Filed Feb. 10, 1997, Ser. No. 66,436
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—65



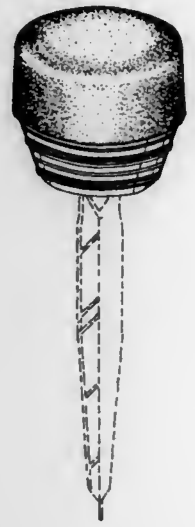
389,935
OUTDOOR LIGHT FIXTURE
Anthony N. Pink, Shorewood, Minn., assignor to The Toro Company, Bloomington, Minn.
Filed Apr. 9, 1997, Ser. No. 69,087
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—68



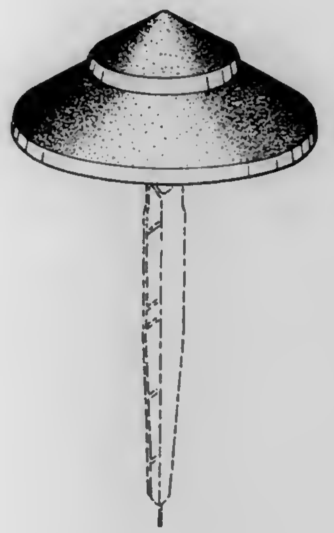
389,936
OUTDOOR LIGHT FIXTURE
Steven T. O'Brien, Brooklyn Park, and Anthony N. Pink, Shorewood, both of Minn., assignors to The Toro Company, Bloomington, Minn.
Filed Apr. 11, 1997, Ser. No. 69,396
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—68



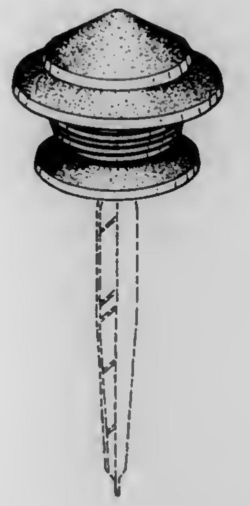
389,937
OUTDOOR LIGHT FIXTURE
Steven T. O'Brien, Brooklyn Park, and Anthony N. Pink, Shorewood, both of Minn., assignors to The Toro Company, Bloomington, Minn.
Filed Apr. 11, 1997, Ser. No. 69,397
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—68



389,938
OUTDOOR LIGHT FIXTURE
Anthony N. Pink, Shorewood, and Steven T. O'Brien, Brooklyn Park, both of Minn., assignors to The Toro Company, Bloomington, Minn.
Filed Apr. 11, 1997, Ser. No. 69,408
Term of patent 14 years
LOC (6) Cl. 26 - *05*

U.S. Cl. D26—68



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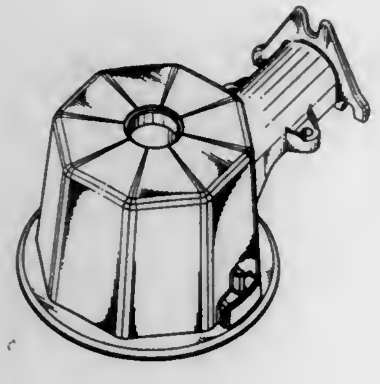
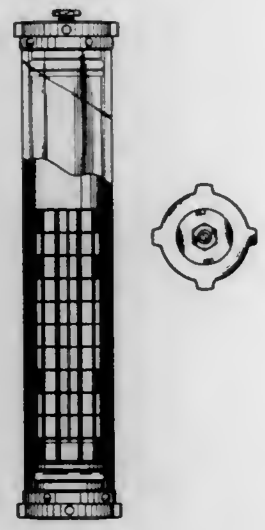
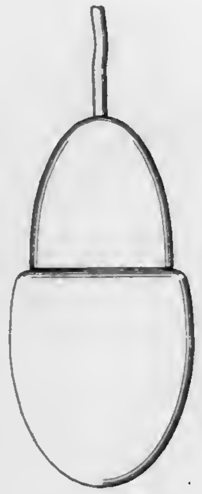
389,939
MERCURY VAPOR LIGHT BASE FOR EXTERIOR LIGHTING FIXTURE
Monte A. Leen, 1804 W. Lake Sammamish Parkway NE., Bellevue, Wash. 98008
Filed Mar. 11, 1997, Ser. No. 67,738
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—71



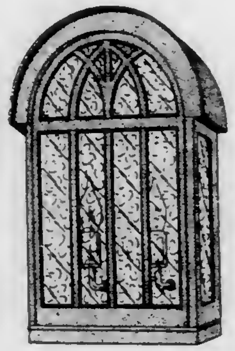
389,940
GRID LIGHT FIXTURE
Herbert Waldmann, Bad Dürrheim, Germany, assignor to Hertbert Waldmann GmbH & Co., Germany
Filed Oct. 18, 1994, Ser. No. 29,858
Claims priority, application WIPO, Apr. 20, 1994, DM/029378
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—76



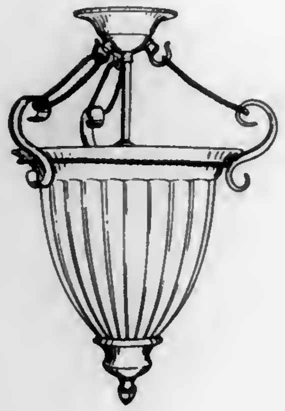
389,941
LIGHT FIXTURE
Brent Markee, Seattle, Wash., assignor to Starbucks Coffee Company, Seattle, Wash.
Filed Nov. 20, 1996, Ser. No. 63,005
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



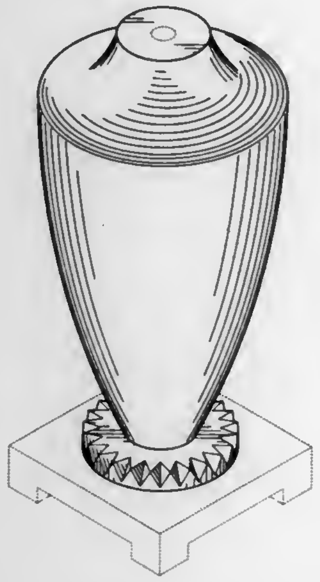
389,942
WALL LANTERN
Patrick H. Ruggles, and James Hampshire, both of Solon, Ohio, assignors to Adjusta-Post Manufacturing Company, Norton, Ohio
Division of Ser. No. 53,998, May 3, 1996. This application Feb. 11, 1997, Ser. No. 66,559
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



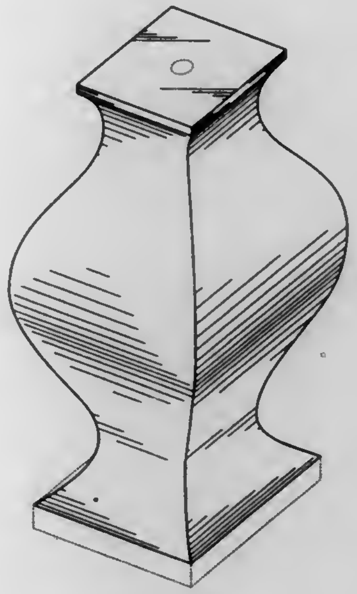
389,943
SEMI-FLUSH LIGHTING FIXTURE
Pasquale Miranda, 154 Sleepy Hollow Rd., Briarcliff Manor, N.Y. 10510
Filed Jan. 24, 1997, Ser. No. 65,341
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—88



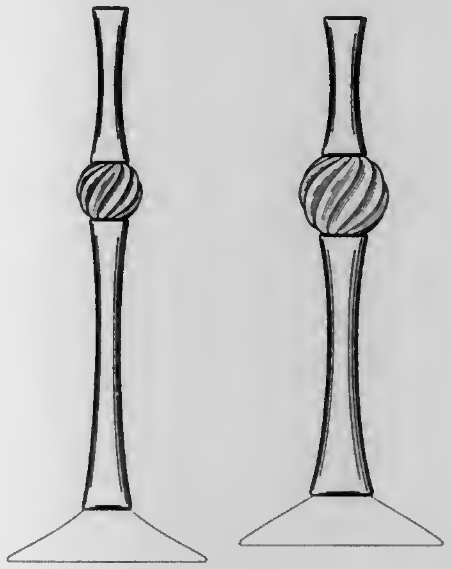
389,944
LAMP BODY
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Mar. 13, 1997, Ser. No. 66,853
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



389,945
LAMP BODY
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Mar. 13, 1997, Ser. No. 66,854
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



389,946
LAMP BODY
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Mar. 13, 1997, Ser. No. 66,855
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



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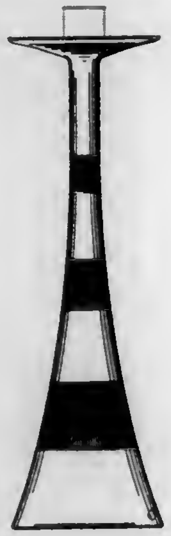
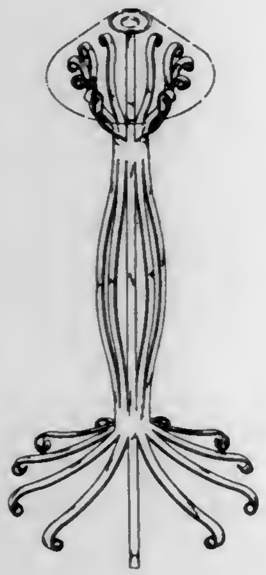
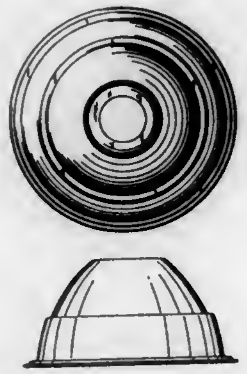
389,947
LAMP BODY
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Mar. 13, 1997, Ser. No. 66,856
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



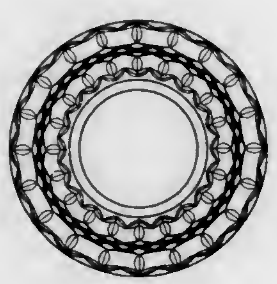
389,948
LAMP STAND
Tsung Chih Chang, No. 16, Lane 26, Shiau Chien Road, Gien Ming Tsuen, Da Li City Taichung Hsien, Taiwan
Filed Mar. 7, 1997, Ser. No. 67,435
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



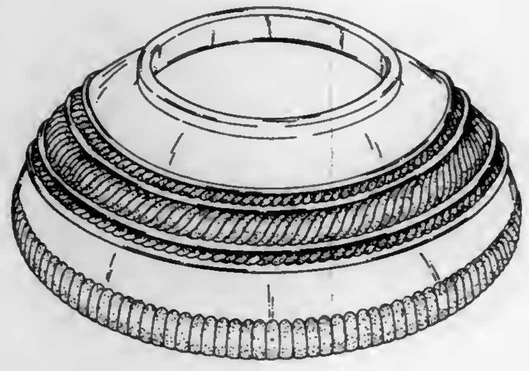
389,949
HIGH BAY LIGHTING REFLECTOR
William H. Walker, 21985 Bahamas, Mission Viejo, Calif. 92692
Filed Apr. 24, 1996, Ser. No. 53,552
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—118



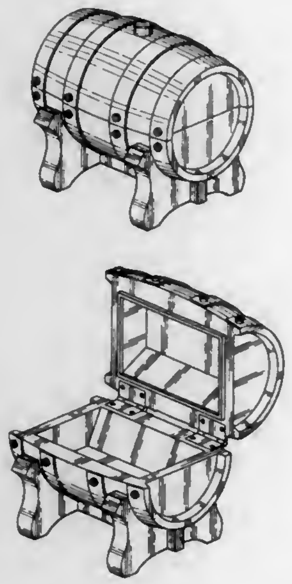
389,950
GLASS LAMP SHADE
Thomas Chiang, 28 W. 335 Picardy Ct., Winfield, Ill. 60190
Filed Sep. 20, 1996, Ser. No. 60,056
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—134



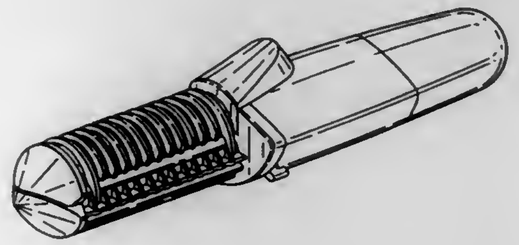
389,951
LAMP SHADE
San Jhy Yan, P.O. Box 196, Fung Yung,, Taichung, Taiwan
Filed Dec. 30, 1996, Ser. No. 64,394
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—134



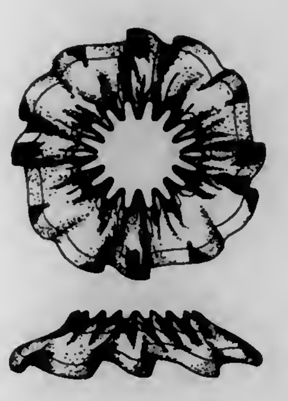
389,952
CIGAR HUMIDOR WITH BASE
Salvatore Bartolotta, 2607 Harway Ave., Brooklyn, N.Y. 11214
Filed Jan. 15, 1997, Ser. No. 64,929
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—188



389,953
HAIR STYLING APPLIANCE
Cornelia Seifert, Bad Soden, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany
Filed Dec. 5, 1996, Ser. No. 63,347
Claims priority, application Germany, Jun. 10, 1996, M96049286
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—35



389,954
HAIRBAND
Jennifer L. McClean, 13502 Whittier Blvd. #H201, Whittier, Calif. 90605
Filed Feb. 12, 1996, Ser. No. 50,217
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—41



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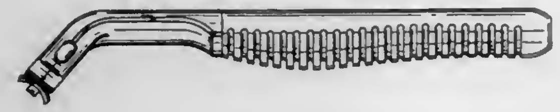
389,955

RAZOR HANDLE

Jeffrey W. Wonderley, Fort Defiance, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Feb. 9, 1996, Ser. No. 50,154
Term of patent 14 years
LOC (6) Cl. 28 - *03*

U.S. Cl. D28—48



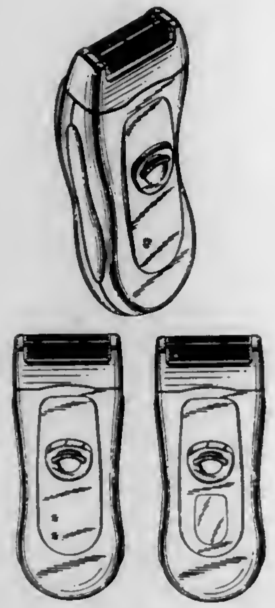
389,956

MEN'S SHAVER

Kristopher W. Schulz, Stratford, Conn., assignor to Remington Corporation, L.L.C., Bridgeport, Conn.

Filed Jan. 21, 1997, Ser. No. 65,128
Term of patent 14 years
LOC (6) Cl. 28 - *03*

U.S. Cl. D28—49



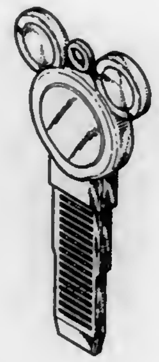
389,957

DECORATIVE NAIL FILE

Yu-Hwei Huang, No. 8, Lane 42, Sec. 2, Nan-Kan Road, Lou-Choo Hsiang, Taoyuan Hsien, Taiwan

Filed Jan. 28, 1997, Ser. No. 65,453
Term of patent 14 years
LOC (6) Cl. 28 - *03*

U.S. Cl. D28—59



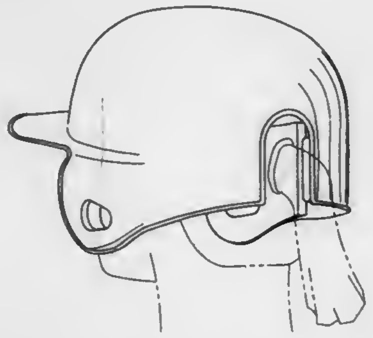
389,958

SPORT SAFETY HELMET

Roy Kinkead, 7 Cartwright Rd., Stony Point, N.Y. 10980

Filed Jun. 3, 1996, Ser. No. 55,244
Term of patent 14 years
LOC (6) Cl. 09 - *03*

U.S. Cl. D29—102



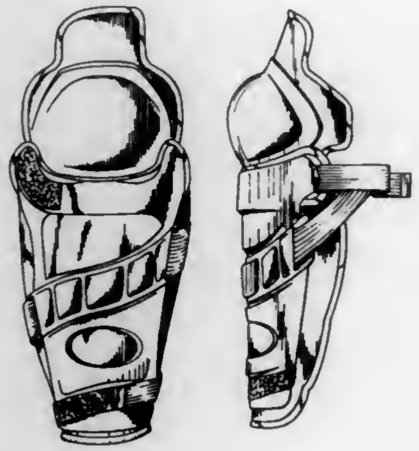
389,959

PROTECTIVE SHIN GUARDS

Gregory James Collins; Henry Alves, both of Toronto; Catherine Louise Ferris, Etobicoke; Daniel Thomas Rolfe, Gravenhurst, all of Canada; Anthony J. Bender, Grover, and Matthew S. McNamara, St. Louis, both of Mo., assignors to Rawlings Sporting Goods Company, Inc., St. Louis, Mo.

Filed Mar. 8, 1996, Ser. No. 51,861
Term of patent 14 years
LOC (6) Cl. 29 - *02*

U.S. Cl. D29—120



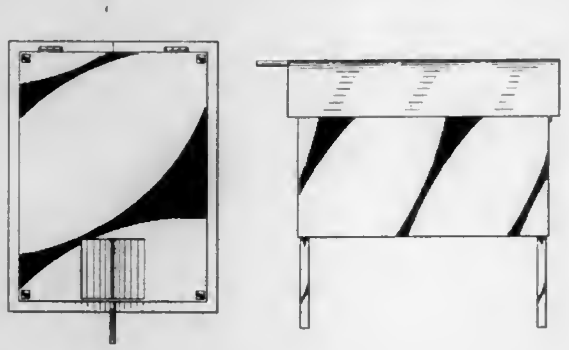
389,960

PET SHELTER

Peter C. Mele, P.O. Box 533, Crown Point, N.Y. 12928

Filed Jan. 23, 1996, Ser. No. 49,353
Term of patent 14 years
LOC (6) Cl. 30 - *02*

U.S. Cl. D30—108



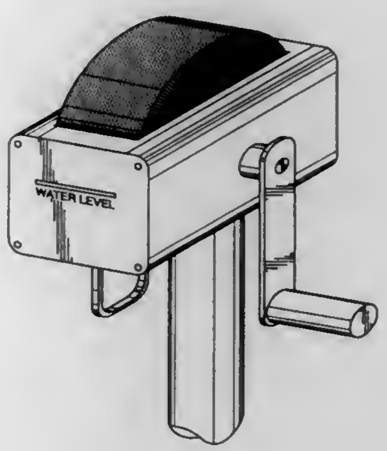
389,961

CLUB WASHER

Gary McBeath, 54 Empress Pl., Airdrie Alta, Canada, T4B 2H7, and Carey Snider, 165 Kriese Rd., Kelowna BC, Canada, V1X 5S7

Filed Nov. 16, 1995, Ser. No. 46,845
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—1



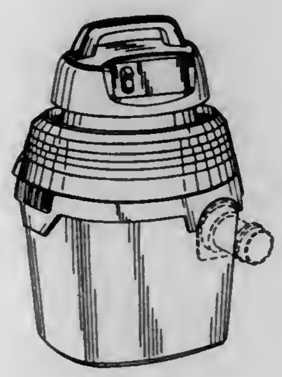
389,962

COMBINED WET AND DRY VACUUM CLEANER

Robert C. Berfield, Jersey Shore, Pa., and John Griffin, Phoenix, Ariz., assignors to Shop Vac Corporation, Williamsport, Pa.

Filed Aug. 14, 1996, Ser. No. 58,416
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—23



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389,963
FILTER FOR A WET/DRY VACUUM APPARATUS

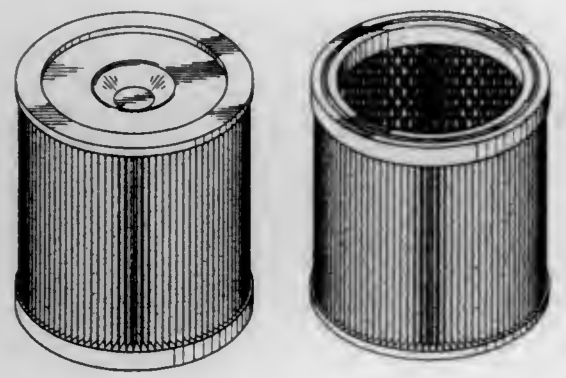
John J. Scanlon, Wilmington; Raymond M. Wnenchak, Newark, both of Del.; Richard W. Giannetta, Elkton, Md., and Jay J. Herring, Landenberg, Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 19, 1996, Ser. No. 58,587

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—31



389,964
MEDICAL WASTE SPILL KIT INCLUDING A WASTE SOLIDIFIER, A SURFACE DISINFECTANT AND A SCOOP

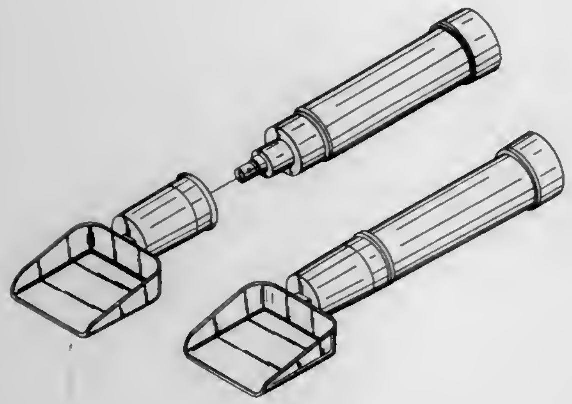
Jan J. Lewandowski, South Euclid; Nick A. Deeter, Fairview Park, and John A. Engelhardt, Bainbridge, all of Ohio, assignors to ViAtro, Corp., Cleveland, Ohio

Filed Dec. 20, 1996, Ser. No. 64,024

Term of patent 14 years

LOC (6) Cl. 08 - *99*

U.S. Cl. D32—35



389,965
LOTTO TICKET SCRATCH-OFF INSTRUMENT WITH BRISTLE END

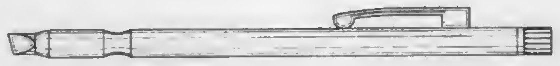
Gavin George Saladino, 156-20 88th St., Jamaica, N.Y. 11414

Filed Mar. 19, 1997, Ser. No. 68,049

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—42



389,966
GAME CARD SCRAPER

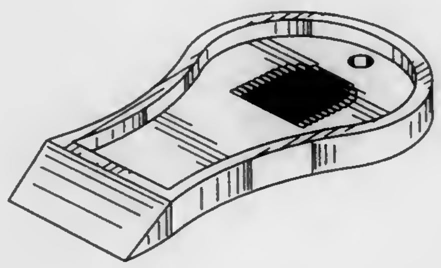
Thomas V. Melodia, 96 W. 3rd St., Deer Park, N.Y. 11729, and Girolamo DeLucia, 155 Tremont St., Westbury, N.Y. 11590

Filed Jan. 8, 1997, Ser. No. 64,681

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—46



389,967
IRON

Keith J. Hensel, North Sydney, and Richard L. Hoare, Neutral Bay, both of Australia, assignors to Sunbeam Products, Inc., Delray Beach, Fla.

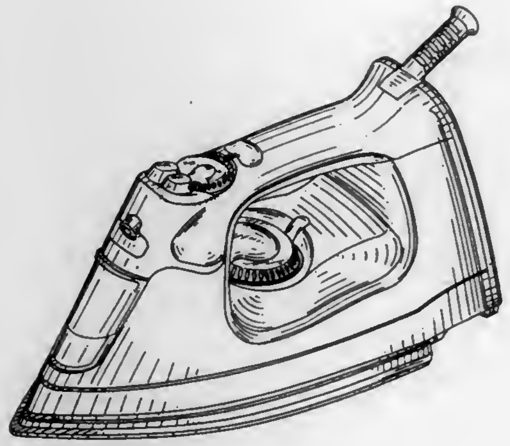
Filed Sep. 12, 1995, Ser. No. 43,780

The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—70



389,968
TRAVEL STEAM IRON

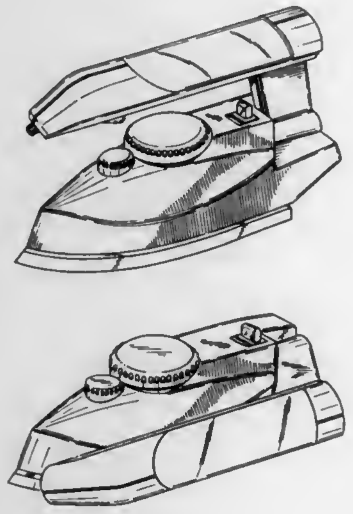
John C. K. Sham, Rm. 1508, Block C, 19 Broadwood Rd., Hong Kong, Hong Kong

Filed Sep. 26, 1995, Ser. No. 44,561

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—70



389,969
DRY IRON

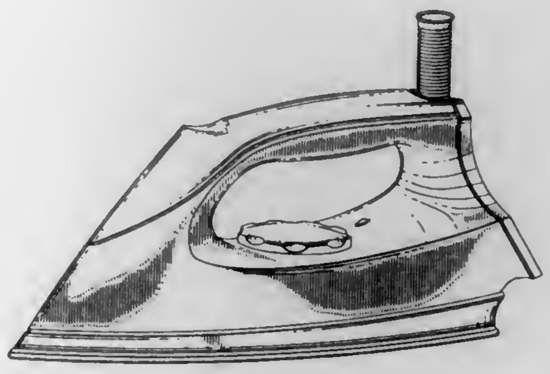
Mark D. Dziersk, Chicago, Ill., assignor to Sunbeam Products, Inc., Delray Beach, Fla.

Filed Dec. 4, 1996, Ser. No. 63,305

Term of patent 14 years

LOC (6) Cl. 07 - *05*

U.S. Cl. D32—70



389,970
REFUSE CONTAINER

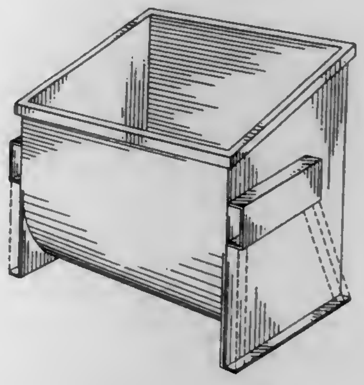
G. Kevin Darnell, Lakeland, Fla., assignor to Anthony Martorana, and Ross Allen Pedigo, both of Lakeland, Fla., a part interest to each

Filed Dec. 10, 1996, Ser. No. 63,559

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—1



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GARBAGE BAG FUNNEL

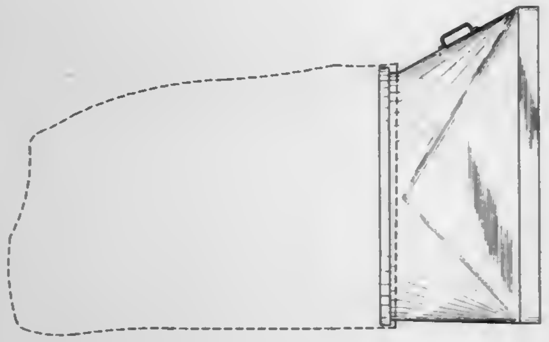
Craig Zickenberg, 5013 Wagon Wheel Way, Antioch, Calif. 94509

Filed Jan. 23, 1997, Ser. No. 65,195

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—5



389,972

WHEELBARROW

Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France

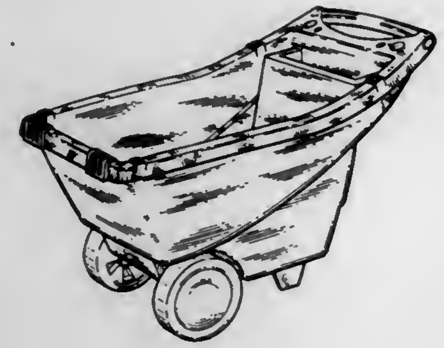
Filed Jul. 24, 1996, Ser. No. 57,415

Claims priority, application Hague Agreement, Jan. 26, 1996, DMA003978

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—16



389,973

PORTABLE CART ASSEMBLY

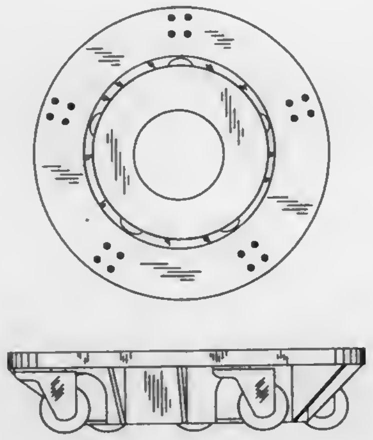
Edward Murray, 19375 Carolina Cir., Boca Raton, Fla. 33434

Filed Apr. 23, 1997, Ser. No. 69,004

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—23



389,974

JOHN BOAT AND CARRYING SYSTEM

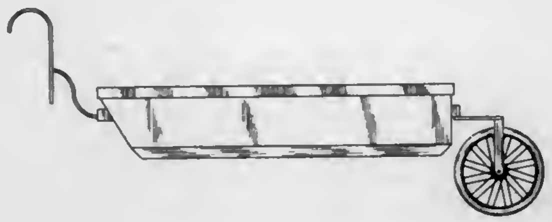
Gary L. Hammer, and Stacy L. Hammer, both of 646 Hassan St. S., Hutchinson, Minn. 55350

Filed Apr. 24, 1997, Ser. No. 69,787

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—25



389,975

DISK HANDLING WAND

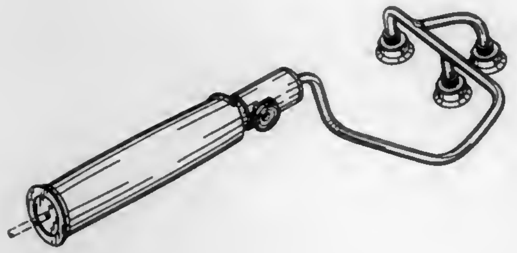
Scott Miller Andrews, 4580 Lake Country Highway, Calistoga, Calif. 94515, and Shyun Renn, 119 Mosswell Ct., San Jose, Calif. 95138

Filed Apr. 10, 1996, Ser. No. 52,853

Term of patent 14 years

LOC (6) Cl. 12 - *05*

U.S. Cl. D34—28



389,976

MORTAR CONVEYOR

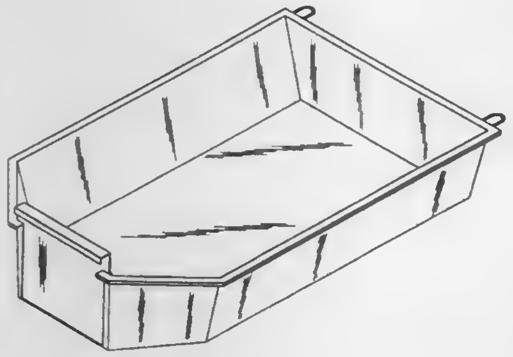
Charles R. Burgess, Sweetwater, Tenn., and Michael G. Williams, Yadkinville, N.C., assignors to Vestal Manufacturing Company, Sweetwater, Tenn.

Filed Nov. 12, 1996, Ser. No. 62,265

Term of patent 14 years

LOC (6) Cl. 12 - *05*

U.S. Cl. D34—28



389,977

CARRYING CART FOR PETROLEUM MEASURING AND PROVING CANS

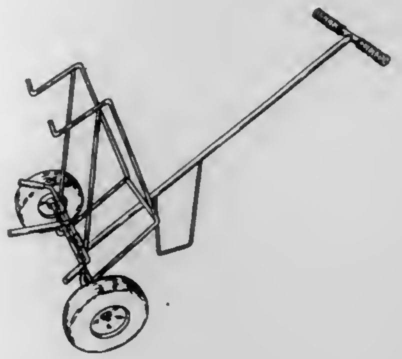
David Swogger, 1390 CR5, Corunna, Ind. 46730; James K. Deetz, 0219 CR2, Wolcottville, Ind. 46795, and Patrick A. Perkins, 10545 E. 1000N, Kendallville, Ind. 46755

Filed Nov. 5, 1996, Ser. No. 61,989

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—24



389,978

CLOSED BLOCK

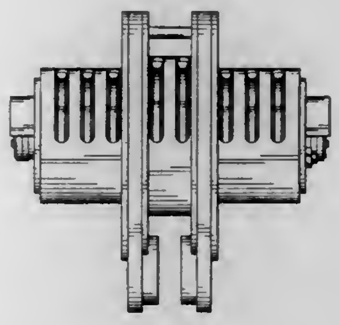
George W. Sondergeld, Jr., 860 Brauer Rd., Oxford, Mich. 48371

Filed Jan. 31, 1995, Ser. No. 34,294

Term of patent 14 years

LOC (6) Cl. 12 - *05*

U.S. Cl. D34—33



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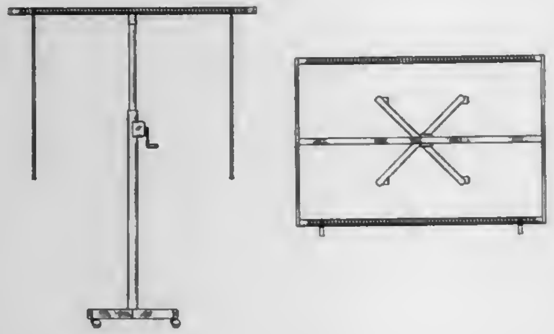
Patent Not Issued For This Number

389,980

SHEET ROCK HANDLING APPARATUS

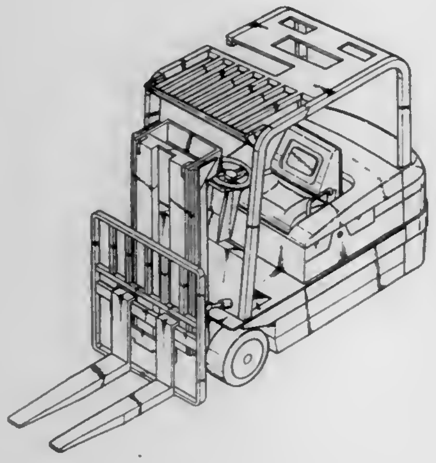
Ismael U. Friz, 4431 NW. 171 St., Carol City, Fla. 33055
Filed May 30, 1996, Ser. No. 55,153
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—34



389,981

FORKLIFT TRUCK

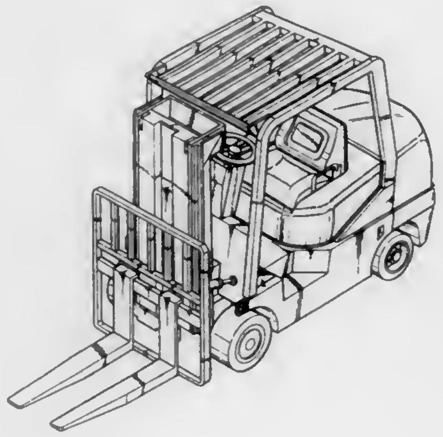
Mark Douglas Donaldson, Pittsburgh, Pa., assignor to Daewoo Heavy Industries, Incheon, Rep. of Korea, and Daewoo Equipment Corp., Warrensville Heights, Ohio
Filed Dec. 9, 1996, Ser. No. 63,476
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—34



389,982

FORKLIFT TRUCK

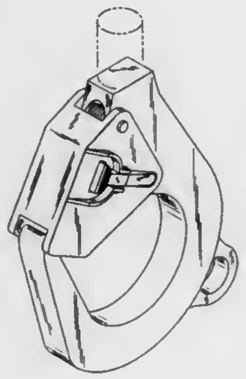
Henry Scott Kim, Cincinnati, Ohio, assignor to Daewoo Heavy Industries Ltd., Incheon, Rep. of Korea, and Daewoo Equipment Corporation, Warrensville Heights, Ohio
Filed Dec. 11, 1996, Ser. No. 63,608
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—34



389,983

LOCKING HOIST HOOK

Samuel G. Maness, 6423 Rubia Cir., Apollo Beach, Fla. 33572
Filed Feb. 19, 1997, Ser. No. 66,935
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—35



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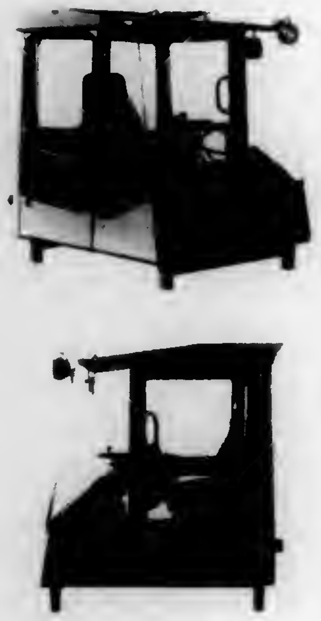
CABIN OF AN INDUSTRIAL TRUCK

Stefan Johansson, Ljungby, Sweden, assignor to Kalmer Last Masking Verkstad AB, Ljungby, Sweden
Filed Oct. 10, 1996, Ser. No. 60,923
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—37



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LIST OF PATENTEES

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  Adjei, Akwete L.; Lee, Dennis Y.; and Hlinak, Anthony J., 5,711,934, Cl. 424-45.000.
  Budt, Karl-Heinz; Stowasser, Bernd; Ruppert, Dieter; Meichsner, Christoph; Paessens, Arnold; Hansen, Jutta; and Knolle, Jochen, 5,712,417, Cl. 564-154.000.
  Lartey, Paul A.; Curty, Cynthia Burnell; Faghih, Ramin; Nellans, Hugh Nerby; and Petersen, Albert Christian, 5,712,253, Cl. 514-28.000.
  Leanna, M. Robert; Morton, Howard E.; and Allen, Michael S., 5,712,400, Cl. 548-202.000.
  Mukerji, Pradip; Prieto, Pedro Antonio; Seo, Amanda Eun-Yeong; Baxter, Jeffrey Harris; and Cummings, Richard Dale, 5,712,250, Cl. 514-12.000.
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Abernathy, Ronald N.: *See—*
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Abler, Joseph H., to Stainless Steel Fabricating, Inc. Cheese molding apparatus. 5,711,976, Cl. 426-36.000.
Abraham, William D.; Manka, John S.; Roby, Stephen H.; and Supp, James A., to Lubrizol Corporation, The. Additive compositions having reduced sulfur contents for lubricants and functional fluids. 5,712,230, Cl. 508-232.000.
Abt, Reinhold: *See—*
  Joerg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,711,396, Cl. 180-444.000.
Ace, Ronald. Microwave oven illumination. 5,712,468, Cl. 219-758.000.
ACT Communications, Inc.: *See—*
  Glaser, James Albert; Glaser, Ronald William; and Britton, James Everett, 5,712,755, Cl. 361-119.000.
Adachi, Hidehiko; and Yonejima, Kunihiko, to Ushiodenki Kabushiki Kaisha. Light irradiator. 5,712,487, Cl. 250-492.100.
Adachi, Toshiya, to Mitsubishi Denki Kabushiki Kaisha. Apparatus and method for adjusting contrast of R,G,B signals. 5,712,659, Cl. 345-150.000.
Adam, Gérard: *See—*
  Robert, Jean-Michel; Rideau, Odile; Robert-Piessard, Sylvie; Courant, Jacqueline; Le Baut, Guillaume; Caignard, Daniel-Henri; Renard, Pierre; and Adam, Gérard, 5,712,294, Cl. 514-336.000.
Adam, Randall E.; and Preston, Leonard A., to Minnesota Mining & Manufacturing. Method and apparatus for bonding orthodontic brackets to teeth. 5,711,665, Cl. 433-9.000.
Adams, Brian M.; Green, Adam; and Watts, Jack L., to Portola Packaging, Inc. One-piece fitment having reclosure cap. 5,711,441, Cl. 215-48.000.
Adams, Thomas F. Writing instrument holding clip for retractable tape. 5,711,085, Cl. 33-768.000.
Adams, Thomas F. Auxiliary towel rack. 5,711,434, Cl. 211-86.000.
Adamson, Ronald B.; and Cheng, Bo-Ching, to General Electric Co. Alloy for improved hydriding resistance and corrosion resistance nuclear reactor components. 5,712,888, Cl. 376-416.000.
Addison, Michael Crombie; Jones, Lynda Anne; and Knox, Rhona Alexandra, to Proctor & Gamble Company. Rinse aid compositions comprising non-nitrogen-containing organs diphosphonic acid, salt or complex thereof. 5,712,244, Cl. 510-514.000.
ADE Optical Systems Corporation: *See—*
  Clementi, Lee D.; and Fossey, Michael E., 5,712,701, Cl. 356-237.000.
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Adjei, Akwete L.; Lee, Dennis Y.; and Hlinak, Anthony J., to Abbott Laboratories. Process for the continuous milling of aerosol pharmaceutical formulations in aerosol propellants. 5,711,934, Cl. 424-45.000.
Adkinson, Brian L.: *See—*
  Schulz, William J.; and Adkinson, Brian L., 5,711,077, Cl. 30-160.000.
Adney, William S.; Thomas, Steven R.; Baker, John O.; Himmel, Michael E.; and Chou, Yat-Chen, to Midwest Research Institute. Method for increasing thermostability in cellulase ennzymes. 5,712,142, Cl. 435-209.000.
Adolf Hottinger Maschinenbau GmbH: *See—*
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Adtran, Inc.: *See—*
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  Bui, Nguyen Duc; and Wollesen, Donald L., 5,712,510, Cl. 257-758.000.
  Grossman, Leonid; Lee, Sherman; and Vepa, Ramkrishna, 5,712,967, Cl. 395-182.010.
  Ibok, Effiong E., 5,712,196, Cl. 437-200.000.
  Liu, Yowjuang W.; Qian, Feng; and Lai, Tze-Kwai Kelvin, 5,712,173, Cl. 437-24.000.
  Tran, Thang M., 5,713,039, Cl. 395-800.000.
Advanced Mobility Systems Corporation: *See—*
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Advanced Technolgy Materials, Inc.: *See—*
  Kirlin, Peter S.; Binder, Robin L.; Gardiner, Robin A.; Van Buskirk, Peter; Stauf, Gregory; and Zhang, Jiming, 5,711,816, Cl. 118-726.000.
Advantest Corporation: *See—*
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Aerobic Funding One, LLC: *See—*
  Miller, Kenneth, 5,711,749, Cl. 482-135.000.
Aerospatiale Societe Nationale Industrielle: *See—*
  Lecomte, Pierre; and Coquin, Laurent, 5,713,007, Cl. 395-500.000.
AESOP, Inc.: *See—*
  Slocum, Alexander H., 5,711,647, Cl. 414-749.000.
Afek, Yachin; Itkin, Yuval; and Kashat, Israel, to Motorola Inc. Apparatus and method for performing adaptive power regulation for an integrated circuit. 5,712,589, Cl. 327-538.000.
Afflerbaugh, Richard L., to Baxter International Inc. Peristaltic pump with rotor position sensing employing a reflective object sensor. 5,711,654, Cl. 417-63.000.
Afonso, Adriano: *See—*

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- Doll, Ronald J.; Mallams, Alan K.; Afonso, Adriano; Rane, Dinanath F.; Rossman, Randall R.; and Njoroge, F. George, 5,712,280, Cl. 514-253.000.
- AGA Aktiebolag: *See—*
  - Hammarlund, Nils, 5,711,292, Cl. 128-200.210.
- Agapiou, Agapios Kyriacos: *See—*
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- Agar, Bill Tabano, Jr.: *See—*
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- AGFA-Gevaert, N.V.: *See—*
  - Andriessen, Hieronymus; and Henderickx, Freddy, 5,712,081, Cl. 430-440.000.
  - Coppens, Paul; Van Der Linden, Bartholomeus; and De Keyzer, René, 5,712,076, Cl. 430-204.000.
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- Aguilar, Stanley C.: *See—*
  - Ciardella, Robert L.; Maiorca, Philip P.; Babiarz, Alec J.; La, Duong; Bouras, Carlos E.; Meier, Mark S.; Christofferson, John L.; Abernathy, Ronald N.; Aguilar, Stanley C.; and Smith, James C., 5,711,989, Cl. 427-96.000.
- Ahern, Michael D., to Harbridge, Inc. Weld wire recovery system. 5,711,640, Cl. 406-117.000.
- Ahlstrom Machinery Corporation: *See—*
  - Toukonummi, Olavi, 5,711,600, Cl. 366-171.100.
- Ahn, Chang Nam; and Kim, Young Sik, to Hyundai Electronics Industries Co., Ltd. Phase shift mask comprising light shielding regions having a multiple box structure. 5,712,063, Cl. 430-5.000.
- Ahn, Che Hong: *See—*
  - Youn, Myoung Joong; Moon, Gun Woo; Jung, Young Seok; Roh, Chung Wook; and Ahn, Che Hong, 5,712,780, Cl. 363-131.000.
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  - Teraoka, Masao; Ishikawa, Osamu; Aiba, Satoshi; and Hiraishi, Kenji, 5,711,737, Cl. 475-160.000.
- Aida Engineering Ltd.: *See—*
  - Komatsu, Isamu, 5,711,176, Cl. 72-336.000.
- Air Liquide Process & Construction: *See—*
  - Ha, Bao; and Turney, Michael A., 5,711,167, Cl. 62-652.000.
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  - Kogita, Hidekazu; Nishikawa, Masumi; and Okada, Shoji, 5,712,736, Cl. 359-841.000.
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  - Sanbonmatsu, Tohru; Mizutani, Masataka; Tanaka, Nobuyuki; Takamata, Akira; Teranisi, Shuniti; and Sawaki, Atsushi, 5,711,645, Cl. 411-270.000.
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  - Tozu, Kenji; Yamazaki, Norio; Mihara, Jun; Itoh, Takayuki; Nishizawa, Yoshiharu; Kojima, Seiichi; and Kuromitsu, Hiromu, 5,711,585, Cl. 303-146.000.
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- Akiyama, Jun, to Sharp Kabushiki Kaisha. Track jump device and information recording medium driving apparatus. 5,712,835, Cl. 369-32.000.
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  - Jordan, Roland, 5,712,017, Cl. 428-113.000.
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- Alexander, Stephen B.; and Mizrahi, Victor, to CIENA Corporation. Dynamically reconfigurable WDM optical communication systems with optical routing systems. 5,712,932, Cl. 385-24.000.
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- Ali, Mahfuza B.; Farooq, Omar; Iqbal, Mohammed; and Miller, Alan G., to Minnesota Mining and Manufacturing Company. Ink-receptive sheet. 5,712,027, Cl. 428-212.000.
- Alicea, Carlos, to Macro Technology International, Inc. Self mailing apparatus. 5,711,846, Cl. 156-556.000.
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- AlliedSignal Europe Services Techniques: *See—*
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- Khosla, Chaitan; Hopwood, David A.; Ebert-Khosla, Suzanne; McDaniel, Robert; Fu, Hong; and Kao, Camilla, to Leland Stanford Junior University, The. Recombinant combinatorial genetic library for the production of novel polyketides. 5,712,146, Cl. 435-252.350.
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- Strawcutter, Grant M.; Dunn, James O., Jr.; and Brooks, Jonathan E., to Soft Play, L.L.C. Helical tube recreational component. 5,711,744, Cl. 482-35.000.
- Street, Graham Stewart Brandon. Autostereoscopic image display adjustable for observer location and distance. 5,712,732, Cl. 359-630.000.
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- Stutz, Peter; Müller, Martin; and Flückiger, Andre, to Ascom Hasler Mailing Systems AG. Postage meter with improved handling of power failure. 5,712,542, Cl. 318-66.000.
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- Hitachi, Ltd.: *See—*
  - Nii, Katsutoshi; Kawaike, Kazuhiko; Hiroyama, Hiroo; and Uno, Satoshi, RE. 35,718, Cl. 384-133.000.
- Kawaike, Kazuhiko: *See—*
  - Nii, Katsutoshi; Kawaike, Kazuhiko; Hiroyama, Hiroo; and Uno, Satoshi, RE. 35,718, Cl. 384-133.000.
- Nii, Katsutoshi; Kawaike, Kazuhiko; Hiroyama, Hiroo; and Uno, Satoshi, to Hitachi, Ltd. Bearing apparatus. RE. 35,718, Cl. 384-133.000.
- Uno, Satoshi: *See—*
  - Nii, Katsutoshi; Kawaike, Kazuhiko; Hiroyama, Hiroo; and Uno, Satoshi, RE. 35,718, Cl. 384-133.000.

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- Goodman, Howard M.; Shine, John; and Seeburg, Peter H., to University of California, The Regents of the. Recombinant DNA transfer vectors. B1 363,877, Cl. 435-320.100.
- Kit, Malon; and Kit, Saul, to Novagene, Inc. Vaccines for pseudorabies disease and methods for use of same. B1 609,548, Cl. 424-205.100.
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- Novagene, Inc.: *See—*
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Yamazaki, Kazuhiko, to International Business Machines Corporation. Docking station for a portable computer. 389,819, Cl. D14-107.000.
Yan, San Jhy. Lamp shade. 389,951, Cl. D26-134.000.
Yeh, John. Combination floor lamp and accessories. 389,933, Cl. D26-59.000.
Yeh, John. Multipurpose tree lamp. 389,934, Cl. D26-65.000.
Yoda, Hiroyuki, to Seiko Epson Corporation. Personal computer. 389,812, Cl. D14-100.000.
Yokoyama, Kazuhiko: *See*—
  Komatsu, Akihiro; and Yokoyama, Kazuhiko, 389,780, Cl. D12-7.000.
Yonge, Christopher F.: *See*—
  Montague, Edgar B., III; Smith, Robin E.; and Yonge, Christopher F., 389,905, Cl. D23-332.000.
Yorkey, David, to Brinks Home Security, Inc. Security system control panel. 389,762, Cl. D10-104.000.
Yoshimoto, Max: *See*—
  Wong, Gil Y.; Yoshimoto, Max; Behar, Yves; and Lee, Peter, 389,811, Cl. D14-100.000.
Young, Scot, to Scot Young Research, Inc. Safety sign. 389,871, Cl. D20-41.000.
Yousko, Sundi Jodon; Stucky, Douglas L.; and May, Gregory, to Coleman Company, Inc., The. Hip huggable cooler. 389,704, Cl. D7-607.000.
Zeigle, Michael L.; Terzaghi, Andre; and Wilcox, Weston M. Road bicycle frame with unified rear triangle. 389,787, Cl. D12-111.000.
Zemel, Marc, to Mr. Bar-B-Q-, Inc. Handle. 389,721, Cl. D8-300.000.
Zenith Products Corporation: *See*—
  Newkirk, John Robert; and Winter, Paul Henry, 389,668, Cl. D6-441.000.
Zickenberg, Craig. Garbage bag funnel. 389,971, Cl. D34-5.000.

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LIST OF PLANT PATENTEES

Cleangro Ltd.: *See—*
  Wain, Peter, 10,212, Cl. Plt.-76.000.
  Wain, Peter, 10,213, Cl. Plt.-76.000.
  Wain, Peter, 10,214, Cl. Plt.-77.000.
  Wain, Peter, 10,217, Cl. Plt.-82.000.

Mak, Johan A. Lily plant 'Alma Ata'. 10,220, Cl. Plt.-87.400.

Pieters, Dirk. Chrysanthemum plant named 'Alcala'. 10,211, Cl. Plt.-74.100.

Pieters, Dirk. Chrysanthemum plant named 'Dark Veria'. 10,215, Cl. Plt.-78.000.

Pieters, Dirk. Chrysanthemum plant named 'Aldo'. 10,216, Cl. Plt.-79.000.

Pieters, Dirk. Chrysanthemum plant named 'Pidoul'. 10,218, Cl. Plt.-82.100.

Pieters, Dirk. Chrysanthemum plant named 'Cobra'. 10,219, Cl. Plt.-82.300.

Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Blue Jay'. 10,212, Cl. Plt.-76.000.

Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Jenny Wren'. 10,213, Cl. Plt.-76.000.

Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Egret'. 10,214, Cl. Plt.-77.000.

Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Red Start'. 10,217, Cl. Plt.-82.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 27, 1998

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

9	5,711,026
21	5,711,027
22	5,711,028
24	5,711,029
60	5,711,030
82	5,711,031
158	5,711,032
171.3	5,711,033
406	5,711,034
436	5,711,035
452	5,711,036

CLASS 4

301	5,711,037
317	5,711,038
344	5,711,039

CLASS 5

81.1 T	5,711,044
99.1	5,711,040
109	5,711,045
708	5,711,041

CLASS 7

138	5,711,042
165	5,711,043

CLASS 8

110	5,711,764
426	5,711,765

CLASS 15

104.2	5,711,046
230.11	5,711,047
250.454	5,711,049
302	5,711,050
321	5,711,051
347	5,711,048

CLASS 16

364	5,711,052
380	5,711,053
382	5,711,054

CLASS 24

16 R	5,711,055
69 J	5,711,056
499	5,711,057

CLASS 29

25.35	5,711,058
423	5,711,059
516	5,711,061
527.2	5,711,062
603.06	5,711,063
	5,711,064
740	5,711,065
855	5,711,066
874	5,711,067
889.1	5,711,068
890.03	5,711,069
890.046	5,711,071
895.32	5,711,072
897.2	5,711,073
898.066	5,711,074

CLASS 30

28	5,711,075
41	5,711,076
160	5,711,077
228	5,711,078
342	5,711,079

CLASS 33

292	5,711,080
409	5,711,081
528	5,711,082
543	5,711,083
706	5,711,084
768	5,711,085

CLASS 34

77	5,711,086
114	5,711,087
	5,711,088
267	5,711,089
606	5,711,091

CLASS 36

72 R	5,711,092
77 R	5,711,093
127	5,711,094

CLASS 37

410	5,711,095
443	5,711,096

CLASS 38

21	5,711,097
102.9	5,711,098

CLASS 40

406	5,711,099
592	5,711,100
750	5,711,101

CLASS 42

71.01	5,711,102
94	5,711,103
100	5,711,104

CLASS 43

44.98	5,711,105

CLASS 44

423	5,711,767
530	5,711,766
552	5,711,768
620	5,711,769

CLASS 47

25	5,711,106
45	5,711,107
58	5,711,108
	5,711,109

CLASS 48

197 R	5,711,770
	5,711,771

CLASS 49

35	5,711,110
42	5,711,111
118	5,711,112
206	5,711,113

CLASS 51

295	5,711,772
306	5,711,773
307	5,711,774

CLASS 52

24	5,711,114
36.3	5,711,115
58	5,711,116
94	5,711,117
177	5,711,118
208	5,711,119
212	5,711,120
239	5,711,121
283	5,711,122
287.1	5,711,123
417	5,711,124
457	5,711,125
519	5,711,126
530	5,711,127
579	5,711,128
604	5,711,129
	5,711,130
656.9	5,711,131
704	5,711,132

CLASS 53

117	5,711,134
399	5,711,135
434	5,711,136
534	5,711,137
571	5,711,138

CLASS 55

273	5,711,775
325	5,711,776

CLASS 56

10.2 R	5,711,139
208	5,711,140
255	5,711,141

CLASS 57

1 R	5,711,142
215	5,711,143

CLASS 59

78.1	5,711,144

CLASS 60

39.281	5,711,145
218	5,711,146
274	5,711,147
276	5,711,148
278	5,711,149
407	5,711,150
545	5,711,151
547.1	5,711,152
583	5,711,153
605.2	5,711,154

CLASS 62

3.7	5,711,155
6	5,711,156
	5,711,157
77	5,711,158
82	5,711,159
125	5,711,160
197	5,711,161
302	5,711,162
324.6	5,711,163
457.9	5,711,164
474	5,711,165
650	5,711,166
652	5,711,167

CLASS 65

26	5,711,777
117	5,711,778
134.1	5,711,779
286	5,711,780
385	5,711,781
390	5,711,782

CLASS 66

189	5,711,168
196	5,711,169

CLASS 68

3 R	5,711,170
4	5,711,171

CLASS 70

208	5,711,506

CLASS 72

61	5,711,173
83	5,711,174
202	5,711,175
336	5,711,176
342.1	5,711,177
352	5,711,178
361	5,711,179
381	5,711,180
389.4	5,711,181
409.14	5,711,182
451	5,711,183

CLASS 73

1.72	5,712,420
19.01	5,712,421
23.32	5,712,422
115	5,712,424
118.2	5,712,425
504.03	5,712,426
504.04	5,712,427
708	5,712,428
732	5,712,429
831	5,712,430
841	5,712,431
862.631	5,712,432
863.03	5,712,433
865.9	5,712,434

CLASS 74

89.15	5,711,184
89.21	5,711,185
331	5,711,186
434	5,711,187
459	5,711,188
493	5,711,189
573 R	5,711,190
574	5,711,191
827	5,711,192

CLASS 75

230	5,712,435
362	5,711,783
712	5,711,784

CLASS 81

63.1	5,711,193
440	5,711,194

CLASS 82

1.11	5,711,195
	5,711,196
113	5,711,197
122	5,711,198

CLASS 83

23	5,711,199
170	5,711,200
856	5,711,201

CLASS 84

610	5,712,436
	5,712,437
622	5,712,438
661	5,712,439

CLASS 86

20.15	5,712,440

CLASS 89

1.13	5,712,441
8	5,712,442
127	5,712,443

CLASS 91

367	5,711,202
376 R	5,711,203
	5,711,204

CLASS 92

155	5,711,205
208	5,711,206

CLASS 95

15	5,711,785
82	5,711,786
96	5,711,787

CLASS 96

3	5,711,788
216	5,711,789

CLASS 99

307	5,711,207
323.5	5,711,208
339	5,711,209
340	5,711,210
467	5,711,211
489	5,711,212
571	5,711,213

CLASS 100

48	5,711,214
211	5,711,215

CLASS 101

40.1	5,711,216
123	5,711,217
128.4	5,711,218
142	5,711,219
246	5,711,220
375	5,711,221
383	5,711,222
389.1	5,711,223
415.1	5,711,224
483	5,711,225
488	5,711,226

CLASS 102

202	5,712,444
288	5,712,445
348	5,712,446

CLASS 104

126	5,711,227

CLASS 105

154	5,711,228

CLASS 106

31.01	5,711,790
31.35	5,711,791
38.22	5,711,792
169.12	5,711,793
244	5,711,794
271	5,711,795
281.1	5,711,796
287.14	5,711,797
417	5,711,798
465	5,711,799
498	5,711,800
789	5,711,801
792	5,711,802

CLASS 108

67	5,711,229
186	5,711,230

CLASS 109

2	5,711,231

CLASS 110

165 R	5,711,233
212	5,711,232
245	5,711,234
257	5,711,235

CLASS 112

117	5,711,236
220	5,711,237
255	5,711,238

CLASS 114

20.1	5,712,447
56	5,711,239
61	5,711,240
77	5,711,248
145 A	5,711,241
230	5,711,242
	5,711,243
312	5,711,244

CLASS 116

28 R	5,711,245

CLASS 117

4	5,711,803
	5,711,804

CLASS 118

5	5,711,808
13	5,711,805
407	5,711,806
413	5,711,807
663	5,711,809
711	5,711,811
722	5,711,810
723 E	5,711,812
	5,711,814
723 VE	5,711,813
725	5,711,815
726	5,711,816

CLASS 119

51.02	5,711,246
57.8	5,711,247
174	5,711,249
259	5,711,250
670	5,711,251
673	5,711,252
706	5,711,253
710	5,711,254
793	5,711,255

CLASS 122

13.1	5,711,256
32	5,711,257

CLASS 123

41.29	5,711,258
90.11	5,711,259
90.39	5,711,260
142.5 R	5,711,262
179.9	5,711,263
182.1	5,711,264
184.35	5,711,261
190.2	5,711,265
193.5	5,711,266
197.4	5,711,267
243	5,711,268
262	5,711,269
304	5,711,270
339.24	5,711,271
418	5,711,272
446	5,711,273
456	5,711,274
458	5,711,275
495	5,711,276
496	5,711,277
501	5,711,278
506	5,711,279
	5,711,280
531	5,711,281
549	5,711,282
637	5,711,283

CLASS 124

49	5,711,284
67	5,711,285
73	5,711,286

CLASS 125

16.01	5,711,287

CLASS 126

37 R	5,711,288
284	5,711,289
390	5,711,290

CLASS 127

37	5,711,817

CLASS 128

200.21	5,711,292
200.24	5,711,293
202.27	5,711,294
202.28	5,711,295
205.13	5,711,296
630	5,711,297
642	5,711,298
653.1	5,711,299
653.2	5,711,300
	5,711,301
667	5,711,291
672	5,711,302
687	5,711,303
696	5,711,304
697	5,711,305
730	5,711,306
733	5,711,307
746	5,711,308
760	5,711,309
	5,711,310
845	5,711,312
864	5,711,313
885	5,711,314
898	5,711,315
	5,711,316
	5,711,317

CLASS 131

84.1	5,711,318
291	5,711,319
305	5,711,320
341	5,711,322

CLASS 132

232	5,711,323
252	5,711,324

CLASS 134

6	5,711,818
11	5,711,819
12	5,711,820
21	5,711,821
27	5,711,822
42	5,711,823
104.1	5,711,325
104.4	5,711,326
105	5,711,327
111	5,711,328
115 R	5,711,329
133	5,711,330

CLASS 135

16	5,711,331
20.3	5,711,332
	5,711,333
65	5,711,334
77	5,711,335
87	5,711,336
121	5,711,337

CLASS 136

203	5,712,448
259	5,711,824

CLASS 137

8	5,711,338
43	5,711,339
68.19	5,711,340
454.6	5,711,341
486	5,711,342
512.1	5,711,343
596.17	5,711,344
625.23	5,711,345

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625.44	5,711,346
625.65	5,711,347
875	5,711,348
876	5,711,349

CLASS 138

45	5,711,350
97	5,711,351

CLASS 139

455	5,711,352

CLASS 141

67	5,711,353
198	5,711,354
382	5,711,355

CLASS 144

144.51	5,711,356
195.1	5,711,357
367	5,711,358

CLASS 148

111	5,711,825
519	5,711,826
552	5,711,827

CLASS 152

209 R	5,711,828
	5,711,829
540	5,711,830

CLASS 156

64	5,711,831
73.1	5,711,832
89	5,711,833
153	5,711,834
154	5,711,835
215	5,711,836
	5,711,837
272.8	5,711,838
277	5,711,839
291	5,711,840
308.4	5,711,841
332	5,711,842
345	5,711,843
477.1	5,711,845
536	5,711,846
580.2	5,711,847
627.1	5,711,848
643.1	5,711,849
	5,711,850
	5,711,851

CLASS 160

168.1 R	5,711,359
310	5,711,360

CLASS 162

57	5,711,852
143	5,711,853
358.3	5,711,854

CLASS 164

21	5,711,361
97	5,711,362
113	5,711,363
	5,711,364
165	5,711,365
312	5,711,366
432	5,711,367

CLASS 165

42	5,711,368
79	5,711,369
178	5,711,370

CLASS 166

106	5,711,371
187	5,711,372
252.2	5,711,373
265	5,711,374
285	5,711,375
308	5,711,376

CLASS 168

14	5,711,377

CLASS 172

730	5,711,378

CLASS 173

48	5,711,379
	5,711,380

CLASS 174

35 GC	5,712,449
66	5,712,450

CLASS 175

45	5,711,381
52	5,711,382
72	5,711,383
203	5,711,384
257	5,711,385
325.3	5,711,386

CLASS 177

210 C	5,712,451

CLASS 180

68.1	5,711,387
168	5,711,388
197	5,711,389
219	5,711,390
273	5,711,391
287	5,711,392
385	5,711,393
422	5,711,394
441	5,711,395
444	5,711,396

CLASS 181

0.5	5,712,452
135	5,712,453
226	5,712,454
238	5,712,455

CLASS 182

3	5,711,397
45	5,711,398
93	5,711,399
119	5,711,400
129	5,711,401

CLASS 184

106	5,711,402

CLASS 187

290	5,712,456
296	5,712,457
317	5,712,458

CLASS 188

77 W	5,711,403
164	5,711,404

CLASS 192

26	5,711,405
70.17	5,711,406
85 R	5,711,408
87.11	5,711,409
201	5,711,407

CLASS 196

14.52	5,711,856

CLASS 198

460.1	5,711,410
470.1	5,711,411
732	5,711,412
860.3	5,711,413

CLASS 200

5 R	5,712,459
86.5	5,712,460
524	5,711,414
570	5,711,415

CLASS 202

235	5,711,857

CLASS 204

157.15	5,712,461
179	5,711,859
192.11	5,711,860
192.15	5,711,858
403	5,711,861
	5,711,862
428	5,711,863

CLASS 205

628	5,711,865
687	5,711,866
688	5,711,867
782.5	5,711,868

CLASS 206

5.1	5,711,416
6	5,711,417
63.5	5,711,418
148	5,711,419
222	5,711,420
223	5,711,421
232	5,711,422
246	5,711,423
316.2	5,711,424
570	5,711,425
586	5,711,426
710	5,711,427
738	5,711,428

CLASS 208

121	5,711,869
131	5,711,870

CLASS 210

86	5,711,871
130	5,711,872
175	5,711,873
223	5,711,874
232	5,711,875
436	5,711,876
488	5,711,877
490	5,711,878
497.01	5,711,879
498	5,711,880
500.21	5,711,881
640	5,711,882
646	5,711,883
650	5,711,884
747	5,711,886
748	5,711,887
	5,711,888

CLASS 211

41.14	5,711,429
45	5,711,430
	5,711,431
57.1	5,711,432
71	5,711,433
86	5,711,434
90	5,711,435
94.5	5,711,436
119.01	5,711,437
149	5,711,438

CLASS 212

275	5,711,439
278	5,711,440

CLASS 215

48	5,711,441
209	5,711,442
256	5,711,443

CLASS 216

5	5,711,889
24	5,711,890
51	5,711,891

CLASS 219

117.1	5,712,462
121.6	5,712,463
411	5,712,464
438	5,712,465
450	5,712,466
497	5,712,467
758	5,712,468
765	5,712,469

CLASS 220

6	5,711,444
8	5,711,445
23.83	5,711,446
254	5,711,447
269	5,711,448
293	5,711,449
319	5,711,450
636	5,711,451
715	5,711,452

CLASS 222

83	5,711,453
95	5,711,454
103	5,711,455
108	5,711,456
136	5,711,457
144	5,711,458
318	5,711,459
380	5,711,460
383.1	5,711,461
385	5,711,462
456	5,711,463

CLASS 223

94	5,711,464

CLASS 224

148.6	5,711,465
159	5,711,466
248	5,711,467
251	5,711,468
675	5,711,469

CLASS 226

4	5,711,470

CLASS 227

113	5,711,471
175.1	5,711,472

CLASS 228

180.1	5,711,473
212	5,711,474

CLASS 229

3.1	5,711,475
125.08	5,711,476
136	5,711,477
195	5,711,478
218	5,711,479

CLASS 235

462	5,712,470
486	5,712,472
492	5,712,471
494	5,712,473

CLASS 236

51	5,711,480

CLASS 239

2.1	5,711,481
11	5,711,482
71	5,711,483
104	5,711,484
105	5,711,485
205	5,711,486
284.1	5,711,487
333	5,711,488
697	5,711,489
745	5,711,490

CLASS 241

95	5,711,491
220	5,711,492

CLASS 242

588.5	5,711,493

CLASS 244

12.1	5,711,494
137.2	5,711,495
214	5,711,496

CLASS 246

34 B	5,711,497

CLASS 248

97	5,711,498
	5,711,499
102	5,711,500
205.9	5,711,501
302	5,711,502
311.2	5,711,503
354.3	5,711,504
424	5,711,505

CLASS 249

105	5,711,892
112	5,711,172

CLASS 250

208.1	5,712,474
214 DC	5,712,475
214 R	5,712,476
221	5,712,477
231.13	5,712,478
282	5,712,479
287	5,712,480
339.12	5,712,481
363.08	5,712,482
367	5,712,483
370.15	5,712,484
474.1	5,712,485
484.4	5,712,486
492.1	5,712,487
492.23	5,712,488
559.43	5,712,489

CLASS 251

129.04	5,711,507
149.6	5,711,508
175	5,711,509
214	5,711,510
293	5,711,511

CLASS 252

62.62	5,711,893
68	5,711,895
	5,711,896
76	5,711,894
77	5,711,897
301.65	5,711,898
311	5,711,899
408.1	5,711,900

CLASS 254

2 B	5,711,512

CLASS 257

11	5,712,490
26	5,712,491
48	5,712,492
51	5,712,495
59	5,712,493
	5,712,494
64	5,712,496
218	5,712,497
256	5,712,498
292	5,712,499
315	5,712,500
335	5,712,501
341	5,712,502
345	5,712,503
452	5,712,504
565	5,712,505
633	5,712,506
666	5,712,507
754	5,712,508
758	5,712,509
	5,712,510

CLASS 261

35	5,711,901
91	5,711,902

CLASS 264

1.21	5,711,903
3.4	5,712,511
40.7	5,711,904
51	5,711,905
63	5,711,906
138	5,711,907
232	5,711,908
320	5,711,909
328.16	5,711,910
401	5,711,911
428	5,711,912
532	5,711,913

CLASS 267

140.12	5,711,513
221	5,711,514

CLASS 269

276	5,711,515

CLASS 271

3.14	5,711,516
4.01	5,711,517
10.03	5,711,518
116	5,711,519
222	5,711,520
225	5,711,521

CLASS 273

129 S	5,711,522
153 R	5,711,523
157 R	5,711,524
292	5,711,525
303	5,711,526
317.1	5,711,527
371	5,711,528
441	5,711,529
448	5,711,530

CLASS 277

12	5,711,531
38	5,711,532
105	5,711,533
134	5,711,534
182	5,711,535
207 A	5,711,536
235 B	5,711,537

CLASS 279

2.08	5,711,538

CLASS 280

11.27	5,711,539
33.998	5,711,540
455.1	5,711,541
491.4	5,711,542
504	5,711,543
688	5,711,544
728.3	5,711,545
736	5,711,546
737	5,711,547

CLASS 283

67	5,711,548

CLASS 285

93	5,711,549
101	5,711,550
136.1	5,711,551
319	5,711,552
	5,711,553

CLASS 292

19	5,711,554
202	5,711,555
251.5	5,711,556
288	5,711,557
335	5,711,558
340	5,711,559
343	5,711,560

CLASS 293

116	5,711,561
120	5,711,562

CLASS 294

1.1	5,711,563
1.3	5,711,564
88	5,711,565

CLASS 296

26	5,711,566
37.16	5,711,568
37.8	5,711,567
57.1	5,711,569
97.13	5,711,571
97.8	5,711,570

CLASS 297

140	5,711,572
199	5,711,573
216.11	5,711,574
284.6	5,711,575
353	5,711,576
361.1	5,711,577
410	5,711,579
423.3	5,711,578
423.33	5,711,580

CLASS 301

35.62	5,711,581

CLASS 303

11	5,711,582
119.2	5,711,583
122.12	5,711,584
146	5,711,585

CLASS 305

201	5,711,586

CLASS 307

10.2	5,712,512
69	5,712,514
126	5,712,515

CLASS 310

12	5,712,516
45	5,712,517
50	5,712,518
75	5,712,519
92	5,712,520
162	5,712,521
248	5,712,522
313 R	5,712,523
328	5,712,524

CLASS 312

265.6	5,711,587

CLASS 313

2.1	5,712,525
493	5,712,526
495	5,712,527
506	5,712,528
558	5,712,529
620	5,712,530
631	5,712,531

CLASS 315

1	5,712,532
169.3	5,712,533
	5,712,534
241 P	5,712,535
247	5,712,536
374	5,712,537
383	5,712,538

CLASS 318

7	5,712,539
46	5,712,540
65	5,712,541
66	5,712,542
71	5,712,543
254	5,712,545
282	5,712,546
	5,712,547
293	5,712,548
376	5,712,549
434	5,712,550
466	5,712,551
568.1	5,712,552

CLASS 320

15	5,712,553

CLASS 323

259	5,712,554
273	5,712,555
314	5,712,556
316	5,712,557
322	5,712,558

CLASS 324

71.1	5,712,559
174	5,712,560
207.16	5,712,562
207.19	5,712,563
207.2	5,712,561
210	5,712,564
252	5,712,565
303	5,712,566
307	5,712,567
434	5,712,568
538	5,712,569
	5,712,570
539	5,712,571
551	5,712,572
619	5,712,573
714	5,712,574
763	5,712,575
	5,712,576

CLASS 326

38	5,712,577
39	5,712,578
93	5,712,579

CLASS 327

12	5,712,580
74	5,712,581
156	5,712,582
158	5,712,583
198	5,712,584
293	5,712,585
333	5,712,586
440	5,712,587
525	5,712,588
538	5,712,589
539	5,712,590

CLASS 330

84	5,712,591
124 R	5,712,592
129	5,712,593
253	5,712,594

CLASS 331

2	5,712,595
76	5,712,596
94.1	5,712,597
105	5,712,598
108 B	5,712,599
113 R	5,712,600
177 R	5,712,601

CLASS 332

127	5,712,602

CLASS 333

101	5,712,603
202	5,712,604
219.1	5,712,605
	5,712,606
238	5,712,607

CLASS 335

60	5,712,608

CLASS 337

70	5,712,609
290	5,712,610
334	5,712,611

CLASS 338

32 R	5,712,612
217	5,712,613

CLASS 340

310.03	5,712,614
332	5,712,615
442	5,712,616
467	5,712,617
475	5,712,618
539	5,712,619
541	5,712,620
547	5,712,621
555	5,712,622
565	5,712,623
825.21	5,712,624
825.31	5,712,625
	5,712,626
825.34	5,712,627
825.5	5,712,629
825.54	5,712,628
	5,712,630
853.1	5,712,631
995	5,712,632

CLASS 341

120	5,712,633
144	5,712,634
	5,712,635
152	5,712,636
155	5,712,637
176	5,712,638

CLASS 342

47	5,712,639
70	5,712,640
362	5,712,641
372	5,712,642

CLASS 343

700 MS	5,712,643
	5,712,644
713	5,712,645
895	5,712,647
909	5,712,648

CLASS 345

8	5,712,649
55	5,712,650
88	5,712,651
90	5,712,652
100	5,712,653
115	5,712,654
123	5,712,655
133	5,712,656
147	5,712,657
150	5,712,659
158	5,712,658
161	5,712,660
170	5,712,661
173	5,712,662
195	5,712,663
200	5,712,664
203	5,712,665

CLASS 347

7	5,712,667
19	5,712,666
32	5,712,668
49	5,712,669
55	5,712,670
102	5,712,672
186	5,712,671
217	5,712,673
238	5,712,674
254	5,712,675
262	5,712,676

CLASS 348

84	5,712,677
117	5,712,678
158	5,712,679
220	5,712,680
231	5,712,681
255	5,712,682
256	5,712,683
341	5,712,684
360	5,712,685
405	5,712,686
453	5,712,687
510	5,712,688
561	5,712,689
570	5,712,690
744	5,712,691
790	5,712,692

CLASS 349

5	5,712,693
9	5,712,694
79	5,712,695
123	5,712,696

CLASS 351

47	5,712,697

CLASS 355

35	5,712,700
71	5,712,698
72	5,712,699

CLASS 356

237	5,712,701
311	5,712,702
319	5,712,703
351	5,712,704
354	5,712,705
394	5,712,706
401	5,712,707
	5,712,708
432	5,712,709
436	5,712,710

CLASS 358

298	5,712,711
403	5,712,712
451	5,712,713
474	5,712,714

CLASS 359

8	5,712,715
125	5,712,716
130	5,712,717
201	5,712,718
207	5,712,719
210	5,712,720
245	5,712,721
285	5,712,722
328	5,712,723
350	5,712,724
392	5,712,725
419	5,712,726
431	5,712,727
484	5,712,728
562	5,712,729
569	5,712,730
619	5,712,731
630	5,712,732
687	5,712,733
701	5,712,734
727	5,712,735
841	5,712,736

CLASS 360

13	5,712,737
15	5,712,738
46	5,712,739
48	5,712,740
51	5,712,741
69	5,712,742
85	5,712,744
96.1	5,712,745
98.08	5,712,746
103	5,712,747
104	5,712,748
	5,712,749
105	5,712,750
113	5,712,751

CLASS 361

56	5,712,752
	5,712,753
58	5,712,754
119	5,712,755
127	5,712,756
	5,712,757
321.2	5,712,758
321.4	5,712,759
680	5,712,760
685	5,712,761
686	5,712,763
687	5,712,762
690	5,712,764
704	5,712,765
737	5,712,766
761	5,712,767
767	5,712,768
796	5,712,769

CLASS 362

30	5,711,588
31	5,711,589
43	5,711,590
61	5,711,591
80	5,711,592
	5,711,593
84	5,711,594
	5,711,595
226	5,711,596
	5,711,597
252	5,712,770
284	5,711,598
352	5,711,599

CLASS 363

17	5,712,771
21	5,712,772
37	5,712,773
46	5,712,774
49	5,712,775
	5,712,776
60	5,712,777
	5,712,778
69	5,712,779
131	5,712,780

CLASS 364

131	5,712,781
424.046	5,712,783
424.055	5,712,784
424.07	5,712,782
428	5,712,785
431.07	5,712,786
449.3	5,712,788
472	5,712,795
478.09	5,712,787
478.14	5,712,789
489	5,712,790
	5,712,791
	5,712,792
490	5,712,793
491	5,712,794
495	5,712,796
499	5,712,797
500	5,712,798
514 R	5,712,799
	5,712,800
550	5,712,801
557	5,712,802
560	5,712,803
563	5,712,804
574	5,712,805
578	5,712,806
724.01	5,712,807
724.02	5,712,808
725	5,712,809
841	5,712,810

CLASS 365

63	5,712,811
149	5,712,812
	5,712,813
182	5,712,814
185.03	5,712,815
185.05	5,712,816
185.08	5,712,817
185.23	5,712,818
185.29	5,712,819
189.02	5,712,820
200	5,712,821
201	5,712,822
203	5,712,823
	5,712,824
222	5,712,825
226	5,712,826
230.03	5,712,827

CLASS 366

171.1	5,711,600
209	5,711,601
251	5,711,602

CLASS 367

13	5,712,828
75	5,712,829
93	5,712,830

CLASS 368

88	5,712,831
187	5,712,832

CLASS 369

13	5,712,833
19	5,712,834
32	5,712,835
50	5,712,836
59	5,712,837
	5,712,838
112	5,712,840
	5,712,841
	5,712,842
	5,712,843
116	5,712,839
121	5,712,844

CLASS 370

226	5,712,845
	5,712,846
228	5,712,847
280	5,712,848
310	5,712,849
326	5,712,850
399	5,712,851
451	5,712,852
467	5,712,853
536	5,712,854

CLASS 371

1	5,712,855
20.1	5,712,856
22.1	5,712,857
	5,712,858
	5,712,859
32	5,712,860
37.1	5,712,861
49.1	5,712,862
52	5,712,863

CLASS 372

50	5,712,864
96	5,712,865

CLASS 374

5	5,711,603
44	5,711,604
141	5,711,605
149	5,711,606
179	5,711,607
208	5,711,608

CLASS 375

200	5,712,866
	5,712,868
202	5,712,867
206	5,712,869
	5,712,870
	5,712,871
222	5,712,872
233	5,712,873
243	5,712,874
257	5,712,875
268	5,712,876
284	5,712,877
303	5,712,878
330	5,712,879
341	5,712,880
354	5,712,881
356	5,712,882
371	5,712,883
375	5,712,884

CLASS 376

159	5,712,885
247	5,712,886
260	5,712,887
416	5,712,888

CLASS 378

19	5,712,889
37	5,712,890
47	5,712,891
54	5,712,892
58	5,712,893
68	5,712,894
207	5,712,895

CLASS 379

10	5,712,896
22	5,712,897
29	5,712,898
58	5,712,899
59	5,712,900
88	5,712,901
89	5,712,902
	5,712,903
93.17	5,712,906
95	5,712,905
112	5,712,907
119	5,712,908
165	5,712,909
373	5,712,910
420	5,712,911

CLASS 380

23	5,712,912
24	5,712,913
30	5,712,914
49	5,712,915
51	5,712,916

CLASS 381

68.6	5,712,917
	5,712,918
69.2	5,712,919
104	5,712,920

CLASS 382

112	5,712,921
155	5,712,922
165	5,712,924
167	5,712,925
205	5,712,926
242	5,712,928
252	5,712,927
270	5,712,929
	5,712,930

CLASS 383

63	5,711,609

CLASS 384

49	5,711,610
50	5,711,611
107	5,711,612
133	Re.35,718
283	5,711,613
429	5,711,614
473	5,711,615
482	5,711,616
484	5,711,617
489	5,711,618

CLASS 385

9	5,712,933
12	5,712,934
22	5,712,935
24	5,712,932
	5,712,936
49	5,712,937
59	5,712,938
78	5,712,939
93	5,712,940
126	5,712,941
134	5,712,942
	5,712,943

CLASS 386

46	5,712,944
52	5,712,945
68	5,712,946
69	5,712,947
95	5,712,948
96	5,712,949
97	5,712,950

CLASS 392

450	5,712,951
458	5,712,952

CLASS 395

2.23	5,712,953
2.34	5,712,954
2.38	5,712,955
2.43	5,712,956
2.49	5,712,957
3	5,712,958
24	5,712,959
77	5,712,960
93	5,712,961
107	5,712,962
109	5,712,963
118	5,712,964
119	5,712,965
128	5,712,966
182.01	5,712,967
182.02	5,712,968
182.03	5,712,969
182.04	5,712,970
183.02	5,712,972
183.1	5,712,971
186	5,712,973
200.09	5,712,976
	5,712,977
200.1	5,712,974
200.11	5,712,978
	5,712,979
200.15	5,712,980
	5,712,981
200.17	5,712,982
200.2	5,712,975
	5,712,983
204	5,712,984
207	5,712,985
210	5,712,987
228	5,712,989
	5,712,990
250	5,712,991
293	5,712,988
309	5,712,986
326	5,712,993
342	5,712,994
	5,712,995
392	5,712,996
393	5,712,997
415	5,712,998
421.01	5,712,999
421.06	5,713,001
421.1	5,713,000
439	5,713,002
445	5,713,003
472	5,713,004
496	5,713,005
497.01	5,713,006
500	5,713,007
	5,713,008
	5,713,009
507	5,713,010
556	5,713,011
580	5,713,012
602	5,713,013
604	5,713,014
	5,713,015
605	5,713,016
608	5,713,017
610	5,713,018
	5,713,019
613	5,713,020
614	5,713,021
615	5,713,022
616	5,713,023
712	5,713,024
729	5,713,025
733	5,713,026
750	5,713,027
	5,713,028
	5,713,029
	5,713,030
762	5,713,031
777	5,713,032
796	5,713,033
800	5,713,034
	5,713,035
	5,713,036
	5,713,037
	5,713,038
	5,713,039
	5,713,040
	5,713,041
802	5,713,042
806	5,713,043
842	5,713,044
877	5,712,992
893	5,713,045

CLASS 396

6	5,713,046
18	5,713,047
25	5,713,048
55	5,713,049
56	5,713,050
84	5,713,051
91	5,713,052

VOL
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UMI

92	5,713,053
165	5,713,055
396	5,713,056
513	5,713,057
612	5,713,054
626	5,713,058

CLASS 399

18	5,713,059
20	5,713,060
38	5,713,061
49	5,713,062
66	5,713,063
99	5,713,064
121	5,713,066
176	5,713,067
249	5,713,068
330	5,713,069
363	5,713,070
401	5,713,071

CLASS 400

74	5,711,619
120.02	5,711,620
120.13	5,711,621
124.29	5,711,622
225	5,711,623
486	5,711,624
582	5,711,625

CLASS 401

219	5,711,626

CLASS 402

3	5,711,627

CLASS 403

5	5,711,628
320	5,711,629
329	5,711,630

CLASS 404

74	5,711,631

CLASS 405

52	5,711,632
60	5,711,633
66	5,711,634
128	5,711,635
154	5,711,636
168.3	5,711,638
171	5,711,639
229	5,711,637

CLASS 406

117	5,711,640

CLASS 408

1 R	5,711,641

CLASS 409

83	5,711,643
234	5,711,642

CLASS 411

131	5,711,644
270	5,711,645

CLASS 414

225	5,711,646
749	5,711,647
786	5,711,648
790.7	5,711,649

CLASS 415

115	5,711,650

CLASS 416

24	5,711,651
144	5,711,652
237	5,711,653

CLASS 417

63	5,711,654
85	5,711,655
312	5,711,656
319	5,711,657
393	5,711,658

CLASS 418

55.2	5,711,659
79	5,711,660

CLASS 420

84	5,711,914

CLASS 422

68.1	5,711,915
83	5,711,916
99	5,711,917
190	5,711,919
282	5,711,920
292	5,711,921

CLASS 423

106	5,711,922
121	5,711,923
240 R	5,711,924
341	5,711,925
359	5,711,926
445 B	5,711,927
522	5,711,928
567.1	5,711,929
625	5,711,930

CLASS 424

1.69	5,711,931
9.1	5,711,932
9.52	5,711,933
45	5,711,934
49	5,711,935
	5,711,936
	5,711,937
	5,711,938
59	5,711,939
61	5,711,940
65	5,711,941
70.1	5,711,942
70.15	5,711,943
85.7	5,711,944
93.47	5,711,945
93.51	5,711,946
188.1	5,711,947
195.1	5,711,948
	5,711,949
205.1	B1 4,609,548
401	5,711,950
	5,711,951
	5,711,952
405	5,711,953
409	5,711,954
	5,711,955
	5,711,956
422	5,711,957
423	5,711,958
	5,711,959
426	5,711,960
441	5,711,961
447	5,711,962
450	5,711,964
	5,711,965
451	5,711,966
462	5,711,967
487	5,711,968
551	5,711,969

CLASS 425

72.2	5,711,970
183	5,711,971
363	5,711,972
504	5,711,973
541	5,711,974

CLASS 426

3	5,711,975
36	5,711,976
61	5,711,977
129	5,711,978
243	5,711,979
392	5,711,980
511	5,711,981
580	5,711,982
635	5,711,983
640	5,711,984
649	5,711,985
658	5,711,986

CLASS 427

7	5,711,987
80	5,711,988
96	5,711,989
201	5,711,990
202	5,711,991
243	5,711,992
250	5,711,993
255.6	5,711,994
258	5,711,995
388.4	5,711,996
403	5,711,997
535	5,711,998
555	5,711,999
573	5,712,000
576	5,712,001

CLASS 428

20	5,712,002
31	5,712,003
33	5,712,004
34.1	5,712,005
34.2	5,712,006
34.8	5,712,007
35.7	5,712,009
36.3	5,712,010
36.9	5,712,011
43	5,712,012
65.6	5,712,014
70	5,712,015
113	5,712,017
158	5,712,018
178	5,712,019
182	5,712,020
192	5,712,021
195	5,712,022
	5,712,023
	5,712,024
	5,712,025
212	5,712,026
	5,712,027
216	5,712,028
323	5,712,029
332	5,712,030
349	5,712,008
355	5,712,031
364	5,712,032
	5,712,033
375	5,712,034
378	5,712,035
	5,712,036
404	5,712,037
411.1	5,712,038
414	5,712,039
421	5,712,040
451	5,712,041
458	5,712,042
500	5,712,043
515	5,712,044
522	5,712,045
586	5,712,046
607	5,712,047
615	5,712,048
646	5,712,049
680	5,712,050
690	5,712,051

CLASS 429

2	5,712,053
13	5,712,052
21	5,712,054
31	5,712,055
54	5,712,056
105	5,712,057
162	5,712,058
197	5,712,059
206	5,712,060
208	5,712,061
218	5,712,062

CLASS 430

5	5,712,063
7	5,712,064
	5,712,065
20	5,712,066
59	5,712,067
106	5,712,068
106.6	5,712,069
	5,712,070
110	5,712,071
	5,712,072
	5,712,073
	5,712,074
137	5,712,075
204	5,712,076
	5,712,077
270.1	5,712,078
	5,712,079
315	5,712,080
440	5,712,081
567	5,712,083

CLASS 431

329	5,711,661
344	5,711,662
354	5,711,663

CLASS 432

116	5,711,664

CLASS 433

9	5,711,665
11	5,711,666
19	5,711,667
167	5,711,668
174	5,711,669

CLASS 434

55	5,711,670
236	5,711,671
307 R	5,711,672
353	5,711,673

CLASS 435

1.2	5,712,084
2	5,712,085
	5,712,086
5	5,712,087
	5,712,088
	5,712,089
6	5,712,090
	5,712,091
	5,712,092
	5,712,093
	5,712,094
	5,712,095
	5,712,096
	5,712,097
	5,712,098
	5,712,099
7.1	5,712,100
	5,712,101
7.32	5,712,102
7.92	5,712,103
	5,712,104
7.94	5,712,105
8	5,712,106
15	5,712,107
	5,712,108
52	5,712,109
67	5,712,110
69.1	5,712,111
	5,712,112
	5,712,113
	5,712,114
	5,712,115
	5,712,116
69.2	5,712,117
69.3	5,712,118
69.4	5,712,119
69.6	5,712,120
69.7	5,712,121
	5,712,122
72	5,712,123
91.2	5,712,124
	5,712,125
	5,712,126
91.21	5,712,127
91.31	5,712,128
118	5,712,129
123	5,712,130
136	5,712,131
147	5,712,132
161	5,712,133
172.2	5,712,134
172.3	5,712,135
	5,712,136
180	5,712,137
189	5,712,138
190	5,712,139
209	5,712,142
212	5,712,143
219	5,712,144
	5,712,145
222	5,712,147
240.2	5,712,148
252.3	5,712,149
	5,712,150
252.35	5,712,146
254.1	5,712,151
254.21	5,712,152
263	5,712,153
297.4	5,712,154
320.1	5,712,155
	B1 4,363,877
325	5,712,156
337	5,712,157
369	5,712,158
372.2	5,712,159
375	5,712,160
382	5,712,161
405	5,712,163
420	5,712,164

CLASS 436

21	5,712,165
58	5,712,166
87	5,712,167
135	5,712,168
503	5,712,169
518	5,712,170
	5,712,171
	5,712,172

CLASS 437

24	5,712,173
31	5,712,174
39	5,712,175
40 GS	5,712,176
42	5,712,177
43	5,712,178
	5,712,179
	5,712,180
46	5,712,181
60	5,712,182
	5,712,183
62	5,712,184
67	5,712,185
69	5,712,186
109	5,712,187
129	5,712,188
133	5,712,189
173	5,712,190
174	5,712,191
182	5,712,192
187	5,712,193
190	5,712,140
194	5,712,194
195	5,712,195
200	5,712,196
214	5,712,197
235	5,712,198

CLASS 438

62	5,712,199
238	5,712,200
239	5,712,201
253	5,712,202
275	5,712,203
307	5,712,204
425	5,712,205
601	5,712,206
627	5,712,207
770	5,712,208

CLASS 439

11	5,711,674
34	5,711,675
63	5,711,676
64	5,711,677
79	5,711,678
	5,711,679
83	5,711,680
86	5,711,681
157	5,711,682
354	5,711,684
587	5,711,685
610	5,711,686
745	5,711,687
762	5,711,688
801	5,711,689
862	5,711,690

CLASS 441

41	5,711,691
74	5,711,692

CLASS 442

208	5,712,209
320	5,712,210

CLASS 445

24	5,711,693
	5,711,694

CLASS 446

211	5,711,695

CLASS 451

5	5,711,696
	5,711,697
41	5,711,698
43	5,711,700
378	5,711,701
540	5,711,702

CLASS 452

92	5,711,703

CLASS 453

57	5,711,704

CLASS 454

57	5,711,705
338	5,711,706

CLASS 455

33.1	5,713,072
56.1	5,713,073
69	5,713,074
427	5,713,075

CLASS 463

35	5,711,707
36	5,711,708

CLASS 464

106	5,711,709
170	5,711,710

CLASS 470

41	5,711,711

CLASS 472

77	5,711,713
123	5,711,714

CLASS 473

9	5,711,715
212	5,711,716
229	5,711,717
234	5,711,718
251	5,711,719
300	5,711,720
308	5,711,721
346	5,711,722
374	5,711,723
427	5,711,724
451	5,711,725
453	5,711,726
479	5,711,727
520	5,711,728
609	5,711,729

CLASS 474

18	5,711,730
79	5,711,731
111	5,711,732
227	5,711,733
260	5,711,734

CLASS 475

44	5,711,735
149	5,711,736
160	5,711,737
246	5,711,738
254	5,711,739
303	5,711,740

CLASS 476

10	5,711,741

CLASS 477

121	5,711,712
	5,711,742

CLASS 482

27	5,711,743
35	5,711,744
54	5,711,745
112	5,711,746
124	5,711,747
135	5,711,749

CLASS 493

210	5,711,750
224	5,711,751
459	5,711,752

CLASS 501

96	5,712,211

CLASS 502

7	5,712,212
31	5,712,213
37	5,712,214
175	5,712,216
303	5,712,217
304	5,712,218
328	5,712,219
400	5,712,220

CLASS 503

226	5,712,221
227	5,712,222
	5,712,223

CLASS 504

116	5,712,224
223	5,712,225
251	5,712,226

CLASS 505

234	5,712,227

CLASS 507

233	5,712,228

CLASS 508

202	5,712,229
232	5,712,230
587	5,712,231

CLASS 510

120	5,712,232
151	5,712,235
174	5,712,233
	5,712,234
259	5,712,236
291	5,712,237
367	5,712,238
372	5,712,239
424	5,712,240
426	5,712,241
444	5,712,242
446	5,712,243
514	5,712,244

CLASS 514

2	5,712,245
12	5,712,247
	5,712,248
	5,712,249
	5,712,250
15	5,712,251
21	5,712,252
28	5,712,253
42	5,712,254
43	5,712,255
44	5,712,256
	5,712,257
47	5,712,258

52	5,712,259
58	5,712,260
75	5,712,261
114	5,712,262
172	5,712,263
173	5,712,264
200	5,712,265
202	5,712,266
210	5,712,267
	5,712,268
212	5,712,270
	5,712,271
213	5,712,272
218	5,712,273
219	5,712,274
220	5,712,269
222.5	5,712,275
235.8	5,712,276
242	5,712,277
252	5,712,279
253	5,712,280
259	5,712,281
263	5,712,282
269	5,712,283
272.4	5,712,304
299	5,712,284
300	5,712,285
	5,712,286
304	5,712,287
305	5,712,288
311	5,712,289
	5,712,290
323	5,712,291
325	5,712,292
327	5,712,293
336	5,712,294
338	5,712,295
340	5,712,296
342	5,712,297
352	5,712,298
365	5,712,299
389	5,712,300
396	5,712,301
397	5,712,302
407	5,712,303
453	5,712,305
468	5,712,306
538	5,712,307
562	5,712,309
570	5,712,310
572	5,712,311
585	5,712,312
654	B1 5,547,995

CLASS 518

706	5,712,313

CLASS 521

41	5,712,314
57	5,712,315
72	5,712,316
76	5,712,317
85	5,712,318
141	5,712,319
172	5,712,320

CLASS 522

28	5,712,321
69	5,712,322
73	5,712,323
75	5,712,324
83	5,712,325

CLASS 523

105	5,712,326
107	5,712,327
161	5,712,328
179	5,712,329
206	5,712,330
400	5,712,331

CLASS 524

88	5,712,332
140	5,712,333
161	5,712,334
269	5,712,335
373	5,712,336
496	5,712,337
505	5,712,338
515	5,712,339
521	5,712,340
528	5,712,341
591	5,712,342
837	5,712,343

CLASS 525

88	5,712,344
131	5,712,345
288	5,712,346
340	5,712,347
384	5,712,348
523	5,712,349
535	5,712,350

CLASS 526

68	5,712,352
88	5,712,353
127	5,712,354
254	5,712,355
264	5,712,356
286	5,712,357
323.2	5,712,358
329	5,712,359

CLASS 528

38	5,712,360
86	5,712,361
196	5,712,362
229	5,712,363
498	5,712,365

CLASS 530

324	5,712,366
338	5,712,367
350	5,712,369
388.22	5,712,372
388.23	5,712,370
388.35	5,712,373
391.7	5,712,374
412	5,712,375

CLASS 534

634	5,712,376

CLASS 536

7.1	5,712,377
22.1	5,712,378
23.4	5,712,379
23.5	5,712,380
	5,712,381
23.6	5,712,382
24.3	5,712,383
24.32	5,712,385
24.33	5,712,386
24.5	5,712,384
119	5,712,387

CLASS 540

362	5,712,388
474	5,712,389
596	5,712,390

CLASS 544

194	5,712,391
295	5,712,392
316	5,712,393
334	5,712,394
344	5,712,395

CLASS 546

22	5,712,396
90	5,712,397

CLASS 548

124	5,712,399
202	5,712,400

CLASS 549

27	5,712,401

CLASS 552

309	5,712,402

CLASS 556

19	5,712,403
53	5,712,404
472	5,712,405

CLASS 558

274	5,712,406
283	5,712,407
446	5,712,408

CLASS 560

56	5,712,409
78	5,712,410
172	5,712,411

CLASS 562

485	5,712,412

CLASS 564

131	5,712,413
138	5,712,414
154	5,712,417
225	5,712,418
490	5,712,415

CLASS 568

31	5,712,416
313	5,712,419

CLASS 600

16	5,711,753
18	5,711,754
109	5,711,755
112	5,711,756

CLASS 601

23	5,711,757
127	5,711,758
139	5,711,759
149	5,711,760

CLASS 604

20	5,711,761

CLASS 606

5	5,711,762

CLASS 623

16	5,711,763

CLASSIFICATION OF DESIGNS

D1—	199	389,635
D2—	894	389,636
	972	389,637
D3—	1	389,638
	203	389,639
	207	389,640
	218	389,641
	254	389,642
		389,643
	255	389,644
	276	389,645
	294	389,646
	301	389,647
	315	389,648
	319	389,649
	320	389,650
D4—	138	389,651
		389,652
D5—	66	389,653
D6—	4	389,674
	349	389,659
	361	389,661
	369	389,662
	393	389,663
	397	389,664
	406	389,665
	421	389,666
	426	389,667
	438	389,654
	441	389,668
	445	389,655
		389,669
		389,670
	450	389,671
	472	389,672
	473	389,656
		389,657
	474	389,673
	487	389,675
	488	389,676
	491	389,677
	505	389,678
	511	389,679
		389,680
	515	389,681
	518	389,682
	522	389,683
		389,684
	523	389,685
	528	389,686
	537	389,660
	545	389,687
	552	389,688
	566	389,689
	575	389,690
	601	389,691
		389,692
		389,702
	632	389,658
D7—	308	389,693
		389,694
	354	389,695
	386	389,696
	400	389,697
	401.2	389,698
	416	389,699
	509	389,700
	564	389,701
	601	389,703
	607	389,704
D8—	1	389,705
	8	389,706
		389,707
	14	389,709
	28	389,710
	38	389,711
	42	389,712
	50	389,713
	57	389,714
	70	389,715
	93	389,716
	99	389,717
		389,718
	100	389,719
	107	389,720
	300	389,721
	319	389,722
	320	389,723
	333	389,724
	348	389,725
	353	389,726
	358	389,727
	367	389,728
	380	389,729
	395	389,730
		389,731
	396	389,732
		389,733
D9—	307	389,734
	346	389,735
	418	389,736
		389,737
	429	389,741
	432	389,738
	433	389,739
	443	389,740
	523	389,742
	527	389,743
	542	389,744
D10—	4	389,745
	30	389,746
		389,747
		389,748
		389,749
		389,750
		389,752
	32	389,751
	40	389,753
	57	389,754
	65	389,755
		389,756
		389,757
	69	389,758
	78	389,759
	100	389,760
	103	389,761
	104	389,762
	106	389,763
		389,764
	116	389,765
	122	389,766
	126	389,767
	128	389,768
D11—	16	389,769
		389,770
		389,771
	34	389,774
	43	389,775
	81	389,772
	88	389,776
	130.1	389,777
	143	389,773
	157	389,778
	218	389,779
D12—	7	389,780
	11	389,781
	16	389,782
	91	389,783
	92	389,784
	102	389,785
	106	389,786
	111	389,787
	146	389,788
	147	389,789
		389,790
		389,791
		389,792
		389,793
	186	389,794
	192	389,798
	209	389,795
	217	389,796
	316	389,797
D13—	107	389,799
	147	389,800
		389,801
		389,802
		389,803
	152	389,804
	164	389,805
	168	389,806
	179	389,807
	182	389,808
	184	389,809
D14—	100	389,810
		389,811
		389,812
	105	389,813
		389,814
	106	389,815
		389,816
	107	389,817
		389,819
	114	389,818
		389,820
		389,821
	115	389,822
		389,823
	124	389,824
	132	389,825
	135	389,826
	137	389,827
	138	389,828
		389,829
	146	389,830
	149	389,831
	150	389,832
	151	389,833
	171	389,834
	172	389,835
	191	389,836
	194	389,837
	218	389,838
	227	389,839
	240	389,840
	258	389,841
D15—	1	389,842
	29	389,843
		389,844
	131	389,845
	139	389,846
	146	389,847
D16—	201	389,848
	209	389,849
	225	389,850
	236	389,851
	321	389,852
	330	389,853
	333	389,854
D17—	10	389,855
	20	389,856
		389,857
D18—	7	389,858
	14	389,859
	43	389,860
	55	389,861
D19—	43	389,862
	48	389,863
		389,864
		389,865
	51	389,866
	55	389,867
	65	389,868
	75	389,869
	90	389,870
D20—	41	389,871
D21—	16	389,872
	24	389,873
	41	389,874
	59	389,875
	64	389,876
	71	389,877
	82	389,878
	104	389,879
		389,880
	129	389,882
		389,883
	147	389,884
	214	389,885
		389,886
	220	389,887
	230	389,888
	234	389,889
	238	389,890
	240	389,891
	245	389,892
D22—	107	389,893
	133	389,894
	134	389,895
D23—	206	389,896
	238	389,897
	255	389,898
		389,899
	277	389,900
	284	389,901
	301	389,902
	311	389,903
	330	389,904
	332	389,905
	367	389,906
	393	389,907
	411	389,908
D24—	104	389,909
	110.3	389,910
	128	389,911
	133	389,912
	138	389,913
	144	389,915
	169	389,916
	186	389,917
		389,918
		389,919
	214	389,920
D25—	53	389,921
		389,922
	64	389,923
	103	389,924
		389,925
	113	389,926
	124	389,927
D26—	6	389,928
	28	389,929
	37	389,930
		389,931
	39	389,932
	59	389,933
	65	389,934
	68	389,935
		389,936
		389,937
		389,938
	71	389,939
	76	389,940
	85	389,941
		389,942
	88	389,943
	110	389,944
		389,945
		389,946
		389,947
		389,948
	118	389,949
	134	389,950
		389,951
D27—	188	389,952
D28—	35	389,953
	41	389,954
	48	389,955
	49	389,956
	59	389,957
D29—	102	389,958
	120	389,959
D30—	108	389,960
D32—	1	389,961

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CLASSIFICATION OF PATENTS

23	389,962	46	389,966	D34—	1	389,970	24	389,977	33	389,978	35	389,983
31	389,963	70	389,967		5	389,971	25	389,974	34	389,980	37	389,984
35	389,964		389,968		16	389,972	28	389,975		389,981		
42	389,965		389,969		23	389,973		389,976		389,982		

CLASSIFICATION OF PLANTS

P.—	74.1	0,211		0,213	78	0,215	82	0,217	82.3	0,219
	76	0,212	77	0,214	79	0,216	82.1	0,218	87.4	0,220

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,711,377
5,711,445
5,711,591
5,711,713
5,711,927
5,712,006
5,712,898
02 : 5,711,455
5,712,455
04 : 5,711,051
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5,711,559
5,711,574
5,711,606
5,711,716
5,711,796
5,711,837

VOL
1206
ISS
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JA
27
1998
UMI

5,711,889
5,711,909
5,712,002
5,712,176
5,712,354
5,712,420
5,712,435
5,712,460
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5,713,039
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5,711,431
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5,713,002
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5,711,640
5,711,794
5,711,832
5,711,847
5,711,910
5,711,976
5,712,037
5,712,110

DESIGN PATENTS

01 : 389,677
02 : 389,932
04 : 389,707
389,837
389,870
05 : 389,900
06 : 389,642
389,664
389,674
389,676
389,681
389,700
389,709
389,710
389,723
389,740
389,742
389,751
389,758
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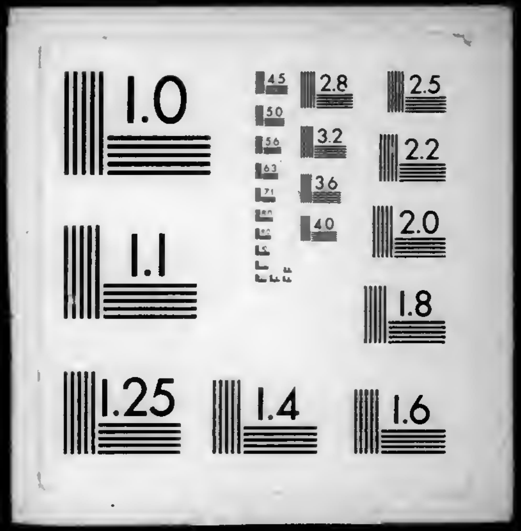

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